



The Effect of Low Impact Aerobics Gymnastics Exercisen Blood Cholesterol Levels and Body Mass Index (BMI) in Larasati Salamah (Salsa) Elderly School Members in Bantul Regency, Yogyakarta

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Abstract. Low-impact aerobics is gymnastics performed at low intensity or using light beats with feet still attached to the floor without jumping. This study aimed to analyze the effects of low-impact aerobics gymnastics on cholesterol levels and the decrease in the body mass index in elderly people. This study applied a quasi-experimental method with a one-group pretest-posttest research design. The subjects of this study included 35 female members of the Salamah Larasati (SALSA) elderly school in Bantul Regency, Yogyakarta Province. The study subjects received low-impact aerobics gymnastics twice a week, every Tuesday and Saturday, for two months, from June 12th 2023 to August 12th 2023. The study results showed that the low-impact aerobics gymnastics affected the cholesterol level and the body mass index in elderly people, members of the Salamah Larasati (SALSA) elderly school in Bantul Regency. It is suggested for elderly people to be able to control their cholesterol level and body mass index by exercising using low-impact aerobics gymnastics to reduce the risks of getting cardiovascular disease and to be healthy and productive.

Keywords: Low-impact aerobics gymnastics, cholesterol, body mass index, elderly

1. Introduction

The Ministry of Health (2016) states that an elderly is someone who is over 60 years old. The number of elderly people in 2019 globally approached 1 billion. It is estimated that this number will continue to increase until it reaches 1.4 billion in 2030 and will continue to grow. Risnawati (2022) explains that in old age, a person will face physiological changes and declines, such as in body texture, muscles, bones and joints, cardiovascular system, breathing, and memory.

According to Riskesdas data (2018), the health cases that are quite high are degenerative diseases, such as heart and blood vessel disease. One of the diseases often suffered is high blood pressure, which increased by 25.8% to 34.1% in 2018. Apart from that, the population in Indonesia also experienced an increase in cholesterol levels, with a total of 39.6% more suffered by women compared to men, which was 30.0%, with most sufferers coming from urban areas compared to inland regions. Lack of physical activity can cause high blood pressure and increase cholesterol levels. High cholesterol levels can cause the risk of heart and blood vessel disease. M. Silva (2019) explains that safe physical activity for the elderly to maintain physical health is regular exercise. Exercise is very influential in lowering blood pressure and cholesterol levels.

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According to Alexis M. McKee (2021), elderly people need to maintain an ideal body weight because several health risks can arise if they are overweight or underweight. Excess body weight or obesity experienced by elderly people can harm their health, increasing the risk of dangerous diseases, including dyslipidemia, high cholesterol levels, diabetes mellitus, hypertension, and heart disease. Being overweight can also cause stress on the joints so that mobility becomes limited, breathing problems, and even a high BMI is at risk of developing cancer.

Lack of body weight can result in reduced muscle mass, which, if it occurs in the elderly, is called sarcopenia. Muscle strength and muscle mass in people with sarcopenia will also decrease. This condition is often associated with the risk of physical disability, reduced quality of life, and even death. Lack of weight in the elderly can also result in health risks, such as loss of the protective effect of fat, narrowing of blood vessels, fractures, malnutrition, and a decrease in the body's immune system, making it susceptible to disease infection. The elderly can maintain their ideal body weight to avoid obesity and underweight by keeping their bodies active. One activity that can be done is regular exercise by doing low-impact aerobics. This sport can train muscle strength and prevent sarcopenia. The greater the muscle mass, the more calories burn.

Salamah Elderly School (SALSA) Larasati is an elderly school that accommodates the elderly to gather, study, and organize. This school was founded in 2017 and has many agendas and programs for elderly people. The program and all the activities of Salamah Elderly School (SALSA) Larasati stopped due to the covid 19 pandemic in 2019 -2022. Murilo Rezende Oliveira (2022) states that increased free time and weight gain can cause an energy imbalance. Being inactive for a relatively long time can increase the risk of cardiovascular disease and death. According to M. Silva (2019), weight gain can be managed properly by adopting a healthy lifestyle and physical exercise.

2. Method

2.1. Study Design

This research uses quasi-experimental, with one group pre-test-post-test design. This research was carried out by providing initial observations before the treatment and final observations after the treatment was carried out. The population in this study were the members of the Salamah Elderly School (SALSA) Larasati in Bantul Regency, Yogyakarta.

2.2. Research Participant

The research sample consisted of 30 elderly people selected from the population that met the criteria using purposive sampling. The sample criteria were: elderly members of Salamah (SALSA) Larasati, female, aged between 60-78 years, have a fairly good degree of health, were willing to be a sample and fill out a statement of availability as a sample.

