



# The relationship of physical exercise with the level of academic marks among university students

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## ABSTRACT

**Background:** Sports activities are an educational process that utilizes physical exercise to produce changes in the quality of individuals in terms of physical, mental, and emotional. In addition, poor physical health can be an internal factor that can interfere with concentration during lectures. This study aimed to determine whether there was a relationship between physical exercise and the academic level of university students.

**Methods:** The population in this study were all second-semester sports students and were selected using cluster random sampling

**Keywords:** Academic grade level, IPAQ, physical training.

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technique. In this study, the sample used was 78 second-semester sports students. Data collection using IPAQ (international physical activity questionnaire) questionnaire and GPA (grade point average). After the data was collected, the data was analyzed using the Chi-Square Correlation test.

**Results:** After the results of the data analysis, a significance value of  $0.700 > 0.05$  was obtained.

**Conclusion:** Physical exercise has no significant relationship with students' academic grades.

## INTRODUCTION

Physical exercise is a body movement produced by skeletal muscles to release energy or burn calories.<sup>1</sup> Physical exercise consists of exercise during work, sleep, leisure time activities, sleep, lifestyle, and daily activities.<sup>2</sup> Each type of activity carried out daily has a category, namely low, moderate, and heavy physical activity. Physical exercise must be trained through regular exercise to get a healthy and fit body.<sup>3</sup> Also, poor physical health can be an internal factor that can interfere with concentration during lectures.<sup>4</sup>

The level of learning concentration can increase if students have a healthy and fit body and a clear mind.<sup>5</sup> By having good concentration, the lecture material the lecturer delivers can be understood properly.<sup>6</sup> If someone rarely does physical activity or exercise, it will have an impact on the difficulty of concentrating due to the supply of oxygen entering the brain in small amounts, causing compensatory effects on other organs such as increased breathing frequency and heart rate, the body feels weak because oxygen levels to other parts of the body are reduced.<sup>7</sup>

Sports activities are an educational process that utilizes physical exercise to produce changes in the quality of individuals in terms of physical, mental, and emotional.<sup>8</sup> Sports activities are a whole unit. Sport is a relationship with improving of human movement and physical development with the mind and soul.<sup>5</sup> In students majoring in sports, more is needed to pass the knowledge test and take a skills

test according to the department's needs. Where these tests require excellent physical support. Students follow lectures for eight semesters or more and deal with activities prioritizing physicality. Practical courses require physical abilities in each student.

Physical Education Sports and Health aims to develop aspects of physical fitness, movement skills, critical thinking, reasoning, and social skills and improve aspects of a healthy lifestyle that are systematically arranged to achieve national education goals.<sup>9</sup> Sports have benefits in improving and maintaining physical fitness and health.<sup>10</sup> With exercise, a person can work productively and efficiently and have good immunity.<sup>11</sup> So that work and learning can be achieved optimally. Physical fitness is a person's ability to perform activities without excessive fatigue. Exercise that is carried out regularly and well-programmed, there will increase physical fitness.<sup>12</sup> Physical education is a medium for encouraging the development of motor skills, physical abilities, knowledge, and healthy lifestyle habits.<sup>13</sup> Physical education is closely related to various creative, innovative, skillful activities and knowledge of human movement.<sup>14</sup> If someone has good physical fitness, students can accept and absorb the courses given. So that students can compete globally, they become the best on a regional, national, and international scale.<sup>15</sup>

Student learning achievement in the academic field can be observed through the Grade Point Average (GPA).<sup>16</sup> The GPA includes the values of

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each course. Learning achievement is an indicator of measuring the success of the student learning process. The combination of the grade point average obtained while studying in college is called GPA.<sup>17</sup> The high and low GPAs between students affect whether or not they absorb the material of each lecture. So that it greatly affects the readiness and ability of students in the success of learning during lectures.<sup>18</sup>

Physical activity is a body movement produced by skeletal muscles in releasing energy or burning calories.<sup>19</sup> Physical activity consists of activities at work, sleep, exercise, leisure time activities, sleep, lifestyle, and daily activities.<sup>20</sup> Each type of activity carried out daily has a category, namely low, moderate, and heavy physical activity. Physical activity must be trained through exercise that is carried out regularly to get a healthy and fit body.<sup>21</sup> Also, poor physical health can be an internal factor that can interfere with concentration during lectures.

