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Physical Fitness Analysis of Junior High School Students by Using Indonesian Student Physical Fitness Test (TKPN)

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Abstract *. Physical fitness is essential for supporting students' daily activities and learning. This study aims to evaluate the physical fitness of students at SMP Negeri 63 Surabaya, specifically those in classes VII D and VIII C, and to compare it between male and female students. The research method used was non-experimental with a comparative design, and data analysis was conducted using the Mann Whitney test and Cluster Random Sampling technique. The instrument for measuring physical fitness was the Indonesian Student Fitness Test (TKPN) and a questionnaire based on the TKPN guidelines. The results showed no significant difference in physical fitness between students in classes VII D and VIII C, with a p-value of 0.3 ($p > 0.05$), indicating that their fitness levels were relatively similar. However, there was a significant difference based on gender. Male students had better physical fitness than female students, with a p-value of 0.00 ($p < 0.05$). Male students were in the "sufficient" category with an average score of 2.05, while female students were in the "poor" category with an average score of 1.2. Overall, both class VII and VIII students were in the "poor" category, with average scores of 1.15 for class VII and 1.25 for class VIII. This indicates the need for improvement in students' physical fitness.*

Keywords *: Physical Fitness, Gender, Physical Education, TKPN (National Student Fitness Test)*

1. BACKGROUND

Physical fitness is an important indicator of a person's physical condition in performing physical tasks without feeling tired (National et al., 2016) . According to the WHO report, lack of attention to one's own health can cause around 3.2 million deaths each year worldwide. Adequate physical activity is very important for health. Exercise, which is defined as physical activity with a specific purpose, helps maintain fitness, improve physical condition, and recover from injury (Sandi, 2019) . Physical fitness can be obtained through sports education at school. Education can be divided into 2 groups, academic and non-academic, academic education is used in the field of science while non-academic education is used in learning outcomes from sports or arts in producing achievements that come from training and learning outside of general subjects. Physical fitness is obtained in several ways, starting from those from oneself and external factors. External factors that influence physical fitness from the outside include motivation, environment, physical activity education assisted by teachers at school. Meanwhile, internal factors include genetic factors, gender, age, health condition factors.

Physical education is a compulsory subject in schools. The purpose of sports can be done for various reasons; some people do it for relaxation, health, fitness, or just to

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pass the time and do it to succeed and represent their country (Irawan & Firtanto, 2020) Physical education lessons have an impact on the physical fitness of students at school. Through physical activity and sports, physical education helps students develop physical fitness, mental stability, develop social spirit, thinking, and moral behavior. Learning experiences have a positive effect on physical and mental growth, and help form healthy living habits. Physical education develops healthy lifestyles, motor skills, sports spirit, psychological knowledge, and sportsmanship (A. Jayul & E. Irwanto, 2020) . Physical education is a process of learning movement through teachers that is given to students in an effort to improve a student's motor skills. Therefore, the importance of sports learning in schools aims to maintain the health and development of students. A person's physical condition can be known whether or not someone is fit, Optimal physical health refers to the condition of the body that allows a person to carry out physical activities by using all the functions of the body's organs according to the capacity that a person has in supporting movement activities (Milana et al., 2022) . Sports learning can improve physical fitness by channeling sports hobbies and learning material that is applied directly on the field or in the school yard with a pleasant atmosphere. The role of PJOK teachers is important for students in helping students' physical fitness in the school environment through PJOK learning which is not always just playing and sports must be combined with educational goals (Arifandy et al., 2021) .

Physical fitness involves various elements such as stamina, muscular endurance, strength, balance, coordination, accuracy, agility, body composition, and speed and flexibility. The level of physical fitness of students is assisted by nutritional intake and physical fitness factors carried out in the educational environment. According to (Mutohir et al., 2022) obtained information discussing the physical fitness of students in Indonesia in the categories of "less" and "very less" for elementary school / equivalent as much as 82.7%, for junior high school as much as 85.8%, and for high school / equivalent as much as 83.9%. The development of physical fitness between boys and girls has several differences According to (Supriyatna et al., 2019) The physical development of boys and girls is different during adolescence (ages 12-18 years) due to hormonal changes. Boys experience faster muscle growth and increased height and hair growth due to testosterone. Meanwhile, girls experience increased height, hair growth, and changes in body shape and the beginning of menstruation due to estrogen, these changes begin to appear from

the age of 11-14 years. There are many factors that influence physical fitness such as genetic factors, gender, physical activity, nutritional intake, health status, adequate rest (Ilyas & Almunawar, 2020) .

