



The relationship between physical activity participation, sleep quality, stress levels, and mental health

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Abstract

This research seeks to ascertain: (1) the correlation between participation in physical activity and the mental health of Universitas Negeri Yogyakarta students, (2) the correlation between sleeping quality and the mental health of Universitas Negeri Yogyakarta students, and (3) the correlation between the level of stress and the mental health of Universitas Negeri Yogyakarta students.

This research was a correlational study in nature. The research population comprised 290 students from Universitas Negeri Yogyakarta, class of 2023, with a sample size of 168 students selected through purposive sampling. The data collection method employed a questionnaire, utilizing the GPAQ to assess Physical Activity participation, the PSQI for sleeping quality, the DASS-42 for the level of stress, and the SRQ-20 for mental health evaluation. The data analysis employed univariate and bivariate analysis utilizing the Pearson correlation statistical test.

This research findings demonstrate that: (1) a significant correlation exists between physical activity participation and mental health, shown by a p-value of 0.004;

(2) a significant correlation exists between sleeping quality and mental health, indicated by a p-value of 0.000; (3) a significant correlation exists between the level of stress and mental health, as shown by a p-value of 0.000. Consequently, it may be inferred that a correlation exists among engagement in physical activity, sleeping quality, level of stress, and mental health.

Keywords: Participation in Physical Activity, Sleeping Quality, Level of Stress, Mental Health.

Introduction

Mental health is an aspect that is receiving increasing attention among university students. In this modern era, where academic pressure and social demands are increasing, students' mental health is a crucial issue. According to a survey conducted by the American College Health Association (ACHA) in 2021^[1], about

60 percent of college students reported experiencing significant feelings of anxiety, and more than 40 percent experienced symptoms of depression. Furthermore, the poor mental health of college students from the survey further, These figures show that poor mental health not only impacts an individual's quality of life, but can also affect academic performance, social relationships, and overall physical health (ACHA, 2021)^[1].g

Poor mental health that affects one of them academic achievement will cause students to decrease their quality. Whereas in the Regulation of the Minister of Education, Culture, Research and Technology, concerning National standards of higher education Number 44 of 2015 Article 5 Paragraph 1 which states that the quality of university graduates must be graduation competency standards minimum criteria regarding the qualifications of graduation abilities which include attitudes, knowledge, and skills in the formulation of learning outcomes, if students experience mental disorders that cause a decrease in academic quality, it can be said that they will not fulfill the provisions of the Permendikbudristek above.

Mental health is an important aspect of achieving overall health. According to the World Health Organization (WHO), good mental health allows a person to realize their abilities, cope with the pressures of daily life, and work productively both individually and in groups (Putri *et al.*, 2015)^[4].

Physical activity has been shown to have a significant positive impact on mental health. Research shows that individuals who engage in regular physical activity tend to have better moods and experience fewer symptoms of depression. According to research conducted by (Ramdani *et al.*, 2024)^[5],

In addition to physical activity, sleep quality is also an important factor that contributes to mental health. Research shows that university students often experience sleep disturbances due to academic pressure and a busy social life. According to National Sleep Foundation, (2020)^[3], poor sleep can lead to an increased risk of mental disorders, including depression and anxiety. A study conducted by Lund (2010)^[2] found that college students who get less than seven hours of sleep per night have a threefold higher risk of experiencing depressive symptoms compared to those who get enough sleep.

High stress levels also contribute to mental health disorders. Prolonged stress can affect the nervous system, cause hormonal imbalances and decrease one's mental capacity to deal with challenges. This can increase the risk of anxiety, depression and other psychological disorders (Hammen, 2005). With effective stress management, increased physical activity, as well as attention to sleep quality, one can achieve a better balance in their life which has a positive impact on overall mental health.

Many college students with busy schedules, ranging from lectures, assignments, to organizational activities, reduce time for physical activity, which can reduce their mental health. Preliminary data shows that only a small proportion of students regularly exercise, and low physical activity can increase anxiety and depression. A survey at UNY revealed that around 30%-40% of students are physically active at least twice a week.

Sleep quality issues are also common, influenced by exam anxiety, assignments, and the habit of staying up late. Around 60%-70% of UNY students sleep less than 7 hours per night, and more than 50% report sleep disturbances, such as waking up in the middle of the night or feeling tired when they wake up. Academic and social stress also have a major effect on mental health. Around 40%-50% of UNY students experience moderate to high stress, which can worsen anxiety and task management skills. High stress, especially during exams or assignment deadlines, reduces mental well-being. These three factors (physical activity, sleep quality, and stress) are closely related to students' mental health. Preliminary data shows that 20%-30% of students at UNY experience anxiety, depression, or stress.

