

**Anthropometric Profiles and Physical Fitness for Elementary School Children****Edo Arisyandi<sup>1✉</sup>, Hartati<sup>2</sup>, Destriana<sup>3</sup>, Doni Pranata<sup>4</sup>**Universitas Sriwijaya, Palembang, Indonesia<sup>123</sup>Universitas Negeri Yogyakarta, Yogyakarta, Indonesia<sup>4</sup>**Article History**

Received May 2021

Accepted June 2021

Published Vol.10 No.(2) 2021

**Keywords:**Anthropometry profile;  
Jasmani Fitness;  
Student**Abstract**

The aim of this study was to determine the anthropometric profile data and physical fitness of elementary school children aged 10-12 years SD Negeri 11 Tanjung Batu 2020-2021. The method used in this research is quantitative descriptive method by measuring and testing TKJI 2010, the total sample is 25 students. The results of the research obtained on the anthropometric profile to see the body mass index obtained the nutritional status of 18 underweight students, 7 normal students, on the physical fitness test, 5 students were in good category, 16 students were enough, and 4 students were less, and there was a relationship between anthropometric profiles with students' physical fitness. After the data is obtained, the educator can review and make a reference for the future learning process. It can be concluded that there is a relationship between Anthropometry profiles and physical fitness of elementary school children based on research data. Based on the results of the t-test that was carried out, It showed the results by SPSS 16 significant test. the results obtained sig 0.0000 which means there is a correlation or relationship between anthropometric profiles and students' physical fitness with a correlation coefficient of  $r = 0.789$  which is included in the strong level category.

**How to Cite**

Arisyandi, E., Et al. (2021). Anthropometric Profiles and Physical Fitness for Elementary School Children. *Journal of Physical Education, Sport, Health and Recreation*, 10 (2), 49-54

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**p-ISSN 2460-724X****e-ISSN 2252-6773**

## INTRODUCTION

One of the subject that is important and must be in school is the subject of physical education and health (Bangun, 2012:1). Physical Education is a sporting subject to encourage motor skills, physical development, reasoning and knowledge, appreciation, and attitude values (emotional, mental and social) as well as getting used to a healthy diet and life that aims to support balanced growth and development. (Setiawan & Ali, 2015:2095).

Physical education subjects are fun because learning can be done while playing (Asriansyah & Mahendra, 2020:122), with the existence of physical education and health subjects in schools, this is useful to support and assist in improving the freshness or physical fitness of students (Saraswati et al., 2017:77). According to Hartati et al., (2017:578) Physical education learning in the form of games is an aspect of sports that can help people develop their body or physical activity.

In physical and health learning, students will automatically carry out physical activities that involve body parts, this can provide benefits for improving physical fitness (Hardiansyah & Syampurma, 2017:77). A healthy body is very useful in everyday life because in a healthy body there is also a strong soul (Imansyah, 2018:39).

Based on research conducted by Prasetio et al., (2017:89) regarding the anthropometric profile and physical fitness of junior high school children, it was found that there was a relationship between anthropometric profiles and physical fitness, this indication by the results of the measurement of body mass index the part of the anthropometric profile of junior high school students normal results and the results of physical fitness level is moderate and good category. this is in line with the research that will be carried out, regarding the anthropometric profile and physical fitness of children primary school, aims to see the relationship between the anthropometric profile and physical fitness of primary school children.

There are many benefits when a person's level of physical fitness is in a good category, including being able to influence a person in carrying out daily activities, thereby helping him carry out his daily activities without feeling tired because of sufficient energy and nutrition. (Setyaningsih & Yuliandi, 2019:2). A person who has a good physical fitness will be able to accept all forms of psychological and physical burdens because good physical fitness is the basic thing for a person to achieve maximum productivity or performance. A good level of physical fitness can be seen from

its ability to accept a problem or burden (Sulistiono, 2014:225). Components that affect physical development consist of housing and food eaten on a daily basis (Mesra & Mokhamad Nur Bawono, 2020:92).

