

## **The Relationship Between the Level Of Physical Freshness And Nutritional Status With Learning Achievement On MTs Students In Kota Manado**

**Achmad Paturusi**

Lecturer / Professor at the Faculty of Sports Science & Public Health (FIKKM)  
Maanado State University

### **ABSTRACT**

This study was to find emperic data on the pattern of relationship between the level of physical freshness and nutritional status with the learning achievement of MTs students in the city of Manado. Survey research method with descriptive and associative approach. The population is all MTs students in Manado City who carry out Penjas learning activities in 5 MTs. Based on the calculation of the sample size, the number of samples obtained is  $(n) = 30.3158$  (rounded up the sample size to 75 students). Sampling technique with "simple random sampling". To measure the variable level of physical freshness "12-minute running test" Cooper method. For nutritional status variables with the "Anthropometry test" the formula "Body Mass Index (IMB)" To measure the variable of student learning achievement, the report card value of the Penjas. Analysis with statistical descriptive and associative tests, namely single and multiple correlation tests. Results obtained (1) There is a positive relationship between the level of physical freshness and learning achievement in MTs students in Manado City. (2) There is a positive relationship between nutritional status and learning achievement in MTs students in Manado City. (3) There is a positive relationship between the level of physical freshness and nutritional status together with learning achievement in MTs students in Manado City.

**Keywords:** *Physical fitness, nutritional status & learning prestige.*

### **INTRODUCTION**

The condition of physical fitness of students is one of the success factors in learning, It has been recognized and believed that doing physical education that is carried out regularly will improve the degree of health, especially healthy dynamic which means increased functional ability or work ability. Increasing the degree of dynamic health and employability means increasing the quality of human resources. Humans are elements of the nation so that increasing human resources means increasing the quality and quality of the nation.

In an effort to realize the objectives referred to in Law of the Republic of Indonesia Number 3 of 2005 and Law of the Republic of Indonesia Number 20 of 2003, the government has formulated a sports and health physical education curriculum (Penjasorkes) to be applied in schools, with the aim that every student who participates in sports and health physical education learning has knowledge and skills in the field of sports and health, Intelligent, independent and responsible personality, which in turn has good physical and spiritual health and fitness.

From this description, it appears that in the maximum effort and effort to improve the learning achievement of children (students), the factors of physical condition or physical freshness of children and good nutritional conditions need serious attention from both parents and teachers in their schools. Considering that children who do not receive food that contains good nutritional requirements will experience obstacles in their physical and mental growth and development, the same thing is stated through the research of Astrand and Rodahl (1980), that "the availability of adequate nutrition in children and adolescents will support achievement, physical growth and mental development". Thus, the consequences of malnutrition and mental development will reduce the child's learning ability and weaken the development of neuromatic reflexes. The age group of school-age children shows a phase of rapid growth, called "adolescence growth spurt", so it requires relatively large amounts of nutrients. Nutritional status is the state of the body as a result of food consumption and the use of nutrients. Food consumption (diet) affects a person's nutritional status (Ahria J. Paturusi, 2023).

Madrasah Sanawiyah (MTs) schools in Manado City as one of the educational institutions that have implemented the KTSP and K-13 curriculum, which in its implementation carry out practical learning in the form of physical activities based on the content of curriculum material carried out by students every week (once a week) with a duration of 3 hours of lessons (@ 45 minutes) which aims among others to make students have skills, knowledge and physical qualities or good physical freshness. As individuals and community groups (school community), MTs students who are studying ideally still have high physical freshness and good nutritional status because they face many academic and non-

academic tasks and other physical activities such as activities after completion of intracurricular activities that extracurricular activities are carried out in the afternoon. One of the academic tasks is physical education practicum learning (Penjas) which in addition to requiring high physical freshness, is also a place to improve physical freshness.

MTs students are a group of people who are in adolescence, which is the second period or period of physical growth that is the most critical in the life cycle. According to Giriwijoyo and Zidik (2012) that during the period of rapid growth at puberty an additional height of about 15% and a large skeletal period of 48% is obtained, therefore the nutrition system of active pubertal children must be in accordance with the increasing needs of energy, vitamins, minerals and other nutrients. Meanwhile, the prevalence of obesity is also increasing due to changes in high-fat food consumption patterns and decreased physical activity, especially in big cities. The increasing trend of obesity triggers an increase in the prevalence of chronic diseases, (Mandagi, 2012).

