

Effects of Elastic Band Combined with Chair Exercise on Abdominal Fat Level, Body-fat Percentage and Body Mass Index in Elderly Women, Thailand

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Abstract--- *The elderly are of deterioration of mechanical performance in many ways. Especially the body's burn. Resulting in the body accumulating more fat. As a result, the risk of various diseases more. The researcher therefore figured out a way for the elderly to exercise easily, conveniently, safely and to help lose weight, body-fat percentage and abdominal fat. The objective of study the effect of a resistance training program using elastic rubber combined with chair exercises affects the decrease the Abdominal fat, Body-fat percentage and Body mass index in Elderly Women. This study is the quasi-experimental design, and the 60 healthy elderly women total participants 48 peoples, and divided into 2 groups each group was 24 peoples. The experimental group found that Body weigh had an average before the experiment (\bar{x} 60.46 \pm SD 7.82) and after the experiment (\bar{x} 59.92 \pm SD 7.62) there was a significant difference of 0.05. Abdominal fat levels had an average before the experiment (\bar{x} 8.95 \pm SD 2.96) and after the experiment (\bar{x} 8.56 \pm SD 2.93) there was a significant difference of 0.01. Body-Fat percentage had an average before the experiment (\bar{x} 35.88 \pm SD 3.25) and after the experiment (\bar{x} 34.92 \pm SD 3.19) there was a significant difference of 0.01. The average of body mass index before the experiment (\bar{x} 25.47 \pm SD 2.82) and after the experiment (\bar{x} 25.16 \pm SD 2.80) there was a significant difference of 0.05. Control group and the experimental group have average Body weight, Abdominal fat levels, Body-Fat percentage And body mass index There was no significant difference 0.05. The training of the elastic band combined with chair exercise for 8 weeks can decrease the abdominal fat, body-fat percentage and body mass index in elderly women.*

Keywords --- Chair Exercise, Abdominal fat, Body-fat percentage, Body mass index

I. INTRODUCTION

Body composition is important for the health and capacity of the elderly. ^{1,2} The muscle mass reduced with age is replaced by fat mass. ³ The fat mass increase affect risk factors such increase of as blood cholesterol, blood sugar levels and increased blood pressure leads to the development of type 2

diabetes, cardiovascular disease.^{4,5} Apart from that, low muscle mass in the elderly are associated with physical inactivity and insufficient energy intake. ⁶

The body composition of the elderly decreases with age and increases in the hip line due to the accumulation of fat. ⁷ In addition, bone loss also affects reduced size and increased fracture marks. ⁸ Exercise is an important factor that helps reduce the risk of growing old. ⁹ Exercise is promote to health care. Including the mental and social health of the elderly .The exercise have many forms such as aggregation are groups resulting in happiness, enjoyment, prevention depression caused by loneliness resulting from neglect and other disease risk factors.¹⁰

Resistance exercises are accepted and widely recommended. Resistance training can helps to control and prevent bone decrease. It also increases the muscle strength affecting the quality of life and body balance. It to main factor in prevented falling and breaking the bone. As a result, the elderly have more performance and more free movement in daily life.^{7,10,11} The American College of Sports Medicine has emphasized and stressed the importance of resistance exercise for the elderly. Medium resistance exercise ($\leq 60\%$ RM) can helps to increase muscle strength and muscle power. Moreover, this type of training cause adjustment in body composition such as weight loss and body mass index. In the population older than 65 years. High level of resistance exercise ($\geq 75\%$ RM) are build muscle strength and muscle power. It can increase muscle strength 21–97% after training 10 to 52 weeks in adults older than 65 years.^{12,14,15}

Previous studies had shown data in Thailand, found obesity is more common in women than men and from the above report. The researchers saw the benefits of resistance exercise. Therefore saw the importance of resistance exercise. The researchers are adjust to appropriate with the elderly women by modify the resistance using elastic rubber in resistance training and sit to do it in a chair for prevent falling. The objective of this study was to examine the effects of moderate resistance training program using elastic rubber

combined with the chair exercises affects on Abdominal fat level, Body-fat percentage and Body mass index of female elderly.

II. METHODOLOGY

This research calculated from the G * power program. Sample site are total of 38 volunteers and calculated 20% withdrawal. Therefore used volunteers of 48 people elderly women. There are criteria inclusion are elderly people between the ages of 60-69 years, female.

This research is a quasi-experiment. The sample is divided into 2 groups, the experimental group and the control group. The researcher designed the study in two groups and assessment of the study twice (Two group Pretest-Posttest Design). The population is the elderly female aged 60-69 years. In which the control group is in Sakae Sam sub district area and the experimental group is in Lam Plai Mat sub district Buriram Province. By screening according to the specified criteria, 24 people in each group, the experimental group will exercise with the elastic rubber with the chair 8 weeks, 3 times a week, 50-60 minutes each time. There will be 6 exercises position, doing 10 times 3set. The rest time is 60 seconds per round. The control group is not trained. Ethics has been considered by the Ethics Screening Committee No. HE612166 from Khon Kaen University.

Tools used in the experiment Exercise program by using the elastic with the chair 8 weeks, 3 times per week, 50-60 minutes each time, there will be a total of 6 postures, do 10 times 3 rounds, rest 60 seconds per round. The position of exercise are Hip abduction, Hip adduction, Hip flexion, Hip extension, Knee extension and last position is Squat.

Data collection tools

1. Form for testing performance skills is used to record date for test before and after training
2. Body composition measurement by measuring the weight, Abdominal fat level, Body-fat percentage And body mass index By using OMRON model HBF-375

Data analysis was performed using Descriptive statistics comparing differences between within the group. Mann Whitney U test was used to compare differences between groups. Wilcoxon sign rank test was used at the significance level of 0.05.