From the gap it is explained that, the research is aimed at determining the level of physical fitness of students is very important and needs to be considered. Therefore, it is necessary to conduct more extensive research on physical fitness both related to gender, physical activity and differences based on class level that can help students in the learning process and growth and development of students. This study aims to determine the level of physical fitness of students based on class, gender and physical activity.

2. THEORETICAL STUDY

In the transitional world after COVID-19, Many aspects of our lives, including education, have been severely impacted and disrupted by the COVID-19 pandemic (Kristiyandaru et al., 2023) . A sedentary lifestyle, or sedentary lifestyle, refers to a lifestyle that involves little physical activity, which can contribute to overweight and obesity. Other factors that can be changed include an unbalanced diet, a history of impaired glucose tolerance, abnormal fasting glucose levels, and smoking habits (Ardiani et al., 2021) . This also certainly applies to students who previously did not take PJOK lessons because they had to keep their distance from each other during the pandemic. A person wants good physical condition so that they can carry out daily activities without experiencing extreme fatigue or running out of energy. The benefits of physical fitness are useful for students, especially in determining their level of physical fitness through a fitness test given by the PJOK teacher at school. In determining a person's level of physical fitness, a fitness test can be used. In this study, the fitness test used was the Nusantara Student Fitness Test (TKPN). The Nusantara Student Fitness Test is a fitness test launched by KEMENPORA in 2022, under the Assistant Deputy for Sports Education Management, Deputy for Sports Culture. This test covers various aspects, such as BMI (Body Mass Index), V Sit Reach Test, Sit-ups for 60 seconds, Squat Thrust for 30 seconds, and Pacer Test (Progressive Aerobic Cardiovascular Endurance Run). This test is the same as other fitness tests in determining the level of physical fitness.

Physical Education teachers in Indonesia are currently researching the Nusantara Student Fitness Test, a new physical fitness evaluation that has not been widely used in previous studies. This statement is reinforced by (Destriana et al., 2023) who stated that

it increases the understanding of physical education teachers regarding the Nusantara student fitness test. This study contains several previous studies, (Syahrastani, 2022) analyzing the physical fitness level of students in Class VIII of SMP Negeri 2 Pariaman, (Rifaldo & Syach, 2024) analyzing the physical fitness level of male students aged 13-15 years, (Vernado Witrian Saputra et al., 2023) to analyze the physical fitness level of children aged 15-16 years at SMA N 1 PLUPUH, (Rifaldi et al., 2023) the physical fitness level of students of SMP N 2, Suliki District, Lima Puluh Kota Regency.

3. RESEARCH METHODS

Design Study

This study uses a quantitative approach with a non-experimental method. The research design applied is a comparative design, which aims to compare two different groups.

Study Participants

The sample studied was 48 students from two classes, namely VII D and VIII C at the junior high school level. The sampling technique used was Cluster Random Sampling. The selection of classes or clusters to be studied was carried out using Spinner.

Instrument

This study used an instrument that had been adapted from the 2022 Nusantara Student Fitness Test (TKPN) (Rusdiana Agus. et al., 2023) . In the TKPN guidebook, there are two types of tests that can be done. The first test is a practical test that includes measuring Body Mass Index (BMI), *sit and reach test, sit-ups* for 60 seconds, *squat thrust* for 30 seconds, and *pacer test* . The second test is a written test in the form of a sports participation questionnaire and a psychological test of Nusantara student fitness, which aims to identify sports activities carried out by students and their development in the field of sports.

Research Procedure

The study lasted for two weeks or two meetings. At the first meeting, the researcher conducted observations to understand the students' conditions during sports learning. While at the second meeting, the researcher collected data by following the Nusantara Student Fitness Test (TKPN) guidelines. This test is divided into two parts, namely a skills test and a written test. The practical test includes measuring Body Mass

Index (BMI), sit and reach test, sit-ups for 60 seconds, squat thrust for 30 seconds, and a pacer test. After completing the practical test, students continued the written test by filling out a questionnaire via Google Form containing questions according to the TKPN guidelines that had been prepared by the researcher.