The results of a survey conducted by the Center for Physical Freshness of the Ministry of National Education obtained information that the learning outcomes of Penjasorkes in schools in general are only able to provide physical fitness effects on approximately 15% of the entire student population. While one of the data obtained through physical fitness measurement was obtained that the level of physical fitness of elementary, junior high, and high school / vocational students was mostly in the categories of less (45%) and medium (38%) and good (17%) (Ministry of Education, 2010).

Many expert opinions say that to get physical health or physical freshness, people must do physical activity or physical exercise at least three times a week. Referring to the results of the study, Wilmore and Costill said that the frequency of 3-4 exercises per week is the optimal frequency (Mandagi, 2012). What Wilmore and Costill said is very different when related to the learning practice activities carried out by each school, which is only to meet the demands of the curriculum, where the involvement of physical activity is very limited, because the learning practice of Teaching in schools, especially in MTs is only carried out once a week with light intensity.

It is realized that the entrance selection in MTs does not place a physical ability test, in this case, the physical freshness test as one of the prerequisites for accepting new students so that the condition of the level of physical freshness of students is not clearly known, as well as the extent to which the contribution of physical freshness and nutritional status to student learning achievement is not known with certainty. This uncertainty actually prompted the author to conduct research on the level of physical freshness and nutritional status with the learning achievement of MTs students in Manado City.

## METHOD

The method used in the implementation of this research is to use survey research methods with descriptive and associative (correlational) approaches. In this study it is intended to provide a descriptive picture of each variable and explain the pattern of relationships between one variable and another. These research variables can be described in the form of the following research paradigm.

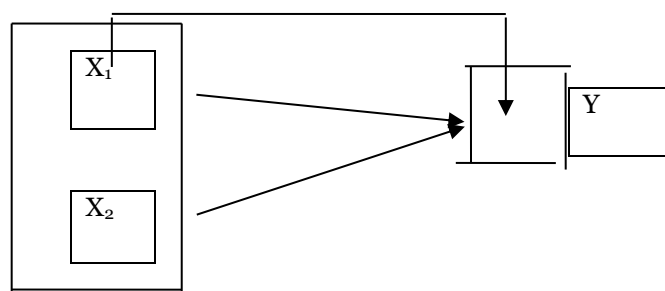


Figure 1. Research Model

Information:

$X_1$  = Level of physical freshness

$X_2$  = Nutritional Status

$Y$  = Student achievement

The population of all MTs students in Manado City who carry out Penjas learning teaching activities for the 2021/2022 academic year is 5 MTs. Based on the calculation of the sample size, the number of samples is obtained ( $n$ ) = 30, 3158 (rounded up the sample size to 30 students). Next for the sampling technique with "simple random sampling". To measure the variable level of physical freshness using the Cooper method "12-minute running test" instrument test. To measure nutritional status variables using the instrument test "Anthropometry test" followed by using the formula "Body Mass Index (BMI)"

(Download internett, Calculate Your BMI – Metric BMI Calculator, 26 July 2015). To measure the variables of student achievement with the report card value of the *Penjasorkes* field of study. Furthermore, the measurement results are analyzed with single and multiple correlation test statistics preceded by testing analysis requirements.

## RESULTS AND DISCUSSION

### Result

The first descriptive hypothesis is to see whether the level of physical freshness of MTs students in Manado City is in the good category. The results showed that the score of the level of physical fitness, can be grouped into seven interval classes, with the first interval class of 3 students (10.00%) being in the group of medium physical freshness, for the second, third, fourth, fifth and sixth interval classes as many as 23 students (75.00%) were in the group of good physical freshness, while the seventh interval class of 4 students (15.00%) was in the group of physical fitness level is very good.

The second descriptive hypothesis in this study was to see whether the nutritional status of MTs students in Manado was in the normal category. The results showed that nutritional status scores, can be grouped into seven interval classes with the first interval class of 3 students (10.00%) being in groups below the BMI threshold limit, for the second, third, fourth, fifth and sixth interval classes as many as 25 students (83.33%) were in the normal group, while the seventh interval class as many as 2 students (6.67%) were in the group above the BMI threshold limit.

The third descriptive hypothesis in this study is to see whether the learning achievement of MTs students in Manado in the subjects of *Penjas* field of study is in the good category. The results showed that learning achievement scores, can be grouped into seven interval classes with the first interval class as 1 student (3.33%) being in the group with sufficient category, for the second, third, fourth, and fifth interval classes as many as 22 students (73.33%) were in the group with good category, while the sixth and seventh interval classes as many as 7 students (23.34%) were in the group with very good category.

