

Original Article

# Silent Healing! A Gateway to Health through Yoga: The Moderated Mediation Role of Flow Experience in the Relationship Between Serious Leisure, Perceived Health, and Quality of Life

Cemal Yalçın 

Department of Property Protection and Security, Ankara University Vocational School of Ayaş, Ankara, Türkiye

Cite this article as: Yalçın, C. (2026). Silent healing! A gateway to health through yoga: the moderated mediation role of flow experience in the relationship between serious leisure, perceived health, and quality of life. *Research in Sports Science*, 16, 0083, 2026. doi:10.5152/rss.2026.25089.

## What is already known on this topic?

- Participation in serious leisure activities enhances individuals' levels of quality of life.
- Yoga is considered an effective practice that supports physical and psychological health within the context of serious leisure.
- Flow experience enhances psychological benefits through focused and satisfying experiences during leisure activities.

## What this study adds to this topic?

- This study presents the first empirical model to test the moderated mediation role of flow experience in the relationship between serious leisure, perceived health, and quality of life, specifically within the context of yoga practice.
- The research demonstrated that the effect of serious leisure on quality of life through perceived health varies depending on the level of flow experience.
- The findings underscore the importance of considering flow experience in the design of health-oriented leisure programs.

## Abstract

Yoga has been increasingly embraced worldwide as a leisure activity that supports physical and psychological well-being. Although previous studies have shown that engaging in yoga as a serious leisure activity contributes to quality of life, the underlying psychological mechanisms remain insufficiently clarified. Specifically, the roles of perceived health and flow experience in this process have been examined to a limited extent. In this cross-sectional study, it was aimed to investigate, from the perspective of flow theory, the moderated mediation role of flow experience in the relationship between perceived health and quality of life through participation in yoga within the context of serious leisure. Data were collected via an online questionnaire from individuals in Ankara who participate in yoga as a serious leisure activity, with a total of 337 female-only yoga participants included. Results from structural equation modeling indicated that serious leisure positively influences quality of life ( $\beta = 0.12$ , 95% CI (0.01, 0.23),  $p < .01$ ). Furthermore, mediation and moderated mediation analyses based on SPSS PROCESS Macro Models 4 and 7 revealed that perceived health mediates the relationship between serious leisure and quality of life ( $\beta = 0.22$ , 95% CI (0.13, 0.31),  $p < .01$ ). Additionally, flow experience significantly moderates the relationship between serious leisure and perceived health ( $\beta = 0.86$ , 95% CI (0.55, 1.17),  $p < .01$ ). The moderated mediation analysis demonstrated that the indirect effect of serious leisure on quality of life through perceived health is stronger when flow experience is high ( $\beta = 0.23$ , 95% CI (0.13, 0.34),  $p < .01$ ). By revealing the moderated mediation process of flow experience in this relationship within a Turkish yoga sample, the study offers a unique contribution to the literature. Theoretical and practical implications, as well as recommendations for future research, are also discussed.

**Keywords:** Flow experience, moderated mediation, perceived health, quality of life, serious leisure, yoga

## Introduction

Yoga, considered a mental and physical discipline, has become an increasingly popular activity worldwide that unites the mind, body, and spirit (Liu et al., 2024). Etymologically rooted in India, the term "yoga" first appeared in sources such as the Taittiriya Upanishad and Katha Upanishad, referring to the union of the individual soul with the universal soul, in other words, the unity of the soul with God (Nagla, 2006). Over time, the adoption of yoga by various cultures has led to its recognition as a practice involving breathing exercises, balance, strength, meditation, and relaxation (Berger et al., 2009; Taneja, 2014). Furthermore, individuals who embrace yoga as a lifestyle and engage in it seriously as a physical practice that integrates spiritual rituals have elevated its meaning to a different level (Khalsa et al., 2024). In this regard, yoga, when practiced as a serious leisure activity, is regarded as a significant tool for reducing health problems and enhancing quality of life (Chhabra, 2022; Patterson et al., 2016).

Serious leisure has been defined by Stebbins (2007) as "the systematic pursuit of an amateur, hobbyist, or volunteer core activity that people find so substantial, interesting, and fulfilling that, in a typical case, they launch themselves on a (leisure) career centered on acquiring and expressing a combination of

its special skills, knowledge, and experience.” It is distinguished from more superficial and temporary leisure activities by six core characteristics: perseverance, leisure career, significant effort, durable outcomes, unique ethos, and strong identification (Stebbins, 1992). Within this framework, yoga practice demonstrates characteristics such as perseverance, significant personal effort, the development of a leisure career, and strong identification with the activity (Kim vd., 2025; Liu et al., 2024). In this respect, it aligns with the theoretical framework of Serious Leisure. Over time, serious leisure has become a foundational concept across various fields of study (Demirel et al., 2025; Yaşar-Sönmez & Yalçın, 2025) and has recently gained prominence in studies focusing on yoga activities (Liu et al., 2024; Patterson et al., 2016). Accordingly, studies in the literature have reported that engaging in yoga as a serious leisure activity improves individuals’ overall mood and contributes significantly and positively to their psychological well-being (Chhabra, 2022; Dilletta et al., 2019). Consistent with this, the World Health Organization (WHO) emphasizes that yoga not only promotes physical well-being but equally contributes to fortifying mental health through reduced stress and anxiety, and emphasizes its worth as a safe and effective practice as a complement to modern medicine (WHO, 2022). This recommendation suggests that participation in yoga as a serious leisure activity may provide individuals with even greater benefits. Practicing yoga as a serious leisure activity in indoor or outdoor settings may enhance self-integration and improve mood, thereby increasing overall psychological well-being (Nagla, 2006; Patterson et al., 2016).