Statistical Analysis

Data analysis in this study was conducted using IBM SPSS Statistics 25. The normality test was conducted using the Kolmogorov-Smirnov method, where data is considered normal if the p-value> 0.05, and is considered abnormal if the p-value <0.05. This study uses a different sample test to determine whether the alternative hypothesis or the null hypothesis is accepted. There are two methods of analysis: if the data is normal, the Independent T-test is used, while if the data is not normal, the Mann-Whitney test is used. If the p-value <0.05, then there is a difference in students' physical fitness based on gender, class, and other factors. If the p-value> 0.05, then there is no difference in physical fitness based on gender, class, and other factors. To calculate the level of physical fitness, the Nusantara Student Fitness Test formula is used as follows:

Table 1. Physical Fitness Calculation Norms

Test items	Weight
Pacer Test	85%
V sit and reach	5%
Sit up	5%
Squat Thrust	5%

4. RESULTS AND DISCUSSION

Normality Test

In this study, descriptive statistical tests using the Kolmogorov-Smirnov method were conducted because the number of samples was more than thirty, and displayed descriptive data from the analysis results. The test results show the significance value of each variable tested. This significant value is displayed for each variable. Descriptive statistical tests are divided into two groups, namely descriptive statistical tests for male students and for female students. The normality test is conducted to determine whether the data is normally distributed or not. This test also functions to describe descriptive data from the samples studied. The results of the normality test indicate that the data is not normal because the p-value <0.05.

Table 2. Normality Test Results

Variables	N	Mean	SD	Min	Max	P-Value
V sit	48	8.64	4.74	2.00	20.00	0.00*
Sit up	48	22.14	8.94	5.00	39.00	0.04*
Squat Thrust	48	8.58	2.99	3.00	15.00	0.02*
Pacers	48	36.87	25.54	8.00	103.00	0.01*
Fitness	48	3.33	2.22	0.79	9.09	0.01*

** sig < 0.05*

Mann Whitney Test

The sample T-test aims to determine whether the alternative hypothesis (Ha) can be accepted or the null hypothesis (H0) is accepted. This sample T-test uses the Independent Sample T-test if the data is normally distributed, and Mann Whitney or Chi Square if the data is not normally distributed. In this study, the hypothesis test uses the Mann Whitney method because the results of the normality test show that the data is not normally distributed. Through the hypothesis test carried out with the SPSS application, the results obtained show a p-value> 0.05, which indicates a difference in test results between male and female students in classes VII D and VIII C, so Ha is accepted.

Table 3. Hypothesis Test Results

variable	N	Mean	SD	p-value
Gender	48	1.41	0.04	0.00*
Class	48	1.47	0.05	0.3

** sig < 0.05*

Physical Fitness Calculation Results

Student Physical Fitness Results Between Classes

BMI Results

Students VIII C

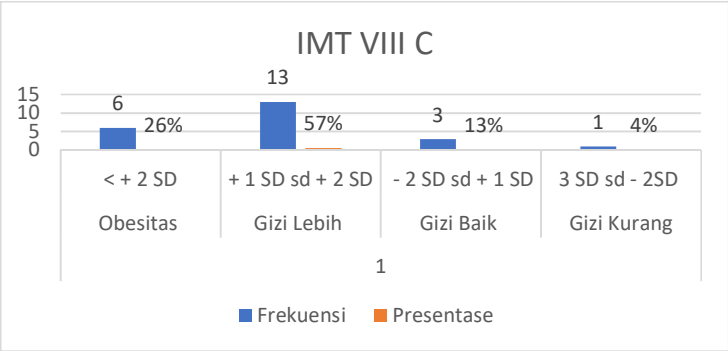


Figure 1. BMI Results for Class VIII C

Based on the data in Figure 1, it can be seen that of the VIII grade students, there are 6 students with obesity nutritional status, which covers 26% of the total. Furthermore, 13 students have overweight nutritional status, which is the largest percentage, which is 57%. In addition, 3 students have good nutritional status, representing 13% of the total, and only 1 student with underweight nutritional status, covering 4% of all VIII grade students. Thus, it can be concluded that the average nutritional status of VIII grade students is included in the overweight category.

Class VII D Students

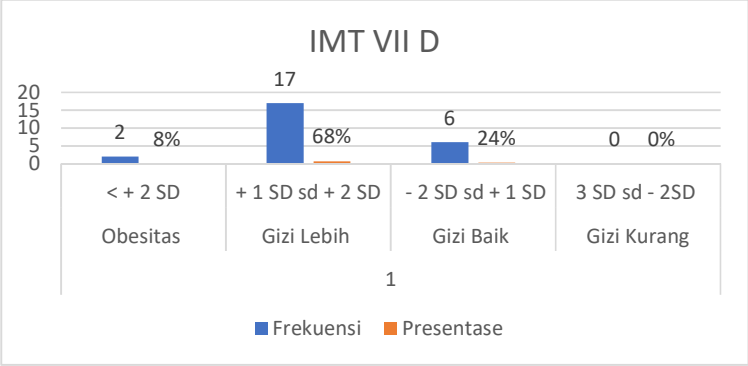


Figure 2. BMI Results for Class VII D

Based on the data in Figure 2, 68% of grade VII students, or 17 students, have overweight nutritional status. In addition, there are 2 students or 8% who have obesity nutritional status. Meanwhile, only 24% or 6 students have normal or good nutritional status. Thus, it can be concluded that the majority of grade VII students are included in the overweight category.

