THE EFFECT OF COMBINED EXERCISE AND MEDITATION ON PHYSICAL FITNESS AND AUTONOMIC NERVOUS SYSTEM

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Abstract - The health prevention and exercise for health is motivation and problem statements research. This study aimed to examine the effects of combined exercise and meditation program on physical fitness and autonomic nervous system. Warm up, Step aerobics, Breathing exercise, Isometric exercise Meditation and Stretching. Be included as a continuous activity for 30 minutes. The training program consisted of 7 weeks. A pretest-posttest experimental research design was used. The sample consisted of 30 female and 3 male of University Student. The measures of physical fitness included muscle strength (hand grip and leg strength), flexibility (Sit -and -Rich test), and lungs capacity. The autonomic capacity were measured by heart variability (HRV) and a modified form electrocardiograph (wireless ECG). After training, significant improvements were found all of physical fitness, and reports on autonomic evaluation using HRV analysis were found no significant improvement. The 30 minutes combined exercise and meditation program should be recommended as a method to maintain and promote the health.

Keywords - Step Aerobics, Heart Rate Variability (HRV), Autogenic

I. INTRODUCTION

Since we have been busy with making a living, we're not taking care of their own health. Many people tire of hard labor for life.Although a lot of money Since you do not pay more attention to health care itself. You must use the available funds to pay all the medical bills[1]. Exercise is a great way to health. The results of the survey exercise behavior of people in Thailand in 2011 found that, working age people exercise regularly, only 19.1% [1] andsuffering from Non-Communicable diseases: NCDs such as heart disease atherosclerosis, hypertension and cancer.These diseases Tends to increase every year[3]. One reason is due to lack of exercise. In addition, economic and political issues have made Thai people sick with stress and depression more. Thai's current illness, depression, about 3 million people (5 %) but less than a hundred thousand people go to the doctor [3]. As a result, the rate of suicide of Thailand is increasing every year. Meditation is one way to help with stress. But Thai people has acted only 14.1% [4].

By nature, the human body is designed to health until the last minute. Stem cell can be divided roughly 50-60 times and then stop. The results from this division makes about 120 yearslong live people. Because of accumulation of toxins from within and outside the body, faster increase in cell division, making the early and short-lived [5]. So if we want to live longer, we should be slow down the rate of cell division.Exercise help to long live activity[6]. Exercise Improves muscle strength, cardiovascular system, pulmonary system, relieve stress and the slender shape. In addition, exercise It also helps prevent heart disease, high bloodpressure, stress, depression, anxiety, improved mental and sleep.

Meditation is the art of the Eastern Hemisphere, which has worldwide recognition. In Physiology, the body is mainly run by the autonomic nervous system, such as the digestive system, respiratory system and cardiovascular system.Usually we do not control the autonomic nervous system. But meditation can be done, for example,when we are excited or frightened, automatic nervous system encourages rapid heartbeat, shortness of breath. If we try to compose a slow deep breath 10 times, we will feel that heartbeat and breathing slow down.The study found that meditation helps make a good memory, learn more and reduce stress[7].

Most people know that exercise and meditation is good for health, but rarely have the time. Because most of the time spent on work and traffic.

Researchers have recognized the importance of the above, and interested to find patterns of exercise with meditation as simple, easy, and does not take more time.

II. DETAILS EXPERIMENTAL

2.1. Materials and Procedures

The format of the research study, A pretest-posttest experimental research design was used.The sample consisted of 30 females and 3 males of University Student.In figure 1 show the process of data collection in order.The measures of physical fitness included muscle strength (hand grip and leg strength), flexibility (Sit and Rich test), and lungs capacity. The autonomic capacity were measured by heart variability (HRV) and a modified form electrocardiograph (wireless ECG).Warm up, Step aerobics, breathing exercise, isometric exercise meditation and stretching. Be included as a continuous activity for 30 minutes. The training program consisted of 7 weeks. (Figure 2)

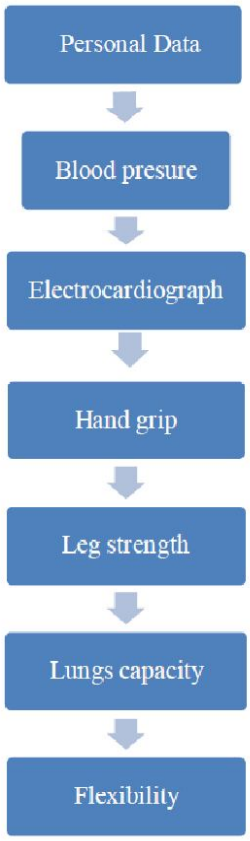

Fig.1 Process of data collection in order

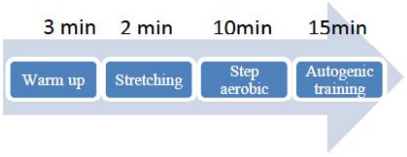

Fig.2 Step of training

The training program takes five days, Monday to Friday 08.00-08.30 a.m.