Its geographic location and historical background positions Türkiye at the intersection of Eastern and Western cultures, which has contributed to a socio-cultural understanding of leisure in which spiritual practices coexist with modern lifestyles (Ekinci & Gürbüz, 2025). Within this context, yoga emerges as a multifaceted experience that reflects both traditional and contemporary leisure values (Kim et al., 2025; Laughlin & Chun, 2025; Yılmaz & Uzunçayır, 2025). In this regard, the present study offers a perspective that has been relatively limited in the literature by examining how the relationships among perceived health, quality of life, and flow experience are shaped within this cultural environment. Existing research has largely relied on samples from India and Western countries (Sardesai & Gore, 2025; Seaman et al., 2025), and studies that investigate the psychological outcomes of yoga within the framework of serious leisure across culturally diverse contexts remain limited (Laughlin & Chun, 2025; Liu et al., 2024). The current study fills this gap by empirically testing how yoga practice, situated within Türkiye’s unique serious leisure culture, influences perceived health and quality of life through the lens of flow experience. This research not only identifies the associations among these variables but also provides a theoretical framework for understanding how contextual cultural factors may be associated with variations in these relationships, without assuming deterministic cultural effects.

Although practicing yoga as a form of serious leisure is known to support well-being among adults, the specific psychological mechanisms underlying this relationship—particularly the significant role of perceived health in enhancing quality of life and the influence of flow experience on these associations—have not yet been clearly understood. Addressing these mechanisms as an integrated whole is of particular importance for developing targeted interventions that promote healthy living, enhance quality of life, and improve general well-being at the societal level. A review of various studies in the literature reveals a positive relationship between participation in serious leisure activities and quality of life (Guo et al., 2021; Stebbins, 2004).

In particular, serious leisure activities involving physical activity have been found to reduce negative emotional states such as stress and anxiety (Kerr et al., 2002) and to improve quality of life (Lee & Payne, 2016). As part of Heo et al.’s (2013) research on older adults, they found positive correlations between life satisfaction and participation in serious leisure activities as well as health. The research in the literature indicates that high levels of participation in serious leisure activities involving physical activity positively influence both physical and psychological health (Kerr et al., 2002; Kim et al., 2011). In light of this evidence, engaging in yoga as a serious leisure activity may play a significant role in enhancing quality of life among adults. Based on these findings, the following hypothesis is proposed:

H1: Serious leisure has a direct positive effect on quality of life.

Additionally, perceived health has been identified in literature as one of the predictors of quality of life (Bachmann et al., 2016). From the above, individuals having high perceived levels of health have been determined to report high subjective levels of well-being (Caldwell et al., 1992). Persons who consider themselves to be healthy due to engaging in leisure activities report high levels of life satisfaction, subjective and psychological well-being, and quality of life (Heo et al., 2013; Mannell, 2007). For instance, a study in the literature by Kim et al. (2011) found that individuals who engaged in Taekwondo as a serious leisure activity exhibited high levels of life satisfaction and perceived health. Sardesai and Gore (2025) identified that increases in yoga participants’ experiences and perceived benefits were associated with corresponding improvements in their quality of life. Accordingly, participation in yoga as a form of serious leisure may enhance perceived health, which in turn may strengthen quality of life. Based on this theoretical reasoning, the following hypothesis is proposed:

H2: Serious leisure positively influences individuals’ quality of life through perceived health.

Moreover, the conceptualization of flow as a peak experience during which one intensely experiences focus, motivation, and enjoyment and does not have awareness of temporal passage of the activity (Csikszentmihalyi & Csikszentmihalyi, 1990) has been found to be one of the strongest predictors in leisure activities (Demirel et al., 2025; Lee & Payne, 2016). Previous studies have demonstrated positive relationships among serious leisure, health, and flow experience (Dieser et al., 2015; Hutchinson & Kleiber, 2005). Flow may function as a moderator in the relationship between serious leisure and perceived health. In this role, flow experience may influence the strength or direction of the relationship between serious leisure and perceived health. Participation in yoga as a form of serious leisure has been associated with enhanced perceived health and overall well-being (Dilletta et al., 2019; Nagla, 2006). Flow experience, characterized by deep engagement and a sense of enjoyment, may moderate the positive effects of serious leisure on perceived health and further amplify these effects. Based on this information, the following hypothesis is proposed:

H3: The effect of serious leisure on perceived health is moderated by flow experience.

As proposed in the relationships, perceived health can be assumed to positively mediate the effects of participating in yoga as serious leisure on the quality of life. Participating in yoga as serious leisure ought to enhance aspects related to health (Dilletta et al., 2019;

Nagla, 2006; Patterson et al., 2016), which in turn ought to help enhance the quality of life (Stebbins, 2004). For example, Chang et al. (2024) demonstrated that women with elevated levels of flow tended to report markedly stronger activity attachment during their yoga participation, particularly when this experience was examined in relation to their sense of purpose in life. Through moderated mediation of the flow experience, the connection between the three variables could be enhanced further. It has been found in past literature that once individuals encounter high levels of flow in leisure activities, not only does it enhance commitment to the activity (Dieser et al., 2015; Lee & Payne, 2016) but also has beneficial effects on aspects of psychological health (Chang et al., 2024; Elkington, 2011). Based on this information, the following hypothesis is proposed:

H4: When flow experience is high (compared to medium and low levels), the indirect effect of serious leisure on quality of life through perceived health is stronger.

Based on this body of literature, although various studies have examined serious leisure in relation to perceived health, quality of life, and flow experience separately (Demirel et al., 2025; Guo et al., 2021; Kim et al., 2011; Lee & Payne, 2016), only a limited number of studies have investigated the moderated mediation role of flow experience in the relationship between serious leisure, perceived health, and quality of life, particularly among adults participating in yoga practice. This gap in the literature highlights the need for a deeper understanding of how individual perceptions of health influence quality of life outcomes in the context of yoga practice, and how the flow experience gained through participation in serious leisure activities is associated with quality of life in relation to healthy living. Drawing upon the existing literature, the present study aims to examine, from the perspective of flow theory, the moderated mediation role of flow experience in the relationship between perceived health and quality of life through participation in yoga as a form of serious leisure among adults. In line with this aim, it is believed that the proposed model will provide valuable insights into the relationships among these variables from a theoretical and empirical standpoint. The research model developed for the present study is presented in Figure 1.