***V sit and Reach* data results**

Students VIII C

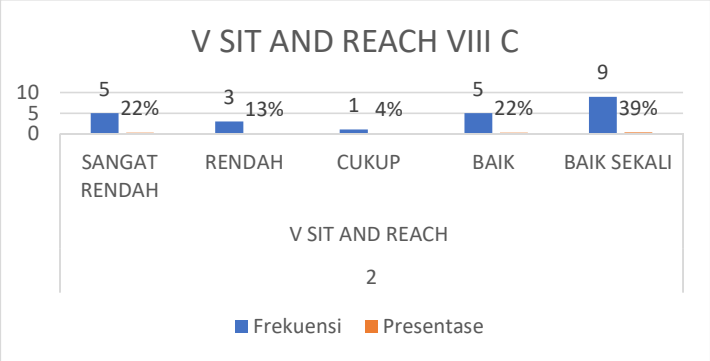


Figure 3. Results of V Sit and Reach class VIII C

Based on the data in Figure 3, the results of the V Sit and Reach test for grade VIII students show that 39% of students, or 9 students, are in the very good category. Meanwhile, 5 students or 22% are in the very low category. There are 3 students in the low category, representing 13% of the total. Only 1 student, or 4%, is in the sufficient category, and 5 other students are in the good category, which also reaches 22%. Overall, the average results of the V Sit and Reach test for grade VIII students are in the very good category.

VII D Students

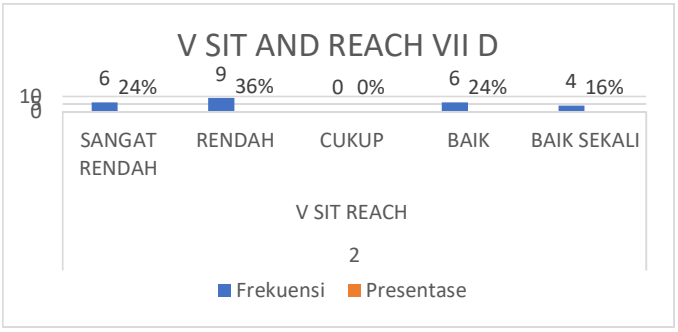


Figure 4. Results of V Sit and Reach Class VII D

Based on Figure 4, as many as 36% of students, or 9 students, are in the low category. The very low category is occupied by 24% or 6 students. In addition, 24% of students, with a total of 6 students, got good scores, while 16% of students, or 4 students, got very good scores. Thus, overall, the results of the V Sit and Reach test for Class VIII C students can be concluded to be in the low category.

60 Second Sit-up Results

Students VIII C

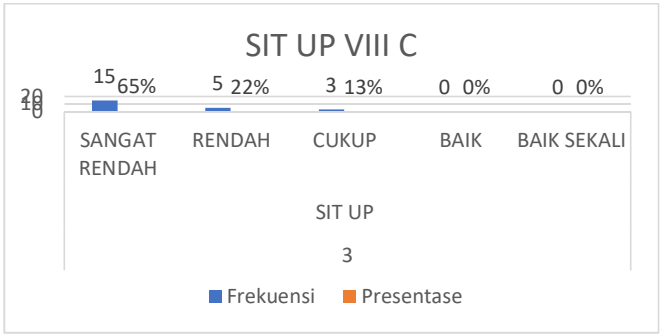


Figure 5. Result of 60-second Sit-Ups for Class VIII C

Based on Figure 5, the results of the sit-up test show that 65% of students, or 15 students, are in the very low category. As many as 22% of students, or 5 students, are in the low category, and 13% of students, or 3 students, are in the sufficient category. Therefore, the average results of the 60-second sit-up test for class VIII are in the very low category.