III. RESULTS

TABLE 1. Shows the average values of testing before and after 8 weeks in experimental group

Measurement variable	Experimental group		P-value
	Before	After	
Weight (Kg)	60.46±7.82	59.92±7.62	0.011*
Visceral Fat (Level)	8.95± 2.96	8.56± 2.93	0.007*
Body Fat percentage (%)	35.88± 3.25	34.92± 3.19	0.005*
Body Mass Index (kg/m ²)	25.47± 2.82	25.16± 2.80	0.020*

*P< 0.05

Table 1 showed data in experimental group that the average body weight before the experiment equal to 60.46 ± 7.82 kg and after the experiment was 59.92 ± 7.62 kilograms, the mean abdominal fat level was 8.95 ± 2.96 and after the experiment was 8.56 ± 2.93, the average body fat percentage

was 35.88 ± 3.25 and after the experiment 34.92 ± 3.19 percent and The average body mass index was 25.47 ± 2.82 kg/m² and after the experiment was 25.16 ± 2.80 kg/m².

TABLE 2. Shows the average values of testing before and after 8 weeks in control group

Measurement variable	Control group		P-value
	Before	After	
Weight (Kg)	61.35± 8.71	61.51± 8.70	0.465
Visceral Fat (level)	9.50± 3.20	9.51± 3.21	0.785
Bbody Fat percentage (%)	35.73± 3.75	35.75± 3.75	0.273
Body Mass Index (kg/m ²)	25.94± 3.17	25.97± 3.16	0.144

*P< 0.05

Table 2 showed data in control group that the average body weight Before the experiment was 61.35 ± 8.71 kilograms and after the experiment was 61.51 ± 8.70 kilograms, the mean abdominal fat level was 9.50 ± 3.20 and after the experiment was 9.51 ± 3.21, the average body fat percentage was 35.73 ± 3.75 percent and after 35.75 ± 3.75 percent of the experiment and the average body mass index was 25.94 ± 3.17 kg / m² and after the experiment equal to 25.97 ± 3.16 kg / m²

The subjects used in this study were 48 peoples, divided in to 2 group, each group 24 peoples totally female (100%). The data of age, abdominal fat level, body fat percentage and body mass index in 2 group have similar in average. Testing by with statistics Kolmo gorov-Smirnov Test appeared with P < 0.05 results. Nonparametric static determines the CI 95% confidence value. However, the research found that The experimental group that received the resistance training program using elastic rubber combined with chair exercises before and after 8 weeks of training had an average Body weight, Before the experiment (x̄ 60.46 ± SD 7.82) and after the experiment (x̄ 59.92 ± 7.62) there was a statistically significant difference at the level of 0.05. Abdominal fat levels, Before the experiment (x̄ 8.95 ± SD 2.96) and after the experiment (x̄ 8.56 ± SD 2.93) there was a statistically significant difference at the level of 0.01. The average Body fat percentage ,Before the experiment (x̄ 35.88 ± SD 3.25) and after the experiment (x̄ 34.92 ± SD 3.19) there was a statistically significant difference at the level of 0.01 and the average body mass index, Before the experiment (x̄ 25.47 ± SD 2.82) and after the experiment (x̄ 25.16 ± SD 2.80) there was a statistically significant difference at the level of 0.05 .

Between the experimental group and the control group with average Body weight, Abdominal fat levels, Body fat percentage and Body mass index no significant difference at the level of 0.05

IV. DISCUSSION

Training using an elastic chair and exercise exercises before and after 8 weeks of training in the experimental group. It appears that the average body weight, Abdominal fat levels, Body fat percentage and Body mass index There has been obvious development that the average value has decreased. The results of this research show that the principles of American College of Sports Medicine are 1. Frequency of exercise is 3 times a week 2. Time of exercise is 30-40 minutes 3.Type of resistance exercise, and 4. Medium

intensity of exercise. That can be improve muscle strength, muscle power and Suitable for fat burning. It affects the change in body weight causing the body mass index to decrease and also reflects that this program can reduce abdominal fat levels and fat percentages. This research are similar to the study of Nattanun Sampet and the et al.¹⁶ Pilates and walking exercise tend to decrease abdominal visceral fat in 8 weeks. But abdominal visceral fat tend to decrease more than walking group. In addition, body fat was decreased but the trunk lean mass was increased by Pilates training. Obese women who have high abdominal visceral fat and body fat should choose type of exercise that can decrease accumulation of fat for prevent health problem. Consistent with the study of Sarayoot Mongkol and the et al.¹⁷ Volunteers in a group that received exercise with a seven-minute exercise program can reduce body weight and body fat percentage because there for training the aerobic exercise and exercise to build muscle strength and the waist line decreasing after exercise caused by postures of exercise with resistance. That uses body weight as resistance and isometric exercise in the core muscles. Which causes the muscles around the waist decrease and the muscles around the core more strength. And which is consistent with the study of Park and the et al of found that exercise with resistance resulting in lower Abdominal fat in obese women in middle age, resulting in lower waist circumference .The experimental group and the control group were not different. May be caused by differences between the groups that occurred that little different. Therefore resulting in no difference between groups and there do not limit the daily use of the control group we are unable to know the lifestyle habits of volunteers.

This research, The data is not different before exercise but we are not limit to eat, limit to activity of daily life the control group, and unable to know the lifestyle habits of volunteers, So resulting in data is not different between group

V. CONCLUSION

The program resistance training with elastic rubber combined the on chair exercises for 8 weeks may be an alternative way to lose weight, Abdominal fat and body mass index. The program is easy, convenient and safe for the elderly

VI. RECOMMENDATION

There should be support and subservience for the elderly to exercise by using an elastic rubber with the on chair exercises

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