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Analysis of 30 Minute Joging and Walking Exercises Results on Body Components

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ABSTRACTS

Purpose: This study aims to determine the effectiveness of reducing weight, BMI as well as fat with enjoyable exercise through treatment and control exercises.

Materials and Methods: This research utilizes a quantitative approach method. This research was conducted at Surabaya State University on March 15 2024 - April 5 2024. 20 students with an average age of 18 - 20 years participated in this research, they were divided into 2 groups, namely 10 students in the circuit training treatment group and 10 students in the circuit training treatment group. 30 minute walking treatment. Training is carried out within 3 weeks carried out 5 times a week. They do physical activities in the form of jogging and walking. Body composition was carried out using the Tanita scale measuring instrument version BC-545N. The urgency of this research was carried out because there are many teenagers who are obese in Indonesia.

Result: The results of this research were that treatment, carried out 5 times a week, and carried out for 3 weeks, was successful in reducing BMI, FAT, MUSCLE, BMR, METABOLIC AGE, dan VISCERAL FAT

Conclusion: In conclusion, control training for 30 minutes has an influence on reducing Water, FAT, Muscle, dan Visceral fat.

Keywords: Obesity; Treatment; Control.

INTRODUCTION

Diabetes mellitus is a deadly disease. Indonesia itself ranks fourth largest in the world of people with diabetes mellitus, followed by China, India, as well as the United States (Nainggolan et al., 2014). Diabetes mellitus (DM) is a long-term condition caused by lack of insulin production in the body (Lubis & Kanzanabilla, 2021). Obesity is an important risk factor for diabetes mellitus, with high fat levels in obese people this causes various health diseases, one of the dangers faced by obese people is diabetes mellitus (Masi et al., 2018). In Ahmadi Abbas's research, it is stated that obesity has an 8 times more risk of developing type 2 diabetes (Abbas, 2021). Exercise is the best treatment to reduce blood glucose levels and body weight according to research from Regita Gebrila Rondonuwu (Rondonuwu et al., 2016). The recommended physical exercises are walking, jogging, swimming, cycling, or aerobics, and gymnastics. which was done three times a week for fifteen to lower blood glucose levels (Windartik et al., 2016).

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Jogging and walking are the most ancient forms of physical activity that are easily applied in everyday life (Moghetti et al., 2021). This is parallel with Kuswahyudi's research which stated that jogging for 30 minutes affects the reduction of glucose levels in the blood and prevents obesity (Kuswahyudi, 2017).

This study was conducted to determine the impact of walking jogging activities for 15 days on glucose levels in the body. This is relevant to provide information needed in managing health conditions, especially for individuals who have a risk of diabetes or other metabolic disorders. The aim of this study was to assess the impact of walking jogging for 15 days on blood glucose levels and its potential benefits in maintaining metabolic health

METHODS

***Study Participants*:** 20 students with an average age of 18 - 20 years participated in the treatment with control group and 10 students entered the 30 minute walking treatment group.

***Study Organization*:** This research was conducted using a quantitative approach method. This research was conducted at Surabaya State University on March 15 - April 2024.

***Statistical Analysis*:** For 3 weeks, 5 times a week they did physical activity. Body composition was carried out using the Tanita scale measuring instrument version BC-545N.

Before being given each treatment, each sample student will carry out a body weighing test, and several series of physical tests, namely push-ups for 1 minute, T-test run, vertical jump, 600 m sprint, leg dynamometer, and test MFT.

***Training Program*:**

Tabel 1. Physical training program

Training component	**Treatment (Jalan, Jogging)**	**Walk**
Duration	30 Menit	30 Menit
Intensity	Medium	Low
Type of movement	(jalan 15 detik terus dilanjut joging 15 detik)	Walk

RESULT

Table 2. Statistical Description of the Treatment

			Profil Pre					**Profil Post**			
No	Body composition profil	N	mean±st.dev	Min	Max	Sig.	N	mean±st.dev	Min	Max	Sig.
1	Berat Badan (Kg)	10	65.10±12.74	47	123	0.486*	10	64.40±12.22	47.70	80.70	0.385*
2	BMI(BW/TB)	10	22.17±3.14	17	25	0.155*	10	21.12±3.35	15.50	25.10	0.349*
3	Body fat (%)	10	20.09±11.35	9.80	50	0.002	10	14.55±4.31	7.6	19.50	0.251*
4	Body Water (%)	10	54.37±12.85	21	69.60	0.004	10	56.21±3.94	49.90	63	0.822*
5	Body Muscle(kg)	10	51.28±8.26	39.60	61.60	0.168*	10	49.96±8.18	38.80	60.50	0.188*
6	Phisical ratinng	10	5.40±8432	4	7	0.172*	10	5.30±1.03	4	7	0.287*
7	Bone Mass (Kg)	10	2,83±4191	2.20	3.40	0.247*	10	2.70±4944	2	3.40	0.558*
8	BMR kcal	10	1599±314.0	1132	1965	0.071*	10	1479±331.0	1038	1942	0.304*
9	Metabolic Age lvl	10	20.90±18.40	19	22	0.067*	10	18.40±18.00	18	20	0.000
10	Viscarel Fat (Kg)	10	5.65±2.70	19	22	0.067*	10	4.45±3.11	1	8.5	0.024