VII D Students

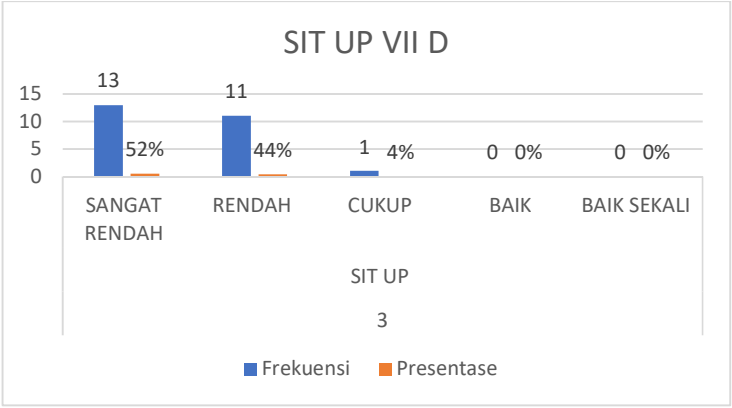


Figure 6. Result of 60-second Sit-Ups for Class VII D

Based on Figure 6, 52% of students, or 13 students, are in the very low category. In addition, 44% or 11 students are in the low category, while only 1 student, or 4%, is in the sufficient category. Thus, the average sit-up test results for class VII D can be concluded to be in the very low category.

30 Second *Squat Thrust* Results

Students VIII C

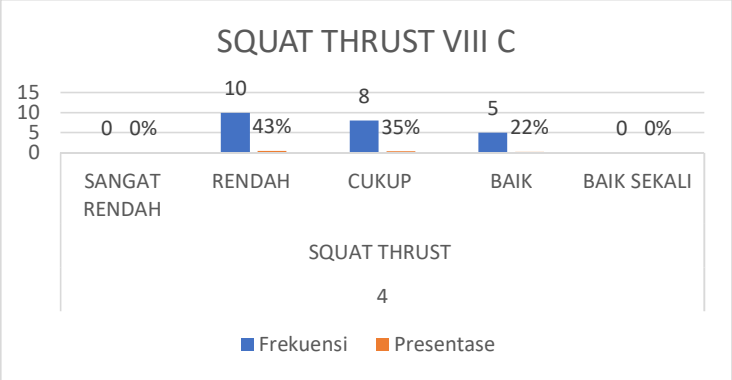


Figure 7. Results of 30-second Squat Thrust Class VIII C

Based on Figure 7, 43% of students who did squat thrust, which is 10 students, are in the low category. As many as 35% or 8 students are in the sufficient category, and 22% or 5 students are in the good category. Thus, the average squat thrust test results of class VIII C students can be categorized as low.

VII D Students

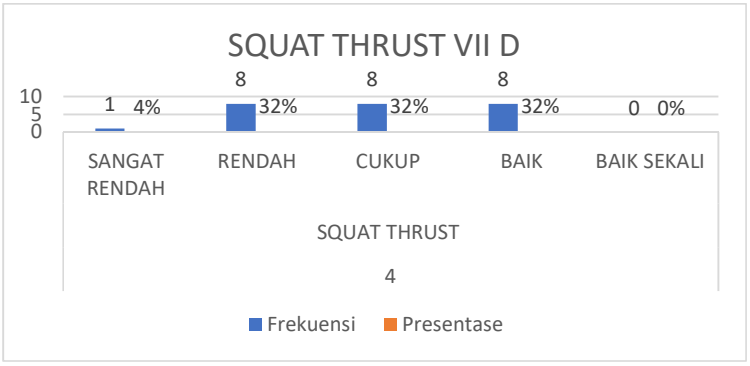


Figure 8. Results of 30-second Squat Thrust Class VII D

Based on Figure 8, the results of the squat thrust test for class VII students show that 32% are in the low category, while the sufficient and good categories each have 8 students. In addition, the very low category includes 4% or 1 student. Thus, the average squat thrust results for class VII D can be categorized as sufficient.

