

# Effects of participation in swimming lessons on health perception and belief

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This study was conducted to investigate the effects of the degree of participation in swimming lessons and the participation styles on health perception and belief. To do this, several analyses were conducted—statistical analysis, frequency analysis, factorial analysis, reliability analysis, correlation analysis, and regression analysis—using SPSS 18.0. A total of 300 copies of the questionnaire were distributed and after excluding those that are considered invalid, only 278 copies were used for the study. As a result, first, for the participants for “30 min- 1 h,” “1 h-2 h,” and “more than 2 h” in time and “2-3 times a week” and “4-5 times a week” in frequency, swimming lessons in types had a significant effect on health interest and health concern. Second, participants

for “30 min-1 h” and “1 h-2 h” in time and “hard” in intensity had a significant effect on resistance and sensitivity. Third, all frequencies and intensities excluding the participants for “15 min-30 min.” and “swimming lessons” in types had a significant effect on perceived benefit. Fourth, all participants for a time period did not have a significant effect on the perceived disability, but they all had a significant effect on the former in terms of frequency and intensity. This being said, however, the participating types did not have any a significant effect.

**Keywords:** Health belief, Health perception, Swimming, Degree of participation

## INTRODUCTION

Although science has indeed brought convenience to the world with its introduction of constant changes, it is true that people of today suffer from chronic fatigue and stress that can be considered as side effects of various phenomena and the present daily habits that take place because of the lack of physical activity connected to such convenience. In addition, to manage a healthy, happy, and lengthened senescence, the desire to achieve a quality of life that puts importance on the promotion of health more than just simply carrying out day-to-day activities is the current trend of this generation.

In line with this, the number of people who consider exercise as a leisure activity is on the rise, with leisure exercise being considered an important factor to increase one's quality of life. This being said, health perception is now more emphasized in health management than ever because of how the behavior of people who manage their health is essentially based on what they perceive and feel about health in the first place. Moreover, these people may change

their behavior as their perception changes.

Advanced research on this area suggested that health perception is one of the important factors of motivation that affect personal health in promoting behavior, lifestyle, and life satisfaction, and they have high correlations with each other (Bisconti and Bergeman, 1999; Duffy, 1988; Nicholas, 1993).

In addition, health belief is a source of behavior toward health and can be defined as one's subjective belief on health (Backer, 1980). In other words, belief influences human behavior and affects health or even the acquisition of disease. Belief's significant effect on external behavior in the awareness of humans because of how it is deeply inherent in their consciousness has also been tackled. In addition, health belief can be described as an important psychological factor that enables the continuous practice of leisure exercises through health-promoting behavior. Thus, it can be considered the source of motivation that would make people form their realization and recognition of their own body conditions through sports activities.

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It is a fact that regular sports activities have been reported to have positive effects not only on one's physical and physiological health but also on one's mental and psychological conditions (Morey et al., 2002; Salmon et al., 2003). It has also been elaborated in a study by Ekkekakis and Petruzzello (1999) that one's preferred type of exercise is an important mediator of the relationship between the exercise intensity and the psychological response. In general, continuous participation in sports is known to contribute to the prevention of obesity and adult diseases.

Bolognini et al. (1996) found that physical activities and participation in sports decrease anxiety and depression, thus making a positive psychological influence. However, sports games in which people participate and consider as leisure activities often include ground exercises, which require a certain level of technique. Moreover, the high risk of injury sports games pose is their point of weakness. This can be seen in instances that result to bruises, contusions, bone fractures, etc.

However, with swimming, the probability of such kinds of accidents taking place is low given the fact that weight is reduced in a swimming environment through the use of the water's buoyancy. Because of this, its biggest advantage is that both men and women of all ages can enjoy the sport. Nevertheless, despite its benefits, it is a fact that there is little research conducted on swimming related to psychological variables, with studies on health perception and health belief by degree of participation in swimming and participating types—what this study is about—even more limited.

The purpose of this study, therefore, is to provide basic information on the preparation of more efficient leisure activities that promote health by specifically investigating the effects of the degree of participation in swimming lessons and participating types on health perception and health belief, as well as presenting a constructive theoretical basis of psychological variables on the effect of participation in swimming.