## Material and Methods

### Participants

This cross-sectional study included yoga practitioners registered at private yoga studios and health and wellness clubs located in Ankara. These clubs were selected based on their provision of structured and regular yoga programs delivered by certified instructors. The study group was selected using a convenience sampling method

and consisted of 337 female yoga participants aged 22–65 years ( $M = 37.97$ ,  $SD = 10.05$ ). Participation in the study was voluntary, and inclusion criteria required participants to be female, aged 18 years or older, and actively engaged in yoga practice at the time of data collection. Participants generally reported participating in yoga activities for 1–7 weeks ( $M = 3.37$ ,  $SD = 1.35$ ) and having been members of a club for 1–10 years ( $M = 4.17$ ,  $SD = 2.69$ ). Furthermore, participants generally had an average financial wealth level (75.1%). However, the majority of the sample reported having an associate's or bachelor's degree (71.8%) and a married marital status (66.2%).

## Measures

### Serious Leisure Inventory-Short Form

The 18-item Serious Leisure Inventory-Short Form (SLI-SF), developed by Gould et al. (2011) and validated in Turkish by Işık et al. (2020), was used to measure the serious leisure levels of the participants in the study. Participants indicated their level of agreement with the items on a 5-point Likert scale from one (Strongly Disagree) to five (Strongly Agree). The Cronbach's alpha internal consistency coefficient calculated on the data collected in this study showed a generally high level (Cronbach's  $\alpha = 0.92$ ).

### Perceived Health Outcomes of Recreation Scale

To assess the perceived health outcomes of the participants from yoga activities they had engaged in during leisure, Gómez et al. (2016) employed the 16-item Perceived Health Outcomes of Recreation Scale (PHORS) of Yerlisu Lapa et al. (2020), which has been found to be valid and reliable in Turkish. The items on this seven-point Likert-type scale are ranked and scored from one (definitely does not describe me) to seven (definitely describes me). The Cronbach's alpha internal consistency coefficient for this study was generally high (Cronbach's  $\alpha = 0.94$ ).

### Recreational Flow Experience Scale

The flow experiences of individuals participating in the yoga activity included in the study were assessed with the Recreational Flow Experience Scale (RFES) (Ayhan et al., 2020). The scale was developed in Turkish culture and consists of nine items. Individuals participating in yoga activities expressed their level of agreement with the items on a seven-point Likert-type scale ranging from one (strongly disagree) to seven (strongly agree). The Cronbach's alpha internal consistency coefficient calculated on the data collected in this study was above the acceptable level (Cronbach's  $\alpha = 0.94$ ).

### World Health Organization Quality of Life-Brief Form

The World Health Organization Quality of Life Questionnaire-Brief Form (WHOQOL-BREF), developed by the WHO (1998) with contributions from 15 centers from various countries, was used to measure quality of life. The scale's validity and reliability in Turkish were conducted by Eser et al. (1999). The scale consists of 27 items and is scored between one and five. In this study, the Cronbach's alpha coefficient indicates acceptable internal consistency (Cronbach's  $\alpha = 0.80$ ).

## Procedure

The research data were collected in accordance with ethical standards, and ethical approval was obtained from the Ethics Committee of Ankara University (Approval No.: 05/34; Date: May 22, 2025). Data collection was conducted between June and July 2025 via Google Forms. The link to the online application form created through Google Forms was shared with participants online. The data collection tool and informed consent form were delivered to the

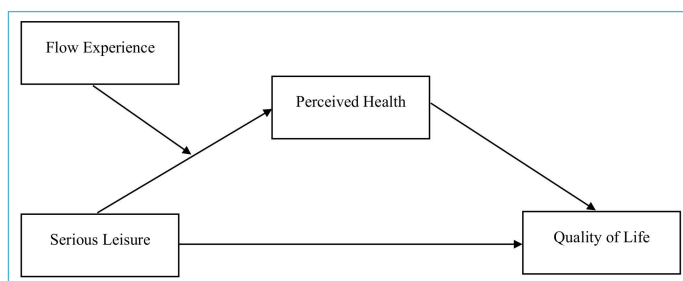


**Figure 1.**  
Research Model.

individuals participating in the study, and participation was based on voluntariness. Participants who voluntarily took part in the study were informed about the purpose of the research and how the collected data would be used. They were also assured that their personal information would remain confidential and would not be used. It was stated that completing each application form took approximately 15 minutes and that participants could withdraw from the study at any time.

## Analysis

The data collected within the scope of the study were analyzed in several steps. Initially, skewness and kurtosis values were examined to assess the normality of the data, using the  $\pm 1$  range as a reference (Kim, 2013). Then, bivariate correlation analysis was conducted to identify the relationships among serious leisure, perceived health, flow experience, and quality of life. In addition, Cronbach's alpha internal consistency coefficients for the measurement instruments used in the study were calculated, ranging from 0.80 to 0.94. These values exceed the acceptable thresholds (Hair et al., 2009). In addition, confirmatory factor analysis was conducted to evaluate the adequacy of the SLI-SF, PHORS, RFES, and WHOQOL-BREF scales as part of the measurement model. The results indicated that the model demonstrated an acceptable level of fit to the data ( $\chi^2/df=2.71$ , CFI=.93, TLI=.91, RMSEA=.058, SRMR=.047) (Hair et al., 2009). The standardized factor loadings ranged from .62 to .89, all exceeding the recommended threshold of .40 (Fornell & Larcker, 1981). These findings collectively support the satisfactory validity of the measurement model. Prior to hypothesis testing, multivariate outliers were examined using Mahalanobis distance based on the chi-square criterion at  $p < .001$ , as recommended in multivariate data analysis (Hair et al., 2009). The obtained values did not exceed the critical threshold, indicating that no significant multivariate outliers were present in the dataset. Additionally, multicollinearity diagnostics were assessed before conducting the PROCESS analyses. The tolerance values ranged between .42 and .71, exceeding the recommended minimum threshold of .10, and the variance inflation factor (VIF) values ranged between 1.40 and 2.36, well below the conservative cutoff value of five (Hair et al., 2009; O'Brien, 2007). These findings suggest that multicollinearity did not pose a concern in the estimation of the regression-based conditional process model (Hayes, 2022).