*sign indicates that the data is normal because P > 0.05

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Table 3. Statistical Description of The Control groups

		Profil Pre					Profil Post				
No	Body composition profil	N	mean±st.dev	Min	Max	Sig.	N	mean±st.dev	Min	Max	Sig.
1	Berat Badan (Kg)	10	64.10±23.74	40	123	0.024	10	64.16±20.97	41.30	11.29	0.117*
2	BMI(BW/TB)	10	22.75±4.86	16	34.60	0.047	10	22.92±4.86	16.80	35	0.33
3	Body fat (%)	10	21.57±6.93	13.20	35	0.457*	10	23.17±8.49	13.20	40	0.225*
4	Body Water (%)	10	52.77±5.49	39.60	58.70	0.064*	10	56.84±3.86	52.30	63.10	0.510*
5	Body Muscle(kg)	10	45.26±10.25	30	60	0.445*	10	46.71±10.81	31.10	62.50	0.135*
6	Phisical ratinng	10	4.80±1.03	3	7	0.043	10	5.60±1.17	4	8	0.108*
7	Bone Mass (Kg)	10	2.67±79169	1.50	4.30	0.814*	10	2.78±94375	1.70	5	0.109*
8	BMR kcal	10	1536.50±465.43	1050	2601	0.147*	10	1433.70±304.72	1038	1942	0.773*
9	Metabolic Age lvl	10	20.10±5.04	18	34	0.000	10	20.20±5.34	18	35	0.000
10	Viscarel Fat (Kg)	10	4.90±4.15	1	15	0.034	10	5.15±4.13	1	15	0.074*

*sign indicates that the data is normal because P > 0.05

Descriptive tests were used in this research to explain the profiles of students from both groups. The data normality test was conducted to see the normality of the data in the two groups. Next, an independent sample t test will be conducted to see the distinctiveness in training results in the two groups. The paired sample t test was utilized to see pre as well as post differences in each group. The entire statistical test process uses the SPSS version 16 application.

Table 4. Nonparametric Test Group Treatment

	BB Post – BB pre	**BMI Post – BMI Pre**	**Water Post – Water Pre**	**Fat Post – Fat Pre**	**Muscle Post – Muscle Pre**	**Physical Ranting Post – Physical Ranting Pre**	**Bone Post – Bone Pre**	**BMR Post – BMR Pre**	**Metabolic --age --Post**	**Visceral Fat Post – Visceral Fat Pre**
Z	-1.172[b]	-2.812[b]	-1.580[b]	-2.803[b]	-2.812[b]	-1.000[b]	-1.529[b]	-2.803[b]	-2.831[b]	-2842[b]
Asymp. Sig.	.241	.005*	.114	.005*	.005*	.317	.126	.005*	005*	.004*

*sign indicates that the data is normal because P > 0.05

In the Treatment group there were differences between pre and post in body composition in BMI, FAT, MUSCLE, BMR, METABOLIC AGE, dan VISCERAL FAT

Table 5. Nonparametric Test Group Control

	BB Post – BB pre	**BMI Post – BMI Pre**	**Water Post – Water Pre**	**Fat Post – Fat Pre**	**Muscle Post – Muscle Pre**	**Physical Ranting Post – Physical Ranting Pre**	**Bone Post – Bone Pre**	**BMR Post – BMR Pre**	**Metabolic --age --Post**	**Visceral Fat Post – Visceral Fat Pre**
Z	-.140[b]	-1.334[b]	-2.599[b]	-2.366[b]	-2.805[b]	-1.857[b]	-1.633[b]	-.663[b]	-1.000[b]	-2.236[b]
Asymp. Sig.	.889	.182	.009*	.018*	.005*	.063	.102	.508	.317	.025*

*sign indicates that the data is normal because P > 0.05

In the control group during walking training there were differences between pre and post in body composition in terms of Water, FAT, Muscle, dan Visceral fat. So in this study, table 3 shows

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that there are only indicators or profiles of Water, FAT, Muscle, dan Visceral fat that show differences before and after training for 3 weeks.