2.3. Data Collection and Instrument

The treatment was carried out twice a week on Tuesday and Saturday in the afternoon, with a total of 16 times. Aerobic Gymnastics Exercise On Blood Cholesterol Levels And Body Mass Index (Bmi) In Larasati Salamah (Salsa) Elderly School Members In Bantul Regency, Yogyakarta

2.4. Statistical Analysis

The data processing was carried out computerized using the SPSS program.

3. Results

The results of the study, conducted from June 2023 to August 2023 and involved 30 respondents regarding the effect of low-impact aerobics on cholesterol and body mass index, are presented as follows:

Table I. The Descriptive Statistics of The Pre-test – Post-test

	N	Min		Max		Mean	
		Pre	Post	Pre	Post	Pre	Post
Cholesterol	30	160	150	284	276	223.4	201.9
BMI	30	15.70	15.29	31.74	31.25	23.3764	23.1754

In Table I, the minimum cholesterol level during the pre-test was 160, and the maximum was 284. The results were obtained from 30 subjects with details of eight people with “good” cholesterol levels, 12 with ‘alert’ cholesterol levels, and 10 with ‘danger’ cholesterol levels. Even in the ‘danger’ category, some people exceed the ‘danger’ assessment threshold. One person had a cholesterol level of 284, the highest level, and it was recommended to be followed up immediately to avoid harming health. The minimum cholesterol level at the post-test was 150, and the maximum was 267. Of the 30 subjects, results were obtained with details of 17 people with ‘good’ cholesterol levels, nine with ‘alert’ cholesterol levels, and four with ‘dangerous’ cholesterol levels. Initially, there was 1 person with cholesterol levels that were still very high, with a value of 276. However, this was lower than during the pre-test.

In Table I, the minimum body mass index (BMI) at pre-test was 15.70, and the maximum was 31.74. Of the 30 subjects, the BMI details showed two people in the underweight (thin) category, 12 people in the normal (ideal) weight category, 11 people in the overweight category, and 5 people in the fat (overweight) category. The minimum body mass index (BMI) during the post-test was 15.29, and the maximum was 31.25. From a total of 30 subjects, the BMI details showed two people in the underweight (thin) category, 17 people in the normal (ideal) weight category, 8 people in the overweight category, and 3 people in the fat (overweight) category.

4. Discussion

Low-impact aerobic exercise done regularly reduces blood cholesterol levels, as shown by the statistical results of the paired sample T-test of 0.000 ($p < 0.05$). Total cholesterol levels in a person’s blood can increase with age and will be higher when men reach age 60 and women age 70. Adopting a healthy lifestyle by exercising regularly, such as doing low-impact aerobics, can prevent an increase in cholesterol.

In the case of cholesterol levels, there was an average decrease of 21.5. Nilawati (2008) states that regular low-impact aerobic exercise can help the activity of several enzymes that play an important role in fat oxidation so that most of the fat will be used as an energy source. Lelazi (2021) illustrates that there is an effect of physical activity on total cholesterol levels. Ribero (2015) suggests that a good exercise that can be done to lower cholesterol levels is to adjust your diet and do aerobic exercise for 30 minutes regularly three times a week. This exercise is proven to reduce cholesterol levels gradually.

Romelo (2010) explains that with increasing age, of course, it affects body fat. Body composition in the elderly will experience changes such as increased fat mass, decreased fat-free mass, and even reduced bone mass. Pascha Paramurti (2021) reveals that changes in body composition, especially increased accumulation of central fat in the abdomen, impact abdominal obesity, which results in abdominal obesity or central obesity. According to Sudargo (2018), underweight conditions are also conditions that may be experienced by the elderly as a result of shrinkage and loss of some lean tissues in the body under normal conditions, where the body is composed of fat, bone, water, and lean tissue that contains muscles and organs.

Rivan Virlando et al. (2020) explain that age affects physical activity in adults and the elderly. However, overweight or obese elderly people show positive changes in BMI. Sedentary living or being physically inactive can increase body weight, cardiovascular disease, and death. According to Lin Yi-Tien (2020), weight gain can be managed well through a healthy diet and physical exercise, reducing morbidity and mortality. Exercise such as low-impact aerobics is highly recommended for the elderly to increase muscle strength and burn fat in the body.

5. Conclusion

Based on the results of research conducted on the members of the Salamah Elderly School (SALASA) Larasati, it can be concluded that (1) there was a difference in total cholesterol levels in the blood before and after doing low-impact aerobics with pre-test data of 223.4 and after doing gymnastics of 201.9; (2) there were differences in body mass index (BMI) before and after doing low impact aerobics with data before exercising at 23.3764 and after doing gymnastics at 23.1754. The low-impact aerobic exercise positively affects cholesterol levels and BMI for the elderly.

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