Hypotheses of the structural equation model derived for the research were estimated via the SPSS PROCESS macro (Model 4 – Model 7). In the model, serious leisure was defined as the independent variable (X), quality of life as the dependent (Y), perceived health as the mediator (M), and flow experience as the moderator (W). In this context, the influence of serious leisure on quality of life was investigated (hypothesis 1). Moreover, the mediator role of perceived health in the serious leisure–quality of life relationship was specified (hypothesis 2). Lastly, the role of flow experience as a moderator and moderated-mediation effects were tested in the research model (Hypotheses 3–4). The bootstrap method was performed with 5000 samples and a 95% CI. The absence of zero within the lower and upper bounds of the confidence interval was interpreted as evidence for the significance of the mediation and moderated mediation effects. Furthermore, the 16th, 50th, and 84th percentiles of the distribution were used to define the levels of change in flow experience. The moderating effect of flow experience was graphically illustrated through slope analysis (Hayes, 2022) (Table 2, 3 and 4; Figure 2)

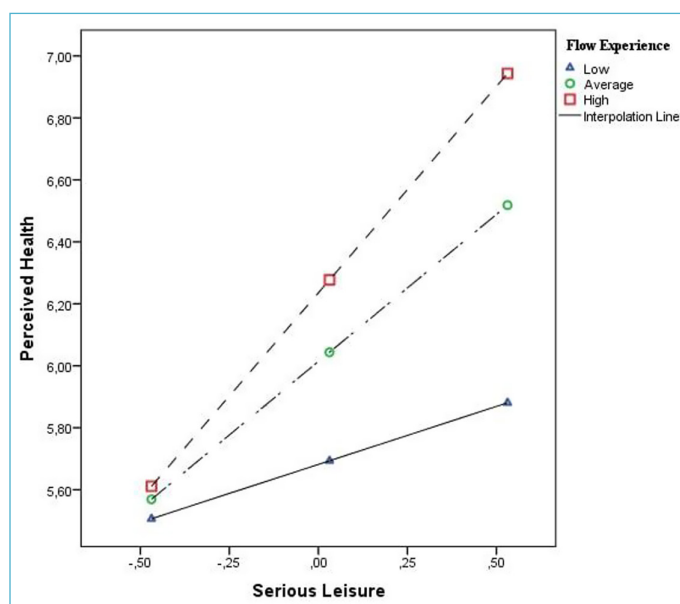


Figure 2.

Graphical Representation of the Moderating Effect of Flow Experience on the Relationship Between Serious Leisure and Perceived Health.

## Common Method Bias

When one employs a questionnaire instrument, data robustness in particular deals with common method bias. To know whether common method bias exists in the present study, Harman's single-factor test through factor analysis in SPSS identified the first eigenvalue from the data matrix (Podsakoff et al., 2003). If the first eigenvalue accounts for the majority of the variance, common method bias may be considered a potential issue. The results indicated that the first eigenvalue accounted for only 41.95% of the total variance, which is below the recommended threshold of 50%. Based on this finding, there is evidence to suggest that common method bias is unlikely to have distorted the results, as the measurement items of the constructs did not overlap and no single factor accounted for the majority of the variance (Kock, 2020).

## Results

### Preliminary Analysis

As can be seen in Table 1, participants' mean scores were high, and the mean of serious leisure was found to be 4.47 (SD=0.40), perceived health 6.10 (SD=0.78), flow experience 6.43 (SD=0.56), and quality of life 4.41 (SD=0.36). In addition, referring to the analysis of the correlation coefficients, statistically significant correlations were

Table 1.  
Descriptive Statistics and Pearson Correlation Analysis

| Variables      | M    | SD   | 1.    | 2.    | 3.    | 4. |
|----------------|------|------|-------|-------|-------|----|
| 1. SLI-SF      | 4.47 | 0.40 | –     |       |       |    |
| 2. PHORS       | 6.10 | 0.78 | .65** | –     |       |    |
| 3. RFES        | 6.43 | 0.56 | .73** | .59** | –     |    |
| 4. WHOQOL-BREF | 4.41 | 0.36 | .39** | .48** | .45** | –  |

M, mean; PHORS, Perceived Health Outcomes of Recreation Scale; RFES, Recreational Flow Experience Scale; SLI-SF, Serious Leisure Inventory-Short Form; WHOQOL-BREF, World Health Organization Quality of Life-Brief Form. Note. \*\* $p < .01$ .

determined between serious leisure and perceived health ( $r=0.65$ ,  $p < .01$ ), flow experience ( $r=0.73$ ,  $p < .01$ ), and quality of life ( $r=0.39$ ,  $p < .01$ ). Furthermore, perceived health was positively and significantly associated with flow experience ( $r=0.59$ ,  $p < .01$ ) and quality of life ( $r=0.48$ ,  $p < .01$ ). A positive correlation was also found between flow experience and quality of life ( $r=0.45$ ,  $p < .01$ ).

### Primary Analyses

In order to examine the direct and indirect effects, SPSS Hayes PROCESS Macro (v.4.2) Model 4 was employed. As presented in Table 2, the results revealed that serious leisure had a significant and positive direct effect ( $b=0.12$ ,  $SE=0.05$ , 95% CI (0.01, 0.23),  $p < .01$ ) as well as a significant total effect ( $b=0.35$ ,  $SE=0.04$ , 95% CI (0.26, 0.43),  $p < .01$ ) on quality of life. Based on these results, hypothesis 1 was supported.

