



# The relationship between serious leisure, flow experience, leisure benefit and quality of life of Yoga

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## Abstract

The purpose of this study was to investigate the relationship between serious leisure, flow experience, leisure benefit and quality of life of yoga, and by adopting PLS-MGA to compare the differences in the overall pattern of different types of yoga. A questionnaire survey was conducted by using a cluster sampling method. Five types of yoga, including Hatha Yoga, Astangar Yoga, Bikram Yoga, Fitness Yoga, and Yogalates, were studied. The subjects of this study, from whom 276 valid questionnaires were collected, were participants who had more than one-year experience of yoga. The effective rate was 93%. Statistical methods such as descriptive statistics, PLS and PLS-MGA were used for analysis. The results of the PLS-SEM study showed that: (1) The serious leisure aspect of the yoga positively influences the flow experience and leisure benefits, but had no significant effect on the quality of life; (2) The flow experience positively influenced leisure benefits and quality of life; (3) The leisure benefits of yoga positively affected the quality of life; (4) The serious leisure of yoga had no indirect effects on the quality of life through the experience of flow and leisure benefits. The results of the PLS-MGA study showed that there were differences in the overall pattern of different types of yoga.

**Keywords:** Partial least squares, multi-group analysis, PLS-SEM, Yoga.

## Introduction

Yoga, a form of ancient oriental aesthetics, is a physical, mental, and spiritual practice which contains ancient Indian philosophy (Burley, 2000; Singleton, 2010). In 2014, the UN announced that June 21 would be designated as International Yoga Day. The purpose was to allow the world to recognize the various benefits resulting from yoga practice. It emphasizes that yoga is both a physical and spiritual practice that results in physical health and spiritual delight which leads to balance. The content of yoga combines Asana, Pranayama, and meditation with a healthy mental state and lifestyle that results in alignment of the body and mind. Yoga can lower the stress caused by lifestyle (Chiang, 1999). In addition, the stretching and meditation of yoga lead to mental peace, personal relaxation, and enhanced quality of life (Huang & Bi, 2010). According to the research finding of Chen (2011), yoga is not limited to gender and age and it shows psychological and physical outcomes. The experiment of Lutz, Greischar, Rawlings, Ricard, and Davidson (2004) demonstrated that meditation results in functional and structural changes in the brain. The left side of the prefrontal cortex of the brain, in particular, controls happiness, positive thoughts, and emotion. The reaction is significant and can influence human beings' emotions, mental state and delight. Based on the research

finding of Stebbins (1982), difficult yoga movements tend to lead to frustration. Continuous participation for at least three years refers to high loyalty to yoga. It shows that long-term yoga participants seek for spiritual quality and mental peace and aim to approach ultimate spiritual completeness by meditation (Singleton, 2010). Likewise, people of serious leisure focus on leisure activities in their lives and are willing to constantly challenge themselves in their favourite leisure activities and pursue their own value and meaning to fulfil the goal of self-realization.

## Research Method

According to the related literature review result, this study established a research structure regarding the relationship among the variables of serious leisure, flow experience, leisure benefits, and quality of life for different types of yoga, as shown in Figure 1. And this study proposed the following seven hypotheses:

*H1: Yoga participants' serious leisure positively and significantly influences flow experience.*

*H2: Yoga participants' serious leisure positively and significantly influences leisure benefits.*

*H3: Yoga participants' serious leisure positively and significantly influences quality of life.*

*H4: Yoga participants' flow experience positively and significantly influences leisure benefits.*

*H5: Yoga participants' flow experience positively and significantly influences quality of life.*

*H6: Yoga participants' leisure benefits positively and significantly influence quality of life.*

*H7: The overall model of different types of yoga shows significant differences.*

