

# Determinants of Lack of Physical Activity in Students in Yogyakarta

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## ABSTRACT

Background: Lack of physical activity can increase the risk of health problems such as non-communicable diseases (NCDs); hypertension, Diabetes Mellitus (DM), Stroke, and several types of cancer and has benefits in preventing obesity, improving fitness and mental health. Various constraining factors affecting participation in physical activity such as lack of time, lack of facilities, lack of interest and energy have led to a significant decline in physical activity among university students. The purpose of this study was to identify physical activity and its constraints on university students. The research method used a cross-sectional approach with a cluster sampling technique. The sample in this study was 120 respondents and data analysis using Spearman's Rank correlation analysis test. The research instrument used questionnaires, namely the Global Physical Activity Questionnaire (GPAQ) and the Barriers to Being Active Quiz (BBAQ). The results showed that physical activity in students was in the low category of as many as 35 respondents (29.2%) with an average MET  $\pm$  SD of  $244.80 \pm 209.609$  per minute per week and the Spearman's Rank analysis test showed a p-value = 0.017 (<0.005) which means there is a significant relationship between obstacles and physical activity in students. Conclusion: Physical activity in students is still low and not by WHO recommendation standards so university efforts are needed to become a place for the development of health literacy as well as socialization and improvement of healthy behaviour of the academic community to become an active and healthy campus.

Keywords: Physical activity, non-communicable diseases (NCDs), physical activity constraints, health literacy

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## INTRODUCTION

Physical activity is any movement that activates skeletal muscles and requires energy, for example in various daily activities such as household work, walking, cycling and recreation (WHO, 2022). In terms of meaning, there is a fundamental difference between physical activity and sport. Sport is part of physical activity that is designed, structured, and repetitive, and aims to improve or maintain one or more components of a person's physical fitness (Kusumo, 2020). In general, physical activity is divided into 3 categories based on the intensity and amount of calories used, namely light physical activity, moderate physical activity and heavy physical activity. These activities include activities carried out at school, work, in the family or household, while travelling and other activities carried out to fill daily free time (Ministry of Health, 2019).

Lack of physical activity can increase the risk of death and disability by 20-30% compared to people who are quite active (Hoveidamanesh *et al.*, 2022). Apart from that, it is a risk factor for non-communicable diseases (NCDs), such as hypertension, diabetes mellitus, *stroke* and coronary heart disease (Silva *et al.*, 2022).

Globally, 7.2% and 7.6% of all causes and deaths from non-communicable diseases are due to lack of physical activity. WHO reports that 27.5% or the equivalent of 1.14 billion adults aged >18 years in the world have low physical activity, especially women who reach 32% while men reach 23%. The highest prevalence of low physical activity in the 18-44 year age group is found in countries in the Eastern Mediterranean region (43% in women while 23% in men) and in America (39% in women and 25% in men). Asian countries report that 1 in 4 Malaysian adults have low levels of physical activity, and 39% of them

are students. (*Institute for Public Health*, 2019). In Indonesia's population aged  $\geq 10$  years, in 2018 the proportion of lack of physical activity increased to 33.5% compared to 2013 (26.1%). DKI Jakarta holds the first highest position (47.8%) then North Kalimantan is the second highest (46.1%) and the lowest is NTT (25.2%). Yogyakarta Province (28.1%) is in 5th place among provinces with low levels of physical activity. Based on data, of the 5 districts/cities in Yogyakarta province, Sleman district is in second place with the highest proportion (33.93%) (Riskasdas, 2018).

Factors that influence physical activity include employment status, obstacles or barriers to physical activity such as lack of time, social support and lack of facilities (Farradika *et al.*, 2019). In addition, in research by Tappen *et al* (2021) in Florida, it is explained that the factors that influence lack of physical activity are age, education, income, social activities, family lifestyle, health status and environment. Research in China shows that limited space and facilities such as free playgrounds and sports centres on campus are factors that influence physical activity (Pan *et al.*, 2022). Lack of time, feeling tired, and lack of motivation and support from friends are obstacles to physical activity due to the pressure of office workers and high academic pressure (Abadini & Wuryaningsih 2018).

