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The analysis of nutritional status and physical fitness level with sport education outcomes in students of Samarinda Negeri 011 Elementary School

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Abstract

The study aims to determine the relationship of nutritional status and physical fitness level with the learning outcomes of sports education in students of Samarinda Negeri 011 elementary school. The study is a descriptive research which taking all students of Samarinda Negeri 011 elementary school as a population. A simple random sampling technique was applied in this study resulted 40 male students selected. A correlation and regression analysis techniques were conducted in this study for data analysis using the SPSS Version 16.00 program at a significant level of 95% or α = 0.05.

Results showed three main conclusions in this study that are (1). There is a correlation between nutritional status and learning outcomes in sports education for elementary school students in Negeri 011 Samarinda with an r value of 0.519, that 26 students have a normal nutritional status, 13 are below normal and 1 is overweight. (2). There is a relationship between physical fitness and learning outcomes in sports education for students of SD Negeri 011 Samarinda with a r value of 0.815 which resulted 36 students have less physical fitness while others are medium. (3). There is a relationship between nutritional status and physical fitness together with the learning outcomes of students in Elementary School of Negeri 011 Samarinda with an R value of 0.833.

Keywords: nutritional status, physical fitness, learning outcomes of sports education

Introduction

The quality of human resources, one of which is determined by the level of good physical fitness and good nutrition, the level of physical fitness and nutrition will affect all activities of daily life. Thus the achievement of quality human resources can be achieved through physical fitness and food or nutrients consumed.

Nutrition is defined as the process of organisms using food consumed normally through the process of digestion, absorption, transportation, storage, metabolism and expenditure of nutrients to maintain life, the normal functioning of organs, as well as producing energy (Djoko, 2007: 2). Almatsier (2004: 3) revealed that nutrition is the study of everything about food in relation to optimal health.

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Knowing the nutritional status and physical fitness of a child comprehensively can be seen by general appearance (weight and height), physical signs, motor, functional, emotional and cognitive cognition of children. Based on anthropometric measurements, a healthy, aging, weight and height child is associated with adequate intake of macronutrients, calcium, magnesium, phosphorus, vitamin D, iodine and zinc (Devi, 2016). A person's nutritional status can be calculated through the adequacy of daily nutrients obtained food.. The more health food digested would be helpful for physical fitness.

Basic health research data (Riskesda) in 2007, 2010 and 2013 showed the trend of malnutrition problems to be a big challenge at the milestone stage of the child's age. Thus, efforts are made with the involvement of parents to provide balanced nutrition in the amount, type, schedule, and manner that is appropriate to the stage of the child's age. The substances needed for child growth are in the form of; Carbohydrates, fats, proteins, vitamins, minerals, water, and dietary fiber (Pekik, 1997: 5-24).

Children who have started learning in school really need enough food to well-participated in learning class. At the age of 0-6 years children experience a rapid growth, while 6-12 years flat growth, and return to rapid growth at the age of 12-18. On the other hand, at the age of 0-6 years, the child's brain growth reaches 95 percent while after 6 year; the brain development is only five percent. Hence, the age of 0-6 years is an important phase for children or windows of opportunity which need nutrition and experiments.

Children growth is an important phase for growth and development. At the time of school-age children are experiencing a period of growing fast and active, in this period children need adequate nutrition both in quantity and quality. This is also accompanied by children's desire to explore them self which can be demonstrated by participating in various sports activities. For this reason, children must be well equipped with nutrition so that their nutritional needs for growth and nutrition while exercising can be fulfilled. According to dietitian from the Academy of Nutrition and Dietetics, Dayle Hayes stated that some nutrition-related things that need to be considered in children before exercise are sufficient energy at breakfast, protein and fluid intake.

Physical education is an inseparable part of comprehensive education, which in its implementation is in the form of physical activities especially sports, and physical education and sports subjects where learning material about nutrition is also expected to be presented by the teacher and all students are expected to know the importance of nutrition for the body.