Table 6. Body Composition Group Treatment

No	Body com	N	Prosentase perubahan
1	Body Weigt (Kg)	10	0.7 Kg
2	BMI (BW/TB)	10	1.05 BW/TB
3	Body Fat (%)	10	6.14%
4	Body Water (%)	10	1.84 %*
5	Body Muscle (Kg)	10	1.32 Kg
6	Phisical Rating	10	0.1%
7	Bone Mass (Kg)	10	0.13 Kg
8	BMR (Kcal)	10	120 Kcal
9	Metabolic Age (lvl)	10	2.5 lvl
10	Viceral Fat (Kg)	10	1.2Cm2

*sign indicates that the data has increased

Table 7. Body Composition Group Control

No	Body com	N	Prosentase perubahan
1	Body Weigt (Kg)	10	0.6 Kg*
2	BMI (BW/TB)	10	0.17(BW/TB)*
3	Body Fat (%)	10	1.6%*
4	Body Water (%)	10	4.07%*
5	Body Muscle (Kg)	10	1.45 Kg*
6	Phisical Rating	10	0.8 *
7	Bone Mass (Kg)	10	0.11 Kg*
8	BMR (Kcal)	10	103 Kcal
9	Metabolic Age (lvl)	10	0.10 lvl*
10	Viceral Fat (Kg)	10	0.23 Cm2*

*sign indicates that the data has increased

DISCUSSION

In the research conducted, treatment exercise significantly reduced body weight, body fat, and visceral fat in obese individuals. This type of exercise, which combines endurance and strength training, has been shown to be highly effective in preventing obesity. Endurance training, such as running and cycling, burns calories and enhances cardiovascular health, while strength training increases muscle mass and elevates metabolism.

The study highlights the profound impact of treatment exercise on key health metrics. Regular participation leads to meaningful weight loss, decreases harmful visceral fat, and improves overall body composition. Lowering visceral fat is especially crucial because it reduces the risk of metabolic diseases such as type 2 diabetes and heart disease.

The findings provide valuable insights for fitness instructors and health professionals, suggesting that a mix of endurance and strength training is optimal for combating obesity. For individuals, engaging in regular treatment exercise not only supports weight loss but also enhances overall fitness, mental health, and quality of life. This research underscores the importance of a structured and consistent exercise regimen in achieving long-term health benefits and reducing obesity-related risks.

The effect of jogging 30 minutes for 15 days on body weight can be verified in the results of this treatment research, namely with 65.10 kg average in pretest as well as posttest of 64.40 kg with

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a difference of 0.7 kg. While the control average was 64.10 kg for the pretest and 64.16 kg for the posttest with a difference of 0.6 kg. with the results of this study, treatment exercise was more efficient than control, this is in line with (Harun et al., 2022) (Arief et al., 2021) (Nation, 2001)(Windiastoni, 2017)research, 30 minutes of jogging with moderate intensity was more effective in losing weight. The reason is, long-term exercise increases the rate at which fat is converted into energy.

In accordace with the results of research as well as analysis of treatment body fat data, the average pretest result was 20.09% while the posttest result was 14.55% with a difference of 6.14%. The results of research and analysis of control body fat data obtained a pretest average of 21.57% and the posttest result was 23.17% with a difference of 1.6%. With the results of this research, the exercise treatment is parallel with the results of research carried out with 30 minutes of exercise treatment for 15 days showing a reduction in body fat of up to 6.14%. This is parallel with research conducted by (Andreacci et al., 2013) (SETIAWAN, 2017)(Taufikkurrachman et al., 2021)(Santika & Pranata, 2020) (Wahid & MB, 2021) which states that jogging for 30 minutes can reduce body fat significantly. Another research conducted by (Toriola, 1984)also concluded that jogging showed a statistically significant reduction in body fat values.

Based on research results, Visceral Fat treatment has an average Pretest result of 5.65 cm2 and Posttest results of 4.45 cm2 with a difference of 1.2 cm2. While the results of the control Visceral Fat study had an average Pretest result of 4.90 cm2 and a Posttest result of 5.15 cm2 with a difference of 0.23 cm2. So jogging training for 15 days for 30 minutes showed a decrease. Regarding the research that (Abdulsalam et al., 2021) conducted, it shows the same results, namely that moderate intensity jogging has a greater influence on visceral fat compared to low intensity walking.

The effect of 30 minutes of jogging can increase BMR temporarily after exercise. This process is called Excess Post-Exercise Oxygen Consumption (EPOC) which increases calorie burning even after completing exercise. The effect on bones is that it can increase bone density. When the body feels pressure from walking activities, the bones will respond by strengthening themselves, helping prevent osteoporosis, while walking jogging can help train the thigh muscles, calf muscles and core muscles, although walking jogging is not as intense as other sports such as lifting weights, but consistently can build the muscles as a whole.

The data from this study shows that treatment exercise is more effective for reducing body weight, body fat and visceral fat in the body compared to control exercise. This is parallel with research that (Shehata & Mahmoud, 2018) conducted, which states that medium intensity jogging can maximize fat burning, hence it takes 15-30 minutes. Such as the release of the hormones norepinephrine and epinephrine which will raises during exercise and also encourage fat burning

CONCLUSION

The results and discussion of the research on exercise medicine to mitigate obesity risk have revealed several important findings. The study showed a significant reduction in various physical metrics, such as Body Mass Index (BMI), body fat percentage (FAT), muscle mass (MUSCLE), Basal Metabolic Rate (BMR), metabolic age, and visceral fat. These enhancements indicate that exercise treatment can be an effective method for managing and reducing these crucial health measures.

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CONFLICT OF INTEREST

There are no conflicts of interest, the authors assure.

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