Students as the young generation who play an important role in nation-building and have a strong, healthy and fit physical condition certainly need to maintain their health by doing regular physical activity (Farradika *et al.*, 2019). In 2021, the total number of students in Indonesia will be 8.96 million. This number increased 4.1% compared to last year which amounted to 8.6 million students. This is of course supported by the existence of universities spread throughout Indonesia. DIY Province, which is popular as a student city, has many accredited universities (135 campuses) supported by a variety of available study programs. From data from the Central Statistics Agency (2022), it is stated that the number of students in Yogyakarta is around 401,863 people. Previous research on students at 'Aisyiyah University, Yogyakarta, showed that students' physical activity levels were low at 54.5% with an average of  $186.56 \pm 220,567$  METs and a duration of  $49.51 \pm 298,898$  per

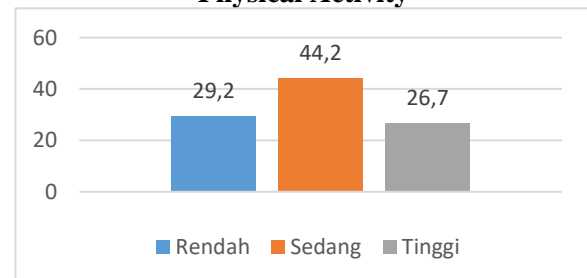
minute per week due to a lack of adequate facilities, free time, and individual physical condition (Rachma, 2021). Based on this reality, researchers are interested in conducting research which aims to determine the relationship between obstacles and physical activity among students in Yogyakarta.

## METHOD

This research has been approved by the Research Ethics Commission of 'Aisyiyah Yogyakarta University No.1750/KEP-UNISA/VII/2023 and was declared ethically appropriate with a correlation study design and *cross-sectional* approach. The research location was at 'Aisyiyah University, Yogyakarta with 120 respondents consisting of 87 women and 33 men with a sampling technique using *cluster sampling*. The dependent variable in this study is physical activity while the independent variables are age, gender, and barriers to physical activity. The activity begins with respondents filling out *informed consent* to complete the questionnaire that has been provided, a questionnaire about physical activity using the *Global Physical Activity Questionnaire* (GPAQ) with the criteria for low activity  $<600$  METs, moderate activity  $600-3000$  METs and high activity  $>3000$  METs and a questionnaire regarding obstacles using the *Barriers to Being Active Quiz* (BBAQ). The data analysis used in this research was IBM SPSS Statistics 25 through univariate analysis to get an overview of the frequency distribution of the research variables and bivariate analysis was carried out to determine the relationship between variables using the *Spearman's Rank* correlation test.

## RESULTS

**Table 1. Frequency Distribution Based on Physical Activity**



The frequency of physical activity in Table 1 shows that 35 people have low physical activity (29.2%) with an average MET  $\pm$  SD of  $244.80 \pm$

209.609 per minute per week, and only 32 people have high physical activity (26.7 %) with an average MET  $\pm$  SD of  $5791.63 \pm 2449.461$  per minute per week.

**Table 2. Frequency Distribution Based on Characteristics**

No	Variable	F	%
1	<b>Age</b>		
	18	4	3,3
	19	13	10,8
	20	27	22,5
	21	31	25,8
	22	37	30,8
	23	8	6,7
2	<b>Gender</b>		
	Women	87	72,5
	Man	33	27,5
3	<b>Constraint</b>		
	No Obstacles	66	55,0
	There are obstacles	54	45,0
4	<b>Constraint Category</b>		
	Less Time	77	64,2
	Social Influence	49	40,8
	Lack of Energy	76	63,3
	Lack of Will	76	63,3
	Fear of Injury	37	30,8
	Lack of Skills	37	30,8
	Lack of Resources	66	55,0

Table 2 shows the characteristics of the respondents, namely the highest age was 22 years (30.8%) while the least was 18 years old (3.3%).

**Table 4. Relationship between physical activity and characteristics**

Physical Activity Barriers	Physical Activity						Total	P Value
	Low		Currently		High			
	F	%	F	%	F	%		
<b>Age</b>								
18	1	0,8	2	1,7	1	0,8	4	0,014
19	1	0,8	7	5,8	5	4,2	13	
20	8	6,7	12	10,0	7	5,8	27	
21	9	7,5	11	9,2	11	9,2	31	
22	15	12,5	15	12,5	7	5,8	37	
23	1	0,8	6	5,0	1	0,8	8	
<b>Gender</b>								
Woman	29	24,2	39	32,5	19	15,8	87	0,33
Man	6	5,0	14	11,7	13	10,8	33	

Table 4 shows that from the bivariate results, there is a significant relationship between physical activity and the characteristics of

Gender is more than 50% (72.5%) dominated by women with 87 respondents and men below 50% (27.5%) with 33 respondents. On physical activity constraints (55.0%) of respondents had no problems and (45.0%) of respondents had problems doing physical activity. Meanwhile, the category obstacles or obstacles that were most in the category of lack of time were 77 respondents (64.2%), followed by lack of energy and will as many as 76 respondents (63.3%) and lack of resources as many as 66 respondents (55.0%) while those who The lowest was in the category of fear of injury and lack of skills, namely 37 respondents (30.8%).