## MATERIALS AND METHODS

### Subjects

A total of 300 copies of the questionnaire, including 100 copies for each of the 3 swimming pools included in this study were distributed to individuals in the *P* region, who are considered the subjects of this study. Excluding those that are considered invalid because of dishonest responses, only 278 copies were used in the study and the samples were extracted using a purposive sampling method among nonprobability sampling methods. The general characteristics of the subjects are described in Table 1.

**Table 1.** General characteristics of samples

Class		Frequency (Persons)	Distribution Ratio (%)
Age	20-30	65	23.3
	31-40	102	36.6
	41-50	87	31.2
	51 or more	24	8.6
Gender	Male	68	24.5
	Female	210	75.5
Frequency of participation in swimming lessons	Once a week	18	6.4
	2-3 times a week	97	34.8
	4-5 times a week	85	30.5
	Every day	78	28.0
Participation time in swimming lessons	Less than 15 min	5	1.8
	15-30 min.	25	8.9
	30 min-1 h	175	62.9
	1-2 h	43	15.4
	2 h or more	30	10.7
Intensity of participation in swimming	Weak	38	13.6
	Slightly hard	102	36.7
	Hard	95	34.1
	Very hard	43	15.4
Types of participating in swimming	Free swimming	75	27.0
	Swimming lesson	203	73.0

### Instruments

As the instrument used to investigate the effects of the degree of participation in swimming lessons and participating types on health perception and belief, the questionnaire, which are composed of a total of 27 questions, including 2 question of demographic variable (age and gender), 3 questions about the degree of participation in a swimming lesson, 1 question of participating type, 8 questions about health perception variable (health interest/health concern and resistance/sensitivity), and 13 questions about health belief (perceived benefit and perceived disability).

As an instrument to measure the degree of perception on health, the Health Perception Questionnaire was corrected and supplemented to meet the standards of the current study. The subfactors of health perception were tackled in eight questions in two domains of health interest/health concern and resistance/sensitivity. Each question was composed with a minimum of 1 (not at all) to a maximum of 5 (very much) in the Likert scale.

As an instrument to measure health belief, the health belief model was used after correction and supplementation to meet the standards of the current study. The subfactors of health belief were

tackled in 13 questions in 2 domains of perceived benefit and disability, and each question was composed of a minimum of 1 (not at all) to a maximum of 5 (very much) in the Likert scale.

### Data process

After collecting the copies of the questionnaire with complete responses, those with double checks and without check were excluded from the analysis; only valid samples were used in the study. In the statistical process for data analysis, frequency analysis, factorial analysis, reliability analysis, and correlation analysis, the analyses were performed using SPSS 18.0, and regression analysis was performed using a dummy variable.

## RESULTS

**Table 2.** Results of exploratory factor analysis and reliability analysis

Variable	Item	Item code	Factor loading	
			Health concern-health anxiety	Resistibility-susceptibility
Health perception	I am more susceptible to diseases than other people.	H1	<b>0.761</b>	-0.108
	I may become sick in the future.	H2	<b>0.771</b>	-0.007
	I am currently a little sick.	H3	<b>0.681</b>	-0.061
	I am more liable to illness than others.*	H4	-	-
	I may become weaker in the future.	H5	0.009	<b>0.501</b>
	I do not worry about my health that much.	H6	-0.071	<b>0.493</b>
	I think I am very healthy.	H7	0.021	<b>0.632</b>
	I am weak according to the doctor's diagnosis.	H8	0.004	<b>0.728</b>
	Cronbach's $\alpha$		0.812	0.743
	Eigen value		2.218	1.451
	Variance explanation (%)		32.528	23.872
Variable	Item	Item code	Factor loading	
			Perceived benefit	Perceived barrier
Health belief	Exercise prevents disease or health deterioration.*	H9	-	-
	Dietary regulation prevents disease or health deterioration in health.	H10	<b>0.782</b>	-0.021
	Stress regulation prevents disease or health deterioration in health.	H11	<b>0.895</b>	0.009
	Weight control prevents disease.	H12	<b>0.837</b>	0.081
	Nonsmoking prevents disease.	H13	<b>0.781</b>	0.032
	Moderated drinking prevents disease.	H14	<b>0.808</b>	-0.108
	Dietary control is hard because of social gatherings.	H15	-0.281	<b>0.632</b>
	Not smoking and moderated drinking are hard to do.	H16	0.301	<b>0.639</b>
	Not smoking is a difficult task for me.	H17	0.027	<b>0.751</b>
	I don't have enough time for exercise.	H18	0.101	<b>0.498</b>
	I don't have time to relieve my stress.	H19	0.003	<b>0.603</b>
	I haven't been severely sick.	H20	-0.112	<b>0.532</b>
	I am currently weaker than before.	H21	-0.018	<b>0.621</b>
		Cronbach's $\alpha$		0.897
	Eigen value		4.108	2.080
	Variance explanation (%)		45.174	19.323