The analyses conducted using PROCESS Model 4 further demonstrated that the indirect effect of serious leisure on quality of life was statistically significant, indicating that perceived health mediated the relationship between serious leisure and quality of life ( $b=0.22$ ,  $SE=0.04$ , 95% CI (0.13, 0.31),  $p < .01$ ). In other words, individuals who engage in yoga as a serious leisure activity tend to feel healthier, which in turn contributes to a higher sense of quality of life. Accordingly, hypothesis 2 was supported.

To examine whether flow experience moderated the relationship between serious leisure and perceived health, SPSS Hayes PROCESS Macro (v.4.2) Model 7 was used. According to the data presented in Table 3, both serious leisure ( $b=0.84$ ,  $SE=0.11$ , 95% CI (0.62, 1.06),  $p < .01$ ) and flow experience ( $b=0.49$ ,  $SE=0.08$ , 95% CI (0.33, 0.66),  $p < .01$ ) had significant and positive effects on perceived health. In addition, the moderating role of flow experience in the effect of serious leisure on perceived health was found to be significant and is presented in Table 3 ( $b=0.86$ ,  $SE=0.15$ , 95% CI (0.55, 1.17),  $p < .01$ ). Based on this result, hypothesis 3 was supported.

As a result of the slope analysis, the effects of the moderating variable are graphically illustrated in Figure 2. When examining the details of the moderating effect, it was observed that the effect of serious leisure on perceived health increased as the level of flow experience increased—low ( $b=0.37$ ,  $p < .01$ ,  $t=2.56$ , (CI=0.08, 0.66)), moderate ( $b=0.94$ ,  $p < .01$ ,  $t=8.49$ , (CI=0.72, 1.16)), and high ( $b=1.33$ ,  $p < .01$ ,

**Table 3.**

*Analysis Results of the Moderating Effect of Flow Experience*

| Variables  | Coeff | SE   | Model 7 |      |
|------------|-------|------|---------|------|
|            |       |      | 95% CI  |      |
|            |       |      | LL      | UL   |
| Constant   | 5.95  | 0.04 | 5.87    | 6.03 |
| SLI-SF (X) | 0.84  | 0.11 | 0.62    | 1.06 |
| RFES (W)   | 0.49  | 0.08 | 0.33    | 0.66 |
| X.W        | 0.86  | 0.15 | 0.55    | 1.17 |

Coeff, coefficients; LL, lower limit; RFES, Recreational Flow Experience Scale; SE, standard error; SLI-SF, Serious Leisure Inventory-Short Form; UL, upper limit.

$t=9.72$ , (CI=1.06, 1.60)). The graph shows that this relationship is particularly stronger when flow experience is high. In other words, when the level of flow experience is high, the effect of yoga practiced as serious leisure on perceived health becomes more pronounced, indicating that the relationship between serious leisure and perceived health is moderated by flow experience.

To examine whether a moderated mediation effect of flow experience existed in the relationship among serious leisure, perceived health, and quality of life, SPSS Hayes PROCESS Macro (v.4.2) Model 7 was used. This analysis tests whether the indirect effect of serious leisure (X) on quality of life (Y) through perceived health (M) depends on flow experience (W). The results indicated that the index of moderated mediation was significant ( $b=0.15$ ,  $SE=0.03$ , 95% CI (0.08, 0.23),  $p < .01$ ), demonstrating that the indirect effect of serious leisure on quality of life through perceived health depends on the level of flow experience (Table 4). Accordingly, individuals with high levels of flow experience in yoga activities ( $b=0.23$ ,  $SE=0.05$ , 95% CI (0.13, 0.34),  $p < .01$ ) exhibited a stronger indirect effect of serious leisure on quality of life via perceived health compared to those with low ( $b=0.06$ ,  $SE=0.02$ , 95% CI (0.01, 0.12),  $p < .01$ ) and moderate ( $b=0.16$ ,  $SE=0.03$ , 95% CI (0.09, 0.25),  $p < .01$ ) levels of flow experience. In other words, the indirect effect of serious leisure on quality of life through perceived health was found to be stronger when flow experience was high. Based on this finding, hypothesis 4 was supported.

### Discussion

The purpose of this study was to examine the moderated mediation role of flow experience in the relationship between perceived health

**Table 2.**

*Analysis of the Direct and Indirect Effects of Serious Leisure and Perceived Health on Quality of Life*

| Effects                      | Model 4 |      |        |      |
|------------------------------|---------|------|--------|------|
|                              | Coeff   | SE   | 95% CI |      |
|                              |         |      | LL     | UL   |
| Direct effect                |         |      |        |      |
| SLI-SF → WHOQOL-BREF         | 0.12    | 0.05 | 0.01   | 0.23 |
| Total effect                 |         |      |        |      |
| SLI-SF → WHOQOL-BREF         | 0.35    | 0.04 | 0.26   | 0.43 |
| Indirect effect              |         |      |        |      |
| SLI-SF → PHORS → WHOQOL-BREF | 0.22    | 0.04 | 0.13   | 0.31 |

Coeff, coefficients; LL, lower limit; PHORS, Perceived Health Outcomes of Recreation Scale; RFES, Recreational Flow Experience Scale; SE, standard error; SLI-SF, Serious Leisure Inventory-Short Form; UL, upper limit; WHOQOL-BREF, World Health Organization Quality of Life-Brief Form.

**Table 4.**

*Analysis of the Moderated Mediation Effect of Flow Experience in the Relationship Between Serious Leisure, Perceived Health, and Quality of Life*

| Moderating variable          | Level   | Coeff | SE   | Model 7 |      |
|------------------------------|---------|-------|------|---------|------|
|                              |         |       |      | 95% CI  |      |
|                              |         |       |      | LL      | UL   |
| RFES                         | Low     | 0.06  | 0.02 | 0.01    | 0.12 |
|                              | Average | 0.16  | 0.03 | 0.09    | 0.25 |
|                              | High    | 0.23  | 0.05 | 0.13    | 0.34 |
| Index of Moderated Mediation |         | 0.15  | 0.03 | 0.08    | 0.23 |

Coeff, coefficients; LL, lower limit; RFES, Recreational Flow Experience Scale; SE, standard error; UL, upper limit.

and quality of life through participation in yoga as a form of serious leisure among adults. Model and hypotheses were confirmed on data obtained from an online questionnaire of 337 yoga participants in Ankara. Analyses conducted through structural equation modeling indicated that the four-factor model had suitable correlations and satisfactory levels of validity and reliability. Moreover, the findings indicated that, in the instance of the sample of yoga, the flow experience could be conceived as a moderated mediator of the serious leisure, perceived health, and quality of life connection. Thus, the findings were interpreted in the context of previous research in the literature and in the theoretical framework.