The level of learning concentration can increase if students have a healthy and fit body and a clear mind. Having good concentration, the lecture material delivered by the lecturer can be understood properly. Suppose someone rarely does physical activity or exercise. In that case, it will have an impact on the difficulty of concentrating due to the small amount of oxygen supply entering the brain, causing compensatory effects on other organs such as increased breathing frequency and heart rate, and the body feels weak because oxygen levels to other parts of the body are reduced.<sup>22</sup> This study aimed to determine whether there is a relationship between physical exercise and the academic marks among students of Faculty of Sports, Universitas Pendidikan Ganesha.

## METHODS

The population in the study were all sports students selected using cluster random sampling technique. The sample of this study used 78 second-semester sports students. Data collection instruments in the study used the international physical activity questionnaire (IPAQ) and student GPA scores. According to Lee et al. (2011), IPAQ is used by experts in physical activity research which is organized based on global standards.<sup>23</sup> Meanwhile, a student's GPA is an amalgamation of IP while studying in college.

The IPAQ questionnaire consists of 7 questions used to measure light, moderate and heavy activities, walking activities, and sitting activities that have been carried out during one week. The IPAQ questionnaire was filled in by selecting the

answer choices made in the form of a Google form. IPAQ is a questionnaire used by 12 countries, so it has good validity and reliability values. Table 1 is the norm used to analyze the collected data.

Before the study began, the sample has first explained the purpose of the study. Then the sample was instructed to sign an informed consent as evidence of being willing to be a sample during the study. This research has received approval from the Research Ethics Commission of the Faculty of Sport and Health, Universitas Undiksha. The study sample signed informed consent before the research procedure was carried out. In this study, data analysis used percentage techniques, cross-tabulation, and correlation tests using Chi-Square.

## RESULTS

The results of metabolic equivalents (METs) measurements were obtained from the results of filling out the IPAQ questionnaire. In Table 1 IPAQ norms are divided into 3, namely light, medium, and heavy. The light category is less than 600 minutes/week, the medium category is more than equal to 600 minutes/week, and the heavy category is more than equal to 3000 minutes/week. For the academic level of students seen from GPA. Table 1 is the GPA category at Ganesha University of Education (Undiksha).

In Table 1 the academic level category is divided into 3 satisfactory, very satisfactory, and with honors. With a satisfactory academic level with a GPA of 2.00 - 2.75, a very satisfactory academic level with a GPA of 2.76 - 3.50, and an academic level with praise with a GPA of 3.51 - 4.00. The results of Table 1 are student physical exercise data obtained through the IPAQ questionnaire with the following analysis results. The moderate category has the highest number of 39 (50%), the light category is 37 (47.43%), and the heavy category is 2 (2.56%).

Based on the results of Table 1, the GPA value of sports students is obtained with 3 categories. The GPA value in the satisfactory category is 2 (2.56%), the GPA value in the very satisfactory category is 23 (29.48%), and the most are the GPA value in the category with praise 53 (67.94%).

According to the results of the analysis presented in Table 1, it is known that students with a category of academic grade level with praise and light physical exercise have the highest number, namely 26 (33.33%). In comparison, students with satisfactory and very satisfactory academic grade level categories with heavy physical activity training have the least number, namely 0 (0%).