Adequate nutrition can play a role in increasing a person's growth, therefore, to meet one's needs, you must eat nutritious foods that contain carbohydrates, protein and others to help improve one's physical health (Rismayanthi, C. 2012:30) Balanced nutrition is a plan. preparation of foods containing substances in the type and amount of doses according to the needs of the body, taking into account the concept of diversity or types of food (Purnamasari et al., 2016:50). Body mass index is defined as a way to measure and monitor nutritional status by anthropometry (Prasetio et al., 2017:88).

Anthropometric profile is defined as a tool for systematic measurement that presents quantitatively, body shape and body frame. This anthropometric measurement has become a standard measure for seeing a person's portion (Yunieswati, 2015:182). Anthropometric which deals with the dimensions of the body structure related to sports and medical sciences. Anthropometric profiles are used to measure waist width, stomach circumference, chest circumference, body weight, height (Hasimjaya et al., 2017:449).

Age 6-12 years is the golden age for development, at this age the condition of the children should be known so that it can support and assist in improving the growth and development of children. At this age the children psychological development and growth begins, so there needs to be basic training for children (Nurchahyo, 2011:92).

Based on the results of direct observations in the field, it is known that SD Negeri 11 Tanjung Batu has never taken measurements of the anthropometric profile of students aged 10-12 years, and the physical fitness level of students aged 10-12 years has not been known. Therefore, a research was conducted.

The formulation of the problem in this study is how the anthropometric profile and physical fitness level of elementary school students? Is there a relationship between anthropometric profiles and the physical fitness level of elementary school students?

The purpose of this study was to determine the anthropometric profile of elementary school students, to determine the level of physical fitness, and to determine the relationship between the anthropometric profile and the physical fitness level of elementary school students. The

hypothesis in this study is that it is suspected that there is a correlation or relationship between the anthropometric profile and the physical fitness level of elementary school students.

**METHODS**

This study uses quantitative descriptive research methods, quantitative descriptive methods, which is a scientific step useful for obtaining correct data with the aim of developing, finding and proving a problem. (Sugiyono,2012:5).

Quantitative data is obtained from the results of testing and measurement, then described. the population used in this study were all male students of SD Negeri 11 Tanjung Batu. the sampling technique is random sampling. the sample used is male students aged 10-12 years, the number of samples is 25 people.

The technique used in analyzing the data is by using statistical data analysis techniques, product moment correlation and data processing assisted by the application used, namely SPSS 16, to analyze anthropometric profile data using the formula:

Mean to calculate average

$$M = \sum xi / N$$

M: Mean (average)

x : The ith data value

N: Number of cases

Then calculated based on BMI with the formula:

$$BMI = kg / (m)^2$$

After obtaining the results, it is then calculated based on the BMI category.

**Table 1.** BMI nutritional status categories according to the Center of Disease Control and Prevention (CDC)

BMI Value	Kategori
< 17,0	Thin, underweight
17,0 – 18,4	Thin, lightly underweight
18,5 – 25,0	Normal
25,1 – 27,0	Fat, light weight overweight
> 27	Fat, overweight levels of weight

Data from student measurements were analyzed using percentage calculations:

$$P = f / n \cdot 100$$

Info ation:

P: Percentage figures

f : Frequency (Number of samples)

n : Number of cases

**Table 2.** Classification of students' physical fitness level.

Score (%)	Classification
0-20	Very less
21-40	Less
41-60	Medium
61-80	Good
81-100	Very good

The research instrument used a scale and meter which is used as an anthropometric measuring device in the form of height and weight to determine the body mass index (BMI) of students. Determination of nutritional status categories in the form of thin, normal, fat (Saraswati et al., 2017:79). The instrument for physical fitness is the 2010 TKJI test for ages 10-12 years. The test consists of 5 tests, namely the 600 m running test, the 40 m running test, the hanging elbow bending test, lying down for 30 seconds, jump df (Hidayat, 2019:15).

