

# The Effect of Aerobic Exercise on Increasing Physical Fitness of Baitul Jannah Islamic Boarding School Male Malang Students

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**Abstract**— The aim of this study was to determine the effect of exercising up and down stairs on physical fitness of Baitul Jannah Islamic Boarding School students by measuring cardiovascular endurance using the Rockport test. This study uses a pre-experimental research method with pretest-posttest technique, by giving up and down stairs exercise for eight weeks. The sample of this study were 20 male students aged 20-23 years old and had been staying in the boarding schools for at least 3 years. The results of the study revealed that there were significant differences between before and after being given the exercise. Thus there is an effect of exercising up and down stairs on increasing physical fitness.

**Keywords**— *physical fitness, up and down stairs, islamic boarding school students*

## I. INTRODUCTION

Physical fitness is a state of the body that needs to be owned by everyone, because physical fitness is the ability and endurance of a person to be able to perform various daily activities without experiencing significant fatigue. The need of physical fitness in each person is different depending on physical challenges, physical fitness needed by athletes is higher than non-athletes. Being active is one way to be fit, lack of physical activity makes a person easily being tired in doing daily activities and one of the risk factors for a person getting sick easily. Sharkey said that doing exercise 3-5 times a week can make a person fit [1].

Sports is an activity that gets less attention by Islamic boarding schools. The educational model in the Islamic boarding school is focused on fostering religious science, this is because the focus on Islamic boarding school education is to seek religious knowledge, not focus on physical fitness. Indeed, in the Qur'an, it is explained: "and prepare to face them whatever strength you are capable of" (Surah Al-Anfal: 60). This is then strengthened by H.R Muslim which means "a strong believer is better and more favored by Allah than a weak believer, even though in each of them there is goodness." One of the factors causing a person's low physical fitness is the lack

of participation in sports, which can be caused by lack of free time and minimal sports facilities [2].

Sports is a promoter of health and well-being, improves functional fitness and provides a positive effect on blood circulation, breathing, immune system and the musculoskeletal system [3]. Meyer et. al. said that stepping up and down stairs can be a simple exercise to improve one's fitness [4]. Exercising up and down stairs can increase an important component of fitness related to the health [5]. The boarding school doesn't have a yard, the area is prioritized on the building and also there is no room for exercise. But the building has 2 floors with stairs, so the steps can be used as a facility to exercise. The aim of the researchers in this study was to determine the effect of exercising up and down stairs on improving physical fitness of Baitul Jannah Islamic Boarding School students in Malang.

## II. METHOD

This study uses pre-experimental One Group Pretest-Posttest Design. The number of subjects who participated in this study were 20 male students who had lived in the boarding school for at least 3 years and rarely exercised. In this study the instrument used was three times a week exercising up and down stairs for eight weeks and for the physical fitness level test using the Rockport test that calculated the run time at 1,600 meters.

Data analysis techniques are used using parametric statistics. Data testing used the SPSS version 16 program, then used the significance test.

## III. RESULT

The following are the results of the analysis.

TABLE I. PRETEST AND POSTTEST DATA DESCRIPTION

Data	N	Min Score	Mean	Standar Deviation
Pretest	20	10,45	14,59	12,6455
Posttest	20	08,02	11,27	9,771

Based on the research result in Table 1, it can be stated that the pretest minimum score is 10.45 and the maximum score is 14.59, while in the posttest the minimum score is 08.02 and the maximum score is 11.27. Then the mean score at the posttest was lower than the pretest score, which was posttest 9.771 and pretest 12.6455. In addition, the standard deviation also showed that the posttest was lower at 1.0220 and the pretest was higher at 1.1099.

TABLE II. T-TEST REPEAT OBSERVATION PRESENTED SIGNIFICANCE LEVEL ALPHA = 0.05

Data	t Count Result	Degree of Free	Sig (2-tailed)	Remarks
Pretest/posttest	8.529	37.745	0.00	Significant

The results of the repeat observation t-test show the 8.529 t-count while the probability (sig 2-tailed)  $p = 0.00$  with a significance level ( $p < \alpha = 0.05$ ), which means there are significant differences.