**Table 3. Normality Test**

	<i>Kolmogorov-Smimov test</i>	
	Statistic	Sig.
Physical Activity	,222	,000
Constraint	,366	,000

The results of the normality test on physical activity and physical activity constraints obtained a value of  $p = 0.000$  from these results it can be concluded that the data is not normally distributed so it is included in non-parametric statistics and the hypothesis test that will be used for the correlation test is the *Spearman Rank* test.

students in Yogyakarta, namely age and the Sig value. 0.014 ( $p = <0.05$ ) and gender with a Sig value. 0.33 ( $p = <0.05$ ).

**Table 5. Relationship between physical activity and obstacles**

Physical Activity Barriers	Physical Activity						Total	P Value
	Low		Currently		High			
	F	%	F	%	F	%		
No Obstacles	14	11,7	30	25,0	22	18,3	66	0,017
There are obstacles	21	17,5	23	19,2	10	8,3	54	
Total	35	29,2	53	44,2	32	26,7	120	

Bivariate analysis between obstacles and physical activity using *Spearman's rho* in Table 5 shows a result of  $p = 0.017$ , so it can be stated that there is a significant relationship between obstacles and physical activity among students in Yogyakarta because the *p-value* is  $<0.05$  so  $H_a$  is accepted and  $H_o$  is rejected.

**DISCUSSION**

**Physical Activity and Characteristics**

In this study, 29.5% of students had low activity with an average of 244.80 METs per minute per week, and only a few students had high physical activity by WHO recommended standards, namely 26.7% with an average of 5791 METs. .63 per minute per week. Compared with WHO data (27.5%), this study has only slight differences in the proportion of adults with low physical activity worldwide.

The National Health and Morbidity Survey (NHMS) reports that 1 in 4 Malaysian adults have low levels of physical activity, and 39% of them are students (*Institute for Public Health*, 2019). These results are similar to the findings of a study on students in Spain who had low physical activity (30.4%) because lack of time and laziness were the main reasons for not doing physical activity (Carballo-Fazanes et al., 2020).

Meanwhile, in Indonesia, physical inactivity rates for those aged  $\geq 10$  years experienced an increase in physical inactivity rates (33.5%) compared to 2013 (26.1%). Riskawati et al.'s (2018) study found that 38.3% of Udayana University students had low levels of physical activity while the other 61.6% were in the moderate to high physical activity category. Of the 5 districts in Yogyakarta province, Sleman district is in second place with the highest proportion (33.93%) (Risksedas, 2018).

In Sudikno et al.'s (2020) research, on physical activity in Indonesia, the number of respondents reached 553,546 people and 64.4% of adults were included in the group who were not

physically active due to the unavailability of sports facilities. In another research conducted on students at the Faculty of Health Sciences, Muhammadiyah University, Prof. Dr Hamka has a low level of physical activity, namely 47.8%, which is caused by a lack of sports facilities at home and in the surrounding area as well as a lack of motivation from friends, family and lecturers to be active (Farradika et al., 2019). The results of this research were strengthened by Rachma (2021) on students at 'Aisyiyah University, Yogyakarta, where the level of physical activity of students was low at 54.5% with an average of  $186.56 \pm 220,567$  METs and a duration of  $49.51 \pm 298,898$  per minute per week due to lack of adequate facilities. free time, and individual physical condition.

22-year-olds have a low physical activity of 12.5%. This is due to the transition period from adolescence to adulthood that occurs in students, where there are lifestyle changes, eating patterns, academic and employment status as well as increased sedentary activities which result in reduced physical activity (Corder et al., 2019).

Sharara et al.'s (2018) study shows that adults in Arabia have a low level of physical activity, namely  $>60\%$  and for children and adolescents, namely 80%. Another study, also conducted in Saudi Arabia, found that the rate of physical inactivity among the 18-25 age group was (30.3%). The low level of physical activity in this age group is due to the need to study or work, this age group has to spend time studying or working with their daily activities, causing a lack of free time for physical activity (Samarkand, 2022).

