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Ariadin
Sport Science Study Program,
Postgraduate Program,
Yogyakarta State University,
Road Colombo No. 1,
Karangmalang, Yogyakarta,
Indonesia

Yustinus Sukarmin
Sport Science Study Program,
Postgraduate Program,
Yogyakarta State University,
Road Colombo No. 1,
Karangmalang, Yogyakarta,
Indonesia

Sigit Nugroho
Sport Science Study Program,
Postgraduate Program,
Yogyakarta State University,
Road Colombo No. 1,
Karangmalang, Yogyakarta,
Indonesia

Deni Rahman Marpaung
Sports Science, Medan State
University, Road William
Iskandar, Deli Serdang, North
Sumatra, Indonesia

Frans File Manihuruk
Sport Science Study Program,
Postgraduate Program,
Yogyakarta State University,
Road Colombo No. 1,
Karangmalang, Yogyakarta,
Indonesia

Corresponding Author:
Ariadin
Sport Science Study Program,
Postgraduate Program,
Yogyakarta State University,
Road Colombo No. 1,
Karangmalang, Yogyakarta,
Indonesia

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The relationship between nutritional status and physical activity on students' physical fitness: A literature study

Ariadin, Yustinus Sukarmin, Sigit Nugroho, Deni Rahman Marpaung and Frans File Manihuruk

Abstract

Physical fitness is the ability or ability of a person to carry out activities or activities with high work power without experiencing significant or excessive fatigue. A student needs good physical fitness for academic achievement. This study aims to determine the relationship between nutritional status and physical activity on students' physical fitness. This type of research uses literature studies. Database in this study with the criteria of articles originating from Sinta. In this study, 4 articles were used as a reference for researchers to conduct a review. Characteristics of the 4 articles, 1). Issues from the last 6 years, 2). The reviewed articles are related focus with this research. Then the procedure for searching the articles needed in this research is based on the Google engine: 1).Google scholar and 2).Google Chrome. This research analysis focused on the relationship between nutritional status and physical activity on students' physical fitness. It was concluded that there is a relationship between nutritional status and physical activity on students' physical fitness.

Keywords: Students, nutritional status, physical activity, physical fitness

1. Introduction

At present the problem for students is that health problems are often discussed by many parties, such as healthy eating patterns, physical activity, healthy diets and types of deadly diseases due to students' lack of physical fitness (Erliana & Hartoto, 2019) ^[6]. In the world of permanent education, students must pay attention to the food consumed so that malnutrition does not occur and carry out physical activities to obtain physical fitness. Unbalanced nutritional status can cause disturbances in the growth and development of the body, this is because every time they do learning in class or when doing physical activities students need energy to get a good level of physical fitness (Yoga, Umiyarni, & Kusnandar, 2014) ^[18]. To maintain physical fitness, at least students carry out physical activity approximately 3-5 days a week with a duration of 20-60 minutes and consume nutritious foods such as fruits and vegetables (Erliana & Hartoto, 2019) ^[6]. Meanwhile, according to (Abadi & Sartika, 2021) ^[1] sports activities that can be done at least 3 times a week to get a good level of fitness in students.

Health is very dependent on the balance of nutrition in the body, so that the nutritional status of a person cannot be separated from the type of food consumed daily (Savitri, Citrawathi, & Dewi, 2019) ^[16]. Nutritional status is the state of the body resulting from consuming food and using nutrients (Pantaleon, 2019) ^[10]. The balanced nutrition guide (PGS) recommends four pillars related to nutritional behavior to be applied every day to students, the four pillars of balanced nutrition are consuming a variety of foods, clean and healthy living behavior (PHBS), doing physical activity, and monitoring body weight regularly to maintain normal body weight and gain physical fitness (Kartini, Manjilala, & Yuniawati, 2019) ^[8]. Poor food intake consumed by students can cause side effects on students such as students lacking concentration in studying and faces looking pale (Hyun *et al.*, 2017) ^[7]. Assessment of nutritional status based on BMI in age groups 13-15 years shows the national prevalence of wasting is 11.1% consisting of 3.3% very thin and 7.8% thin (Pantaleon, 2019) ^[10].

