The Effect of Cardio and Tabata Exercises on Decreasing Body Fat, Weight and Increasing Physical Fitness

Taufikkurrachman[1], Amy Nilam Wardathi[2], Afif Rusdiawan[3], Reno Siska Sari[4]

{Ufikblack@gmail.com[1], Amynilamwardathi@budiutomomalang.ac.id[2], Rusdiawan.a@gmail.com[3]}

IKIP Budi Utomo, Malang, Indonesia[1,2,3,4]

Abstract. The purpose of this study is to analyze the effects of cardio exercise and tabata method on body weight, body fat, and physical fitness. This study applied experimental design with pretest and posttest. A total of 27 respondents were all males and had BMI over 25.0 (overweight and obese). They were then divided into 3 groups: control (K1), cardio group (K2) and Tabata group (K3), each consisting of 9 individuals. K1 did not receive any intervention. While K2 and K3 were received six-weeks interventions, three times per week. K2 performed jogging and skipping training at 55% - 70% HRmax during 40-minutes. While K3 performed squat trust and skipping 8 sets at 90%-95% HRmax. There were significant differences between groups for all body composition measures. In conclusion, Tabata method represents an effective way in reducing body weight and body fat, but it is no better than cardio exercise in improving physical fitness.

Keywords: cardio; tabata; obesity; fat; body weight; fitness

1 Introduction

In Indonesia, the problem of overweight and obesity is a major health problem especially for students. The tendency for overweight and obesity in some people is closely related to diet, social status, and imbalance in body activity and food consumption. Obesity or over weight occurs when the body becomes fat (obese) due to the buildup of adipose, which is a special fat tissue that is stored excessively by the body. The amount of energy consumption from digested food exceeds the energy used for metabolism and physical activity [1]. Obesity is characterized by a body mass index (BMI) value above normal (≥25 kg / m2) between the 95th percentile on the growth curve, according to age and sex [2][3].

Cardio or often called aerobic exercise is the easiest and cheapest type of exercise that provides health for our bodies, especially for heart health and fitness[4]. There are several types of cardio exercises that we already know together such as running,

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jogging, gymnastics, cycling and swimming [5]. The great benefits of cardio exercise to increase fat burning in the process of weight loss and to increase body fitness [6][7]. According to Andini (2016), the most effective type of exercise for weight loss is aerobic exercise with a long period of time between 20-60 minutes with an intensity of 65% -75% maximum heart rate [8].

Maybe we already know or hear that cardio training with low or moderate intensity in a long time (> 45 minutes) can burn body fat and improve fitness. This is true, but there are still other techniques that are more effective and efficient, do not require a long time but provide satisfying results. The technique is Tabata Training which is a training exercise introduced by Izumi Tabata in 1996 based on a 2: 1 ratio for training work time and rest time [9]

Through tabata training a trainer can improve one's physical condition and provide an evaluation (evaluation) of the shortcomings and progress of the training process. The advantages of tabata training include burning fat, increasing athlete's metabolism during and after training, effective and efficient in its implementation, improving anaerobic and aerobic systems and can be used for various activities [10]. The Tabata method is a method that utilizes the ratio between exercise and rest (pauses with high intensity). In practice, this training method lasts for 4 minutes with details of the time of sports activities within 20 seconds and 10 seconds (2: 1) for rest periods, and is repeated until those 4 minutes have expired [11].

Emphasized by other studies that Tabata training is another type of exercise that is considered to be able to contribute in increasing speed and VO2max, Tabata training is a method that utilizes the ratio between exercise and rest (pauses with high intensity). In practice, this training method lasts for 4 minutes with the breakdown of the time of sports activities within 20 seconds and 10 seconds for rest periods, and is repeated until those 4 minutes have expired [12].

Tabata training is one of the HIIT (High Intensity Interval Training) training methods [9]. HIIT is a type of training with high intensity in each session, with speed or training load in a very short time [13]. HIIT exercises conducted with an intensity of 90-95% for 6 weeks can increase VO2 max, decrease body fat percent and body mass index [14]. HIIT training is highly recommended for people with sedentary lifestyle, overweight, obesity and young adults [15]. Tabata exercises which include high intensity exercises can increase aerobic capacity, improve body composition, burn calories and fat, and increase excitatory threshold of lactic acid [11].

For the above description, the authors are interested in conducting research on the effect of cardio and tabata exercises on decreasing body fat, weight and increasing fitness.