#### IV. DISCUSSION

The age of students in the boarding school are between 17-23 years old, students were being sampled were students who had lived at least 3 years, rarely even never doing exercise, then got 20 students with ages 20-23 years old. In addition to the duration of staying, also measured body height and weight, based on the normality test of age, height, and weight of the students sample, the data distribution of age, height, weight of students is normal because  $D \text{ count} > \alpha$ , with  $\alpha = 0.05$ . Age, in general physical fitness will reach a maximum peak up to the age of 25-30 years, there will be a decline of about 0.8-1% per year, but if you diligently exercise the decrease can be reduced by half [6].

Islamic boarding school is a place that functions as a center for Islamic religious education. At this place, students not only study but also learn to live independently. Baitul Jannah Islamic Boarding School Malang is not a formal education institutions, but students are given the opportunity to study at the formal education level outside the boarding house. The activities of the students are very tight, the everyday routine starts at 3:00 a.m. to perform Tahajood prayers followed by recitation of Qur'an and Subh prayers. Starting at 6:00 a.m. until the early hours, the students have activities outside the boarding school, usually used for formal education and other activities. After Ashr prayers, students join the boarding school program, which emphasizes on the deepening of religion, activities must be carried out by students until sleep time at night.

The tightness of daily activities make the students less even never do physical activity even though Saturdays is sometimes be used for exercise. With the lack of physical activity there is an impact on physical fitness which is not good for the students, they often complain of easily being tired, especially when doing community service. This was also evidenced from the results of the pretest using the rockport test 1.6 km obtained a minimum travel time of 10 minutes 45 seconds and a maximum of 14 minutes 59 seconds with an average travel time that can be reached for 12 minutes 6 seconds. When

converted to fitness according to the AHA (American of Heart Association) the students highest  $VO_2\text{max}$  score is 35 and the lowest is 28 and the average is 32. This number shows that the physical fitness level of the students is in the less category. This cannot be allowed because it will be at high risk of easily infected by disease [1].

Fitness can be interpreted as endurance or stamina which is the ability to maintain activities. People who are active in doing sports not only get good health, but also achieve discipline and are challenged to make it happen. In this study manipulation was carried out by giving exercise up and down stairs, this exercise was chosen because the building in the boarding school consisted of 3 floors so the stairs were available. Exercising up and down stairs were done with frequency three times a week for eight weeks. Exercising up and down stairs can be given for 20 minutes using the interval training method which is a physical exercise method that takes place intermittently between rest and work or between the working phase and the resting phase [7].

Exercising up and down stairs is enough moderate activity to improve cardiorespiratory fitness, which if done regularly has been able to increase  $VO_2\text{max}$ , reduce cholesterol and increase limb strength [9]. Exercising up and down stairs is an easy physical activity especially for students who are living in the boarding school. In general, Islamic boarding schools in order to save the land space always have a building with two to four floors, on the fourth floor is often used as a drying room. Utilization of available facilities can be done to make someone have a good level of fitness. By giving exercise up and down stairs, expected after the program ends the students can continue to exercise up and down stairs.

After being given exercise for 8 weeks, the posttest showed there was a change in the students, most experienced weight loss, although there were 2 students there actually gain weight. But the students feel more comfortable, sleep better and experience more appetite. These changes are caused by treatment, because exercise up and down stairs can improve health [5]. The posttest results showed decreasing travel time, the longest duration is 11 minutes 27 seconds, for the fastest is 8 minutes 2 seconds with an average is 9 minutes 7 seconds. After being converted to posttest, the lowest  $VO_2\text{max}$  is 33 and the highest  $VO_2\text{max}$  is reaching 44, the average  $VO_2\text{max}$  value of the students' physical fitness level was 37. According to the AHA, the figure shows that boarding school students' physical fitness level is sufficient, even there are 2 students in the good level of physical fitness. Exercise, with regular frequency and increased intensity and duration can affect a person's physical fitness level [9].