The importance of nutrition for students, both for growth and for physical fitness should be realized by the teacher and students' parents. The teachers should pay attention to the nutritional status of students, so that the teacher's goal to improve physical fitness can be achieved. In addition, teachers are also required to pay attention to student nutrition through an approach to give education the parents.

In addition, in order to find out the nutritional status, anthropometric tests are conducted. Anthropometry test is a test to find out the composition of the body and its shape or measurement of the structure of the human body. The ultimate goal of anthropometric measurements is to determine a person's body shape or type. Body type for a person before he works is important, because with the ideal body type for certain types of work can improve the achievement of work success. With anthropometric tests will be able to find out whether a person's body growth is normal or not, the deficiencies as well as the ideal body growth efforts. On the other hand, to find out and assess the level of physical fitness, physical fitness tests are conducted. The Indonesian Physical Fitness

Test or known as TKJI is a form of instrument to measure the level of physical fitness (Ministry of National Education, TKJI: 2007).

Optimal physical fitness can only be obtained through proper physical training, regular and measurable, both the dose and intensity of the exercise. Yet, the nutritional status and physical fitness level of students in grades IV, V, VI State Elementary School 011 Samarinda is very important to be investigated. Therefore based on the available facts it is deemed necessary to conduct a study entitled "Analysis of Nutrition Status and Physical Fitness Levels with Learning Outcomes of Sports Education among students of Samarinda 011 Elementary School".

Method

This research is a kind of descriptive research that aims to determine the relationship of independent variables with the dependent variable. In this case the relationship of nutritional status with the level of physical fitness. The populations in this study were all male students of Samarinda State Elementary School 011. Samples in this study were 40 students. The sampling technique used is restriction where the sample is taken based on certain criteria. Restriction is the application of limiting criteria by selecting research subjects. The purpose of the restriction is to facilitate the implementation of research and reduce research costs, and control for confounding factors (Bhisma Murti, 1997: 79). The sample inclusion criteria are male, have the similar age, No physical disability, not in a state of illness or in the healing stage of illness, not a smoker and not following extracurricular activities. While, the sample exclusion criteria in this study are those who are not willing to be research samples, those who are not in school and those were not in the place or location of the study.

To obtain suitable data in this study, the technique used is the field survey method then measurements and tests are carried out. After finding out the study population, it was found the number of samples for research using retention techniques in accordance with the sample requirements, namely the sex of men aged 10-12 years old, not disabled, not sick, not smoking and not following extracurricular activities. Then given direction and heating and numbering in accordance with the absent number so that it makes it easier to record the results of measurements and test implementation. Before measurement, the study sample is given an explanation of the anthropometric measurement procedure. Nutritional status measurements include: Measurement of Body Weight (BB), Height Measurement (TB), Physical Fitness Test, including: sprint 40 meters, Hang elbow bending, Sitting Lie (30 seconds), Jump Upright, Running Medium Distance 600 meters. Data analysis techniques after this research data was collected namely nutritional status data and physical fitness level, then to test the truth of the proposed research hypothesis, the data needs to be analyzed using statistical analysis using computer assistance through the SPSS program.

Results

Results showed that the measurement of nutritional status and physical fitness of the school consisting of (1). Nutritional status is divided into age, height and weight (2). The level of physical fitness that consists of running 40 meters, vertical jumps, sit-ups, body

lift and run 600 meters. (3). Physical education learning outcomes are the physical education values in their report cards. The physical fitness data of each item is in the form of a standard value so that it does not need to be converted into a t-score for determining one's physical fitness level. Figures obtained from each test item are directly matched to the standard table values applied for the Indonesian physical fitness test. Therefore, to find out the level of physical fitness someone has to add up the total value of each test item and then further classified according to the assessment norms that have been determined. From these results, then a person can be categorized the level of physical fitness— Very Good, Good, Medium, Poor and Very Less. Likewise, the nutritional status, after obtaining a value through calculation, it is then matched to the table for determining the nutritional status, so that the following categories are found that are Obesity, Normal and Under Normal. But before an analysis is conducted to test the hypothesis, a normality test required.