\*Items are removed in the exploratory factor analysis.

### Results of factorial and reliability analyses

To investigate validity, an exploratory factor analysis was conducted. As a result of the analysis, some questions with low-factor loading were deleted, and a variable was only considered significant if factor loading is over 0.40. Thus, factor loading was based on 0.40 or higher.

In addition, with regard to the internal consistency reliability measurement, a clear reliability was determined when it was over 0.70 or more, based on Guilford. With this, Cronbach's  $\alpha$  coefficient was more than 0.743, satisfying both factor loading and reliability. Detailed results are described in Table 2.

### Correlation analysis

To identify the correlations among all variables included in hypothesis testing, Pearson checks and no check were excluded from the analysis, and only valid samples were described in Table 3.

**Table 3.** Analytical table of correlation

Unit	Mean	SD	Interconstruct correlation (Interconstruct correlation)			
			1	2	3	4
Interest Concern Resistance	3.678	0.685	1			
Sensitivity Perception	3.030	0.389	-0.077	1		
Benefit Perception	3.893	0.714	0.220**	-0.043	1	
Disability Interest	3.037	0.661	0.014	0.362**	0.411**	1

\*\* $P < 0.01$ .

### Result of regression analysis

Next, the regression analysis was performed by converting the degree of participation in swimming lessons (time, frequency, and intensity) and the participating types (swimming lesson and free swimming) into dummy variables. The results are described in Table 4.

In participation time, the participants for “30 min-1 h” ( $t = 5.012^{**}$ ), “1 h-2 h” ( $t = 4.142^*$ ) and “2 h or more” ( $t = 5.102^{***}$ ) were found to have a significant effect. In the participating frequency, participants for 2-3 times a week ( $t = 0.341^*$ ) and 4-5 times a week ( $t = 0.003^{**}$ ) were found to have a significant effect as well. In addition, in the participating intensity, all participants were found to have no significant effect. In the participating type, however, participants in swimming lessons ( $t = 0.632^*$ ) were found to have a significant effect.

The following are the results of a regression analysis on resis-

**Table 4.** Results of regression analysis between health interest and health concern by degree of participation (time, frequency, and intensity) and participating types (swimming lesson and free swimming)

Dependent variable	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
Health interest/ health concern	Constant	0.162	-	14.831	0.000	-
	15 min-30 min.	0.257	0.102	0.417	0.491	2.102
	30 min-1 h.	0.172	0.471	5.012	0.001**	3.231
	1-2 h	0.261	0.526	4.142	0.016*	1.572
	2 h or more	0.401	0.371	5.102	0.000***	1.357
Corrected $R^2 = 0.121$ , $F = 12.721$ , $P = 0.000$ Reference category = Less than 15 min						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.171	-	15.171	0.000	-
	2-3 times a week	0.341	0.057	0.341	0.041*	3.302
	4-5 times a week	0.301	0.157	1.302	0.003**	2.987
	Every day	0.417	0.041	0.501	0.571	3.201
Corrected $R^2 = 0.104$ , $F = 1.224$ , $P = 0.271$ Reference category = Once a week						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.172	-	16.643	0.000	-
	Slightly hard	0.341	0.051	0.328	0.656	3.857
	Hard	0.109	-0.108	-0.732	0.381	4.257
	Very hard	0.285	0.151	1.323	0.153	2.581
Corrected $R^2 = 0.031$ , $F = 2.713$ , $P = 0.025$						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.132	-	24.761	0.000	-
	Swimming lesson	0.145	0.032	0.632	0.017*	1.000
Reference category = Weak. Corrected $R^2 = 0.007$ , $F = 0.407$ , $P = 0.011$ Reference category = Free swimming						

\* $P < 0.05$ . \*\* $P < 0.01$ . \*\*\* $P < 0.001$ .

