

# The Relationship Between Nutritional Status and Physical Activities on Physical Fitness Level

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## ABSTRACT

This study aims to find out whether there is a relationship between the nutritional status and physical fitness of Islamic Senior High School's students and investigates the relationship between physical activity and physical fitness of the Islamic Senior High School's students. This study also examines the relationship between nutritional status and physical activity on the physical fitness of Islamic Senior High School students. This research applied post-facto research. This research involved students of one of the Islamic Senior High Schools in South Sulawesi, Indonesia. Nutrition status data implemented using height and weight. While, physical activity data were collected using a questionnaire and physical fitness data collection was conducted using bleep tests. The results of this research showed there was a significant relationship between nutrition status and physical fitness, and there is a significant correlation between physical activity and physical fitness. This research also found that there is a significant relationship between nutritional status and physical activity on the physical fitness of the Islamic Senior High School's students.

**Keywords:** *Nutritional status, physical activity, physical fitness*

## 1. INTRODUCTION

Physical education is a learning process that makes physical activity a learning medium to improve physical fitness, develop motor skills, healthy living behaviors, active, sportsmanlike attitudes, and emotional intelligence [1]–[4]. Physical education has a vital role in allowing students to gain learning experience in motion [5]. In addition to physical education, motion experiences also play a role in the fitness status of students.

Components of physical fitness are determinants of the degree of the condition of everyone. Someone said to be fit if in carrying out daily activities without experiencing significant fatigue. Student activities such as playing games and watching television at home make them do not have much time to do activities that can improve physical fitness. This affects students' eating routines and movement activities and allows for underweight (thin) and obesity in students [6]. The energy causes the thin body condition of the student expended higher than the amount of energy entered. Meanwhile, obesity in children occurs because of the imbalance between the incoming energy with the energy consumed [7]. This means that the student eats a lot but lacks physical activity.

Nutritional problems are caused by an imbalance between nutritional intake or adequacy needs [8]. Nutritional status can be determined through laboratory and anthropometric tests. Anthropometry is the easiest and cheapest way to determine nutritional status. Body Mass Index (BMI) is recommended as a good indicator to assess the nutritional status of adolescents.

The development of physical fitness of a person through a sports activity aims to improve the physical condition [9]. It also increases the endurance of a person's body to be able to follow learning activities properly [10]. Physical activity is a motion activity carried out to provide an increase in the quality of human performance [11], [12]. In addition to nutritional status and physical activity, vital lung capacity is critical in supporting one's activities. The existence of nutritional status and physical activity with physical fitness is an important issue to be studied. Based on this background, researchers are interested in examining the correlation between nutrition status and physical activity. This study also aims to determine the relationship between nutritional status and physical activity on the physical fitness of Islamic Senior High School students.

## 2. RESEARCH METHODOLOGY

### 2.1. Research Setting

This research applied post-facto research [13]. The researchers divided the existed work into two categories. This study is a correlational study aimed to determine the correlation between nutritional status and physical activity on the physical fitness of the students of one of the Islamic Senior High Schools in South Sulawesi, Indonesia. The research was carried out in one of the Islamic Senior High School in South Sulawesi, Indonesia.

### 2.2. Data Collection Techniques

The research instrument applied in this research is in the form of a performance checklist. The research instrument is used in data collection to make their work more comfortable and better [14]. The research instrument used to collect data in this study was the method of measuring nutritional status, physical activity questionnaires, and physical fitness with a multistage fitness test.

### 2.3. Data Analysis Techniques

The data collected is obtained according to the research approach. Data analysis techniques are directed at testing the proposed hypothesis as well as to answer the problem formulation. In this study, a correlational analysis was used. The correlation coefficient test is intended to be able to determine the closeness of the relationship between the two variables studied [15].

## 3. RESULTS AND DISCUSSION

### 3.1. Descriptive Analysis

This study uses three variables, consisting of one independent variable (nutritional status and physical activity) and one dependent variable (physical fitness). The following details describe the research data obtained from each variable.

#### 3.1.1. Nutritional status (X1)

Based on the results of research from twenty respondents, this research analyzed the nutritional status using the descriptive statistics (see Table 1).

The results of the descriptive statistics showed that the Mean score was 21.28, the median score was 21.32, the Mode score was 17.64, Standard Deviation was 3.34, the minimum score was 12.02, and a Maximum score was 26.53. Table 1 also shows that zero percent of the respondents were in the underweight and overweight category. There were twenty-five percent of the respondent was in the mild overweight category. While ,

there were thirty-five respondents were in mild weight loss. Fifty percent of the respondents were in the normal weight category.