Descriptive data analysis is intended to get an overview of research data. Descriptive analysis was carried out on the research data in the form of nutritional status, physical fitness and the learning outcomes of Physical Education students of Elementary School 011 Samarinda. Descriptive analysis includes total scores, averages, standard deviations, variances, maximum and minimum data. These statistical values are expected to provide a general picture of the state of nutritional status and physical fitness data with the physical education learning outcomes of 011 Samarinda State Primary School.

Table 1. Results of descriptive analysis of nutritional status data, physical fitness and physical education learning outcomes

Statistics	N	Total	Average	SD	Range	Min	Max
Nutritional status	40	590.60	14.79	2.87	12.40	12.15	24.45
TKJI	40	483.05	12.10	1.18	4.05	10.05	15.00
Physical learning outcomes	40	295.40	7.28	0.53	2.05	6.40	8.55

The nutritional status stated that the students obtained an average of 14.79, a standard deviation of 2.87, a range of 12.40, a minimum of 12.15, a maximum of 24.45, and a total value of 590.60. The results of physical fitness measurements obtained an average of 12.10, a standard deviation of 1.18, a range of 4.05, a minimum of 10.05, a maximum of 15.00, and a total value of 483.05. Physical education learning measurement results obtained an average of 7.28, a standard deviation of 0.53, a range of 2.05, a minimum of 6.40, a maximum of 8.55. Furthermore, the analyzed data were classified for nutritional status data found 26 students in the normal category, 1 student in the overweight category and 13 students under the normal category. Whereas for the physical fitness category based on the physical fitness test norm table found 4 students were moderate and 36 students were poor.

The results of the descriptive data analysis, is a general description of nutritional status, physical fitness and the learning outcomes of the students. This was not described the relationship between research variables yet. In order to analize it, the correlation test was conducted. To determine the distribution of nutritional status data, physical fitness and physical education learning outcomes, a data normity test was conducted using the Kolmogorov Smirnov test (KS-Z).

Table 2. Summary of normality test results on nutritional status, physical fitness and physical education learning outcomes

Variabel	N	KS-Z	As.Sig	Ket
Nutritional status	40	1.853	0.016	Normal
TKJI	40	1.280	0.073	Normal
Physical learning outcomes	40	1.255	0.076	Normal

The data normality testing using the Kolmogorov Smirnov test result as follows: (1) nutritional status obtained KS-Z value = 1,853 (P <0.05), which means that the nutritional status data and the learning outcomes of the student physical education service are normally distributed. (2) Physical fitness obtained KS-Z value = 1,280 (P <0.05), or conclude that physical fitness data and student learning outcomes are normally distributed. (3) Physical education learning outcomes obtained KS-Z value = 1,255 (P <0.05) as outcomes of students in learning physical education.

The hypothesis proposed in this study concerns the relationship of each independent variable, namely nutritional status and physical fitness with physical education learning outcomes. In addition, a double relationship test between the two independent variables was jointly carried out on the dependent variable. After testing the analysis requirements, namely the normality test data so that parametric statistics can be applied, it turns out that all the data variables of this study follow the normal distribution, so in testing this hypothesis using parametric statistics, namely the Pearson relationship (rho).

a. **Relationship between nutritional status and physical education learning outcomes**

To find out the relationship between nutritional status and physical education learning outcomes, correlation and Pearson tests were used. Pearson's relationship calculation results, obtained r count = 0.518 (P <0.05), means that there is a significant relationship of nutritional status with the learning outcomes of the students.

Table 3. Summary of the relationship between nutritional status and physical education learning outcomes

Variabel	r_o	P	signification
Nutritional status (X_1) Physical learning outcomes (Y)	0.518	0.000	Significant

b. **The relationship between physical fitness with physical education learning outcomes**

To determine the closeness of the relationship of physical fitness with student learning outcomes, correlational and Pearson analyzes were performed. The Pearson relationship calculation results, obtained r count = 0.819 (P <0.05), means that there is a significant relationship between physical fitness with the physical education learning outcomes.