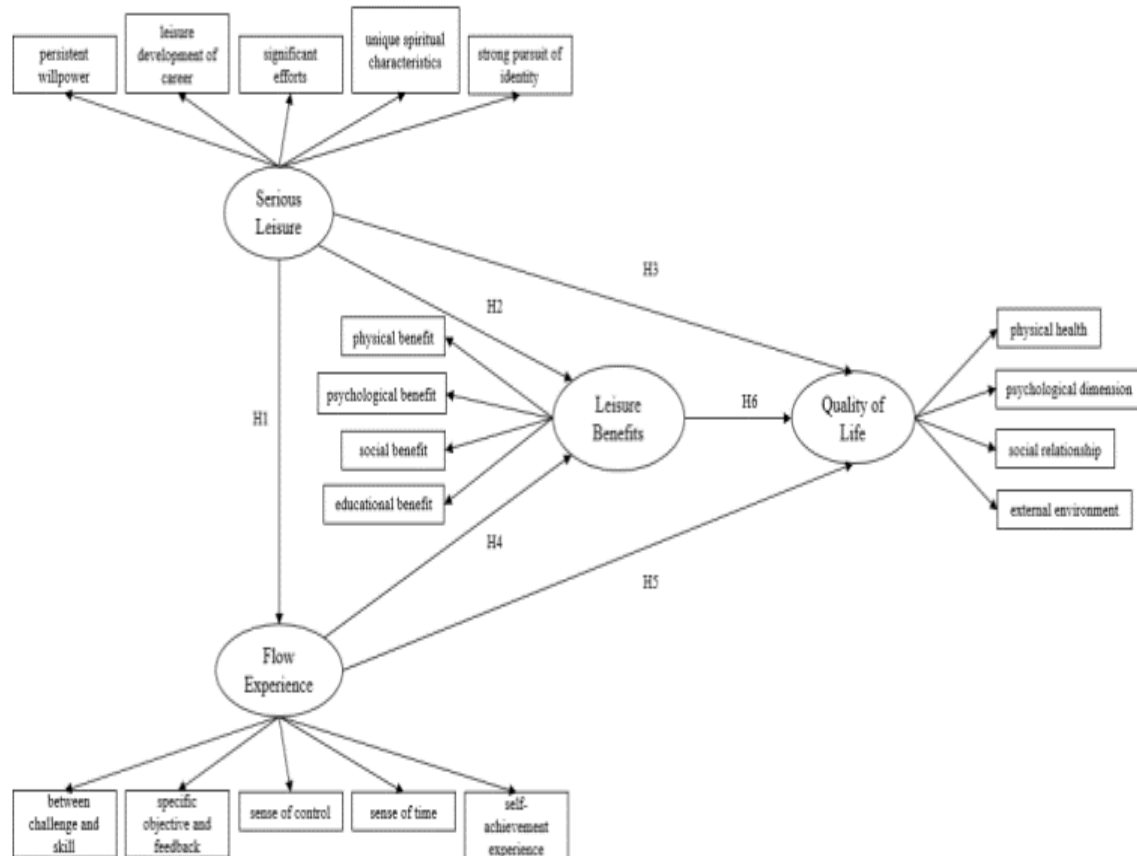


Figure 1. Conceptual Framework of Study



## Research Subjects and Sampling Method

The subjects of this study were yoga participants and the research scope was types of yoga. By cluster sampling, this study selected Hatha Yoga, Ashtanga Yoga, Bikram Yoga, Fitness Yoga, and Yogalates and distributed questionnaires to yoga participants with at least one year of experience in the five clusters. From February 1 to March 31, 2018, this study conducted the formal questionnaire survey in yoga learning centers. In each cluster, it distributed 60 questionnaires, with a total of 300 questionnaires. Of these, 297 questionnaires were retrieved for a questionnaire return rate of 99%; after deleting invalid questionnaires with regular responses, it obtained 276 valid questionnaires for a valid questionnaire return rate of 93%.