The fourth associative hypothesis in this study is to test whether there is a positional relationship between the level of physical freshness ( $X_1$ ) and learning achievement (Y) in MTs students in Manado City. The calculation results show  $r_{calculate} = 0.817$  with the coefficient of determination  $RSquare = 0.667$  (the coefficient of determination is the square of the correlation coefficient between  $X_1$  and Y). Based on the calculation of the coefficient of determination that the contribution of the level of physical freshness to the learning achievement of MTs students is  $Kd = r^2 \times 100\% = (0.817)^2 \times 100\% = 66.70\%$ . Furthermore, the remaining 33.30% was determined by other variables that could not be explained one by one because they were not discussed in this study.

The fifth associative hypothesis in this study is to test whether there is a positional relationship between nutritional status ( $X_2$ ) and learning achievement (Y) in MTs students in Manado City. From the calculation results show  $r_{calculate} = 0.823$  with the coefficient of determination  $RSquare = 0.677$  (the coefficient of determination is the square of the correlation coefficient between  $X_2$  and Y). Based on the calculation of the coefficient of determination that the contribution of nutritional status to the learning achievement of MTs students is  $Kd = r^2 \times 100\% = (0.823)^2 \times 100\% = 67.70\%$ . Furthermore, the remaining 32.30% was determined by other variables that could not be explained one by one because they were not discussed in this study.

The sixth associative hypothesis in this study is to test whether there is a relationship between the level of physical freshness ( $X_1$ ) and nutritional status ( $X_2$ ) together with learning achievement (Y) in MTs students. The calculation results show  $r_{calculate} = 0.869$  with the coefficient of determination  $RSquare = 0.775$  (the coefficient of determination is the square of the double correlation coefficient between  $X_1$  and  $X_2$  together with Y). Based on the calculation of the coefficient of determination that the variable contribution of the level of physical freshness and nutritional status together to the learning achievement of MTs students in Manado City is  $Kd = r^2 \times 100\% = (0.869)^2 \times 100\% = 77.50\%$ . Furthermore, the remaining 22.50% was determined by other variables that could not be explained one by one or were not discussed in this study.

### Discussion

Based on the criteria for the level of physical freshness for the 12-minute running test, the results were obtained based on age / age groups after consulting the criteria table, that the results of the analysis of the level of physical freshness of students showed that the achievement of the level of physical freshness of students was in the good category group with almost 75.00% (23 students dominated it). As for the very less and less category, no students get, while for the medium category only 10.00% (3 students),

while for the good category it is 15.00% or only (4 students). Thus, this result proves that MTs students in Manado City have an average level of good physical freshness.

Based on the criteria/categories of BMI threshold for nutritional status, results were obtained based on the BMI formula ( $\text{Kg} / \text{m}^2$ ) (*data attached*), after consulting the table of criteria the results as in table 5.6 showed that the achievement of nutritional status of students was in the normal category group with 83.33% of students dominating it (25 students). As *for the mild underweight category, only 10.00%* (3 students), and for the mild overweight category, only 6.67% (2 students), while for the underweight *and overweight* categories, no students were found in that category. This result is reinforced by the average score of nutritional status achievement of MTs students in Manado City of 21.72, meaning that the average score obtained from nutritional status scores is in the normal category.

Based on learning achievement scores, it can be grouped into seven interval classes with the first interval class as 1 student (3.33%) is in the group with sufficient category, for the second, third, fourth, and fifth interval classes as many as 22 students (73.33%) are in the group with good category, while the sixth and seventh interval classes as many as 7 students (23.34%) are in the group with very good category. Thus this result proves that MTs students in Manado City have an average of good learning achievement including in aspects of attitude, knowledge and skills.

Based on the calculation of the correlation coefficient of the level of physical freshness ( $X_1$ ) with student learning achievement ( $Y$ ), a correlation coefficient of 0.817 was obtained, with the coefficient of determination  $RSquare = 0.667$  (the coefficient of determination is the square of the correlation coefficient between  $X_1$  and  $Y$ ). From the value of the coefficient of determination that the contribution of the level of physical freshness to the learning achievement of students is  $Kd = r^2 \times 100 \% = (0.817)^2 \times 100 \% = 66.70 \%$ . Furthermore, the remaining 33.30% was determined by other variables that could not be explained one by one or were not discussed in this study because they had not been targeted by researchers. Thus, from the results of this investigation, it turns out that the variable level of physical freshness has contributed 66.70% to the learning achievement ability of MTs students in Manado City. This result is reinforced by Wiarto (2012) that physical freshness is a person's ability to carry out his daily tasks easily, without feeling excessively tired, and still have residual or reserve energy to enjoy his leisure time and for sudden needs, another thing by Wahjoedi, (2001) that physical freshness is the body's ability to perform daily tasks and work diligently, Without experiencing significant fatigue, as well as with the remaining energy reserves he is still able to enjoy free time and face emergencies that were unexpected before. This means that good physical freshness will facilitate the learning process and thus the absorption of each student will be easily digested and understood.

