

The Effect of Sports Activities on the Reduction of Cardiovascular Disease



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ABSTRACT: This study aims to determine the activity of exercise on reducing cardiovascular disease. This study used an experimental method with a one group pretest-posttest research design). The population in this study was 15 adolescents in Makassar. The sample in this study was 15 adolescents in Makassar, sampling technique in total sampling. Data analysis techniques use the help of SPSS 23 software to test normality, homogeneity and t (influence) tests. From the results of the study found that sports activities have a significant influence on reducing cardiovascular disease with p value results of $0.000 < 0.05$

KEYWORDS: Sports activities, cardiovascular disease

I. INTRODUCTION

In today's modern era, all ages use gadgets, starting from school and work. From using gadgets every day, they forget to do sports activities, so that the impact is mostly affected by cardiovascular disease (Susanti et al., 2023). All ages who do not involve themselves in sports activities are at risk of experiencing various degenerative and cardiovascular diseases such as heart disease, diabetes, obesity, and osteoporosis later in life (Amila et al., 2021).. Global health that can affect anyone, but with proper preventive measures, early diagnosis, and good management, the risk of cardiovascular disease can be reduced and its impact can be minimized can affect the quality of life of sufferers and prevention of cardiovascular disease can be done before diagnosis and after diagnosis (Berawi et al., 2019).

Prevention can be done by increasing awareness of risk factors, staying away from risk factors and conducting regular health checks (Widyaningrum & Umam, 2020). Awareness raising can be done by education both directly and using technology. Education can increase patient motivation related to self-management compliance (Hallberg et al., 2016). Poor health conditions due to cardiovascular disease can interfere with participation in education and careers and people suffering from serious degenerative diseases have to miss school or work, which can have an impact on their future (Banerjee, 2016).

Cardiovascular disease is the number one cause of death in the world. In 2015, 17.5 million people died annually from cardiovascular disease and an estimated 31% of deaths worldwide. Cardiovascular disease causes 75% of deaths that occur in middle and low-income countries in the world, one of which is Indonesia (Sunu et al., 2017). Deaths from cardiovascular disease were 7.4 million people (42.3%), and 6.7 million people (38.3%) were caused by cardiovascular disease. Cardiovascular disease is a disease caused by impaired heart and blood vessel function such as cardiovascular disease, heart failure, hypertension and stroke (Anakonda et al., 2019). Cardiovascular disease is caused by lifestyle in daily life such as smoking, eating high-fat foods, obesity, physical activity, and so on (Zahrawardani et al., 2012).

Cardiovascular disease includes several factors, namely the occurrence of coronary heart when blood flow to the heart muscle is blocked by atherosclerotic plaque buildup in the coronary arteries (Warganegara & Nur, 2016). This can cause angina (chest pain) or heart attack (Sasube & Rampengan, 2016). A stroke occurs when blood flow to the brain is interrupted, either by a blockage (ischemic stroke) or hemorrhage (hemorrhagic stroke) (Oktaria & Fazriesa, 2017). This can cause serious brain damage (Puspitasari, 2020). Heart failure occurs when the heart is unable to pump blood strongly enough to meet the body's needs (Sari et al., 2023). Symptoms include shortness of breath, fluid buildup, and fatigue (Kurniawan et al., 2021). Arrhythmias are heart

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rhythm abnormalities that can cause the heartbeat to be too fast (tachycardia) or too slow (bradycardia) (Lukman et al., 2023). Hypertension is an increase in blood pressure that can damage arteries and increase the risk of other cardiovascular diseases (Telaumbanua & Rahayu, 2021).

The lack of public awareness about the importance of sports activities for health is one of the factors causing cardiovascular disease (Malm et al., 2019). Sports activities are part of physical activity. In general, physical activity is divided into 3, namely daily physical activity, physical exercise, and sports activities (Hadi, 2020). By definition, sports training is part of physical activity or it can be said that sports practice is physical activity that is planned, structured, repetitive, and aims to maintain physical fitness (Prakosa & Hartati, 2022). The amount of energy needed to complete an activity can be measured in kilojoules (KJ) or kilocalories (kcal). One calorie (cal) is equivalent to 4,186 joules or 1 kilocalorie (Kcal) is equivalent to 1,000 calories or equivalent to 4,186 calories.