2.2. Before and after training test

Testing was conducted before and after training period of 7 weeks as follow hand grip, leg strength, sit and rich test, lungs capacity and electrocardiograph.

Statistic: All data were analyzed by using SPSS for window. The statistical were by comparing the mean andstandard deviation of each parameter before and after experiment. The t-test was performed to determine the difference between pre-test and post-test of physical fitness and heart rate variability before and after the experiment with a significant level of .05.

Table 1: Comparison of hand grip, legstrength, flexibility and lungs capacity between the pre-test and post-test by show of mean and standard deviation after experiment.

	Pre-test		Post-test		t	P-value
	X	S.D.	*X*	S.D.		
Hand grip (kg)	24.72	3.42	28.42	3.28	-20.78	0.000*
Leg strength (kg)	74.49	9.86	87.82	13.56	-7.74	0.000*
Flexibility (cm.)	2.69	1.15	5.96	1.46	-20.15	0.000*
Lungs capacity (ml)	2306.15	453.615	2419.04	501.47	-3.95	0.001*

Significant difference within group *p<.05

Table 2: Comparison of heart rate valiability (HRV) between the pre-test and post-test by show of mean and standard deviation of after experiment

	Pre-test		Post-test		t	P-value
	X	S.D.	X	S.D.		
NN	826.63	136.39	956.06	127.22	-6.94	.000*
SDNN	74.88	92.47	61.98	20.37	.705	.487

Significant difference within group *p<.05

III. RESULTS AND DISCUSSION

3.1 Comparison of physical fitness (hand grip, legstrength, flexibility and lungs capacity) and Heart rate variability.

From the study, the researcher presents data analysis of the changing results of physical fitness and heart rate variabilityheld for 7 weeks with voluntary participation of 33University Student. T-test and pair t-test were used analyze by show of mean and standard deviation according to the following changes:

Comparison of hand grip, leg strength, flexibility and lungs capacity between the pre-test and post-test by show of mean and standard deviation were significantly less than at the level .05 Therefore, this is an appropriate sample of the research is show in table 1. In table 2 heart rate variability between the

pre-test and post-test by show of mean and standard deviation were not significantly

3.2. Reasons for change after training

The strength of muscle (hand and legs) after 7 weeks training were significantly less than 0.05 better than pre-test group.By the training, the muscles contracting throughout the body short time Interspersed with muscle relaxation.This is consistent with Comfort' s research [8] has conducted a comparison exercise, isometric contraction with isotonic contraction. The results show that. isometric contraction is strained even more and stronger.

The flexibilityof 7 weeks training,the post-testgroup were significantly less than 0.05 better than pre-test group. The pre-test flexibility is pretest 2.69 cm and post-test is 5.96 cm. The principles flexibilitytraining, as well as yoga. The result is more flexibility. Consistent with the Fan and Chen's research [9] of casting elderlyyoga,to conducted flexibilityand the angle of joints test,the results showed, yoga makes the body has a lot more flexibility and moreangle movement of the joints.

The lung capacity of the samples pre-test and post-test7 weeks, results showed pre-testgroup were significantly less than 0.05 better than post-group.The average pre-test lung capacity is a 2306.15 ml, and post-test is 2419.04. In this experiment, the training is practice deep breathing alternating with Isomeric contraction for short, which affects the respiratory system. This is consistent with Elizabeth'sresearch [10] thatpractice deep breathing in patients after heart surgery,that allows for greater lung capacity.

The variability of heart rate (HRV) before and after the training7 weeks appear to have increased slightly. However, it were not statistically.Therefore, this is an appropriate sample of the research is show in table 2.This is an appropriate sample of the research is show in table 1. In accordance with Nobuhiro's[11] research,the measure of the heart rate variability in short-distance runner before training and after training.The heart rate variability of after training were significantly better than before training. Practice shows that influence the control of the autonomic nervous system.

CONCLUSIONS

This study shows. Combined exercise and meditation in 30 minutewill result in physical fitness and autonomic nervous system.

ACKNOWLEDGMENTS

For more skill, practice-based training period should be more than 7 weeks.To see the change of values.It should be test the physical fitness and autonomic nervous system for 3 phase, before training middle training and after trainingand the experiment should be control group.

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