2 Material and methods

Type of this research used experimental type. The research design used the pretest-postest group design.

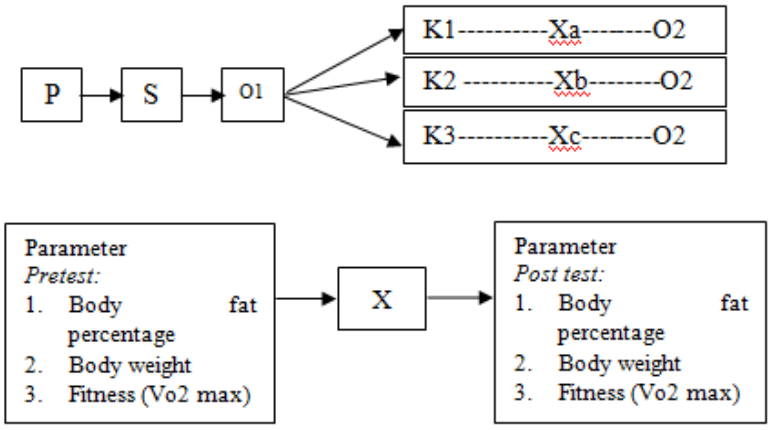

Fig. 1. Research design

Notes :

P : Population
S : Sample
O1 : pre-test
K1 : Group 1
K2 : Group 2
K3 : Group 3
O2 : post test
X : Treatment
a : Cardio exercise
b : Tabata exercise
c : Control

The respondents of this research were students majoring in Health and Recreation Education Faculty of Physical Sciences and Sport Sciences IKIP Budi Utomo Malang with criteria for male sex, body weight between 55-70 kg, age between 18-22 years, having an overweight or obese body mass index (BMI), not under doctor's or postoperative care 6 months before the study, not having a serious muscle injury, no history of cardiovascular disease. They were then divided into 3 groups, the control group (K1), cardio exercise group (K2) and tabata exercise group (K3). By using federer formula $(t - 1)(r - 1) \geq 15$, a total of 27 respondents are obtained. Each consisting of 9 individuals per groups [16].

Data was collected by conducting 2 tests, namely pretest and post test. Pretest and posttest data collection was done by measuring body weight, fat percentage and physical fitness. Body weight was measured by weight scales. Percentage of fat measured is subcutaneous body fat in the triceps, biceps, subscapules and suprailiaca. Fat percentage was measured using a skinfold caliper. Then for physical fitness was

measured by conducting cooper running tests as far as 2.4 km and then the traveling time is calculated.

The treatment given to each group is different. The exercise treatment was given 18 times with the provisions 3 times a week for 6 weeks. For the control group (K1), only completed pretest and posttest and did not receive any intervention. For the cardio training group (K2), they were given a jogging exercise treatment for 8 meetings and skipping exercise for the next 8 meetings. Cardio exercise done for 40 minutes with moderate intensity (65% -75% DN max). For the tabata training group (K3), they were given squat trust and skipping exercise for 20 seconds of exercise and 10 seconds of rest for 8 sets. Exercises carried out for 20 minutes at intervals of 1 minute each set.

Data analysis in this research used descriptive test, normality test, manova test and LSD test with the help of SPSS 20 series.

3 Result

3.1 Descriptif statistic

Table 1. Deskriptif statistic (mean±SD) and homogenity test of pretest dan posttest all variables

Variable		**Mean ± SD body weight (kg)**			**p (sig)**
		Control	**Cardio**	**Tabata**	
Body Weight (Kg)	Pretest	79,78 ± 2,54	81,22 ± 5,49	79,33 ± 4,79	0,118
	Post test	79,67±2,92	78,33±2,91	74,78±5,07	0,299
	Δ Body weight (Post test – pretes)	-0,11±1,27	-2,89±1,61	-4,56±1,88	0,489
Percentage of Fat (%)	Pretest	84,78 ± 16,57	85,33 ± 8,34	85,00 ± 10,21	0,214
	Post test	85,00±17,89	80,22±9,71	77,33±9,79	0,347
	Δ Fat (Post test – pretes)	0,22±2,39	-5,11±2,32	-7,67±2,65	0,637
Physical fitness	Pretest	14,78 ± 1,11	14,26 ± 0,98	14,52 ± 0,93	0,520
	Post test	14,65±0,98	13,30±1,07	12,87±1,00	0,997
	Δ Physical fitness (Post test – pretes)	-0,13±0,46	-0,96±0,63	-1,65±0,77	0,620

p>0,05 shows homogeneous variable data

Homogenity test of body weight both pre-test and post-test in all groups showed significant results. This is evidenced by the pre-test value (p = 0.118) and post test (p

= 0.299) and delta body weight (p = 0.428). So it can be concluded that all body weight data are homogene.