The frequency of doing sports activities every week can affect the performance and ability of a person's physical condition (Camera et al., 2016). A person's low level of activity can have a negative impact on physical fitness (Ruiz-Montero & Castillo-Rodríguez, 2016). The negative impact of a low fitness level is that the body becomes tired quickly, overweight, and susceptible to symptoms of cardiovascular disease (Mainous et al., 2019). Fitness is very important to support someone to carry out their daily activities without experiencing excessive fatigue and not developing cardiovascular disease (Moggetti et al., 2019).

Regular exercise activity can help reduce blood pressure, which is a major risk factor for cardiovascular diseases, such as hypertension, as well as exercise can increase levels of HDL cholesterol (good cholesterol) and reduce LDL cholesterol (bad cholesterol), which contributes to atherosclerosis (Mondal & Chatterjee, 2018). Sports activities help burn calories, maintain a healthy weight, and reduce the risk of obesity, which is a risk factor for cardiovascular disease (Wijaya, 2015). Moderate or moderate exercise can produce a drop in blood pressure soon after the activity is completed, providing a protective effect. Moderate or moderate exercise can produce a decrease in blood pressure immediately after the activity is completed, providing a protective effect and Exercise helps maintain a healthy weight, reducing the risk of obesity that contributes to cardiovascular disease (Sandi, 2019).

Sports that can usually be used in people with cardiovascular disease are walking, jogging, swimming, cycling, and yoga (Rahmadiya & Dahlia, 2022). Regular exercise can improve the balance between sympathetic and parasympathetic nerves, so it is less common to have attacks and it is important to start with low intensity and gradually increase it over time in cardiovascular disease patients (Kushartanti, 2013). The intensity and duration of exercise must be adjusted to the condition of people with cardiovascular disease and the best exercise program is personalized according to individual needs and abilities (Sarastuti & Widyantoro, 2018).

Based on field observations that people with cardiovascular disease occur because they do not maintain a healthy diet and actively smoke every day so that they experience cardiovascular diseases such as heart, hypertension and so on. This study aims to determine the effect of sports activities on reducing cardiovascular disease

II. RESEARCH METHODS

This type of research is experimental research, so it can be interpreted that experimental research has treatment given to samples in research (Eltanamly et al., 2023). The experimental method is used to be able to see the presence or absence of the effect of the treatment given to the sample (Castelnovo et al., 2023). The design in this study used the design of one group pretest-posttest (The One Group pretest-posttest). This research was held in Makassar field. This research was carried out for 4 weeks or 1 month, the research began on March 9, 2023 to April 9, 2023. Frequency of exercise 3 times a week. The number of training sessions is 12 times. Population is a subject in a study (Oliveira et al., 2023). The population in this study was 15 adolescents in Makassar. The sample is part of the population to be studied in a study which will later be treated and measured with measuring instruments (M. Pratt et al., 2023). The sample in this study was 15 adolescents in Makassar, the sampling technique was total sampling, total sampling was all populations in the population were sampled to obtain research data (Wrzus & Neubauer, 2023). Data analysis techniques use the help of SPSS 23 software to test normality, homogeneity and t (influence) tests.

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III. RESULT

Based on the results of the research obtained then analyzed using SPSS 23 software, the results can be seen in the table below.

Table 1. Normality Test
Shapiro Wilk

INFORMATION	Statistic	Df	Sig
Pretest	0,754	15	0,207
Posttest	0,760	15	0,532

Based on the results of the normality test, the pretest and posttest results are greater > 0.05 so that it can be concluded that the data is normally distributed

Table 2. Homogeneity Test

Test of Homogeneity of Variances

Pretest posttest

Levene Statistic	df1	df2	Sig.
.719	1	28	.301

Based on the results of the homogeneity test, the pretest and posttest results are greater > 0.05 so that it can be concluded that the data is homogeneously distributed

Table 3. Test T (Effect)

		Levene's Test for Equality of Variances				
		F	Sig.	T	df	Sig. (2-tailed)
Pretest	Equal variances assumed	.519	.301	5.712	28	.000
Posttest	Equal variances not assumed			5.712	41.567	.000

From the results of the data analysis test, the p value of 0.000 is smaller than 0.05 so that it can be concluded that sports activities have a significant influence on reducing cardiovascular disease.