**Table 5.** Results of regression analysis between resistance/sensitivity by degree of participation (time, frequency, and intensity) and participating types (swimming lesson and free swimming)

Dependent variable	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
Resistance sensitivity	Constant	0.117	-	28.901	0.000	-
	15-30 min	0.201	-0.132	-1.271	0.142	1.455
	30 min-1 h.	0.147	-0.343	2.451	0.019**	3.788
	1-2 h	0.321	-0.102	0.801	0.044*	3.273
	2 h or more	0.162	-0.131	-2.301	0.301	1.455
Corrected R <sup>2</sup> =0.083, F=2.706, P=0.037 Reference category=Less than 15 min						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.142	-	26.573	0.000	-
	2-3 times a week	-1.541	0.020	0.107	1.200	3.218
	4-5 times a week	0.101	0.064	0.281	0.205	4.320
	Every day	0.071	0.103	0.574	0.241	2.071
Corrected R <sup>2</sup> =-0.012, F=0.511, P=0.712 Reference category=Once a week						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	3.216	-	28.757	0.000	-
	Slightly hard	0.105	-0.218	-1.302	0.145	4.351
	Hard	0.201	-0.624	2.971	0.002**	4.171
	Very hard	0.172	-0.153	-1.602	0.101	2.235
Corrected R <sup>2</sup> =0.032, F=4.316, P=0.012 Reference category=Weak						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.051	-	35.717	0.000	-
	Swimming lesson	0.072	0.047	0.430	0.057	1.022
Corrected R <sup>2</sup> =0.014, F=0.143, P=0.005 Reference category=Free swimming						

\*P<0.05. \*\*P<0.01.

tance/sensitivity, a subfactor of health perception. The results are described in Table 5.

With regard to the participation time, the participants for “30 min-1 h” (t=2.451\*) and “1-2 h” (t=0.801\*) were found to have a significant effect, and all participants were found to have a significant effect in the participating frequency. In the participating intensity, only those in the “hard (t=-2.971\*\*)” category had a significant effect. The remaining participants and participating types were found to have no significant effect.

The following are the results of a regression analysis on perceived benefit, a subfactor of health belief. The results are described in Table 6.

In the participation time, all participants, except those in “15-30 min” (t=0.432), were found to have a significant effect; it was also found to be significant in the participating frequency and intensity. On the other hand, in terms of participating types, the participants in swimming lessons (t=5.101\*\*) were found to

have a significant effect.

The following are the results of a regression analysis on perceived disability, a subfactor of health belief. The results are described in Table 7.

In the participation time, all participants were found to have no significant effect, and in the participating frequency and intensity, all participants were found to have a significant effect.

However, in the participating type, all participants did not have a significant effect.

## DISCUSSION

The purpose of this study is to investigate the effects of the degree of participation in swimming lessons, including the participating types on health perception and benefit in middle-aged women.

In this chapter, therefore, based on the results obtained from

**Table 6.** Results of regression analysis between perceived benefits by degree of participation (time, frequency, and intensity) and participating types (swimming lesson and free swimming)