From the mean body weight pre-test measurements, the results in the control group were 79.78 ± 2.54 kg, the cardio group was 81.22 ± 5.49 kg and the tabata group was 79.33 ± 4.79 kg. Then after the treatment carried out a post test and obtained almost the same weight results in the control group by 79.67 ± 2.92 kg, decreased in the cardio group by 78.33 ± 2.91 kg and the tabata group by 74.78 ± 5, 07 kg. Descriptive test results are presented in the figure 2.

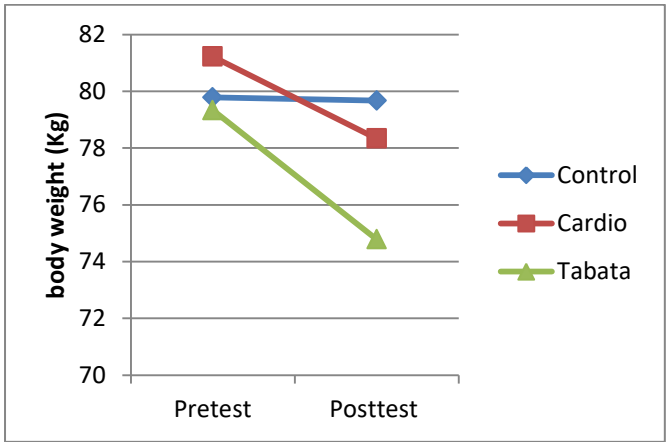

Fig. 2. Body weight diagram of control, cardio and tabata group

Fat homogeneity test both pre-test and post-test in all groups showed significant results. This is evidenced by the pre test values (p = 0.214) and post test (p = 0.347) and fat deltas (p = 0.637). So it can be concluded that all fat data are homogeneous.

From the average pre-test measurement of fat, the results obtained in the control group were 84.78 ± 16.57, the cardio group was 85.33 ± 8.34 and the tabata group was 85.00 ± 10.21. Then after the treatment was carried out post test and obtained almost the same fat results in the control group by 85.00 ± 17.89, decreased in the cardio group by 80.22 ± 9.71 and the tabata group by 77.33 ± 9.79. Descriptive test results are presented in Figure 3

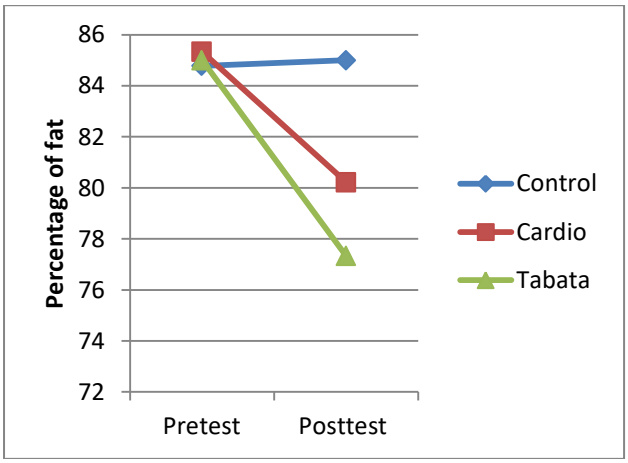

Fig. 3. Percentage of fat diagram of control, cardio and tabata group

Homogeneity test of physical fitness both pre-test and post-test in all groups showed significant results. This is evidenced by the pre test ($p = 0.520$) and post test ($p = 0.997$) and the fitness delta (0.620). So it can be concluded that all fat fitness data are homogeneous.