Based on the calculation of the correlation coefficient for testing the nutritional status hypothesis ( $X_2$ ) with student learning achievement ( $Y$ ), a correlation coefficient of 0.823 was obtained (*SPSS program analysis see appendix*), with the coefficient of determination  $RSquare = 0.677$  (the coefficient of determination is the square of the correlation coefficient between  $X_2$  and  $Y$ ). From the calculation of the coefficient of determination that the contribution of nutritional status to the learning achievement of MTs students in Manado is  $Kd = r^2 \times 100 \% = (0.823)^2 \times 100 \% = 67.70 \%$ . Furthermore, the remaining 32.30% was determined by other variables that could not be explained one by one or were not discussed in this study because they had not been targeted by researchers. Thus, from the results of this investigation, it turns out that the nutritional status variable has contributed or influenced by 67.70% on the learning achievement ability of MTs students in Manado. The results of this study are similar to those stated through the research of Astrand and Rodahl (1980), that "the availability of adequate nutrition in children and adolescents will support achievement, physical growth and mental development". Thus, the consequences of malnutrition and mental development will reduce the child's learning ability and weaken the development of neuromatic reflexes.

From the test results, the double correlation coefficient was obtained at  $rx_1x_2y$   $r_{calculate} = 0.869$  with the coefficient of determination  $RSquare = 0.755$ . Based on the calculation of the coefficient of determination that the contribution of the level of physical freshness and nutritional status together with learning achievement in students is  $Kd = r^2 \times 100 \% = (0.869)^2 \times 100 \% = 75.50 \%$ . Furthermore, the remaining 24.50% was determined by other variables or external factors that were not the target of the study and were not explained one by one in this study. Thus, from the results of this investigation, it turns out that the variable level of physical freshness and the variable nutritional status together have contributed 75.50% to the learning achievement of MTs students in Manado. These results are in accordance with the opinion of Iskandar Z. Adisapoetra (2005) that physical freshness plays an important role in achieving achievements in general, especially learning achievement, because with (1) Increased blood circulation ability and heart work, (2) Increased strength, flexibility, endurance, coordination, balance and agility, (3) Increased ability to move efficiently, (4) Increased recovery of body organs after exercise, (5) Improved response quickly." The learning process is an activity carried

out by students in achieving learning objectives, while learning outcomes are abilities that students successfully have after receiving learning experiences (Paturusi, 2013).

## CONCLUSION

### Conclusion

Based on the results of research and discussion, the following conclusions can be drawn.

#### *Descriptive Conclusion*

MTs students in Manado City have an average level of good physical freshness, with the following results; Very good category 15.00% (4 students), good category 75.00% (23 students), medium category 10.00% (3 students), while less and less categories were not found.

MTs students in Manado City had an average normal nutritional status (normal weight), with the following results; normal weight category 83.33% (25 students), mild underweight category 10.00% (3 students), and light overweight category 6.67% (2 students), while the underweight category and overweight category were not found.

The learning achievement of MTs students in Manado City both aspects of knowledge, skills and attitudes are above the good category, this is evidenced by the following results; very good category 23.34% (7 students), good category 73.33% (22 students), and sufficient category 3.33% (1 student), while less category and less category once not found.

#### *Associative Conclusion*

There is a positive and significant relationship between the level of physical freshness and learning achievement in MTs students in Manado City.

There is a positive and significant relationship between nutritional status and learning achievement in MTs students in Manado City.

There is a positive and significant relationship between the level of physical freshness and nutritional status together with learning achievement in MTs students in Manado City.

## Suggestion

From the results of this study, it is expected to provide meaningful suggestions on the following;

To improve learning achievement in general and especially learning achievement in MTs students in Manado City, attention and improvement of physical freshness and maintaining good nutritional conditions or status (normal nutrition), as well as the presence of other learning components that also affect student learning achievement ability.

As input material for teachers in applying appropriate learning and training methods to improve physical freshness and maintain normal nutritional status conditions and can improve better learning achievement.

Further research is recommended by involving other learning components, such as learning infrastructure, *instrument tests* of physical freshness and other nutritional status, as well as other environmental factors in the form of family conditions, parental education, and others that also affect student learning achievement.

Do not rule out the possibility, the results of this study become additional information for further research.