Dependent variable	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
Perceived benefit	Constant	2.871	-	17.080	0.000	-
	15-30 min	0.327	-0.101	-0.371	0.612	2.455
	30 min-1 h	0.401	0.493	4.203	0.017*	3.635
	1-2 h	0.221	0.572	3.330	0.001**	3.512
	2 h or more	0.339	0.171	2.129	0.009**	1.231
Corrected R <sup>2</sup> =0.129, F=6.715, P=0.001 Reference category=Less than 15 min						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.203	-	17.193	0.000	-
	2-3 times a week	0.301	0.712	6.071	0.003**	3.251
	4-5 times a week	0.172	0.971	5.497	0.007**	3.891
	Every day	0.371	0.511	2.341	0.032*	2.397
Corrected R <sup>2</sup> =0.197, F=25.361, P=0.012 Reference category=Once a week						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.129	-	15.971	0.000	-
	Slightly hard	0.307	0.421	3.808	0.042*	3.971
	Hard	0.591	0.271	2.393	0.019*	4.292
	Very hard	0.379	0.390	4.203	0.037*	2.832
Corrected R <sup>2</sup> =0.061, F=5.891, P=0.001 Reference category=Weak						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.129	-	21.984	0.000	-
	Swimming lesson	0.131	0.340	5.101	0.007**	1.179
Corrected R <sup>2</sup> =0.139, F=28.913, P=0.010 Reference category=Free swimming						

\*P<0.05. \*\*P<0.01.

the analysis, the meaning inherent in the relationship among the variables and the above results, including similar advanced studies, are to be examined and discussed.

First, participants for “30 min-1 h,” “1 h-2 h,” and “2 h or more” in terms of time and “2-3 time a week” and “4-5 times a week” in terms of frequency, including the participants in “swimming lessons” in types, had a significant effect on health interest and health concern. These two are the subfactors of health perception.

However, in terms of participating intensity, participants were found to have no significant effect. The frequency of participation in exercise and intensity were studied by Dishman (1985), who insisted that if a person performs moderate or higher-level exercise for at least three to five times a week, he or she can find relief in problems related to mental health. North et al. (1990) suggested that if the frequency of weekly exercise is increased, psychological effects may be increased in the result of the analysis. This sugges-

tion is based on 80 research cases on the relationship between exercise and depression, which indirectly supports the result of this study.

Some people manage their health efficiently, but they often perceive sensitivity to diseases or the possibility of disease occurrence to be low. As such, if physical activities decline, there would be a deterioration of functions, subsequently causing the overall deterioration of one’s physical fitness levels (Janssen et al., 2000).

Moreover, physical activities cause positive changes in body perception by increasing the physical ability of a person; in addition, the positive changes enhance the psychological well-being of a person (Brownwell and Kaye, 1982; Lüschen et al., 1996; Riddick and Daniel, 1984). In other words, as the frequency of sports participation increases, people tend to have an increased perception of their health interest/concern. However, excessive concern about one’s health also brings risk occurrence of hypochondria and health anxiety (Cox et al., 2000).

**Table 7.** Results of regression analysis between perceived disabilities by degree of participation (time, frequency, and intensity) and participating types (swimming lesson and free swimming)

Dependent variable	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
Perceived disability	Constant	0.129	-	16.901	0.000	-
	15-30 min	0.308	-0.072	-1.101	0.700	1.179
	30-1 h	0.271	-0.080	-1.581	0.115	2.985
	1-2 h	0.302	-0.201	-1.192	0.117	3.191
	2 h or more	0.384	-0.105	-1.092	0.507	1.205
Corrected $R^2=0.012$ , $F=0.471$ , $P=0.531$ Reference category=Less than 15 min						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.245	-	13.781	0.000	-
	2-3 times a week	0.284	0.338	2.701	0.015*	3.007
	4-5 times a week	0.341	0.119	1.098	0.041*	2.981
	Every day	0.208	0.173	0.701	0.001**	3.181
C Corrected $R^2=-0.102$ , $F=2.901$ , $P=0.013$ Reference category=Once a week						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.129	-	18.701	0.000	-
	Slightly hard	0.201	0.484	3.209	0.004**	2.980
	Hard	0.199	0.391	1.901	0.001**	2.079
	Very hard	0.137	0.233	3.736	0.007**	3.129
Corrected $R^2=0.057$ , $F=5.177$ , $P=0.012$ Reference category=Weak						
	Independent variable	Standard error	$\beta$	t value	Significance probability	VIF
	Constant	0.151	-	24.101	0.000	-
	Swimming lesson	0.201	0.201	1.858	0.119	1.541
Corrected $R^2=0.132$ , $F=1.471$ , $P=0.172$ Reference category=Free swimming						

\* $P<0.05$ . \*\* $P<0.01$ .