Exercising up and down stairs done three times a weeks will improve maximum oxygen volume or  $VO_2\text{max}$  [10].  $VO_2\text{max}$  is a way to measure fitness which is also related to endurance and performance. Physical activity that aims to make the body more fit by increasing energy expenditure above the basic level, planned, structured, and repetitive, duration, frequency, and measurable intensity [11]. As explained by Sugiharto said that exercise is an interesting and fun activity that not only affects the improvement of health, physical and physiological conditions, but also psychological [12].

People who make sports as an important part of their daily routines make them happier. To do the sport do not need to place a sports club or public facilities. Many places around the house can be used to do sports, for example by going up and down stairs that are found in homes, dormitories, campuses, offices. A person can reduce or even not using an escalator or elevator when going to the next floor everyday, so physical activity will trigger fat metabolism and change it into energy. Can improve cardiovascular work, so it can reduce the risk of heart disease. Walking and using stairs everyday can increase muscle work and reduce fat.

Based on the results of data analysis, there is a difference in the average rockport test is 1.6 km of Baitul Jannah Islamic Boarding School students pretest and posttest. At the pretest shows the difference in the average pretest and posttest results of repeat observation test that is t-count 8.529 while the probability (sig 2-tailed)  $p = 0.00$  with a significance level ( $p < \alpha = 0.05$ ), which means that there are significant differences. It can be concluded that there is an effect of exercising up and down stairs on physical fitness improvement for students.

Exercising up and down stairs with moderate intensity can improve fitness even though it is done less than 30 minutes [13]. Exercising up and down stairs is a move that moves the large muscles in the legs, especially if the move regularly is not done slowly but like a person running in a hurry. Exercise will be beneficial to improve fitness if you follow the principle of training [14]. The training given by the researcher for 2 months uses a frequency of 3 times per week, because by using the frequency of 3 times a week a person can adapt to the training load he receives [7]. For men or athletes, exercising up and down stairs should be adjusted to the conditions, to maintain health recommended 600 MET.min/week with an average exercise intensity of 6 MET, 100 minutes/week divided by 20 minutes/day. By adjusting the floor height, speed, repetition and controlling the pulse, going up and down the stairs will be safely used as a model of physical activity and exercise training [8].

Regular exercise significantly reduces blood pressure, the risk of developing heart disease, stroke, diabetes and can help relieve stress, anxiety and depression. Physical activity and exercise can reduce stress and anxiety, increase brain power, sharpen memory, and increase muscle and bone strength. Thus it can help in preventing and reducing heart disease, fatigue, cardiovascular disease and cancer. A balance exercise program can improve general health, build endurance and slow the effects of aging. But everyone who is healthy may be physically unwell if he does not practice regular exercise [15].

Hope for students to be able to regulate their diet, rest periods and take the time to do sports whose purpose is to have good physical fitness, according to what was revealed by Sharkey to achieve "quality of life" there are three aspects must be fulfilled, namely: regulating food, regulating rest, and regulating activities (sports) [1]. Muscle efficiency will be reduced if you don't do physical exercise regularly. Physical activity and exercise can have direct and long-term health benefits, so regular exercise even if only 30 minutes or 150 minutes of moderate intensity aerobic activity can improve quality of life every week. In the time of Rasulullah SAW the

Companions were required to participate in running, wrestling, archery, riding to face the enemy (H.R Imam Al-Baihaqi). The above hadith explains that exercise is one of the orders of the Prophet that every follower of the prophet Muhammad SAW to maintain health is by exercising.

## V. CONCLUSION

Based on regular and balanced training, then based on the results of the calculation of the significant differences in the influence of up and down stairs training to increase physical fitness in students, from the average included in the category less increased to sufficient physical fitness level. Which is good for supporting worship, to get good health one can exercise. So there is no reason for someone not to get fitness with exercise, which is due to the lack of land. Only by using stairs in a building can a person have fitness.

## ACKNOWLEDGMENT

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