IV. DISCUSSION

Today exercise therapy in the form of exercise acrygativity exercise programming is increasingly integrated in the overall management of chronic diseases such as cardiovascular disease (Fahlman et al., 2002).. Pedersen & Saltin, (2006) stated that broadly speaking, physical exercise has the aim to: (1) minimize adverse physiological effects of bed rest or sedentary lifestyle due to chronic diseases and (2) optimize the functional capacity of patients with chronic diseases as one of the parameters of therapeutic success and (3) optimize the work of pharmacological therapy. However, sports activities must be carried out in accordance with medical protocols and must be adjusted to individual abilities, as well as the degree of disease because sports activities that ignore these things have the potential to cause negative effects on sufferers (Arovah, 2015).

Ordinary exercise activities are also known to affect the body's metabolic mechanisms and increase levels of high-density lipoprotein (HDL) and can reduce excess fat levels in the blood, increase glucose metabolism by increasing insulin sensitivity and reduce excess fat levels, high blood pressure and decreased cardiovascular disease, however, the benefits of sports activities are influenced by the duration and frequency of activity the sport (Dawson et al., 2016; Deminice et al., 2016; Hannibal & Blom, 2017).

The exercise program of sports activities both used for diagnosis purposes (exercise testing) and therapy (exercise prescription) is different for each individual and must be adjusted to the clinical condition of people with cardiovascular disease (Ibrahim & Prawata, 2020). Changes in a patient's clinical status require a reassessment of the balance of risks and benefits of an exercise program. Sports activities are generally interpreted as body movements generated by the skeletal muscles and resulting in energy expenditure. For those who have one or more risk factors for cardiovascular disease, exercise activities can prevent an

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increase in blood pressure (Utomo et al., 2021). For people with cardiovascular disease, exercise activities can control blood pressure, so pharmacological treatment may no longer be needed (Ekawati, 2010). Regular exercise ideally 3-5 times a week and at least half an hour each session with moderate intensity (Manihuruk et al., 2023).

In order to avoid cardiovascular disease, it is very important to have a regular and balanced exercise routine with healthy foods. Consult a Doctor before starting an exercise program. Sports activities can improve body composition by increasing muscle mass and reducing body fat, this helps reduce the risk of cardiovascular disease significantly (Lestari et al., 2020). Exercise can increase lung capacity and the body's ability to supply oxygen throughout the body and provide additional benefits in reducing the risk of cardiovascular disease (Lamusu, 2018).

In order to maintain heart health and reduce the risk of cardiovascular disease, physical activity and regular exercise are very effective choices (Tiksnadi et al., 2020). Combined with a balanced diet and other healthy lifestyles, exercise is an important element in efforts to prevent cardiovascular disease (Pane et al., 2022). Doing regular exercise activities strengthens the heart muscle, increases the working capacity of the heart, and helps maintain good heart pump function (Setyaningrum, 2020). Overall, exercise is an important component in the prevention of cardiovascular disease and promotes overall heart health (Syahbani et al., 2021). Regular physical activity can reduce inflammation in the body, which contributes to the development of atherosclerosis and thus lowers the risk of cardiovascular disease. Sports activities can trigger the regulation and control of blood sugar levels, because when doing sports activities there will be the use of glucose in muscles that do not require insulin as a mediator of glucose use into muscle cells so that blood sugar levels decrease and can reduce the risk of cardiovascular disease (Amrullah, 2020).

V. CONCLUSIONS

Sports activities carried out can be an alternative for the reduction of cardiovascular disease. From the results of the study found that sports activities have a significant influence on reducing cardiovascular disease with *p value* results of $0.000 < 0.05$

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