According to the results of the analysis presented in table 2, it can be seen that there is no significant

**Table 1. Characteristics.**

Characteristics	METs (minutes/week)	Category	Frequency	Percentage (%)
International physical activity questionnaire (IPAQ)	< 600	Mild	-	-
	≥ 600	Moderate	-	-
	≥ 3000	Severe	-	-
Academic level category	2.00 – 2.75	Satisfactory	-	-
	2.76 – 3.50	Very satisfactory	-	-
	3.51 – 4.00	With compliments	-	-
Physical training data distribution	-	Mild	37	47.43
	-	Moderate	39	50
	-	Severe	2	2.56
Academic grade point average score distribution	-	Satisfactory	2	2.56
	-	Very satisfactory	23	29.48
	-	With compliments	53	67.94
	-	Mild x satisfactory	1	1.28
Physical training x academic level	-	Mild x very satisfactory	9	11.53
	-	Mild x with compliments	26	33.33
	-	Moderate x satisfactory	1	1.28
	-	Moderate x very satisfactory	14	17.94
	-	Moderate x with compliments	25	32.05
	-	Severe x satisfactory	0	0
	-	Severe x very satisfactory	0	0
	-	Severe x with compliments	2	2.56

**Table 2. Correlation Test.**

Variable	P-value	Description
Relationship between physical training and academic level	0.700	Not significant

relationship between physical exercise and the level of academic grades of sports students at the Undiksha Faculty of Sports and Health. This can be proven by the  $p=0.700$  ( $p > 0.05$ ).

## DISCUSSION

From the research above, there are various factors that affect the level of students academic grades. This study examines the relationship between physical exercise and the level of academic grades of students using the IPAQ questionnaire so it can find out physical exercise for the last 1 week. Based on the above data obtained and analyzed there is no significant relationship between physical exercise and the level of academic grades of sports students in the undiksha faculty of sports and health as evidenced by a  $p=0.700$ .

This can occur due to differences in time constraints, this research was limited to the data of Faculty of Sport and Health, Universitas Pendidikan Ganesha, Indonesia students, and the

overall research was not completed. Furthermore, there are no additional observations regarding the factors that influence academic achievement. There are many factors that influence the results of this study so it is necessary to conduct further research to be able to refine the results.

Based on the research results, the suggestions that can be given are as follows: for researchers, the results of the study can be used as a reference to consider in subsequent studies, for institutions, the results of the study can be input to improve student physical training to be even better. The GPA includes the values of each course. Learning achievement is an indicator of measuring the success of the student learning process. The high and low GPAs between students affect whether or not they absorb the material of each lecture. From this study, it produces data that the most is the GPA value in the category with praise as many as 53 (67.94%).

This happens because the higher the intensity of physical activity, the higher the GPS of students. According to research conducted by previous research explains that Physical activity is not only important for adolescents' physical health, but also plays an important role in their mental well-being, also physical activity is positively related to

quality of life in general, but little is known about how changes in physical activity can be associated with changes in certain aspects of quality of life.

The results of the above analysis are confirmed by the research of Oktaviani and Akhmadi (2014), which states that there is no significant relationship between physical activity and learning achievement, as evidenced by a  $p=0.700$  ( $p>0.05$ ).<sup>24</sup> Meanwhile, the research of Pratiwi and Wiguna (2015) states that there is no significant relationship between physical activity and learning achievement, as evidenced by a  $p=0.321$  ( $p>0.05$ ).

Although physical activity does not have a significant relationship with learning achievement, it does produce positive physiological and psychological effects. Physical activity reduces shortness of breath symptoms, increases functional exercise capacity and improves quality of life. However, existing studies looking at the relationship between physical activity and academic achievement are limited by relatively small sample sizes and/or cross-sectional designs, little is known about how academic achievement may benefit from certain types of motor activity (for example, fine and gross) integrated into learning activities.

## CONCLUSION

The above results indicate that the physical exercise has no significant relationship with students' academic grades.

## ETHICAL CLEARANCE

The Commission for Research Ethics, Faculty of Sport and Health, Universitas Pendidikan Ganesha, Indonesia.

## CONFLICT OF INTEREST

This study does not have any conflict of interest.

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## AUTHOR CONTRIBUTIONS

LIM conceived the study design and data collection and drafted the manuscript; AAPL collected the data and revised the manuscript.

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