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Effects of Combined Exercise on Exercise Adherences and Health Self-Efficacy in Middle-aged Women

Ryewon Ma[1] and Young-Ju Jee[2]

[1,2]Kyungnamdaehak-ro, Masanhappo-gu, Changwon-si, Gyeongsangnam-do, Republic of Korea
[1]mrw4023@kyungnam.ac.kr, [2]jeeyoungju@kyungnam.ac.kr

Abstract

Therefore, this study aimed to develop a combined exercise program to induce the participation of middle-aged women and examine the effect of involvement in the proposed program on health self-efficacy and exercise adherence. This study also intended to provide essential data on developing effective exercise programs for the continuous health care of middle-aged women. The one-group pre-post experimental design was applied. The subjects were 20 middle-aged women aged 35 to 65 who participated in a combined exercise program administered by the S District Public Health Center in Busan Metropolitan City. The proposed program was a 12-week exercise program composed of aerobic exercise, low-middle intensity muscle-strength exercise, and flexibility and balance exercise. The program's effectiveness was measured using a structured questionnaire on health self-efficacy and exercise adherence. The collected data were analyzed using the SPSS 23.0 program, and the descriptive statistics and Wilcoxon sign rank were conducted. Participation in combined exercise programs positively affected health self-efficacy and exercise adherence, which is expected to induce continuous involvement in exercise and active engagement with health management.

Keywords: *Middle-aged women, Combined exercise, Health self-efficacy, Exercise adherence*

1. Introduction

Middle-aged women who are located between maturity and old age during the development stages of life [1] experience changes in the role of the family, the social support system, and individuality in society, as well as physical ones such as aging and the onset of physical illness and to adapt to various changes in socio-psychological factors such as loss of relationship [1][2]. Menopause, which middle-aged women experience, may cause multiple physical and mental changes, thus, unless directly managed, making them vulnerable to many types of diseases [1]. In addition, considering that the health of this period affects the quality of life of the elderly, the importance of health care is also emphasized.

Regular exercise is an appropriate stimulus for the body, promoting physical health, such as the maintenance of daily activities, and reducing depression or stress in the aspects of

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psychological health [3]. Exercise also has a social effect, such as decreased health expenditure, increased social participation, and improved well-being, inducing higher motivation for life [4].

Since exercise in middle-aged women has a close relationship with lifestyle [2] and plays a vital role in improving the quality of life [5], it is essential, in exercise selection, to choose an exercise that reflects various conditions such as the type and environmental condition of exercise and subject's willingness to participate in the exercise. The combined exercise is carried out in multiple ways, using tools that help increase exercise capacity, such as aerobic and resistance [6]. This type of exercise has the effect of reducing metabolic syndrome factors, strengthening cardiorespiratory fitness, and reducing cardiovascular risk factors, which make this type of exercise a theme of extensive studies [7][8][9].

Even though the importance of exercise effects is accepted widely, continuous participation in exercise is so complex that it is likely to stop exercise even before checking the effect of exercise. Continuous and active involvement in the chosen exercise according to one's needs is very important. Health self-efficacy is a perceived ability to perform tasks related to physical performance for health promotion [10] and is an essential variable in sustaining exercise behavior. Although the importance of exercise as a means of health management in middle-aged women has been emphasized, research on the development and effects of exercise programs that increase their willingness to participate actively and continuously in these exercise programs has been very limited.

Therefore, this study aimed to develop a combined exercise program to induce the participation of middle-aged women and examine the effect of involvement in the proposed program on health self-efficacy and exercise adherence. This study also intended to provide essential data on developing effective exercise programs for the continuous health care of middle-aged women.

2. Method

2.1. Subjects

The subjects of this study were 20 middle-aged women aged 35 to 65 who participated in a combined exercise program administered by the S District Public Health Center in Busan Metropolitan City. The contents and procedures of the exercises were explained in detail, and consent was obtained before enrollment in the study. The data were collected for about three months, from September 4 to November 29, 2017.

2.2. Procedure

This group pre-post experimental study intended to investigate the effects of a 12-week combined exercise program on health self-efficacy and exercise adherence in middle-aged women. The general characteristics, health self-efficacy, and exercise adherence were pre-measured one week before the exercise program, and post-measurement was performed over the last week of the exercise program. To minimize the effects of extraneous variables on the results of this study, nutritional counseling was added during the program to instruct them to keep their eating habits unchanged during the program period and encouraged them not to participate in the additional exercise.