From the mean pre-test physical fitness measurement, the results obtained in the control group were 14.78 ± 1.11, the cardio group was 14.78 ± 1.11 and the tabata group was 14.52 ± 0.93. Then after the treatment was carried out post-test and obtained almost the same fitness results in the control group by 14.65 ± 0.98, increased in the cardio group by 13.30 ± 1.07 and the tabata group by 12.87 ± 1.00. Descriptive test results are presented in Figure 4

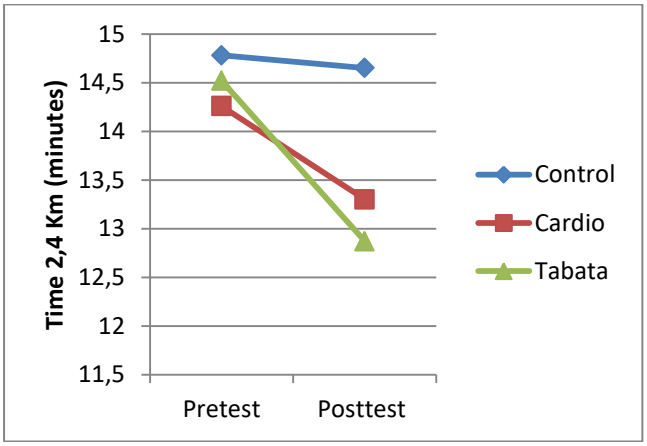

Fig. 4. Physical fitness diagram of control, cardio and tabata group

3.2 Normality Test

The next step is to test data normality using the Shapiro Wilk test.

Table 2. Result of Normality test

Variable		Group p (sig)		
		Control	**Cardio**	**Tabata**
Body weight	*Pre*	0,755	0,602	0,230
	Post	0,162	0,914	0,191
Percentage of fat	*Pre*	0,316	0,344	0,308
	Post	0,309	0,639	0,831
Physical fitness	*Pre*	0,458	0,161	0,911
	Post	0,615	0,186	0,849

p>0,05 shows normal distribution data

From the results of normality test data on body weight, fat and fitness it was found that all data were normally distributed p> 0.05, both the control group, the fat group and the tabata group.

3.3 Manova Test

The result of the manova test can be seen in table 3.

Table 3. Test of Between-Subjects Effects

Variabel	**P (sig)**
Body Weight	0,000
Fat	0,000
Physical Fitness	0,000

P<0,05 shows significant different

Table 3 shows the results of weight, fat and fitness differences between the control, cardio and tabata groups. The results of the analysis showed that cardio and tabata exercises significantly affected body weight as indicated by the value of p = 0,000 in the control group, cardio and tabata. In addition, cardio and tabata exercises significantly affected fat as indicated by p = 0,000 and fitness with p = 0,000 in the control, cardio and tabata groups.

3.4 Post Hoc Test

The post hoc test in this study used LSD test. The result of LSD test can be seen in table 4.

Table 4. The result of post hoc test

Variable	Group		P (sig)
Body weight	Control	Cardio	0,001
		Tabata	0,000
	Cardio	Tabata	0,038
Fat	Control	Cardio	0,000
		Tabata	0,000
	Cardio	Tabata	0,037
Physical fitness	Control	Cardio	0,011
		Tabata	0,031
	Cardio	Tabata	0,130

P<0,05 shows significant different

The results of LSD test on the body weight variable showed that there were significant differences between the control group and the cardio group (p = 0.001) and the control group with the tabata group (p = 0,000) and the cardio group with the tabata group (p = 0.038).

While the LSD test on fat variables showed significant differences between the control group and the cardio group (p = 0,000) and the control group with the tabata group (p = 0,000) and the cardio group with the tabata group (p = 0.037).

Then the LSD test on the fitness variable showed a significant difference between the control group and the cardio group (p = 0.011) and the control group with the tabata group (p = 0.031). But in the cardio and tabata groups there was no significant difference indicated by the value of p = 0.130.

4 Discussion

4.1 Effects of cardio and tabata exercises on body weight

Based on the results of research and analysis of data on body weight, the average pretest body weight of the control group was 79.78 ± 2.54 kg, the cardio group was 81.22 ± 5.49 kg and the tabata group was 79.33 ± 4.79 kg . Then the posttest results found that the mean was almost the same in the control group by 79.67 ± 2.92 kg, decreased in the cardio group by 78.33 ± 2.91 kg and the tabata group by 74.78 ± 5.07 kg (see table 1 and figure 2). From these results the difference in body weight was then sought at the pre-test and post-test in each group. Then an LSD test was performed between the cardio and control groups and also obtained a significant value (p = 0.001) on the weight variable. This shows that there are significant differences in body weight after doing cardio training between the control group and the cardio group.