This study aims to determine the relationship between physical activity participation, sleep quality, stress levels, and students' mental health. The researcher wanted to observe the pattern of the relationship between these factors without changing their habits. In the context of university students, these factors are heavily influenced by daily routines that are difficult to modify, so this study used a correlational design to explore these relationships under natural conditions. If a significant relationship is found, this could open up opportunities to design programs that encourage the improvement of students' mental health, such as exercise programs.

Research Method

This study uses a quantitative design, which aims to measure and analyze the relationship between the variables studied, namely physical activity participation, sleep quality, stress levels, and mental health of university students.

Type of Research

This study used a correlational approach.

Time and Place of Research

Research time The research was conducted in October 2024. The research place where this research was conducted was at Yogyakarta State University.

Target/Subject of Research

The population in this study were all students of the Faculty of Sports Science, Department of Physical Education Health and Recreation class of 2023, Yogyakarta State University with a population of 290, In this study researchers used Purposive Sampling with a sample of 168 students of the Faculty of Sports Science majoring in Physical Education.

Procedure

In conducting this research the procedures carried out are as follows

1. After the proposal was approved by the supervisor and examiner, the researcher submitted a request for permission to the academic department of the faculty of sports science to obtain data and the number of students.
2. Researchers met prospective respondents directly to approach and explain to prospective respondents about the research to be carried out and wait for questions if any respondents asked.

3. Ask the respondent's willingness to give a statement of willingness to be a respondent in the form of Inform Consent.
4. If all respondents agree, the researcher starts collecting data on the number of respondents then makes a lottery to select a sample to be used as research material.
5. Respondents who were selected as samples filled out the questionnaire, then after completion were collected back to the researcher.
6. After all was collected, the researcher re-examined whether the questionnaire had been filled in or not.
7. If all is felt to be sufficient, the researcher performs data processing and data analysis techniques.

Data, Instruments, and Data Collection Techniques

The instrument or research tool used in this research is a questionnaire. The use of this questionnaire refers to existing parameters or parameters made by previous researchers.

1. Physical Activity

The questionnaire used as a measuring tool in this study is the Global Physical Activity Questionnaire (GPAQ) to measure the level of physical activity.

2. Sleep Quality

The measuring instrument used to assess sleep quality is the PSQI questionnaire adopted from research.

3. Stress Level

The questionnaire used as a measuring tool in this study is the Depression Anxiety Stress Scale (DASS 42).

Mental Health

The instrument used in this study was the Self Rating Questionnaire (SRQ).

Data Analysis Technique

1. Univariate Analysis

Univariate analysis aims to describe the characteristics of the percentage and frequency distribution of each research variable.

2. Bivariate Analysis

In this study, bivariate analysis was conducted to determine the relationship between physical activity, stress levels and sleep quality with the mental health of UNY sports science faculty students. Processing of this bivariate data analysis using computerization. The statistical test used is Pearson correlation with $\alpha = 0.05$.

3. Multivariate Analysis

Multivariate analysis is an analysis that will be studied with the aim of knowing the relationship between physical activity, sleep quality, and stress levels with mental health using regression tests.

Research Results And Discussion

1. Characteristics of Respondents

The general characteristics of respondents are the characteristics that are embedded and inherent in them. In this study, the characteristics of respondents shown are gender and age. The characteristics of the respondents are distributed as follows

Table 1: Respondent Characteristics

Gender	Frequency (f)	Percentage (%)
Male	124	73,8
Female	44	26,2
Age		
19,00	105	62,5
20,00	58	34,5
21,00	4	2,4
22,00	1	,6
Force		
2023	168	100,0
Total	168	100,0

Source: Primary data processed 2025

Based on the table above, respondents are divided into two groups or categories, namely men and women. It can be concluded that out of a total of 168 respondents, the majority were male respondents with 124 respondents with a proportion of 73.8% and 44 respondents (26.2%) were female. According to the age distribution of a total of 168 respondents, most respondents were in the age group of 19 years with a proportion of 62.5%, followed by the age group of 20 years which had a percentage of 34.5%, age 21 years had a percentage of 2.4% and the least age 22 years had a percentage of 0.6%.