## Research Tools

This study adopted and modified Chiu's (2012) "Scale of Serious Leisure", the "Scale of Leisure Flow Experience" of Yu et al. (2015), Tsai's (2012) "Scale of Leisure Benefits", and the "Scale of Quality of Life" of Huang and Bi (2010) as the research tools.

All four scales were measured using a Likert 7-point scale, with answers ranging from "strongly disagree" to "Strongly agree" receiving a score of 1-7 points. When the scores were higher, the characteristics or levels measured were more significant.

## Data Analysis

Regarding the valid questionnaires retrieved, this study conducted data analysis using the statistical programs SPSS 20.0 for Windows and SmartPLS 2.0. The statistical methods applied included descriptive statistics, Partial Least Squares (PLS), and PLS Multi-Group Analysis. Partial Least Squares (PLS) is an analytical method used to construct a predictive model that can analyze the causal model of latent variables. It is the structural equation modeling analysis of Path Analysis (Chin, 1998). PLS-MGA (PLS Multi-Group Analysis) is a multi-group analytical method based on PLS-SEM and is a series of new technology that can be used to compare the estimation difference of different PLS models. It tends to be applied to the comparison of path coefficients. It can also compare weights and factor loadings (Tang, 2016). This study conducted multi-group analysis using the parametric approach to PLS-MGA proposed by Kiel (2000).

## Results

### Structural Model Analysis

Regarding the convergent validity test of the overall model, Fornell and Larcker (1981) suggested that the composite reliability should be at least 0.7 and the AVE should be more than 0.5. According to Table 1, in this study, the CR of the sub-dimensions were higher than 0.7 and the AVE were more than 0.5, indicating that the items had positive reliability and convergent validity and could thus be allocated in the sub-dimensions.

**Table 1. Outer loadings test.**

Sub dimension ← dimension	Original Sample	Standard Error	T Statistics	CR	AVE
persistent willpower ← serious leisure	0.876	0.018	49.768***	0.943	0.770
leisure development of career	0.896	0.015	59.046***		



← serious leisure					
significant efforts	0.882	0.014	62.244***		
← serious leisure					
unique spiritual characteristics	0.876	0.017	51.722***		
← serious leisure					
strong pursuit of identity	0.856	0.019	46.210***		
← serious leisure					
strong pursuit of identity	0.834	0.021	40.371***		
← flow experience					
specific objective and feedback	0.864	0.018	49.139***		
← flow experience					
sense of control	0.840	0.026	32.509***	0.923	0.706
← flow experience					
sense of time	0.820	0.025	32.334***		
← flow experience					
self-achievement experience	0.842	0.023	36.405***		
← flow experience					
physical benefit	0.843	0.020	42.524***		
← leisure benefits					
psychological benefit	0.887	0.015	57.519***		
← leisure benefits				0.928	0.764
social benefit	0.885	0.021	42.284***		
← leisure benefits					
educational benefit	0.879	0.013	68.848***		
← leisure benefits					
physical health	0.905	0.013	70.726***		
← quality of life					
psychological dimension	0.911	0.010	91.874***		
← quality of life				0.942	0.802
social relationship	0.897	0.012	71.861***		
← quality of life					
external environment	0.867	0.019	45.181***		
← quality of life					

Note: > 1.96, p < .05\* ; t > 2.58, p < .01\*\* ; t > 3.29, p < .001\*\*\*.

According to the path coefficient analytical result among variables, serious leisure influenced flow experience with a significance level of at least 0.001 and a standardized coefficient of 0.816. Serious leisure influenced leisure benefits with a significance level of at least 0.001 and a standardized coefficient of 0.284. Serious leisure influenced quality of life insignificantly (p > .05) and the standardized coefficient was 0.133. Flow experience influenced leisure benefits with a significance level of at least 0.001 and a standardized coefficient of 0.554. Flow experience influenced quality of life with a significance level of at least 0.01 and a standardized coefficient of 0.262. Finally, leisure benefits influenced quality of life with a significance level of at least 0.001 and a standardized coefficient of 0.429 (see Table 2).