**Table 1.** Descriptive statistics results of the nutritional status

<b>Mean</b>		21.28
<b>Median</b>		21.32
<b>Mode</b>		17.64
<b>Standard Deviation</b>		3.34
<b>Minimum</b>		12.02
<b>Maximum</b>		26.53
<b>Percentage</b>	<b>Underweight</b>	0%
	<b>Mild weight loss</b>	35%
	<b>Normal weight</b>	50%
	<b>Mild overweight</b>	25%
	<b>overweight</b>	0%

#### 3.1.2. Physical activity (X2)

Based on research results from 20 students obtained research statistics for physical activity data. The statistical description of a data based on the calculation results obtained statistics for physical activity data; namely, Mean was 30.45, Median was 28.50, Mode was 24, Standard Deviation was 6.16, Minimum score was 23, and the maximum score was 41. Moreover, fifty percent of the respondents were in the good and fairly good category, respectively (see Table 2).

**Table 2.** Descriptive statistics results of the physical activity

<b>Mean</b>		30.45
<b>Median</b>		28.50
<b>Mode</b>		24
<b>Standard Deviation</b>		6.16
<b>Minimum</b>		23
<b>Maximum</b>		41
<b>Percentage</b>	<b>Good</b>	50%
	<b>Fairly good</b>	50%

#### 3.1.3. Physical fitness level (Y)

Descriptive statistics also were implemented in analyzing the physical fitness level, as in Table 3 below.

The statistical description of a data in Table 3 above based on the calculation results obtained statistics for physical fitness data, namely: a mean of 45,04, a median of 44,84, a mode of 43.30, a standard division of 3,86, a minimum score of 39.2, and a maximum score of 51.1. Based on the above results, it can be seen that the criteria of the physical fitness bleep test results of 20 students. None or 0% for very poor criteria, None or 0%

for poor criteria, there are 10 or 50% of students' fairly good criteria. For good criteria, there are 8 or 40% of students, and very good criteria there are 2 or 10% of students.

**Table 3.** Descriptive statistics results of the physical fitness level

<b>Mean</b>	45.04	
<b>Median</b>	44.84	
<b>Mode</b>	43.30	
<b>Standard Deviation</b>	3.86	
<b>Minimum</b>	39.20	
<b>Maximum</b>	51.10	
<b>Percentage</b>	<b>Very poor</b>	0%
	<b>Poor</b>	0%
	<b>Fairly good</b>	50%
	<b>Good</b>	40%
	<b>Very good</b>	10%

**3.2. Prerequisite Test**

**3.2.1. Normality test**

The purpose of the normality test is to find out whether the data obtained from each variable analyzed follows the normal distribution pattern or not. The rule used to determine whether a distribution is normal or not is  $p > 0.05$ , the distribution is normal, and if  $p < 0.05$ , the distribution is said to be abnormal. The summary of normality test results can be seen in the following Table 4.

**Table 4.** Normality test results

<b>Variable</b>	<b>P</b>	<b>sig.</b>	<b>Notes</b>
nutritional status	0.741	0.05	Normal
physical activity	0.626		Normal
physical fitness	0.994		Normal

P Variable Sig. Description of nutritional status 0.741, physical activity 0.626, Physical Fitness 0.994 From the above table, it shows that the significance value (p) is higher than 0.05, so the data is normally distributed.

**3.2.2. Linearity test**

Table 2 below shows that the significance value (p) is higher than 0.05, so the relationship of all independent variables with the dependent variable is stated linear (see Table 5).

**Table 5.** Linearity test results

<b>Functional Relationship</b>	<b>P</b>	<b>sig.</b>	<b>Information</b>
X1.Y	0.763	0.05	Linear
X2.Y	0.541		Linear

**3.3. Hypothesis Test Results**

**3.3.1. Relationship between nutritional status and physical fitness**

Based on the results of the analysis, obtained by the correlation coefficient between nutritional status with the physical fitness of 0.562 is positive, meaning that the better the nutritional status, the better physical fitness (see Table 6).

**Table 6.** Relationship between nutritional status and physical fitness

<b>Correlation</b>	<b>r arithmetic</b>	<b>r table</b>	<b>Description</b>
X1.Y	0.562	0.4227	Significant

The significance of the correlation coefficient was tested by examining the calculated r price with r table, at  $\alpha = 5\%$  with  $N = 20$  obtained 0.42 r table. The correlation coefficient of  $r_{x1.y} = 0.562 > r(0.05)(20) = 0.42$  indicated the correlation coefficient is significant. Thus, the hypothesis of this research that "there is a significant relationship between nutritional status and physical fitness of Islamic Senior High School's students" is accepted.