Awareness for healthy eating patterns is generally not shared by students due to the tendency to eat outside the home, namely in prestigious places with menu choices that do not meet the principles of balanced nutrition, such as fast food. Fast food) is food that is available quickly and ready to eat, such as fried chicken, hamburger or pizza (Savitri *et al.*, 2019) ^[16]. If sufficient nutrition is consumed it will encourage children or students to be more enthusiastic, agile and active in carrying out physical activities, if nutrients are not sufficient then physical activity in children or students can decrease so as to make the body unfit (Yoga *et al.*, 2014) ^[18]. According to (Darmawan, 2017) ^[5] the level of fitness of students at all levels of education is not in good condition, and the higher the level of education, the less physical activity students have, thus impacting on a decrease in physical fitness. Meanwhile, according to (Abdurrahim & Hariadi, 2018) ^[2] basically the level of physical fitness of students varies from one region to another in terms of the geography of each region whose geographical conditions include climate, topography, soil type and quality and water conditions. Topography is closely related to the elevation of the shape of the earth's surface.

One way that can be done to maintain health and fitness is to do physical activity. Physical activity needs to be done by all ages, both children, young, adults and old in order to obtain health and fitness (Rohmah & Muhammad, 2021) ^[14]. The importance of having good physical fitness and balanced nutrition socialization in order to improve and maintain student achievement in educational institutions from the lowest level (kindergarten) to tertiary institutions (Yulianti, Irsyanty, & Irham, 2018) ^[19]. Physical fitness is the suitability of the physical condition for the tasks that must be carried out physically or physically based on the physical requirements that are anatomical, physiological, anatomical suitability and physiological suitability, and physical fitness more emphasis on physiological fitness, so that the level of suitability of the dynamic health degree possessed by the executor can be defined for the severity of the physical tasks that must be carried out (Candra Dewi, Astra, & Suwiwa, 2020) ^[4].

Physical fitness is closely related to humans in doing work, Berger and one's level of physical fitness will affect physical readiness and nutritional intake as well as the mind to be able to accept workloads, this also applies to school students, students with good levels of physical fitness and balanced nutrition will be able to carry out their learning activities smoothly (Abdurrahim & Hariadi, 2018) ^[2]. According to (Abadi & Sartika, 2021) ^[1] all forms of human activity in daily life every day always requires physical support, at least students must have good physical fitness which always supports the demands of the activity and of course it is even better if students have a balanced nutritional status.

Physical activity that is carried out regularly and spends more

time aimed at increasing the body's ability to increase maximum muscle work ability, preventing obesity which includes the correct, structured and continuous training components in carrying out physical exercise can definitely lead to good physical endurance and carry out physical fitness tests to find out how much fitness level they have and consume balanced nutrition every time they finish doing physical activity (Rohmah & Muhammad, 2021) ^[14].

Research conducted by (Riyanto, 2020) ^[13] found that student learning outcomes were not only determined by students' intelligence abilities, students' physical activity and physical fitness also affected student learning outcomes and the amount of contribution made by physical activity and physical fitness to physical education learning outcomes by 74%. While the research conducted (Kyan, Takakura, & Miyagi, 2018) ^[9] physical fitness has an influence on students' academic and cognitive results.

2. Materials and Methods

This study uses the literature review method. Literature review is a literature review which is the basis for the reasons researchers decide to choose a particular theme or title that collects from several previous studies (Ridwan, Ulum, Muhammad, Indragiri, & Sulthan Thaha Saifuddin Jambi, 2021) ^[12]. The data collection technique in this study uses web-based internet by focusing on articles that are relevant to this research. The data used is secondary data in the sense that researchers do not go directly to the field.

It should be noted that the procedure for searching articles that are relevant to this research uses a sinta database with the help of a machine Google Chrome and Google Scholar. The article search system uses keywords derived from the title of this research. As many as 50 articles were found during the article search process, but of the 50 articles found, only 4 articles were used as a reference for researchers to conduct a review. This is because 46 articles were not included or not needed in this study. The researcher also emphasized that all the data used for this research was sourced from database national or Santa with the provisions of the last 6 years so that its existence is still relevant today.