In research by Kumar et al (2021) conducted on students in Urban Chidambaram, the majority had low levels of physical activity at the age of 21-25 years, namely 197 students (56.9%). Another study conducted on students at the Faculty of Health, Sam Ratulangi University,

Manado, showed that the majority of low physical activity levels occurred at the age of 18 years, namely 52 people (52.0%) (Steve *et al.*, 2021).

There were more women, namely 29 people (24.2%) who had low physical activity. This is because there are differences in muscle mass and anaerobic strength (7-10%) which are lower in women compared to men. Muscle strength between men and women is different because men have more contractile tissue while women are dominated by adipose tissue, causing higher fat accumulation (Sandi *et al.*, 2021). In addition, due to the lack of interest or motivation in women, they rarely have an interest in intense physical activity because they are too tired to do it and tend to have higher feelings of fear, low self-esteem, anxiety and stress, and are more emotionally sensitive (Salvo *et al.*, 2020).

Grasdalsmoen *et al.*'s (2019) research on the student population in Norway showed that male students (23.3%) were more active than female students (17.9%). On the other hand, based on a study by Carballo-Fazanes *et al.* (2020) on students in Spain, it was proven that men have more reasons for physical activity compared to women, so men are more active than women. Low physical activity in women has been proven in research conducted at the University of Ireland, with men (66%) being more active than women (43%) because women have a different body composition to men, where men have different hormones. testosterone which influences the formation of muscle mass and energy endurance (McCarthy & Warne, 2022).

In Risdiana & Perdana's (2018) research on early adults in Yogyakarta, men spent more of their free time on sports and recreation activities such as soccer, running, walking or cycling. This is different from women who tend to spend their free time on passive activities such as watching TV, reading books or just playing with gadgets or social media. The results of this research were confirmed by Farradika *et al.* (2019) at Muhammadiyah University, Prof. Hamka Jakarta, there is a significant relationship between physical activity and gender, women surveyed tend to do passive physical activity (49.5%) compared to men (36.8%).

### **Relationship between Obstacles and Physical Activity**

In this study, it was found that 54 respondents (45%) had obstacles in carrying out physical activity. More than 50%, lack of time, energy, will and resources are the biggest reasons for not doing physical activity. The results of bivariate analysis show that there is a relationship between obstacles and physical activity in students with a *p-value* of 0.017 ( $p < 0.05$ ).

Based on questionnaire data, students stated that they could not carry out physical activities during the day because of their busy routine, especially for undergraduate students who took 149 credits by carrying out lectures from morning to evening every day, while in the evening students had activities in organizations and UKM, thus making students unable to make time for physical activity. In the questionnaire, it was found that students lack energy because they are too tired from daily activities on campus and also stay up late at night so they use the weekend to rest. In the lack of willpower category, it is known that students have thought about exercising more but have not been able to start because of a lack of knowledge and awareness of the importance of health and fitness and there are no programs or regulations related to a healthy campus which aims to create an active environment involving the entire academic community such as *Health Promotion University* so that it can meet the physical activity standards recommended by the government and reduce the risk of non-communicable diseases.

Apart from that, students do not engage in physical activity because there are limited sports facilities in their residential and campus environments, such as fitness centres, wisdom parks, green campuses and jogging tracks that are easily accessible and safe to use. The existing sports facilities have been converted for other purposes. The availability of facilities in residential areas and campuses contributes to being able to spend more time doing physical activity so that they can meet the standards recommended by the government compared to those where facilities are not available.

Kgokong & Parker's (2020) research on physiotherapy students from three universities in the Western Cape found that most students agreed that physical exertion was an obstacle to physical activity. This is strengthened by the results of the overall low level of physical activity of the

majority of students so that there is a relationship between barriers and physical activity levels. Monica's research (2018) also shows that obstacles, especially peer support or social influence, have a relationship with a person's healthy behaviour with a p-value of 0.00 ( $p < 0.05$ ). This is in line with Khalafallah's research conducted on medical students where obstacles were related to physical activity, especially environmental factors. In contrast to the results of research by Riskawati et al (2018) obstacles, especially living conditions, do not affect a person's level of physical activity.

## CLOSING

### 1. Conclusion

The prevalence of students who are not physically active is still relatively high and the factors that hinder them from being physically active are lack of time, lack of energy, lack of will and lack of resources.

### 2. Suggestion

Universities can be a source of information and increase health literacy through campus health promotion and regulations so that they can become an environment that will increase active and healthy behaviour for all academics for a minimum of 150 minutes per week by WHO recommendations.

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