In this study, cardio training is done by jogging and skipping with an intensity of 55% - 70% of the maximum pulse rate. Based on the intensity of the exercise performed, it is included in the moderate intensity [17]. Exercise in general contributes to

weight loss and maintenance. Moderate intensity exercise and long duration (150 minutes per week) can reduce and maintain weight better in the long run [18]. Petrofsky (2006) states that long-term exercise training can reduce weight, fat, systole and diastole blood pressure and pulse [19]. Utomo in his research also stated that aerobic exercise can prevent obesity, build muscle, improve muscle tone and reduce body fat and cholesterol levels in the blood so that it can lose weight [20]. From these various opinions there is a concordance between the results of this study with the above theory that aerobic exercise with moderate intensity can reduce and maintain ideal body weight. by 79.67 ± 2.92 kg, decreased in the cardio group by 78.33 ± 2.91 kg and the tabata group by 74.78 ± 5.07 kg.

Based on the results of this study, the mean body weight decreased after tabata training from 79.33 ± 4.79 kg to 74.78 ± 5.07 kg (see table 1 and figure 2). LSD test results also showed that there were significant differences in body weight after doing tabata exercises between the control group and the tabata group ($p = 0.038$). These results are in accordance with the research bucket (2013) that tabata exercises which include high intensity exercise can increase aerobic capacity, improve body composition, burn calories and fat, and increase the excitatory threshold of lactic acid [11].

Tabata training is one of the HIIT (High Intensity Interval Training) training methods [9]. HIIT is a type of exercise with high intensity in each session, with speed or training load in a very short time[13]. HIIT exercises performed with an intensity of 90-95% for 6 weeks can increase VO2 max, decrease body fat percent and body mass index [14]. HIIT training methods have advantages such as a very short time, flexible and can cause the effects of injury to the musculoskeletal system very little. HIIT training is highly recommended for people with sedentary lifestyle, overweight, obesity and young adults [15].

HIIT training causes burning more calories compared to other exercises, especially after exercise. After a training period called "EPOC" which is a condition of excess oxygen after exercise. This mass lasts for 2 hours after exercise where the body stores more energy and uses it more. Because HIIT training is naturally very heavy, EPOC suppresses up to 6-15% more calories (energy expenditure) expended during exercise [21].

The best strategy for balancing energy, or making a negative energy balance in obese people is to increase energy expenditure. Increased energy expenditure can be done by increasing physical activity. Exercise and physical activity will increase energy expenditure by breaking down the body's main energy such as glycogen and triacylglycerol which will cause weight loss. Physical activity specifically stimulates the process of glycogenolysis in muscles and liver, glycolysis, oxidative phospholpiration in muscles, oxidation of fatty acids in muscles, lipolysis in adipose tissue and the citric acid cycle [22].

4.2 Effects of cardio and tabata training on fat

Based on the results of research and analysis of data on fat, the mean pretest fat of the control group was 84.78 ± 16.57, the cardio group was 85.33 ± 8.34 and the tabata group was 85.00 ± 10.21. Then after the treatment was carried out post test and obtained almost the same fat results in the control group by 85.00 ± 17.89, decreased in the cardio group by 80.22 ± 9.71 and the tabata group by 77.33 ± 9.79. (see table 1 and figure 3). From these results, the difference between fat in the pre-test and post-test in each group was searched. Then the LSD test between the cardio and control groups also obtained a significant value (p = 0,000) in the fat variable. This shows that there are significant differences in fat after doing cardio exercises between the control group and the cardio group.

The results of the study by Fisher et al. (2015) in obese and obese men showed that there was a significant decrease in body fat percent in subjects who were given moderate and severe intensity exercise [23]. The results of other studies in adolescents who indicated obesity by Buchan et al. (2011) also showed a decrease in body fat percent after doing moderate intensity exercise [24].

Physical activity suitable for reducing excess fat is activity in the form of endurance training or low intensity endurance. Endurance training is an activity that requires a long duration of time and low intensity, for example doing aerobics with low intensity, brisk walking, jogging, and cycling. Aerobics is a sport that if properly and properly developed can increase the level of physical fitness for the culprit [25].