2. Univariate Analysis

Table 2: Distribution of Respondents Based on Physical Activity

Physical Activity	Frequency (f)	Percentage (%)
Low	1	0,6
Medium	87	51,8
High	80	47,6
Total	168	100,0

Source: Primary Data Processed 2025

Based on the table above shows that respondents who have high physical activity are 80 people with a percentage of 47.6%. Followed by moderate 87 people with a percentage of 51.8% and the least low physical activity has a percentage of 0.6%,

Table 3: Distribution of Respondents Based on Sleep Quality

Sleep Quality	Frequency (f)	Percentage (%)
Normal	128	76,2
Medium	19	11,3
Mild	16	9,5
Total	168	100,0

Source: Primary Data Processed 2025

Based on the table above shows that respondents who have normal sleep quality are 128 people with a percentage of 76.2%. Followed by moderate 19 people with a percentage of 11.3% and the least light has a percentage of 16%,

Table 4: Distribution of Respondents Based on Stress Level

Stress Level	Frequency (f)	Percentage (%)
Normal	133	79,2
Mild	16	9,5
Moderate	19	11,3
Total	168	100,0

Source: Primary Data Processed 2025

Based on the table above, it shows that respondents who have normal stress levels are 133 people with a percentage of 79.2%. Followed by moderate 19 people with a percentage of 11.3% and the least mild 16 respondents peresntase 9.5%,

Table 5: Distribution of Respondents Based on Mental Health

Mental Health	Frequency (f)	Percentage (%)
Good	128	76,2
Fair	21	12,5
Less	19	11,3
Total	168	100,0

Source: Primary Data Processed 2025

Based on the table above, it shows that respondents who have good mental health are 128 people with a percentage of 76.2%. Followed by 21 people with a percentage of 12.5% and at least 12 respondents 11.3%.

3. Bivariate Analysis

a. Bivariate analysis is an analysis that will be studied with the aim of knowing the relationship between variables, namely the relationship between physical activity, sleep quality, and stress levels, with mental health and using the Chi-Square test.

The results of bivariate analysis with the Chi-Square test obtained p-value = 0.004 which means $p\text{-value} \leq 0.05$, so H_0 is rejected or H_a is accepted. This means that statistically there is a significant relationship between physical activity and mental health of students of the Faculty of Sport and Health Sciences, Yogyakarta State University.

b. Sleep Quality

The results of the cross tabulation can be explained that most of the sleep quality is normal and mental health is good as many as 114 respondents or 67.9%.

The results of bivariate analysis with the Chi-Square test obtained p-value = 0.000 which means $p\text{-value} \leq 0.05$, so H_0 is rejected or H_a is accepted. This means that statistically there is a significant relationship between sleep quality and mental health of students of the Faculty of Sport and Health Sciences, Yogyakarta State University.

c. Stress Level

The results of cross tabulation can be explained that most of the stress levels are normal and mental health is good as many as 117 respondents or 69.6%.

The results of bivariate analysis with the Chi-Square test obtained p-value = 0.000 which means $p\text{-value} \leq 0.05$, so H_0 is rejected or H_a is accepted. This means that statistically there is a significant relationship between stress levels and mental health of students of the Faculty of Sport and Health Sciences, Yogyakarta State University.

4. Multivariate Analysis

Multivariate analysis is an analysis that will be studied with the aim of knowing the relationship between physical

activity, sleep quality, and stress levels with mental health using regression tests.

The results of the bivariate analysis with the regression test obtained by the F test $p\text{-value} = 0.000$ which means the $p\text{-value} \leq 0.05$, so that H_0 is rejected or H_a is accepted. This means that there is a statistically significant relationship between physical activity, sleep quality, and stress levels with the mental health of students of the Faculty of Sport and Health Sciences, Yogyakarta State University.

Conclusions and Suggestions

Conclusion

Based on the results of bivariate analysis using the Chi-Square test, this study shows a significant relationship between physical activity, sleep quality, and stress levels with the mental health of students of the Faculty of Sport and Health Sciences, Yogyakarta State University.

The test results show a $p\text{-value}$ of 0.004 for physical activity, which indicates that increasing physical activity has a positive effect on the mental health of students of the Faculty of Sport and Health Sciences, Yogyakarta State University. Physical activity, both light and heavy, can reduce symptoms of anxiety and depression and improve the psychological well-being of students of the Faculty of Sport and Health Sciences, Yogyakarta State University.

In addition, sleep quality also has a significant effect on the mental health of students of the Faculty of Sport and Health Sciences, Yogyakarta State University with a $p\text{-value}$ of 0.000.

The results of the analysis also showed a $p\text{-value}$ of 0.000 for stress levels, which indicates that a decrease in stress levels or better stress management can improve the mental health of students of the Faculty of Sport and Health Sciences, Yogyakarta State University.

Suggestion

Future research needs to explore other variables that affect student mental health, develop holistic intervention models that consider psychological, social, and environmental factors, design longitudinal studies to understand the dynamics of student mental health on an ongoing basis.

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