One of the main findings of the study found that serious leisure had a direct and significant positive effect on the quality of life in the yoga activity context (H1). The finding confirms results of prior research in the literature that serious leisure activities increase the quality of life (Guo et al., 2021). In the context of the mental advantage obtained from serious leisure activities, core features of such activities, such as perseverance, significant effort, and strong identification (Stebbins, 1992), can be an essential psychosocial resource most notably during adulthood, a life stage characterized by acute stress and strain mobilized by environmental imperatives by promoting the recurrent feeling of positive emotions and boosting personal abilities, in addition to developing the quality of life (Kim et al., 2025; Lee & Payne, 2016; Stebbins, 2004). From a broader perspective, it can be concluded that serious leisure is not merely a cognitive tendency related to the use of leisure time, but also a dynamic structure that shapes individuals' long-term physical and psychological factors.

Another significant finding obtained in the present study is that perceived health serves as a meaningful mediating variable in the relationship between serious leisure and quality of life (H2). In this context, the findings indicate that engaging in yoga as a serious leisure activity enhances individuals' perceived health by strengthening physical and psychological resources, thereby contributing to the construction of quality of life. In this respect, the results align with the existing theoretical and empirical literature (Bachmann et al., 2016; Heo et al., 2013; Kim et al., 2011; Laughlin & Chun, 2025). It was found that increases in individuals' levels of experience with yoga and in their perceptions of its benefits were linked to parallel improvements in their quality of life (Sardesai & Gore, 2025). Accordingly, the positive interactions that yoga participants experience through serious leisure activities allow them to lead physically and psychologically healthier lives in their daily routines. Thus, perceived health emerges as a highly significant factor that reinforces the connection between serious leisure and quality of life.

According to the findings indicating a moderating effect, the impact of serious leisure on perceived health varied depending on whether individuals participating in yoga perceived their flow experience as low, moderate, or high (H3). In line with the findings of this study, previous research has shown that flow experience obtained during leisure activities positively influences individuals' physical and psychological factors (Elkington, 2011; Lee & Payne, 2016). Singh et al. (2025) found that flow experience markedly shapes individuals' interpretations of environmental factors through enhanced physical and emotional resilience. Furthermore, their findings revealed that higher levels of flow substantially amplify the psychological and physical benefits derived from yoga participation. As emphasized by Dieser et al. (2015), flow experience renders serious leisure activities more meaningful, focused, and transformative. This intense experience

positively affects individuals' perceptions of both psychological and physical health. In this regard, it appears that yoga participants who experience a stronger sense of flow during the activity report higher levels of perceived health when viewed from a serious leisure perspective. Therefore, flow experience can be considered not merely a temporary psychological state obtained during the activity, but also a significant moderating factor in enhancing individuals' perceptions of health.

One of the most striking and theoretically enriching findings of this study is that, from a moderated mediation perspective, the indirect effect of serious leisure on quality of life through perceived health was found to be stronger when the level of flow experience was high (H4). This moderated mediation model directly supports the core assumptions of Flow Theory (Csikszentmihalyi & Csikszentmihalyi, 1990). According to the theory, during leisure activities, individuals become so focused that they lose track of time, experiencing motivation and pleasure, thereby achieving an optimal experience (Csikszentmihalyi & Larson, 2014). In this context, participants who experience high levels of flow during yoga practice tend to engage with the activity in a way that aligns with their broader sense of life purpose, resulting in an experience that is not merely physical but also psychologically meaningful and transformative (Chang et al., 2024). This situation strengthens perceived health gains and leads to a visible positive increase in quality of life levels. Accordingly, the current finding not only supports the idea—distinct from previous studies (Dieser et al., 2015; Elkington, 2011; Lee & Payne, 2016)—that flow experience plays a previously overlooked yet effective moderated mediation role in the relationship among serious leisure, perceived health, and quality of life, but also confirms the proposed research model established in the present study.

The findings of this study offer important implications for both the development of health interventions and the promotion of physical activity among individuals participating in yoga practice. The study found that adult individuals who are highly engaged in yoga as a serious leisure activity experience improvements in their quality of life both directly and indirectly, perceive their health more positively during this process, and that flow experience serves as a moderated mediation mechanism that strengthens these relationships. The empirical identification of flow experience as a moderated mediator in the relationship between participation in yoga as serious leisure, perceived health, and quality of life constitutes a critical contribution to the literature in this field. The results of the current research indicate that engaging in yoga as a serious leisure experience offers a holistic feeling of well-being that contributes to the overall quality of life of individuals.

### Theoretical and Practical Implications

The findings of this study demonstrate that flow experience is not only a psychological mechanism that enhances the relationship between serious leisure and perceived health, but also a core construct that strengthens the indirect effect on quality of life through perceived health. The moderated mediation mechanism identified in the study shows that the positive outcomes of serious leisure vary depending on the intensity of flow experience. Based on this, the study integrates the serious leisure perspective with flow theory and suggests that the health and quality of life outcomes of structured leisure participation differ depending on the level of optimal psychological experience. This indicates that flow experience functions as a reinforcing enhancer, and that the quality of life derived from yoga practiced as serious leisure is amplified by this experience.

