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The Effect of Aerobic Dance Exercise towards the Decreasing of Total Cholesterol Level on Kiyomi Dance Studio's

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Abstract

The purposes of this study are to know the total level cholesterol of the samples before and after doing aerobic dance exercise besides to know the influence of aerobic dance exercise toward reduction of total blood choleterol levels. This is a Pre-Experimental Design study and used One Group Pretest Posttest Design. The population in this study was participants of Kiyomi gymnasium group and 16 participants. The collected data was gathered by measuring blood total cholesterol levels when conducting pre-test and post-test by using East Touch GCU. For analysing the data used Paired T-test. The result of the study shows the average of the samples after doing aerobic dance exercise are able to lower the blood total cholesterol levels from 221,68 to 173,12. And gained tarithmetic as many as 6,197 with the value of signification 0,000 < 0,05. It means that there is a significant influence between aerobic dance exercise and reduction of total cholesterol. The conclusion of this study is there is reduction of the average of the total cholesterol levels before (pre-test) and after getting treatment (post-test) so it can be concluded that there is an effect of aerobic dance exercise toward the decreasing of total cholesterol level on Kiyomi dance studio's members in Gabus Sub-District Pati Regency.

How to Cite

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INTRODUCTION

Busyness in today's "worldly life" often causes people to be lazy, and also stress which can cause various non-infectious diseases, such as heart disease, high blood pressure and stroke (Santosa Giriwijoyo and Dikdik Zafar Sidik, 2013: 28). The main risk factors of coronary heart disease besides hypertension and smoking are hypercholesterolemia. The study of Saeed, et al (2015) has confirmed that hypercholesterolemia is an independent risk factor for atherosclerosis and thrombosis, coronary heart disease and ischemic stroke.

Increasing cholesterol is a serious health problem in the world. According to (Sharkley, 2011) similar to high blood cholesterol, lack of physical activity is also considered as a major risk factor for heart disease, high blood pressure and so on. Based on the research of Siti Fatimah Zuhroiyyah, et al (2017) it stated that physical activity had a significant inverse relationship with total cholesterol and LDL cholesterol. This meant that the higher the physical routine activity carried out, the cholesterol level in the blood will decrease.

Sport is a form of planned and structured physical activity that involves the repetition of body movements that aimed to improve physical fitness. One type of exercise is aerobic exercise (Aristotle, 2018). Aerobic exercise is a sport that requires a lot of oxygen, the more muscles involved in the sport, the oxygen demand needed will also increase, and the stronger the muscle will contract, the more oxygen needed (Santosa Giriwijoyo & Dikdik Zafar Sidik, 2012: 396- 397).

Physical exercise that is done regularly, programmed and measured exactly will improve the health, physical fitness, fix and slow down the process of decreasing the function of organs and also increase endurance. Physical exercise that is carried out with maximum intensity and is tiring will only produce oxidative stress (Aristotle, 2018). According to Pantouw, et al (2014) aerobic exercise has an impact on reducing cholesterol levels.

One of the aerobic exercises besides jogging, biking, swimming and so on is aerobics. This is because aerobic dance exercise involves all components of the body including the work of heart and lung function called heart and lung endurance (Susiana Candrawati, et al: 2016). Aerobic exercise which is done with moderate to high intensity for 150 minutes or more in a week can reduce total cholesterol levels by 5-20% and increase blood HDL cholesterol levels by 5-10% (Pantouw, et al, 2014).

According to Arum Tri Sukma (2015), to get optimal results, aerobic exercise could be done 3 times a week and done intermittently, for example, Monday-Wednesday-Friday, while the other days were used for rest so the body had a chance to do the recovering energy. According to the American Heart Association in Annisa Mustika Ayu (2017) that a good frequency of exercise to normalize cholesterol levels were doing gymnastics 3-4 times a week.

Based on the results of Mafalina Amalia research (2017), it stated that the application of moderate-intensity aerobic dance exercise could reduce cholesterol levels. The increasing physical activity caused a decrease in the weight percent of body fat and blood cholesterol levels. This happened because during aerobic dance exercise the body's fat was burned to fill the body's calorie needs.

METHODS

The method used in this study was Pre-Experimental Design research using the One Group Pre-test Post-test Design which only used one treatment group without a control group. The population in this study were members of the Kiyomi gymnastics studio at Gabus District, Pati Regency. While the sample in this study were 16 people who were determined using purposive sampling techniques based on inclusion and exclusion criteria.

This study used the independent and dependent variables. The independent variable in this study was aerobic exercise, while the dependent variable was cholesterol levels. The instruments used were low impact aerobics 45 minutes which performed 3 times a week for one month and the measurement of cholesterol levels using the Easy Touch GCU tool and the cholesterol levels were in milligrams per deciliter (mg / dL).

In this study, primary data collection was obtained by measuring the total cholesterol levels of pre-test and post-test in the treatment group by using the GCU easy touch tool. While secondary data collection was obtained from literature, there were journals and books related to the research that will be conducted.

Data analysis techniques used paired t-test assisted with SPSS. In descriptive data analysis, the data will be described as mean, standard and median deviations and then the normality test of the data distribution by using the Kolmogorov Smirnov test.