**3.3.2. Relationship between physical activity and physical fitness**

Based on the results of the analysis of the correlation coefficient between physical activity and physical fitness, which is equal to 0.58, it is positive. Thus, this research found that the better the value of physical activity, the better physical fitness (see Table 7).

**Table 7.** Relationship between physical activity and physical fitness

<b>Correlation</b>	<b>r arithmetic</b>	<b>r table</b>	<b>Description</b>
X2.Y	0.582	0.4227	Significant

The significance of the correlation coefficient between physical activity and physical fitness was tested by calculating the r price with r table, at  $\alpha = 5\%$  with  $N = 20$  obtained r table equal to 0.42. The correlation coefficient between  $r_{x2.y} = 0.582 > r(0.05)(30) = 0.42$ , meaning the correlation coefficient is significant. Thus, this research found that there is a significant relationship

between physical activity and the physical fitness level of Islamic Senior High School's student.

**3.3.3. Relationship between the nutritional status and the physical activity on the physical fitness**

The third hypothesis test in this research is that there is a significant relationship between nutritional status and physical activity on the physical fitness of students at Islamic Senior High School. The results of the hypothesis testing using multiple regression analysis can be seen in the following Table 8.

**Table 8.** Correlation coefficients between nutritional status and physical activity on the physical fitness

Correlation	r arithmetic	r table	Desc.	Correlation
X1.X2.Y	0.667	6.825	3.52	Significant

Based on the results of the analysis above obtained by the correlation coefficient between physical activity and nutritional status on the physical fitness level is equal to 0.67. The correlation coefficient was tested by calculating F value of  $6.83 > F$  table at the 5% significance level and degrees of freedom 2.19 namely 3.52, and  $r_{x1.x2.y} = 0.91 > r(0.05)(40) = 0.42$ , meaning that the correlation coefficient is significant. The hypothesis that there is a significant relationship between the nutritional status and the physical activity on the physical fitness of the Islamic Senior High School's students is accepted. The contribution of nutritional status and physical activity on the physical fitness level of Islamic Senior High School's students is known through the value of R ( $r^2 \times 100\%$ ). R<sup>2</sup> value of 0.445. Hence, the amount of the contribution is equal to 44.5%, while the remaining 55.5% is influenced by other factors which are not examined in this study.

**4. DISCUSSION**

**4.1. The Relationship between Nutritional Status and Physical Fitness**

Based on the results of the research, it shows that there is a significant relationship between nutritional status and physical fitness of Islamic Senior High School's students, with a value of  $r_{x1.y} = 0.56 > r(0.05)(20) = 0.42$ . Nutritional status is support for physical fitness, based on this nutritional status has a close relationship and has an important role in improving physical fitness. Without having a good nutritional status, physical fitness will be difficult to obtain [8].

**4.2. Relationship between Physical Activity and Physical Fitness**

This research found that there is a significant relationship between physical activity and physical fitness of Islamic Senior High School's students, with a value of  $r_{x2.y} = 0.582 > r(0.05)(30) = 0.42$ . Physical activity is support for physical fitness. Hence, physical activity has a close relationship and has an important role in increasing physical fitness [9], [11], [12]. Besides, maximizing extracurricular activities in schools is also a way that can be done to increase the physical activity of students at school. It is hoped that students' physical fitness will also increase.

**4.3. Relationship between nutritional status, Physical Activity and Physical Fitness**

This research also revealed that there is a significant relationship between nutritional status and physical activity on the physical fitness of Islamic Senior High School's students, with a value of  $R_{x1.x2.y} = 0.67 > R(0.05)(30) = 0.42$ . Factors that influence physical fitness include the nutritional status and physical activity. The nutritional status consists of height, weight, and physical activity, such as daily activities.

Good physical fitness will be very supportive of students in carrying out daily tasks without causing significant fatigue [5], [12]. By better conditions with physical activity and nutritional status support, the nutrient intake will support children's growth and development [8], [12]. Hence, nutritional status and activity will be good. However, physical fitness is not entirely influenced by physical activity and nutritional status, but also influenced by healthy living behavior. Thus physical activity and nutritional status can be said to affect physical fitness.

**5. CONCLUSION**

This research found that there is a significant relationship between nutritional status and physical fitness of Islamic Senior High School's students. Also, this study revealed that there is a significant relationship between physical activity and physical fitness of Islamic Senior High School's students. Finally, this study exposed the significant relationship between nutritional status and physical activity on the physical fitness of Islamic Senior High School students.

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