



Body Fat Percentage of Male Martial Arts Athletes Preparing for PON Papua

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Abstract

The required fat percentage for martial athletes is an important component. The purpose of this study was to describe the body fat percentage of martial arts athletes from Tarung Rajat, Boxing, Kempo, Pencak Silat, Taekwondo, Kempo, and Muay Thai who were chosen as the best athletes for the Papua New Guinea PON preparation. The number of samples is 70 athletes, with details of 7 taekwondo, 13 tarung drajat, 16 pencak silat, 24 boxing, 3 kempo, and 7 muay thai. Measurements were made with the Omron Karada Scan HBF-375 balance. The data were analysed with descriptive statistics. The results showed that the overall average percentage of athletes' body fat was 15.17%, included in the normal category. And you can say that the body fat percentage of martial arts athletes in this study is in the low category.

Keywords: Percentage of Fat, Exercises, Training Intensity, Martial Arts.

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A. Introduction

The problem of malnutrition is widespread worldwide, with 21.9% of children experiencing stunting (WHO, 2019). Therefore, based on research findings, it is recommended to maintain nutritional status in order to preserve the percentage of body fat for the prevention of bodily damage (Wulansari & Kasyani, 2021). One type of food that has a negative impact on body composition is fast food. This is supported by research indicating that adolescents who are physically inactive

and consume fast food have a high percentage of body fat (Hafid et al., 2019). Furthermore, non-communicable diseases have been a longstanding issue as people become less active. This poses a separate problem, as indicated by body mass index (BMI) and body fat percentage (Nurfadhilah et al., 2018). The criteria for body fat percentage according to Mutia Rahman et al. (2021) are outlined in Table 1.

Table 1. Norms for body fat percentage

Information	Range
Obese	>35%
Over Fat	>31%
Normal,	$\geq 16\%$ s/d $\leq 31\%$
Under	<16%.

It has been proven that obesity and body fat percentage are related to energy intake adequacy (Tamamilang et al., 2019; Riagustin et al., 2019), where adequacy refers to excessive energy intake combined with lack of physical activity. Based on research on body fat percentage (Aliza & Mariani, 2020), it is explained that body fat percentage has a strong correlation with the risk of prehypertension. There is a relationship between body fat percentage

and fitness (Salamah et al., 2019). The condition of body fat percentage is closely related to waist circumference (Mighra & Djaali, 2021) and waist-to-hip ratio (Widiastuti et al., 2018). The increase in body fat leads to an increase in waist circumference and body weight, which results in a burden on the back and causes discomfort. This has been researched and proven (Indra et al., 2021). The evidence from these studies provides insights that

body fat percentage is closely associated with overconsumption of energy, lack of physical activity, leading to obesity, as indicated by an increase in BMI and waist circumference.

However, there are some studies that have produced different results from the aforementioned studies. There is a negative correlation between body fat and grip strength (Savitri et al., 2020), where higher body fat potentially leads to weaker strength. A study by Rohendi et al. (2020) states that there is no association between body fat percentage and fitness level. Another study involving student samples states that there is no relationship between BMI, waist circumference, body fat percentage, and vital lung capacity (Haznawati et al., 2019).

Several research findings mention recommendations related to body fat percentage (Aliza & Mariani, 2020; Riagustin et al., 2019; Rohendi et al., 2020; Tamamilang et al., 2019). Furthermore, research studies demonstrate that exercise can effectively address body fat percentage. The intensity of exercise is usually categorized into three levels: low, moderate, and high. Moderate-intensity exercise is more commonly recommended, as well as high-intensity exercise. Moderate and high intensity exercise for body composition management (Campbell

et al., 2019), 75% intensity for weight loss (Y. T. J. Samodra & Musfira, 2021), and blood pressure reduction. In their research, both high and moderate intensities have the ability to decrease BMI, body fat, body weight, waist circumference, and waist-to-hip ratio (Andreato et al., 2019). The relationship between moderate and high intensities and their effectiveness in reducing body fat percentage, body weight, cholesterol, and improving VO₂max has also been discussed. A review of other research studies conducted by Magalhães et al. (2019) suggests using moderate intensity combined with high intensity for body composition and aerobic fitness improvement, and a similar recommendation is provided by Wormgoor et al. (2017).