**RESULTS AND DISCUSSION**

The research data has been analyzed and data processing has been carried out using the SPSS 16 application data about anthropometric profiles and physical fitness, the results of processing anthropometric profile data in the form of height and weight measurements to obtain the nutritional status of students expressed in body shape index, presented in the table and bar chart as follows:

**Table 3.** Data description of the percentage of student nutritional status based on BMI

Nutrition Status	Frequency	Percentage (%)
Skinny	18	72
Normal	7	28
Fat	0	0
Total	25	100

Based on **Table 3.** The nutritional status of students based on the body mass index above, It is known that the nutritional status of 25 students, namely 18 students with a percentage of 72% who have nutritional status belonging to the thin category, 7 students. with a percentage of 28% with normal nutritional status and 0 students with fat nutritional status. Based on the description above, it can be presented with a bar chart as below:

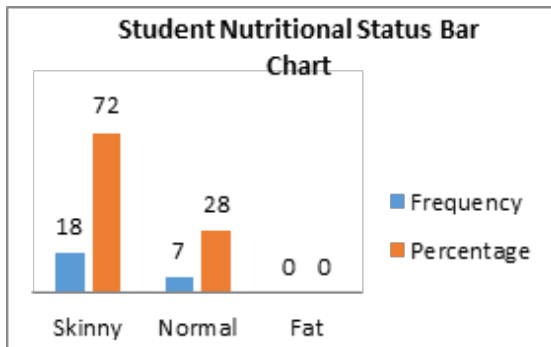


Figure 1. Student Nutritional Status Bar Chart

Data on the results of physical fitness students by SPSS 16. The results is, the categories consisted of 5 types, namely very good, good, sufficient, lacking, very less. conclusions are presented in the following Table 4:

Table 4. Data description of the percentage of Physical Fitness Measurement Using TKJI 2010.

Nutrition Status	Frequency	Percentage (%)
Skinny	18	72
Normal	7	28
Fat	0	0
Total	25	100

In Table 4. The results of measuring physical fitness using the 2010 TKJI for ages 10-12 years above show that 25 male students. 5 students with a percentage of 20% of their physical fitness were in the good category, 16 students with a percentage of 64% of their physical fitness category is enough, 4 students with a percentage of 16% are in the poor category, and no students are in the very good and very poor category. Based on the description above, it can be presented with a bar chart as below:

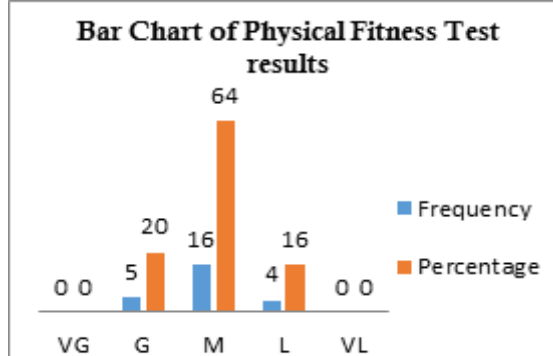


Figure 2. Bar Chart of Physical Fitness Test results

The results of data processing the percentage of student nutritional status from the measurement results of anthropometric profiles, it

was found that 18 students (72%) had nutritional status classified as thin, 7 students (28%) with normal nutritional status and 0 students with fat nutritional status. 18 students with low nutritional status are caused by several factors that influence it. According to Setiawan & Prihandono (2019:123) the occurrence of malnutrition status is caused by several factors, such as nutritional insufficiency in the food eaten and infection with this disease is a direct factor from the cause of malnutrition, another factor is availability food-stuffs in a household, health reparation, how to care for children.