Cardio training, also called aerobic exercise, is an exercise that uses energy derived from combustion with oxygen [26]. The effect of aerobic exercise is cardiorespiratory fitness, because the exercise is able to increase oxygen uptake, increase the capacity of the blood to carry oxygen and the pulse becomes lower during rest or activity. Other benefits, aerobics can increase the number of capillaries, reduce the amount of fat in the blood and increase fat-burning enzymes [27].

Aerobic exercise increases the sensitivity of β-adrenergic receptors in adipose tissue. Interestingly, in women who are trained in endurance, β-adrenergic sensitivity is increased, while the sensitivity of the anti-lipolytic α2 receptor is reduced [28]. Increased physical activity will increase basal metabolism in body cells, this facilitates fat mobilization and oxidation especially in visceral adipose tissue which will cause a decrease in body fat levels [29]. Other factors that play a role in fat oxidation are the proliferation of skeletal muscle capillaries which increases the release of fatty acids to the muscles, an increase in carnitine transferase that facilitates the transport of fatty acids across the mitochondrial membrane, and an increase in protein-binding fatty acids that regulate myocyte fatty acid transportation [30].

Based on the results of this study, the mean weight decreased after tabata training from 85.00 ± 10.21 to 77.33 ± 9.79 (see table 1 and figure 3). LSD test results also showed that there were significant differences in body weight after doing tabata exercises between the control group and the tabata group (p = 0.00). This is consistent with 8 weeks of training research can reduce body fat by 44% [31]. Decreased body fat after HIIT exercise is a result of increased fat oxidation by 60% [32].

When doing HIIT metabolic rate increases after exercise between 90 minutes to 24 hours because of rapid burning of fat and calories. Metabolism during exercise increases so that it can increase the process of burning fat by stimulating the heart's system to work harder and consume more oxygen. In addition, when we rest an increase in metabolism is known as the Resting Metabolic Rate (RMR) for 24 hours after high intensity exercise [33].

The acute response after HIIT exercise is to increase the pulse rate, catecholamines, cortisol, growth hormone, blood lactate and blood glucose, glycerol and decrease parasympathetic, ATP, PCr and glycogen reserves [28]. EPOC or response after high-intensity exercise also affects fat metabolism. Fat oxidation increases because the body needs to neutralize lactic acid and H + to synthesize glycogen again. Increased growth hormone after high-intensity exercise can also cause increased energy expenditure and fat oxidation [28].

4.3 Effects of cardio and tabata training on fitness

In this study, fitness was measured using a 2.4 km cooper test. then the fitness results are determined from the 2.4 km run time. the faster the travel time, the better fitness. Based on the results of research and analysis of data on fitness, the average results of the pretest running time in the control group were 14.78 ± 1.11, the cardio group was 14.78 ± 1.11 and the tabata group was 14.52 ± 0.93. Then after the treatment was carried out post test and the results obtained running time that was not much different in the control group of 14.65 ± 0.98, decreased in the cardio group by 13.30 ± 1.07 and the tabata group by 12.87 ± 1.00 (see table 1 and figure 4). From these results, the difference between running time during pre-test and post-test was searched for each group. Then an LSD test was performed between the cardio and control groups and also obtained a significant value (p = 0.011) on the fitness variable. This shows that there are significant differences in fitness after doing cardio exercises between the control group and the cardio group.

The results of this study are in accordance with the research of Tanzila et al (2018) which states that cardio or aerobic exercise with moderate intensity 3 times in 6 weeks with a duration of 15 minutes can improve cardiorespiratory fitness [34]. Kumarudin (2013) also states that there is an effect of aerobic exercise on increasing VO2 max in adolescents aged 18-20 years with a training dose for 4 times in 4 weeks with a duration of exercise 30 minutes [35].

Moderate aerobic exercise will stimulate the heart muscles to work. Regular contraction of the heart muscle will cause hypertrophy of the heart muscle. With the increasing strength of the heart muscle, the blood pumped from the heart will be more so that the oxygen supply throughout the body will be more too. Increased oxygen supply is used to meet tissue requirements for oxygen, especially muscle tissue [36].

Based on the results of this study, the average cooper running time decreased after tabata training from 14.52 ± 0.93 to 12.87 ± 1.00 (see table 1 and figure 4). The LSD test results also showed that there were significant differences in running time after doing tabata exercises between the control group and the tabata group (p = 0.031). This is consistent with Wiswadewa research (2017) that HIIT training for 4

times in 6 weeks can increase Vo2 max and speed of motion [37]. Whereas Whyte et al. (2010) also stated that high-intensity exercise for 2 weeks with a frequency of 3 times per week was able to increase VO2 max by 7% in untrained men [38]. Dias (2017) also states that HIIT training for 12 weeks will increase Cardiorespiratory fitness (CRF) and reduce body fat in obese children [39].