***Pacer* Test Results**

Students VIII C

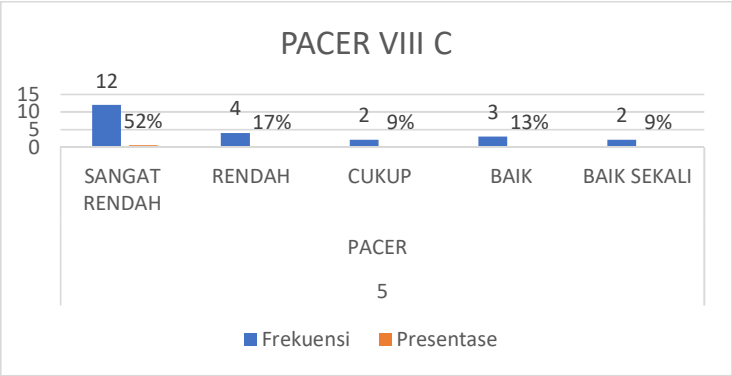


Figure 9. Results of Pacer Test Class VIII C

Based on Figure 9, the results of the pacer test for class VIII show that 52% of students, or 12 students, are in the very low category. The low category includes 17% with a total of 4 students, while the sufficient category consists of 9% or 2 students. The good category consists of 13%, with a total of 3 students, and there are 2 students in the very good category, representing 9%. Therefore, the average results of the pacer test for class VIII C can be categorized as very low.

VII D Students

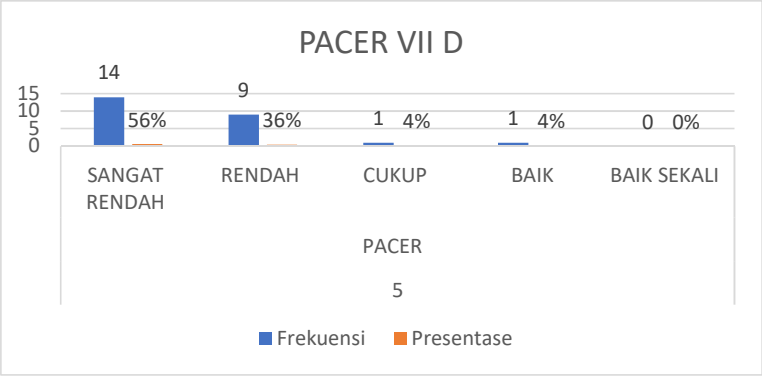


Figure 10. Results of Pacer Class VII D

Based on Figure 10, the results of the pacer test for class VII D show that 56% of students, or 14 students, are in the very low category. The low category covers 36% with a total of 9 students, while the sufficient and good categories each amount to 4% or 1 student. Thus, the average pacer test results for class VII can be categorized as very low.

Results of Fitness Analysis of Male and Female Students

BMI Results

Male students

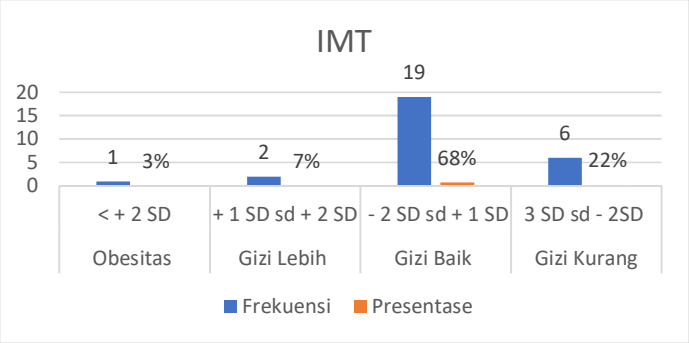


Figure 11. Results of Nutritional Status of Male Students

Based on Figure 11, above, the results found that 19 male students had good nutritional status of 68% with the highest percentage, while the lowest percentage was in the obesity category, which was 3% with 1 male student.

Female Students

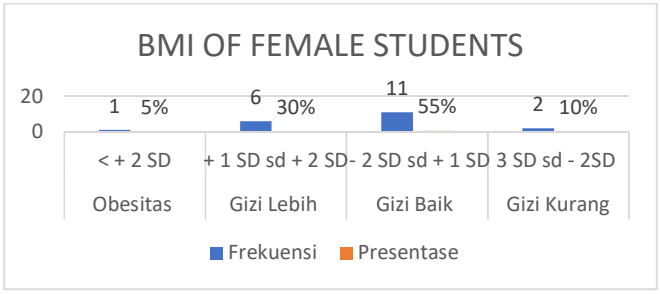


Figure 12. BMI of Female Students

Figure 12 above shows the results of the data analysis of female students, on average 55% are included in the good nutrition category with a total of 11 students and the lowest percentage is in the obesity category, namely 5% of students with 1 child.