The results of the study suggest that structured serious leisure activities such as yoga may serve as a tool to support individuals' perceptions of health and to improve quality of life. In this context, health professionals, municipalities, university departments, and non-governmental organizations may develop strategies to enhance factors by offering yoga-based serious leisure programs to different segments of society. Particularly given the impact of flow experience on these relationships, the development of program content that enables individuals to focus their attention and experience engagement during leisure activities could contribute to the enhancement of quality of life.

### Limitations and Directions for Future Research

This study has several limitations that should be considered. The first limitation is the conceptual structure of the study. This research is the first in the literature to address the moderated mediation role of flow experience in the relationship between serious leisure, perceived health, and quality of life. Future research may provide more diverse perspectives on these concepts through different modeling approaches. Secondly, the study sample consisted exclusively of female participants, which limits the generalizability of the findings to a broader population. Recruiting male participants and conducting research on larger and heterogeneous samples can help in getting a wider view of the determinants of quality of life. Subsequent research can assist in expanding the model to encompass other mediator and/or moderator variables such as psychological resilience, self-efficacy, and mental well-being besides flow experience.

**Data Availability Statement:** The data that support the findings of this study are available on request from the corresponding author.

**Artificial Intelligence Usage Statement:** The author declared that no Artificial Intelligence tool was used in the preparation of the manuscript.

**Ethics Committee Approval:** Ethical committee approval was received from the Ethics Committee of Ankara University (Approval No.: 05/34; Date: May 22, 2025)

**Informed Consent:** Written informed consent was obtained from all participants included in this study.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept - C.Y.; Design - C.Y.; Supervision - C.Y.; Resources - C.Y.; Materials - C.Y.; Data Collection and/or Processing - C.Y.; Analysis and/or Interpretation - C.Y.; Literature Search - C.Y.; Writing Manuscript - C.Y.; Critical Review - C.Y.; Other - C.Y.

**Declaration of Interests:** The author has no conflict of interest to declare.

**Funding:** The author declared that this study has received no financial support.

### References

- Ayhan, C., Eskiler, E., & Soyer, F. (2020). Rekreasyonel katılımcılarda akış deneyiminin ölçülmesi: Ölçek geliştirme ve doğrulama. *Journal of Human Sciences*, 17(4), PDF. [\[CrossRef\]](#)
- Bachmann, J. M., Goggins, K. M., Nwosu, S. K., Schildcrout, J. S., Kripalani, S., & Wallston, K. A. (2016). Perceived health competence predicts health behavior and health-related quality of life in patients with cardiovascular disease. *Patient Education and Counseling*, 99(12), 2071–2079. [\[CrossRef\]](#)
- Berger, D. L. M. D., Silver, E. J. P., & Stein, R. E. K. (2009). Effects of yoga on inner-city children's well-being: A pilot study. *Alternative Therapies in Health and Medicine*, 15(5), 36–42.
- Caldwell, L. L., Smith, E. A., & Weissinger, E. (1992). The relationship of leisure activities and perceived health of college students. *Loisir et Société / Society and Leisure*, 15(2), 545–556. [\[CrossRef\]](#)
- Chang, L. C., Dattilo, J., Lee, W. C., & Huang, F. H. (2024). Relationships between yoga and purpose in life among women: Testing a moderated mediation model. *Leisure Studies*, 44(6), 1092–1106. [\[CrossRef\]](#)
- Chhabra, D. (2022). Transformational model of well-being for serious travelers. *International Journal of Spa and Wellness*, 5(2), 129–146. [\[CrossRef\]](#)
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*, 1990. New York: Harper & Row.
- Csikszentmihalyi, M., & Larson, R. (2014). *Flow and the foundations of positive psychology*, 10. Dordrecht, The Netherlands: Springer. [\[CrossRef\]](#)
- Demirel, M., Bayrak, A., & Kaya, A. (2025). Serbest Zaman Akış deneyimi ve ciddi serbest Zaman arasındaki ilişkinin demografik değişkenler açısından incelenmesi. *Ankara Üniversitesi Beden Eğitimi ve Spor Yüksekokulu Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi*, 23(1), 168–179. [\[CrossRef\]](#)
- Dieser, R. B., Christenson, J., & Davis-Gage, D. (2015). Integrating flow theory and the serious leisure perspective into mental health counseling. *Counseling Psychology Quarterly*, 28(1), 97–111. [\[CrossRef\]](#)
- Dillette, A. K., Douglas, A. C., & Andrzejewski, C. (2019). Yoga tourism—a catalyst for transformation? *Annals of Leisure Research*, 22(1), 22–41. [\[CrossRef\]](#)
- Ekinci, E., & Gürbüz, B. (2025). Leisure in Turkish society: Historical development, policy perspectives, and social structure. *Leisure Studies*, 1–18. [\[CrossRef\]](#)
- Elkington, S. (2011). What it is to take the flow of leisure seriously. *Leisure/Loisir*, 35(3), 253–282. [\[CrossRef\]](#)
- Eser, E., Fidaner, H., Fidaner, C., Eser, S. Y., Elbi, H., & Göker, E. (1999). WHO-QOL-100 ve WHOQOL-bref'in psikometrik özellikleri. *Psikiyatri Psikoloji Psikiyatri Psikoloji*, 3P Dergisi, 7(Suppl 2), 23–40.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. [\[CrossRef\]](#)
- Gómez, E., Hill, E., Zhu, X., & Freidt, B. (2016). Perceived health outcomes of recreation scale (PHORS): Reliability, validity and invariance. *Measurement in Physical Education and Exercise Science*, 20(1), 27–37. [\[CrossRef\]](#)
- Gould, J., Moore, D., Karlin, N. J., Gaede, D. B., Walker, J., & Dotterweich, A. R. (2011). Measuring serious leisure in chess: Model confirmation and method bias. *Leisure Sciences*, 33(4), 332–340. [\[CrossRef\]](#)
- Guo, R., Liu, X., & Song, H. (2021). Structural relationships among strategic experiential modules, motivation, serious leisure, satisfaction and quality of life in bicycle tourism. *International Journal of Environmental Research and Public Health*, 18(23), 12731. [\[CrossRef\]](#)
- Hair, J. F., Black, W. C., Babin, B., & Anderson, R. E. (2009). *Multivariate data analyses* (7th ed). Englewood Cliffs: Prentice Hall.
- Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regressionbased approach* (3rd ed). New York: The Guilford Press.
- Heo, J., Stebbins, R. A., Kim, J., & Lee, I. (2013). Serious leisure, life satisfaction, and health of older adults. *Leisure Sciences*, 35(1), 16–32. [\[CrossRef\]](#)
- Hutchinson, S. L., & Kleiber, D. A. (2005). Gifts of the ordinary: Casual leisure's contributions to health and well-being. *World Leisure Journal*, 47(3), 2–16. [\[CrossRef\]](#)
- Işık, U., Kalkavan, A., & Demirel, M. (2020). Ciddi Boş Zaman Ölçeği-Kısa Formu (18 madde)'nin faktör yapısının Türkiye örneklemine yönelik sınanması: Geçerlik ve güvenirlik çalışması. *Spormetre. Journal of Physical Education and Sport Sciences*, 18(3), 136–145. [\[CrossRef\]](#)
- Kerr, J. H., Fujiyama, H., & Campano, J. (2002). Emotion and stress in serious and hedonistic leisure sport activities. *Journal of Leisure Research*, 34(3), 272–289. [\[CrossRef\]](#)
- Khalsa, S. B., Cohen, L., McCall, T., Telles, S., & Cramer, H. (2024). *The principles and practice of yoga in health care*. London: Jessica Kingsley Publishers.
- Kim, H. Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry and Endodontics*, 38(1), 52–54. [\[CrossRef\]](#)
- Kim, J., Dattilo, J., & Heo, J. (2011). Taekwondo participation as serious leisure for life satisfaction and health. *Journal of Leisure Research*, 43(4), 545–559. [\[CrossRef\]](#)
- Kim, J., Im, S., Lee, R. S., & Heo, J. (2025). Navigating societal stressors through yoga in Korea. *Leisure Sciences*, 47(7), 1553–1572. [\[CrossRef\]](#)
- Kock, N. (2020). Harman's single factor test in PLS-SEM: Checking for common method bias. *Data Analysis Perspectives [Journal]*, 2(2), 1–6.