3. Results and Discussion

Table 1 below is the five articles which are the main references or sources for the authors in completing this research. Because the research database is sourced from the articles listed in the table below. These four have several components that need to be listed in the table below, namely 1). Author's name, 2). Article title, 3). Journal name, 4). Research results which include, a. the variable being measured, b. number of samples and c. The following statistical test is used in detail 5 articles that are relevant to this research as follows.

Table 1: List of articles that become references

No	Author Name and Year Rise	Title	Journal Name	Research result
1	(Setiaputri, Rahfiludin, & Suroto, 2017) ^[20]	Connection consumption of nutrients, percentage body fat and physical activity with fitness body in swimming athletes	Journal Health Public	The result showed that level of energy consumption was classified as adequate (50%). Level of fat consumption was good (53, 3%). Body fat percentage was normal (66, 7%). Physical activity was heavy (40%). Physical fitness moderate (60%). The result of this research showed that there were no correlation between level of energy consumption ($p = 0,269$) and level of fat consumption ($p = 0,054$) with physical fitness in swimming athletes. There was correlation between physical activity ($p = 0,006$) with physical fitness in swimming athletes, but no correlation between body fat percentage ($p = 0,066$) with physical fitness in swimming athletes. This research recommended athletes to increase their energy consumption in

				order to fulfill their nutritional needs, moreover athletes's physical fitness should also be improved to increase athletes's performance during exercise and competition
2	(Qusnul Manggar Sari, 2018) ^[11]	Connection between nutritional status, adequacy intake energy, Dan physical activity with fitness physical in grade xi students at Sman 1 stone	Journal Education Sports and Health	From the results of data analysis it can be seen that there is no significant relationship between nutritional status, energy adequacy and physical activity with physical fitness in class XI students at SMAN 1, the result is sig 0.446 with a contribution of 19.7%.
3	(Adi & Eko, 2019) ^[21]	Connection nutritional status and physical activity by level fitness physical in junior high school students	Sport Science and Health	The results of the study: (1) nutritional status with a physical fitness level rcount (0.208) \leq rtable (0.266), (2) physical activity with a physical fitness level rcount (0.747) $>$ rtable (0.266) and (3) nutritional status and physical activity with physical fitness level Rcount (0.762) $>$ Rtable (0.266). Conclusion: (1) nutritional status has no significant relationship with level physical fitness, (2) physical activity has a significant relationship with the level of physical fitness and (3) together nutritional status and physical activity have a significant relationship with the level of physical fitness
4	(Satin, Yohanis M. Mandosir, Irmanto, Susanto, & Kristanto, 2021) ^[15]	Connection between nutritional status and physical activity with level fitness physically high school students in the city Jayapura	Indonesian Journal of Ki anthropology (IJOK)	The results of the study of nutritional status are not related to the level of physical spread in high school students in Jayapura City, but there is a good relationship between physical activity and physical health level. The results of the Spearman rank correlation test at $\alpha = 5\%$ obtained a p-value of 0.215 ($p > 0.05$), which means that there is no significant relationship between nutritional status and physical fitness

4. Conclusions

The first article written by (Setiaputri *et al.*, 2017) ^[20] entitled "Relationship of Nutrient Consumption, Body Fat Percentage and Physical Activity with Physical Fitness in Swimming Athletes". The purpose of this study was to determine the relationship between nutritional intake, body fat percentage and physical activity with physical fitness in swimming athletes. This type of research is explanatory research with approach cross sectional desain. The population in this study were all swimming athletes aged 13-18 years at PLOP and TCS Swimming Clubs. Sampling was done by purposive sampling technique. Data were analyzed using Pearson Product Moment and Rank Spearman. The result showed that level of energy consumption was classified as adequate (50%). Level of fat consumption was good (53, 3%). Body fat percentage was normal (66, 7%). Physical activity was heavy (40%). Physical fitness moderate (60%). The result of this research showed that there were no correlation between level of energy consumption ($p = 0,269$) and level of fat consumption ($p = 0,054$) with physical fitness in swimming athletes. There was correlation between physical activity ($p = 0,006$) with physical fitness in swimming athletes, but no correlation between body fat percentage ($p = 0,066$) with physical fitness in swimming athletes. This research recommended athletes to increase their energy consumption in order to fulfill their nutritional needs, moreover athletes' physical fitness should also be improved to increase athletes' performance during exercise and competition.