HIIT training can improve BMI and increase body fitness [40]. Fitness is negatively correlated with body fat percentage. The lower the body fat percentage, the better fitness [29]. HIIT can improve cardiorespiratory fitness. This occurs because HIIT selection increases VO2 max and causes physiologic left ventricular myocardial thickening of the heart so that the strength and ability of the heart to pump blood each contraction increases and decreases the number of beats per minute [41].

The impact of aerobic exercise on the intensity and different methods get the results that high intensity interval training (HIIT) training has proven to be effective in increasing body fitness 6-8% (VO2max). HIIT training for 15 weeks has also succeeded in reducing fat in the abdominal region in young women [42]. Another positive result in doing HIIT is that it can reduce fat oxidation in the body, and also reduce levels of lactic acid [43].

4.4 Comparison of cardio and tabata exercises for body weight and fat

The results showed that there were differences in body weight and fat between the cardio and tabata groups after treatment. this is evidenced by the results of the LSD test which states the value of $p = 0.022$ in the weight variable and $p = 0.037$ in the fat variable. In accordance with Zhang's research that HIIT training is better at reducing belly fat compared to moderate intensity exercise, because HIIT training time is more efficient [44].

In sports with high intensity and short duration, fulfillment of energy requirements increases almost one hundred fold [45]. Increased exercise intensity will reduce the mobilization of fatty acids from adipose tissue into the blood. This causes a shift from fat metabolism to carbohydrate metabolism. Thus the process of breaking down carbohydrates will be more dominant than the process of lipolysis in higher intensity exercises. However, in training with higher intensity such as HIIT, it expends more energy so that it will also reduce body fat more [44].

Increased intensity of exercise will also be followed by increased secretion of lipolytic hormones such as the catecholamine hormone. Catecholamine hormone stimulates the process of lipolysis through ad-adrenoceptors resulting in a reduction in body fat [46]. In addition to increasing catecholamines, higher intensity exercise such as HIIT training also increases growth hormone secretion [47]. Growth hormone is believed to increase the body's lipolysis process [48].

Exercise with high intensity will increase energy requirements, burning fat will contribute less when compared to burning carbohydrates to meet energy needs in the body. Although this fat burning contributes less when compared to burning carbohydrates when the intensity of exercise increases, the quantity of fat burned will still be greater than when exercising with low intensity. Because at the time of high intensity exercise has used a large amount of energy in muscle glycogen so when switching to

low intensity exercise with an aerobic metabolic system the source of glucose energy in the body has been depleted so that it forces the adipose tissue to release fatty acids to become an energy source. Which means that in the combination of the two metabolic processes the burning of adipose tissue is faster than exercise with the aerobic system [49].

4.5 Comparison of cardio and tabata training to fitness

The results showed that there was no difference in fitness between the cardio and tabata groups after treatment. this is evidenced by the results of the LSD test which states the value of p = 0.130 on the fitness variable which means not significant. This contradicts Cao's study which states that high-intensity exercise (HIIT) is better at increasing cardiorespiratory fitness (CRF) compared to moderate-intensity exercise in children and adults [50]. HIIT training has a more positive effect on increasing VO2 max than moderate exercise both in normal and obese people [51].

However this is different from the results of a study by Carr (2011) which stated there was no difference in the increase in max VO2 between those given HIIT training and moderate intensity training for 4 weeks [52]. That is because the VO2 max test protocol performed is more aerobic, whereas HIIT training is more anaerobic. So what should be measured in HIIT training is the maximum anaerobic capacity [52].

Tabata training can increase arobic capacity but is not better than moderate intensity training. Although the level of increase in aerobic capacity between tabata training and moderate intensity does not differ, tabata training increases anaerobic capacity by about 28% compared to moderate intensity exercise [11].

5 Conclusion

Tabata training method represents an effective way in reducing body weight and body fat, but it is no better than cardio training method in improving physical fitness. That's because tabata training requires more energy so that more fat burning occurs. As for fitness, tabata training is no better than cardio training because tabata training is more anaerobic, while the fitness test protocol is more aerobic.

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