## BIBLIOGRAPHY

1. Adiatmika I Putu Gede. 2002. *Physical Fitness Checkup*. Denpasar: Udayana University.
2. Adisapoetra Iskandar. 2005. *Technical Guide to Physical Freshness Tests and Exercises*. Jakarta: Seminar Materials and Widya Karya Nasional Sports and Physical Health.
3. Ahria Paturusi. 2023. *The Relationship between Diet and Nutritional Status in Elementary School Children at SDN Tumbak, Southeast Minahasa Regency*. Thesis. FIKKM Unima.
4. Anonymous. 2012. *Understanding Physical Fitness*. <http://bedande.blogspot.com/2012/01/understanding-fitness-physical.html> (accessed October 5, 2013).
5. Astrand, P.O.; Rodahl, K. *Textbook of Work Physiology*. Mc.Crow-Hill Kogakusha, Ctd, Tokyo.
6. Giriwijoyo. 1991. *People and Sports: Health, Physical Fitness and Sports*, FPOK/IKIP Bandung.
7. Giriwijoyo, Sidik. 2012. *Sports Health Sciences*, PT. Juvenile Rosdakarya. Bandung
8. Giriwijoyo Santosa and Ali Muchtamadji M, 2006. *Sports Faal*. Bandung: FPOK UPI.
9. Hasdiana, Siyoto, Peristyowati. 2014. *Nutrition: Utilization of Nutrition, Diet and Obesity*, Nuha Medika.Yogyakarta.
10. Hilgard Ernest, R. 1982. *Introduction to Psychology*, 3rd Edition. Harcourt Brass and World Inc. New York.

11. Ministry of Education. 2010. *Technical Guidelines for Student Physical Fitness Mapping*, Center for Physical Quality Development. Jakarta.
12. Massie Aide, 1990. *Nutritional handling of balanced ingredients*. Sports & Health Seminar. Faculty of Medicine Unsrat. Manado.
13. Mandagi. 2012. *Physical Freshness*. Manado State University Instructional Activities Development and Development Institute. IASPK Enterprise and Printing Manado.
14. Nala Ngurah. 2001. *Principles of Sports Physical Training*. Denpasar: Udayana University.
15. Nurhasan. 2001. *Tests and Measurement in Physical Education: Principles and Their Application*. Directorate General of Sports. Jakarta.
16. Paath, Rumdasih, Heryati. 2005. *Nutrition in Reproductive Health*, EGC Medical Book. Jakarta.
17. Balitbang Curriculum Center of the Ministry of Education. 2002. *Curriculum and Learning Outcomes: Basic Competencies of High School and MA Physical Education Subjects*. PUSKUR BALITBANG DEPDIKNAS. Jakarta.
18. Regulation of the Minister of Education and Culture of the Republic of Indonesia No.70 of 2013 concerning the Curriculum of SMK / MA.
19. Paturusi. 2012. *Physical Education and Sports Management*, Rineka Cipta. Jakarta.
20. -----, 2013. *Test and Evaluation: Physical Education, Sport and Health*, UNIMA PRESS. Manado.
21. Ratag, Nelwan, Dilapanga. 1992. *Educational Administration*. Department of Education and Culture IKIP Manado.
22. Rosdiani. 2013. *Learning Planning in Physical Education and Health*. Alfabeta. Bandung.
23. Riduwan. 2010. *Methods and Techniques for Preparing Research Proposals*. Alfa Beta, Bandung.
24. Sugiyono, 2009. *Statistics for Research*. Alfa Beta, Bandung.
25. Sumosardjuno Sadoso, 2005. *National Journal of Physical Education and Sports Science*. Jakarta: Ministry of State, Youth and Sports.
26. Sidharta, 2008. *Mechanisms of trauma of the central nervous system*. Dian Rakyat. Jakarta
27. Syarifuddin. 1998. *Physical Education and Health of Grade 1 Public High Schools*. Grasindo. Jakarta.
28. Suryosubroto. 2004. *Education Management in Schools*. Rineka Cipta. Jakarta.
29. Wahjoedi. 2001. *Foundations of Physical Education Evaluation*. Rajagrafindo Persada. Jakarta.
30. Wiarto. 2012. *Physiology and Exercise*. Graha Science. Yogyakarta.
31. Wiryoseputro Moeljono and Suherman Slamet, 1993. *Sports Health Subject Matter*. Jakarta: Ministry of Education and Culture, P2MG SD equivalent to D-II.
32. Winarno, S. 1992. *The Best Way to Study*. Tarsito Publishers, Bandung.