V Sit and Reach Results

Male Students

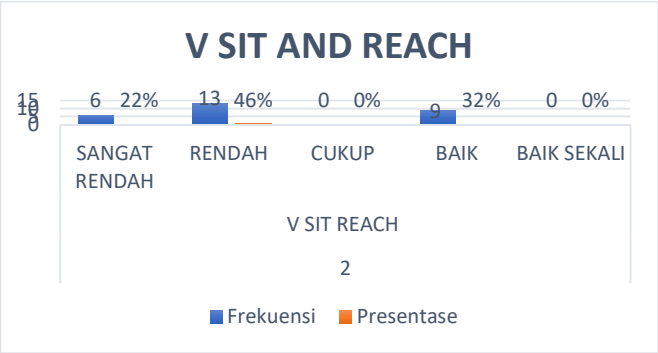


Figure 13. Results of V sit and reach for male students

Figure 13, above shows the results of male students taking the sit and reach test, 46% were in the low category with a total of 13 students and the lowest percentage was in the very low category, which was 22% with a total of 6 students.

Female Students

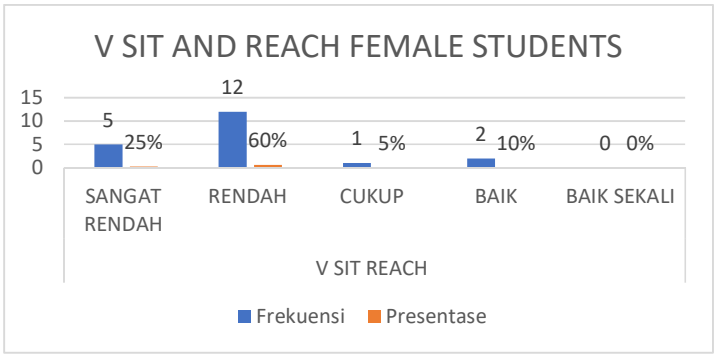


Figure 14. Results of V sit and reach of female students

Based on the results of the data in Figure 14, above, the analysis results were found that 60% of students were in the low category with a total of 12 female students and the lowest percentage was in the sufficient category, namely 5% with a total of 1 student.

60 Second Sit Up Results

Male Students

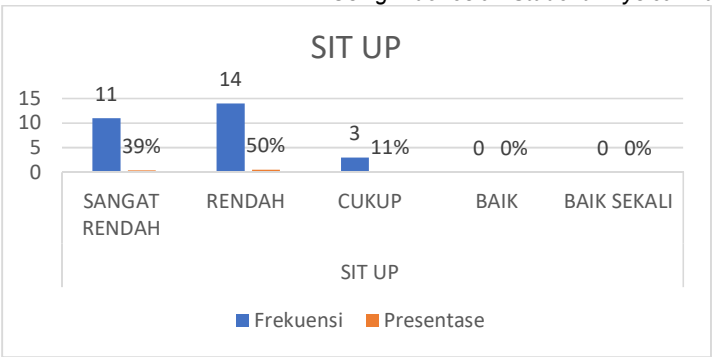


Figure 15. Sit Up Results for Male Students

The results of the analysis of male students' sit-ups in Figure 15 found 50% data with a total of 14 students in the low category as shown in the table above, but if seen from the lowest percentage, it is in the sufficient category with a percentage of 11%, namely 3 students.

Female Students

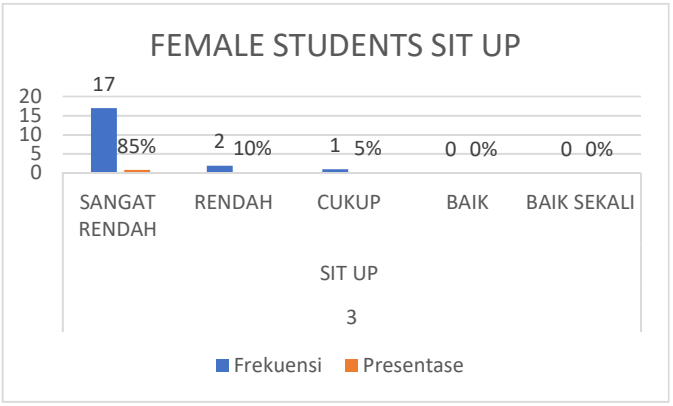


Figure 16. Female Students' Sit Up Results

From figure 16, above, it is found that female students do sit ups with a result of 85%, namely 17 students are in the Very low category. Meanwhile, the lowest result is in the sufficient category with a percentage of 5%, namely 1 student.