**Table 2. Path coefficient test**

Path Analysis	Original Sample	Standard Error	T Statistics
Serious Leisure → Flow Experience	0.816	0.022	36.984***
Serious Leisure → Leisure Benefits	0.284	0.067	4.209***
Serious Leisure → Quality of Life	0.133	0.077	1.735
Flow Experience → Leisure Benefits	0.554	0.062	8.874***
Flow Experience → Quality of Life	0.262	0.083	3.145**
Leisure Benefits → Quality of Life	0.429	0.068	6.287***

Note:  $t > 1.96, p < .05^*$  ;  $t > 2.58, p < .01^{**}$  ;  $t > 3.29, p < .001^{***}$ .

The explanatory power (R<sup>2</sup>) is the variance percentage explained by exogenous variables on endogenous variables. It represents the predictive power of a model and shows fitness between the structural model and empirical data. When R<sup>2</sup> is lower than 0.3, it means the explanatory power is extremely weak; when R<sup>2</sup> is 0.3-0.5, it means the explanatory power is low; when R<sup>2</sup> is 0.5-0.7, it means the explanatory power is medium; when R<sup>2</sup> is higher than 0.7, it means the explanatory power is high and reveals practical value (Moore, Notz & Fligner, 2013).

According to Table 3, as to the direct effect, the effect of serious leisure on flow experience and leisure benefits was 0.816, 0.284, the effect of flow experience on leisure benefits and quality of life was 0.554, 0.262, and the effect of leisure benefits on quality of life was 0.429. As to the indirect effect, the effect of serious leisure on leisure benefits through flow experience was 0.452, the effect of flow experience on quality of life through leisure benefits was 0.238, and the effect of serious leisure on quality of life through leisure benefits was 0.122. The total effect of serious leisure on quality of life through flow experience and leisure benefits was 0.530, the total effect of flow experience on quality of life was 0.500, and the total effect of leisure benefits on quality of life was 0.429.

**Table 3. Direct and indirect analysis.**

Latent variable	Flow Experience		Leisure Benefits		Quality of Life		
	Direct	Indirect	Direct	Indirect	Direct	Indirect	Total Effect
Serious Leisure	0.816	--	0.284	0.452	--	0.530	0.530
Flow Experience	--	--	0.554	--	0.262	0.238	0.500
Leisure Benefits	--	--	--	--	0.429	--	0.429
R <sup>2</sup>	0.666		0.643		0.589		

The explanatory power of serious leisure on flow experience was 66.6%, the explanatory power of serious leisure and flow experience on leisure benefits was 64.3%, and the explanatory power of serious leisure, flow experience, and leisure benefits on quality of life was 58.9%. The results indicated that the explanatory power of the model in this study on the latent variables was positive.

### Fit Measures

In PLS-SEM, the measure of the model fit is the GoF (Goodness of Fit). The evaluation purpose of the model fit is to find if the theoretical model can explain the data obtained by real observation. When the fitness is better, it means the usability of the model is higher and the estimated parameters are more significant (Akter, D'Ambra, & Ray, 2011). As to the evaluation

standard of GoF, 0.1 is a low degree of fit, 0.25 is a medium degree of fit, and 0.36 is a high degree of fit (Hsiao, 2013). The GoF of this study was 0.693, which was higher than the standard of 0.36 for a high degree of fit. This result demonstrated that the overall fit of this study was high (see Table 4).