Nutritious intake is very important for the student body because with the fulfillment of the nutritional values needed by the body, the process of growth, development and thinking power of students is getting better as well (Hartati, 2019:2). Underweight nutritional status are recommended to meet daily nutritional needs in order to increase their nutritional status from thin to normal. According to Rahmawati & Marfuah (2016:73) the factors causing malnutrition are due to economic factors, insufficient availability of basic foodstuffs, an environment that is not good in terms of health, the application of lack of nutrition in everyday life. According to Joshi et al., (2011:11) one way that can meet daily nutritional needs is by consuming foods that contain protein, carbohydrates and fats because these substances are needed by the body. According to Widani (2019:52) the importance of consuming fruits and vegetables because by consuming fruits and vegetables it will increase the number of nutritional intake needed by the body.

Data on the results of the measurement of physical fitness for students aged 10-12 years using the 2010 TKJI test obtained 4 students it shown 20% it's mean good physical fitness category, 16 students it shown 64% it's mean the moderate physical fitness category, 4 students it's shown 16% it's mean the physical fitness category is lacking, and there are no students in the very good and very poor physical fitness category (0%). Physical fitness is said to be a state of one's body to be able to carry out an activity that is carried out without feeling fatigue that is not so felt. According to (Hardiansyah & Syampurma, 2017:25) the body's ability to adapt after a long day of activity. so it doesn't cause excessive fatigue.

According to Prasetio et al., (2018:168) efforts can be made to increase physical fitness, namely by exercising regularly or continuously. Physical activities that are carried out all day such as exercising, playing are a form of training

to improve one's physical fitness (Setiawan & Ma'mun 215:2095). A person who can do many daily activities indicates that the person's physical condition is in good shape (Hartati et al., 2020:459).

The correlation between anthropometric profiles and physical fitness was obtained R count of 0.789 and R table equal to 0.623, which means that R count > R table. According to Sugiyono (2013: 235) if R count > R table, then the hypothesis is accepted. The hypothesis is that there is a relationship between anthropometric profiles and physical fitness of elementary school students, so this hypothesis is accepted with the research results that have been obtained, as is the case with previous research conducted by Prasetio et al., (2017:89) regarding body mass index which is a the anthropometric profile section of junior high school students by showing normal results and the fitness level of junior high school students belonging to the medium and good categories. Nutritional status affects the physical fitness of students, students who have low nutritional status obtained data on average physical fitness into the sufficient category. According to Hartanti et al., (2012:159) micronutrient intake affects a person's physical fitness. The sufficiency of one's energy will affect the activities to be carried out.

According to Annas (2011:193) the availability of nutrition in children can be seen based on body shape, body weight, a balanced body proportion that can do physical tasks every day so that energy is needed to drive the body, so it can be stated that to produce a good level of physical fitness, there must be a balance of nutrients in the body. According to Mesra & Mokhamad Nur Bawono (2020:92) the age of 10-12 years is the perfect age to start training children to improve body fitness by exercising. Efforts to increase flexibility, power, and balance possessed by children will affect their proficiency in gestures for the future. According to Hartanti et al., (2019:52) routine exercise can improve organ function and body fitness. According to Rahmawati & Marfuah, (2016:72) children who have good or normal nutrition will later become quality human resources because they have intelligence, health and a fit body.

## CONCLUSION

Based on the data from the Anthropometric profile research and physical fitness of elementary school children, it can be concluded that there is a relationship, if the results of the anthropometric profile BMI are normal, the child's phy-

sical fitness is obtained with a good classification, if the calculation of the BMI anthropometric profile is thin then the child's physical fitness is obtained with a sufficient classification and if the BMI anthropometric profile is fat then the child's physical fitness is obtained with a poor classification. This is in accordance with the Data Collection Techniques used by researchers. Based on the results of the t-test that has been carried out, it shows significant test results using SPSS 16, the results of sig 0.0000 are obtained, which means that there is a correlation or relationship between anthropometric profiles and students' physical fitness with a correlation coefficient of  $r = 0.0789$  which means in the strong level category.

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