Table 4. Summary of the results of physical fitness analysis with student learning outcomes

Variabel	r_o	P	signification
TKJI (X_2) Physical learning outcomes (Y)	0.819	0.000	Significant

c. **The relationship of nutritional status and physical fitness with the Physical learning outcomes**

In order to determine the close relationship between nutritional status and physical fitness with the learning outcomes of Physical Education, the multiple correlation analysis is performed. The results of the calculation of multiple relationships, obtained R count (Ro) = 0.835 (P <0.05), means there is a significant relationship between nutritional status and physical fitness with the learning outcomes.

Table 5. Summary of the results of the multiple correlation analysis between nutritional status and physical fitness with student learning outcomes

Variabel	R	P	signification
Nutritional status (X_1), TKJI (X_2) Physical learning outcomes (Y)	0.835	0.000	Significant

Hypothesis testing

Hypothesis testing is carried out one by one in accordance with the order in the formulation of the hypothesis as follows: (1). There is a significant relationship between nutritional status and the learning outcomes of Physical Education students at the Samarinda Elementary School 011. Statistical hypothesis to be tested H0: $\rho x1y = 0$, H1: $\rho x1y \neq 0$, Test results: From the results of data analysis using the Pearson correlation test, the value of r count (ro) 0.518 (P <0.05) is obtained, then H0 is rejected and H1 is accepted, meaning there is a significant relationship between nutritional status and physical education learning outcomes. (2). There is a significant relationship between physical fitness with the Physical learning outcomes of students at 011 Samarinda Primary School. Statistical hypothesis to be tested: H0: $\rho X2y = 0$, H1: $\rho x2y \neq 0$, Test results: From the results of data analysis using Pearson correlation test, the value of r count (ro) 0.819 (P <0.05) is obtained, then H0 is rejected and H1 is accepted, which means that a significant relationship between physical fitness with Physical learning outcomes. (3). There is a significant relationship between nutritional status and physical fitness with Physical learning outcomes of 011 Samarinda State Elementary School students. Statistical hypothesis to be tested: H0: $R12y = 0$, H1: $R12y \neq 0$, Test results: From the results of data analysis using multiple correlation tests, the calculated R value (Ro) = 0.835 (P <0.05), then H0 is rejected and H1 is accepted, meaning there is a significant relationship between nutritional status and physical fitness with the Physical learning outcomes.

Discussion

There is a significant relationship between nutritional status and the Physical learning outcomes among students at the Samarinda Elementary School 011. Statistical test showed that there is a significant relationship between nutritional status and physical education learning outcomes. Furthermore, the similar result was stated the previous research that nutritional status and physical activity are very important in achieving good physical fitness for a person, especially for school-aged children, aged 6-12 years. Achieving a good level of physical fitness will affect a child's health.

There is a significant correlation between physical fitness with the learning outcomes of Physical Education among students at 011 Samarinda Primary School. The results of statistical tests show that there is a significant relationship between physical fitness with physical education learning outcomes. This study is in line with other studies which state that physical fitness has a positive relationship with significant physical achievement learning outcomes showing that children who have good physical fitness are more likely to have better achievement values than children who have less physical fitness. There is a significant correlation between nutritional status and physical fitness with the learning outcomes of the 011 Samarinda Elementary School students. Statistical test results showed that there is a significant relationship between nutritional status and physical fitness with physical education learning outcomes. This result support and strengthen the previous theory. Nutritional status as a supporter of growth, physical fitness as an activity and learning achievement achieved as a result of both.

Conclusions

Based on the results of data analysis and discussion, the results of this study can be concluded as follows: (1). There is a significant relationship of nutritional status with the Physical learning outcomes among students of the Samarinda Elementary School 011 (2). There is a significant correlation between physical fitness with the learning outcomes of Physical Education students at 011 Samarinda Primary School, (3). There is a significant relationship together nutritional status and physical fitness Physical learning outcomes of the students.

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