**Table 4. Goodness of fit.**

Latent variable	AVE	Composite Reliability	R Square	Cronbach's Alpha	Redundancy	GoF
Serious Leisure	0.770	0.944		0.925		
Flow Experience	0.705	0.923	0.666	0.896	0.470	0.693
Leisure Benefits	0.763	0.928	0.643	0.896	0.257	
Quality of Life	0.801	0.942	0.589	0.917	0.128	

### PLS-MGA

Through Levene's test, the parametric approach to PLS-MGA attempts to find if the variance of the parameter estimates shows significant differences between groups (Keil, Tan, Wei, Saarinen, Tuunainen, & Wassenaar, 2000). This study conducted PLS-MGA of the overall model according to five types of yoga: Hatha Yoga, Ashtanga Yoga, Bikram Yoga, Fitness Yoga, and Yogalates. First, through PLS path model estimation, it acquired the parameter estimates of different groups of yoga (see Table 5). Subsequently, it compared multiple groups by permutation tests of two groups of yoga models. The difference of the coefficients was significant ( $t > 1.96$ ) and the result of the two-tailed test was significant ( $p < .05$ ), indicating there were significant differences between the groups. By a permutation test of the two groups of yoga models, this study conducted PLS-MGA and the path was significant, as shown in Table 6.

**Table 5. Compared of difference types.**

Path Analysis	Total Subjects	Hatha Yoga	Ashtanga Yoga	Bikram Yoga	Fitness Yoga	Yogalates
	β-value	β-value	β-value	β-value	β-value	β-value
Serious Leisure → Flow Experience	0.816***	0.725***	0.774***	0.914***	0.727***	0.837***
Serious Leisure → Leisure Benefits	0.284***	0.261	0.407*	0.151	0.519***	0.047
Serious Leisure → Quality of Life	0.113	0.373*	-0.039	0.272	-0.051	-0.134
Flow Experience → Leisure Benefits	0.554***	0.583***	0.337*	0.710***	0.353***	0.793***
Flow Experience → Quality of Life	0.262***	-0.008	0.248	0.461*	0.138	0.636***
Leisure Benefits → Quality of Life	0.429***	0.470**	0.667***	0.175	0.545**	0.352*

Note:  $t > 1.96$ ,  $p < .05$  \* ;  $t > 2.58$ ,  $p < .01$  \*\* ;  $t > 3.29$ ,  $p < .001$ \*\*\*.

**Table 6. Compared multiple groups.**

Path Analysis	Compared Multiple Groups	$\beta$ -value		Diff.	t-value	p-value
Serious Leisure → Flow Experience	Bikram Yoga vs Hatha Yoga	.914***	.725***	.189	2.758**	.007**
	Bikram Yoga vs Fitness Yoga	.914***	.727***	.187	2.587**	.011*
	Bikram Yoga vs Ashtanga Yoga	.914***	.774***	.140	2.495*	.014*
Serious Leisure → Leisure Benefits	Yogalates vs Fitness Yoga	.047	.519***	-.472	2.654**	.009**
Flow Experience → Leisure Benefits	Yogalates vs Fitness Yoga	.793***	.353***	.440	2.915**	.004**
	Yogalates vs Ashtanga Yoga	.793***	.337*	.456	2.472*	.015*
Flow Experience → Quality of Life	Yogalates vs Hatha Yoga	.636***	-.008	.644	2.908**	.004**
Serious Leisure → Quality of Life	Bikram Yoga vs Ashtanga Yoga	.175	.667***	-.492	2.485*	.015*

Note:  $t > 1.96$ ,  $p < .05$  \* ;  $t > 2.58$ ,  $p < .01$  \*\* ;  $t > 3.29$ ,  $p < .001$ \*\*\*.

## Conclusion and Suggestions

Based on the research questions and results of this study, according to the path analysis of the overall model, the effect of serious leisure on flow experience was the highest, followed by the effect of flow experience on leisure benefits and the effect of leisure benefits on quality of life. The effect of serious leisure on leisure benefits and the effect of flow experience on quality of life were lower. In addition, serious leisure did not significantly influence quality of life. However, through flow experience and leisure benefits, it indirectly influenced quality of life. This result revealed the mediating effect of flow experience and leisure benefits between serious leisure and quality of life. The discussion on the relationship among variables is shown below.