The second article was written by (Qusnul Manggar Sari, 2018) ^[11] entitled "The Relationship between Nutritional Status, Adequacy of Energy Intake, and Physical Activity with Physical Fitness in Class Xi Students at Sman 1 Batu". The purpose of this study is to determine the relationship between nutritional status, energy adequacy and physical activity with physical fitness. This research is a correlational research. The population in this study were students of class XI at SMAN 1 Batu with a sampling technique using cluster random sampling of 52 students. Measurement nutritional status by measuring the weight and height of students, then for energy adequacy using a questionnaire food recall and physical activity using the IPAQ questionnaire and fitness tests using TKJI. Data analysis techniques used gamma

correlation and logistic regression. From the results of data analysis it can be seen that there is no significant relationship between nutritional status, energy adequacy and physical activity with physical fitness in class XI students at SMAN 1, the result is sig 0.446 with a contribution of 19.7%.

The third article was written by (Adi *et al.*, 2019) ^[21] with the title "Relationship between Nutritional Status and Physical Activity with the Level of Physical Fitness in Middle School Students". This study aims to determine the relationship between nutritional status and physical activity with the level of physical fitness in junior high school students. Using a quantitative descriptive design correlation method with independent variables: nutritional status (X1) and physical activity (X2) and the dependent variable level of physical fitness (Y), and a sample of 54 students. The results of the study: (1) nutritional status with a physical fitness level rcount (0.208) \leq rtable (0.266), (2) physical activity with a physical fitness level rcount (0.747) $>$ rtable (0.266) and (3) nutritional status and physical activity with the level of physical fitness Rcount (0.762) $>$ Rtable (0.266). Conclusion: (1) nutritional status has an insignificant relationship with the level of physical fitness, (2) physical activity has a significant relationship with the level of physical fitness and (3) together nutritional status and physical activity have a significant relationship with the level of fitness physical.

The fourth article was written (Satin *et al.*, 2021) ^[15] with the title "Relationship Between Nutritional Status and Physical Activity and the Level of Physical Fitness for High School Students in Jayapura City". This study aims to determine the relationship between nutritional status, physical activity, and fitness level physical education in high school students in Jayapura City. This research is a quantitative study with a cross sectional approach. A total of 384 students from five high schools in Jayapura City participated in the study this. The variables in this study included nutritional status, physical activity, and physical fitness which were obtained through measurements using a 1,200 meter running test. Data analysis used the Spearman correlation test with a significance level set at 5%. The results showed that nutritional status was not related to the level of physical fitness in high school students in Jayapura City, but there was a significant relationship between physical activity and the

level of physical fitness.

Based on the results of a review of the four articles, the researchers firmly stated that there was a relationship between nutritional status and physical activity on students' physical fitness. The similarities between the four previous studies and this research are: 1). the research objective focuses on the relationship between nutritional status and physical activity on students' physical fitness, 2). Focus on the sample, namely students or students, 3). the research results from the four articles focus on the relationship between nutritional status and physical activity on physical fitness. Then the differences between the four previous studies and this research are, 1). The research methods used are different, this research uses literature studies while the four articles do not use literature studies, and 2). Analyze the data. But from the four articles it is clear and convincing regarding the relationship between nutritional status and physical activity on physical fitness.

Physical fitness is a condition of a person's body when doing an activity is not easily tired. To get a physical fitness by consuming nutritious food or balanced nutrition and doing regular physical activity. To improve physical fitness, regular physical activity is carried out 3-5 times a week with 20-40 minute durations per day. When a student has good physical fitness by controlling his nutritional intake and physical activity, students when studying have high enthusiasm, are not weak, are agile and concentrate.

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