2.3. Measurement

2.3.1. Health self-efficacy

The Self-Rated Abilities for Health Practices Scale [10], translated, modified, and refined by Choi (2004), was used. This instrument comprises 28 items, and the higher scores indicate a higher level of health self-efficacy.

2.3.2. Exercise adherences

The Willingness to Adhere Exercise – Korean version developed by Choi (2005) was used. The tool comprises 17 items and measures five subscales of exercise ability, habits, environment, interest, and friends. The higher score indicates a higher level of direct participation or adherence without stopping.

2.4. Combined exercise intervention

Four specialists, including a doctor specializing in physical education, an exercise prescription specialist, one social work practitioner, and a doctor specializing in adult nursing, participated in the development of the proposed program. Stretching as a warm-up and cool-down exercises were added before and after the main exercise. The main exercises include aerobic exercise (body exercise, stretching, step box), low-middle intensity exercise (core exercise, thera-band, kettle-bell), and flexibility and balance exercise (yoga). The program consisted of three sessions per week for 12 weeks, and it takes about 60 minutes to complete a session.

2.5. Statistic

The collected data were analyzed using the SPSS 23.0 program. The pre-and post-program mean and standard deviations of the subjects' health self-efficacy and exercise adherence were used at the level of the corresponding variables. The Wilcoxon signed rank test was conducted to test the ranks of pre- and post-experimental effects.

3. Results

3.1. General characteristics

The mean age of the subjects was 58.35 (±7.17) years old. For the educational level, 45% (n=9) reported high school graduation, and 25% (n=5) reported university graduates. For marital status, almost (n=18; 90%) were married.

3.2. Difference in health self-efficacy and exercise adherence between pre- and post-combined exercise program intervention.

The result of the difference test in subjects' health self-efficacy showed a significant difference in nutritional efficacy between pre- and post-program, indicating an increase in nutritional efficacy after the program.

For exercise adherence, the exercise habit ($Z=-2.63$, $p<.01$) and exercise interest ($Z=-3.06$, $p<.01$) showed a significant difference between pre-and post-program and the willingness to exercise adherence measured by total score showed a significant increase after the program ($Z=-2.75$, $p<.01$).

Table 1. Effectiveness of exercise on exercise adherence and health self-efficacy

Variable	Sub-Categories	Pre	Post	z	p
		M(SD)	M(SD)		
Health Self-Efficacy	Exercise	2.92(.28)	2.94(.35)	-.06	.95
	Psychological Well Being	2.94(.29)	3.02(.28)	-1.42	.16
	Nutrition	2.78(.29)	2.93(.31)	-2.25*	.03
	Responsible Health Practices	2.87(.35)	2.95(.40)	-.95	.34
Total Score		2.88(.19)	2.96(324)	-1.34	.18
Exercise Adherence	Exercise Abilities	3.20(.67)	3.24(.74)	-.41	0.69
	Exercise Habits	3.13(.68)	3.43(.58)	-.2.63**	<.01
	Exercise Environments	3.49(.53)	3.64(.50)	-.71	.48
	Exercise Concern	2.92(.58)	3.35(.67)	-3.06**	<.01
	Exercise Partners	3.38(.46)	3.53(.58)	-1.48	.14
Total Score		3.24(.42)	3.44(.43)	-2.75**	<.01

*$p<.05$, **$p<.01$

4. Conclusion

In this study, the effects of 12 weeks of combined exercise on health self-efficacy and willingness to exercise adherence in middle-aged women. The results showed a significant increase in nutritional efficacy, a subscale of health self-efficacy, after the program. For exercise adherence, the total score and subscales of exercise habit and exercise interest increased significantly after the program.

Exercise plays a vital role in improving the quality of life in all age groups. This exercise is more critical in middle-aged women because they are subjected to various physical and psychological diseases due to menopause in the course of transition to the elderly. Although the effects of exercise may be improved through manipulating the intensity, the number of times is more emphasized than the intensity. The willingness to participate in and interest in exercise are also essential factors.

The combined exercise in this study increased the willingness to exercise adherence in middle-aged women but failed to improve their health and self-efficacy in exercise. It is urgent to provide a program that encourages adults to participate actively and self-directly in exercise and lead healthy lives by themselves. Future research is recommended to widely investigate the effect of exercise by adding physical variables.

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