### Relationship among serious leisure, flow experience, leisure benefits, and quality of life of yoga

The positive effect of serious leisure on flow experience was 0.816 and serious leisure showed 66.6% of the explained variance on flow experience; therefore, H1 was supported. The direct effect of serious leisure on leisure benefits was 0.284 and the indirect effect on leisure benefits through flow experience was 0.452. Serious leisure and flow experience showed 64.3% of the explained variance on leisure benefits; therefore, H2 was supported. Serious leisure did not directly influence quality of life; thus, H3 was not supported. The direct effect of flow experience on leisure benefits was 0.554; therefore, H4 was supported. The direct effect of flow experience on quality of life was 0.262 and the indirect effect on quality of life through leisure benefits was 0.238. The total effect was 0.500; thus, H5 was supported. The direct effect of leisure benefits on quality of life was 0.492; therefore, H6 was supported.

### The overall model of different types of yoga showed a partial difference

By PLS-SEM, this study tested the overall model of different types of yoga. The results for the Hatha Yoga, Ashtanga Yoga, and Fitness Yoga groups were significant, while those for the



Bikram Yoga and Yogalates groups were insignificant. Flow experience positively and significantly influenced quality of life. The results for the Bikram Yoga and Yogalates 3 groups were significant, while those for the Hatha Yoga, Ashtanga Yoga, and Fitness Yoga groups were insignificant. In addition, leisure benefits positively and significantly influenced quality of life. The results for the Hatha Yoga, Ashtanga Yoga, Fitness Yoga, and Yogalates 5 groups were significant; only the Bikram Yoga had insignificant results.

By a PLS-MGA comparison, this study showed the different effects among different groups of yoga on the paths, as shown below:

As to the path of serious leisure on flow experience, Bikram Yoga was significantly higher than Hatha Yoga, Ashtanga Yoga and Fitness Yoga. As to the path of serious leisure on leisure benefits, Yogalates was significantly lower than Fitness Yoga. These two groups showed a significant between-group difference. As to the path of flow experience on leisure benefits, Yogalates was significantly higher than Ashtanga Yoga and Fitness Yoga. As to the path of flow experience on quality of life, Yogalates was significantly higher than Hatha Yoga. These two groups showed a significant between-group difference. As to the path of leisure benefits on quality of life, Bikram Yoga was significantly lower than Ashtanga Yoga. These two groups showed a significant between-group difference.

### **Research findings**

In the overall model, serious leisure did not directly influence quality of life; however, it showed an indirect effect. Nevertheless, in the overall model of different types of yoga, the effect of Hatha Yoga was significant. Hatha Yoga is a classical yoga system and is the base of various types of yoga nowadays. It can be regarded as the basic practice of yoga learning (Rosen, 2012). The effect of flow experience on quality of life was significant in the total samples and the overall model of Bikram Yoga and Yogalates. Nevertheless, it was insignificant in the overall model of Hatha Yoga, Ashtanga Yoga and Fitness Yoga. Thus, future research can further explore the difference.

### **Research scope**

This study mainly investigated five types of yoga: Hatha Yoga, Ashtanga Yoga, Bikram Yoga, Fitness Yoga, and Yogalates. Nowadays, there are various kinds of yoga. The characteristics and benefits of different types of yoga are different. Thus, study on more types of yoga is suggested.

### **Research subjects**

The father of modern yoga, B.K.S. Iyengar, introduced yoga to western countries and caused an immediate sensation through which yoga was developed around the world. The UN designated June 21 as International Yoga Day in 2014. At present, there are numerous yoga participants in Europe, America, Asia, Australia, and Southeast Asia who meet and celebrate International Yoga Day every year. It shows the significant identification of yoga participants in these areas on yoga. Thus, multiple group analysis on yoga participants in different areas can further explore the differences among these yoga participants.

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