Martial arts is a branch of sports that requires high speed and power, making high-intensity training highly recommended. It is a known fact that martial artists compete within specific weight classes (Reale et al., 2020). In relation to body fat percentage, research findings indicate that martial artists should have a low body fat percentage (Catikkas et al., 2013) and normal BMI (Catikkas et al., 2013). This is also observed in the karate discipline (Gloc et al., 2012) and Taekwondo (Jagiełło, 2015).

Participation in sports is important for

recreation, health, and achievement. Participation in sports is important for recreation, health, and achievement. This research is particularly important in providing evidence that engaging in sports, especially martial arts, is related to efforts to maintain body fat percentage. However, there is limited research specifically focused on the impact of participating in sports, especially martial arts. Therefore, the aim of this study is to describe the body fat condition of athletes involved in competitive sports, specifically martial arts, through scientific investigation.

B. Method

This study is a quantitative research using a survey method. The research involved measuring the body fat percentage of male martial arts athletes from West Kalimantan Province. The sample consisted of 70 athletes from six sports disciplines: Tarung Drajat, Boxing, Kempo, Pencak Silat, Taekwondo, and

Muay Thai. The athletes included in the sample were selected from the entire pool of athletes sent by the provincial martial arts association, with an age range of 16-33 years and an average age of 23 years. The study was conducted in May 2020. The measurements were taken using the Omron Karada Scan HBF-375 scale. The research data were analyzed using descriptive statistics, including the presentation of descriptive data and graphs.

C. Result and Discussion

Hasil penelitian ini menunjukkan rerata hasil menyatakan 15.17%, dengan persentase terendah pada atlet tinju 11.22% dan tertinggi pada atlet kempo 25.33%. Secara berurutan dilihat dari nilai rata-rata dan standar deviasi semakin kecil standar deviasi maka persentase lemak tubuh sekelompok atlet semakin mendekati.

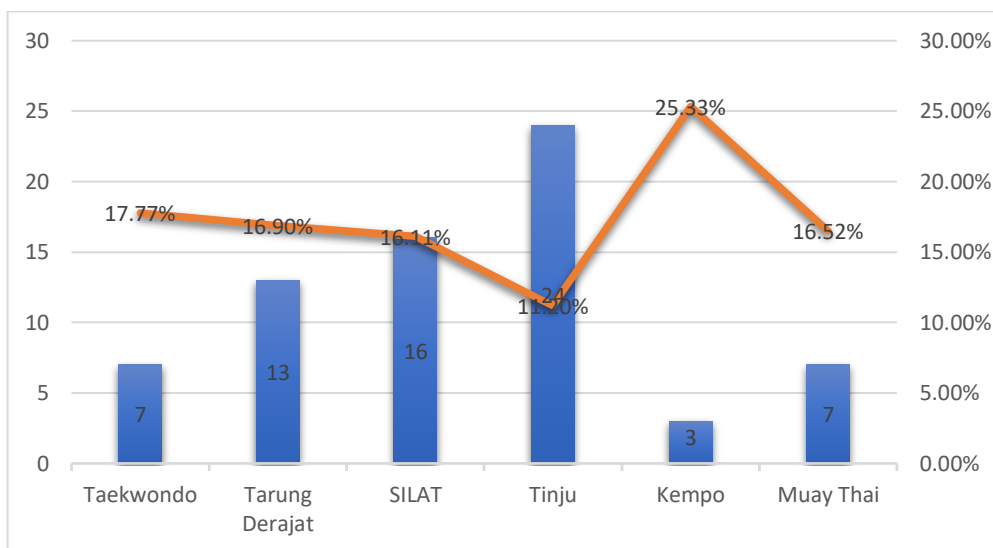
Table 2 Description of the percentage of body fat in male martial arts athletes