If the data tested were normally distributed

then to find out the status of the changes in cholesterol levels that occurred after aerobic dance exercise was analyzed by paired t-test. At the significance level of 5% (a= 0.05), it was stated that H1 was accepted, which meant that there was a significant decrease if the significance level was less than 0.05.

RESULTS AND DISCUSSION

Tabel 1. The description of pre-test and post-test cholesterol levels.

		Pretest	Posttest
N	Valid	16	16
	Missing	0	0
Mean		221.6875	173.1250
Std. Deviation		44.40528	30.26962
Minimum		161.00	139.00
Maximum		319.00	242.00

From Table 1, it was known that the average of total blood cholesterol levels before treatment (pre-test) was 221.68 with a standard deviation of 44.40, a minimum score of 161, and a maximum score of 319. The average of total cholesterol levels after treatment (post-test) was 173.12 with a standard deviation of 30.27, a minimum score of 139, and a maximum score of 242. Based on these results, it appeared that there was a decrease in total blood cholesterol levels from pre-test to post-test.

Furthermore, to find out if the data were normally distributed, the Kolmogorov Smirnov test was used as a one-sample test. After the Kolmogorov Smirnov test was carried out on the pre-test data, the Asymptotic value of the Kolmogorov Smirnov test for cholesterol was 0.472 > 0.05, which meant that the pre-test data were normally distributed.

From the Kolmogorov-Smirnov test value in the post-test data, it was obtained the Asymptotic value of the Kolmogorov-Smirnov test total cholesterol level that was 0.250 > 0.05, which meant that the post-test data were normally distributed.

For the hypothesis test, it was done by the paired t-test method. A paired t-test in this study was conducted to find out if there was a significant effect between aerobic exercises with a decrease in total blood cholesterol levels. And the influence that given to cholesterol levels based on the N Gain formula obtained a value of 67% which was included in the moderate category or quite effective.

Based on the hypothesis test in this study, the results obtained that aerobic exercise (low impact) affected the reduction in total blood cholesterol levels. It could be seen from the results of the measurement test of total blood cholesterol levels during the initial condition before treatment (pre-test) and the final condition after treatment (post-test).

The decreasing of cholesterol levels was caused by increasing physical activity of the samples from the initially which only doing sports once a week or twice even not at all and became a routine of 3 times a week with low intensity where the energy sources needed came from burning of body fat reserves.

The fuel used when doing aerobics is fat, because the cardiovascular system is still able to fill the oxygen demand of contracting muscles, especially for light to moderate loads. The fats used are in the form of fatty acids and triglycerides. Endogenous fat stores in adipose tissue and muscle tissue are in the form of triglycerides. Furthermore, triglycerides are changed to glycerol and free fatty acids (free fatty acids / FFA) as the main energy sources during physical exercise. The process of breaking down fats into free fatty acids and glycerol is called lipolysis. The increasing lipolysis during physical exercise will affect the increased use of fat deposits during physical exercise. In an aerobic exercise conducted for 30 minutes with 70% of VO2 max, it occurred the use of high fat with the same period and intensity (Mora et al 2000).

Physical activity requires energy and it is obtained from carbohydrate, fat, and protein sources in the process of glycogenolysis, lipogenesis, and gluconeogenesis which are summarized in the process of catabolism that breaks down complex molecules into simpler molecules by releasing the energy needed to synthesize ATP. Carbohydrates become the main energy source because they are easily oxidized, if carbohydrates are insufficient in the energy supply, oxidation of fat, even protein as an energy provider will occur. If the duration of exercise is less than 30 minutes, the main source of energy comes from carbohydrates, and if the duration is more than 30 minutes, fat has a greater contribution than carbohydrates (Giriwijoyo, 2012).

Aerobic exercise is done regularly with a

frequency of 3 to 5 times every week, with an intensity of 60-80% of the maximum pulse, and a duration of 20-60 minutes will accelerate blood flow, the disposal of metabolic waste, and reduce the levels of lactic acid (Aditya Candra, et al, 2016). Following the opinion of Cooper (1994) about the adequate health sports that is a continuous and homogeneous exercise for 20-30 minutes that reaches the heart rate target of 65-85% (220-ages), with a frequency of 3-5 times a week.

If it was done regularly and continuously, aerobic activities such as aerobic dance exercise will not only improve physical fitness but can also reduce bad cholesterol levels, and increase good cholesterol levels in the body. The used of fat as body fuel which was caused by doing aerobic dance exercise could reduce triglyceride and VLDL levels so that it influenced on increasing levels of good cholesterol (HDL). The increasing of HDL levels due to aerobic dance exercise which is because of the presence of fat as an energy source, so triglyceride and VLDL levels decrease. If the triglyceride and VLDL levels decrease, the total cholesterol level will also decrease. (Aristotle, 2018).

Following the research which was conducted by Andi Risni Handayani in 2016, it stated that physical activity had a positive impact on health and as an effort to prevent diseases including aerobic dance exercise which was proven to significantly reduce blood cholesterol levels. The physical activity caused the burning of body fat reserved to fill the body's calorie needs during aerobic dance exercise so that it caused a decrease in the respondents' blood cholesterol levels.

CONCLUSION

Based on the research results and discussions, it can be concluded that there was a significant influence between aerobic dance exercise on decreasing total blood cholesterol levels in the Kiyomi gymnastics group at Gabus District, Pati Regency.

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