- Laughlin, E., & Chun, S. (2025). 'Yoga really makes me feel good': Leisure as a coping resource for parent caregivers of children living with autism. *Leisure/Loisir*, 49(4), 895–921. [CrossRef]
- Lee, C., & Payne, L. L. (2016). Experiencing flow in different types of serious leisure in later life. *World Leisure Journal*, 58(3), 163–178. [CrossRef]
- Liu, H., Huang, Y., Gao, M., & Stebbins, R. (2024). From serious leisure to devotee work: An exploratory study of yoga. In *Leisure and work in China* (pp. 151–169). Abingdon, UK: Routledge.
- Mannell, R. C. (2007). Leisure, health and well-being. *World Leisure Journal*, 49(3), 114–128. [CrossRef]
- Nagla, M. (2006). Yoga, health and leisure: Attitudes of women in Haryana. *World Leisure Journal*, 48(2), 23–34. [CrossRef]
- O'brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality and Quantity*, 41(5), 673–690. [CrossRef]
- Patterson, I., Getz, D., & Gubb, K. (2016). The social world and event travel career of the serious yoga devotee. *Leisure Studies*, 35(3), 296–313. [CrossRef]
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. [CrossRef]
- Sardesai, S. J., & Gore, S. (2025). Impact of service quality on the quality of life of yoga tourists: A moderated mediation analysis. *Tourism Recreation Research*, 1–14. [CrossRef]
- Seaman, A. N., Schroeder, L., Morris, L., Hines, K., & Abee, M. (2025). "Ten Bucks for yoga and a beer in a cool vibey spot": Exploring motivations for LTPA at craft breweries. *Leisure Studies*, 44(4), 590–604. [CrossRef]
- Singh, S., Singh, N., & Misra, R. (2025). Establishing the missing link between motivational factors and international tourist intentions for yoga tourism: A perspective from flow experience theory. *Tourism Recreation Research*, 50(7), 1738–1759. [CrossRef]
- Stebbins, R. A. (1992). Amateurs, professionals, and serious leisure. *McGill-Queen's press MQUP*.
- Stebbins, R. A. (2004). Serious leisure, volunteerism and quality of life. In *Work and leisure* (pp. 200–212). Abingdon, UK: Routledge.
- Stebbins, R. A. (2007). *Serious leisure: A perspective for our time*. Transaction Publishers.
- Taneja, D. K. (2014). Yoga and health. *Indian Journal of Community Medicine*, 39(2), 68–72. [CrossRef]
- World Health Organisation (WHO) (1998). Development of the world health organisation WHOQOL-bref quality of life assessment. *Psychological Medicine*, 28(3), 551–558. [CrossRef]
- World Health Organisation (WHO) (2022). <https://www.who.int/southeastasi/news/opinion-editorials/detail/yoga-for-humanityadresinden.al>.
- Yaşar Sönmez, B., & Yalçın, C. (2025). "My health finds meaning through Pilates": Understanding serious leisure Pilates practice from the perspective of the health belief model. *Pamukkale Journal of Sport Sciences*, 16(3), 515–542. [CrossRef]
- Yerlisu Lapa, T., Serdar, E., Tercan Kaas, E., Çakır, V. O., & Köse, E. (2020). Rekreatyonda algılanan sağlık çıktıları ölçeğinin Türkçe versiyonunun psikometrik özellikleri. *Spor Bilimleri Dergisi*, 31(2), 83–95. [CrossRef]
- Yılmaz, S. H., & Uzunçayır, D. (2025). Ebeveyn perspektifinden Çocuk yogasının etkileri: Nitel bir araştırma. *Research in Sports Science*, 15(1), 1–7. [CrossRef]