	N	Mean	Std. Dev	Min	Max
Taekwondo	7	17.77	10.16	9.50	36.50
Tarung Derajat	13	16.90	6.67	7.70	29.00
Silat	16	16.11	12.84	5.00	59.70
Tinju	24	11.20	4.18	6.30	22.80
Kempo	3	25.33	1.97	24.00	27.60
Muay Thai	7	16.52	8.42	6.90	27.70
Total	70	15.17	8.73	5.00	59.70

As an example, in Silat athletes, with a sample size of 16, the standard deviation is 12.84 and the mean is 16.11%. In comparison, Boxing athletes, with a sample size of 25, have a mean of 11.20% and a standard deviation of 4.18. This indicates that the distribution of body fat percentage in Boxing athletes is more tightly clustered compared to Silat athletes. This can also be observed from the range of minimum and maximum values, which shows a

significant difference between Boxing and Silat athletes. The range of body fat percentage for Boxing athletes is between 6.3% and 22.80%, while for Silat athletes, it ranges from 5.00% to 59.70%.

Among the represented disciplines, Kempo athletes, consisting of 3 individuals, have the highest average body fat percentage, which is 25.33%. This indicates that Kempo athletes have a higher than normal level of body fat percentage.



Graph 1. Average Body Fat Percentage of Male Martial Athlete

Discussion

The results of this study indicate that the average body fat percentage is 15.17%, which, according to the body fat percentage norms in Table 1, falls under the "underweight" category. However, according to Brian Mackenzie (2005), male athletes should have a body fat percentage of 15-17%, while female athletes should have a range of 18-22%.

Undeniable research findings state a

strong correlation between BMI and body fat percentage (Lestari et al., 2020). However, this condition does not show a relationship between body mass index and cholesterol levels (Wahyuni & Diansabila, 2021). Another study indicates a close association between consumption of fatty foods and body fat percentage (Mutia Rahman et al., 2021). BMI and body fat percentage also have a strong correlation (Teresa et al., 2018). High blood pressure is

caused in part by high salt consumption, so reducing salt intake and increasing potassium and calcium intake is necessary (Nugraheni et al., 2018).

Previous research studies on body fat percentage have provided evidence that exercise has a positive impact. Sit-up exercises, for example, have been shown to reduce abdominal fat percentage (Walukow et al., 2021). Aerobic exercises have been found to influence a decrease in body fat percentage (M. Syukur Zulbandi Sitepu et al., 2020); (Bakri, 2020). An experiment explained that engaging in Zumba exercise for 4 weeks can reduce body fat percentage (Tendean et al., 2018), with a frequency of 3 times a week among adult women. Both Pilates and body language exercises have been found to decrease body fat percentage and increase muscle mass (Fatmawati & Syurrahmi, 2018); (Devi et al., 2022).

If body fat increases, people will try various diets, one of which is the South Beach diet, which has been successful in reducing BMI and body fat levels (Faizah & Muniroh, 2018). Super set training plays a role in reducing body fat percentage, body weight, and increasing muscle strength (Nasrulloh & Shodiq, 2020), while 100% intensity training reduces body weight (T. J. Samodra, 2021). An experiment conducted by (Sugiharto et al., 2019) states that oxygenated water with a density of 120 PPM affects the reduction of body fat

percentage.

Tai Chi activities for the elderly have been found to maintain good body fat composition and improve fitness (Utami et al., 2021). The results of a study conducted by (Kadek & Lestari, 2018) indicate that practicing yoga can reduce body fat percentage by up to 4.91%, while low-impact aerobic exercise has an impact of 1.41% and improves flexibility (Oktaviani & Lestari, 2018), including Zumba exercise (Ikayani et al., 2019). Interval training with high intensity has a positive effect on reducing body fat percentage among postmenopausal mothers (Putra et al., 2018). Calcium is a micronutrient that plays a role in fat metabolism for weight loss (Rasyid, 2021)

D. Conclusion

Based on the conducted research, it can be concluded that martial arts athletes have a below-normal body fat percentage (underweight). This can be observed from the average body fat percentage of martial arts athletes, which is 15.17%.

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F. Conflict of Interest

This article is written with no particular interests or objectives other than for the purpose of academic writing.

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