Second, participants for “30 min-1 h” and “1 h-2 h” in terms of time and the “hard” category in terms of intensity had a significant effect on the relationship of resistance/sensitivity, the subfactor of health perception. Participating frequency and participating types were not found to have any significant effect.

In addition, Feltz and Petlichkoff (1983) as well as Sonstroem et al. (1992), reported that physical self-perception affects participation in exercise. In other words, increased physical self-perception increases the frequency of exercise participation. Moreover, it is inferred that self-evaluation of the body will motivate participation in exercise and have a positive effect on decision-making with regard to participation in regular exercise. However, as excessive sports activities may cause fatigue and depression, people who exercise should carefully consider their fitness levels.

Third, all participants, except the ones for the “15-30 min” category, had a significant effect on the relationship of the perceived benefit, the subfactor of health belief in terms of participating fre-

quency and intensity. In addition, in the participating types, the participants in “swimming lessons” were found to have a significant effect on perceived benefit.

When looking at the results of health belief variable studies, which are similar to this study, Rosenstock et al. (1988) assumed that health belief must be present as the only way to control diseases and Ponde and Santana (2000) stated that regular exercise and long participation time have positive effects on psychological stability, and Berger and Motl (2000) reported that physical activity ameliorates tension, depression, and anger, and enhances psychological optimism, indirectly supporting the result of this study.

In addition, Malt (2008) and Timonen et al. (2002) reported that a continuous participation in exercise will not only cause physical changes, it will also reduce negative emotional attitude in middle-aged women. In other words, it can be said that the participation in sports increases perceived benefit of a person, enhancing his/her intention to continue to exercise.



Fourth, the participation time in all variables did not have a significant effect on the relationship with perceived disability, the subfactor of health belief. In addition, all the participants for frequency and intensity had a significant effect on perceived disability. Hansen et al. (2001) reported that participation in exercise has a positive effect on health belief, and Carpenter (2010) mentioned that observing the recommended health behavior, as the perceived disability is low, supports the basic assumption of the health belief model.

In this way, the importance of the increasing practice to solve health problems by helping people observe psychological adaptive behaviors, such as participation in leisure sport activities and activities that allow you to overcome frustration, is currently emphasized. Nevertheless, studies in physical education are unsatisfactory compared to those in the areas of social science and health science. Therefore, research that directly supports the result of this study is somewhat lacking. To be specific, the result of this study implies that the perceived disability of health belief affects participation time and intensity. To lower the disability, it is inferred that before anything else, the exercise method should be appropriate for the physical fitness level of a person.

In other words, if the perceived disability of negative factors is high, it may act as a factor that reduces the possibility of health behavior, decreasing the perceived disability and increasing perceived benefit by constantly participating in exercises, which will have positive effects on health belief. Thus, to improve health belief, which is determined by the goal and belief that a person perceives, the effort to participate in sports continuously is needed.

For the result in the participating types, on the other hand, it was found that the relationship between swimming lessons and free swimming had positive effects on health interest/concern and the perceived benefit because it was inferred that people prefer swimming lessons with instructive leadership and considerate behavior in which they can be taught swimming styles and techniques as well as lessen their anxiety about water or fear as novices.

## CONCLUSIONS

This study examined the effects of the degree of participation and participation styles of middle-aged women who participate in swimming lessons on health perception and belief. Based on the study, the following conclusions were found.

First, participants in swimming lessons in types with “30 min-1 h,” “1 h-2 h” “more than 2 h” in terms of time and “2-3 times a week” and “4-5 times a week” in terms of frequency had a signifi-

cant effect on health interest and health concern.

Second, participants with “30 min-1 h” and “1 h-2 h” in terms of time and “hard” category in terms of intensity had a significant effect on resistance and sensitivity.

Third, in all frequencies and intensities, except for participants in the “15 min-30 min.” and “swimming lesson” categories, had a significant effect on perceived benefit.

Fourth, both frequency and intensity had a significant effect on perceived disability. However, because some of the instruments used in this study are composed of somewhat restrictive questions for measuring inherent values, the subfactors of health perception or health belief was unable to fully cover the change within the current society. Therefore, in the future, it is inferred that these parts should be supplemented in order have a more comprehensive and extensive study.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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