Squat Thrust Results

Male Students

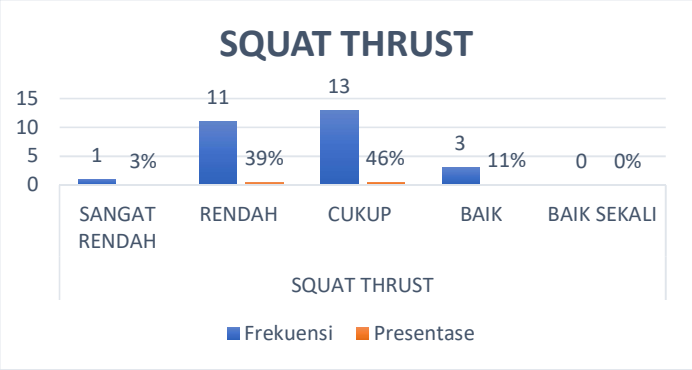


Figure 17. Squat Thrust Results of Male Students

Based on the results of Figure 17, the analysis above obtained data of 46% from 13 male students showing that the squat thrust data was in the sufficient category, but there were male students who were in the very low category, namely 3% totaling 1 student.

Female Students

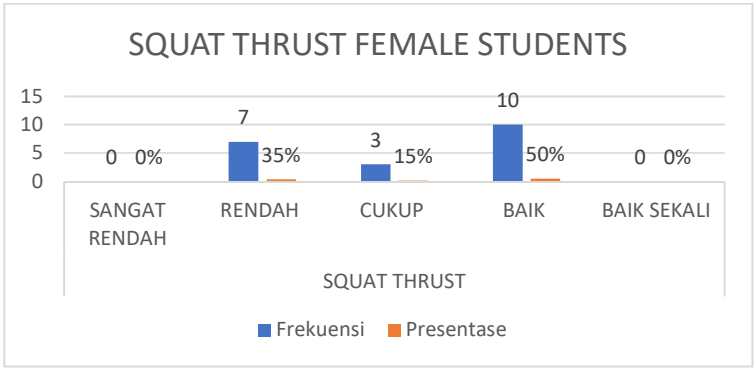


Figure 18. Female Students' Squat Thrust Results

Based on Figure 18, above, it is known that the results of the squat thrust test show that female students get the highest score with a percentage of 50% totaling 10 students in the good category. While the lowest score is in the sufficient category, which is 15%.

Pacer Results

Male Students

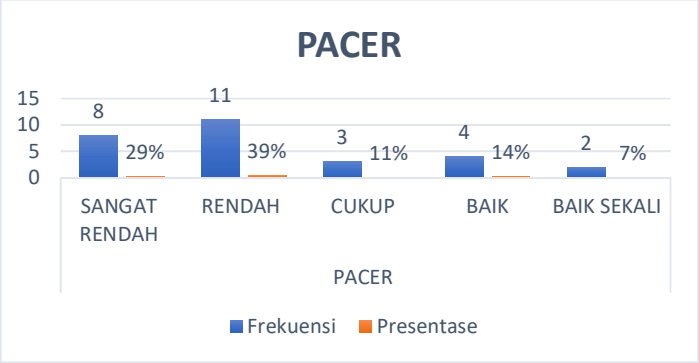


Figure 19. Pacer Results for Male Students

Figure 19, above shows the results of the analysis of the male students' pacer test, namely 39% with a total of 11 students falling into the low category, while the lowest percentage is in the very good category, namely 7% with a total of 2 students.

Female Students

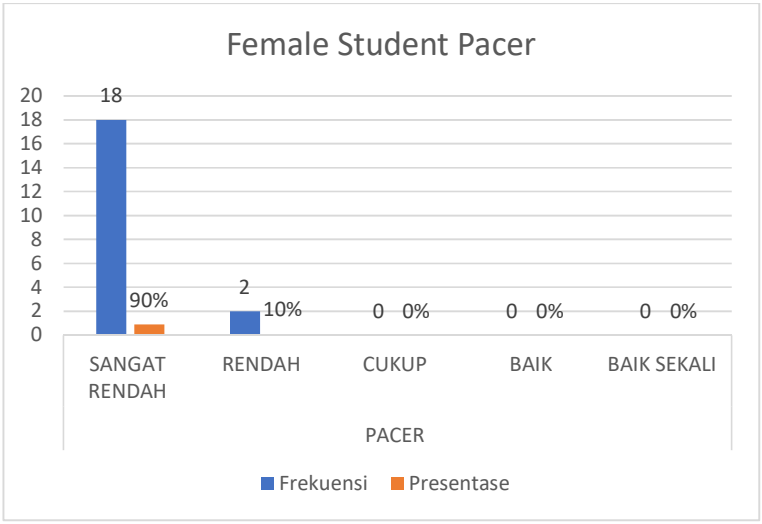
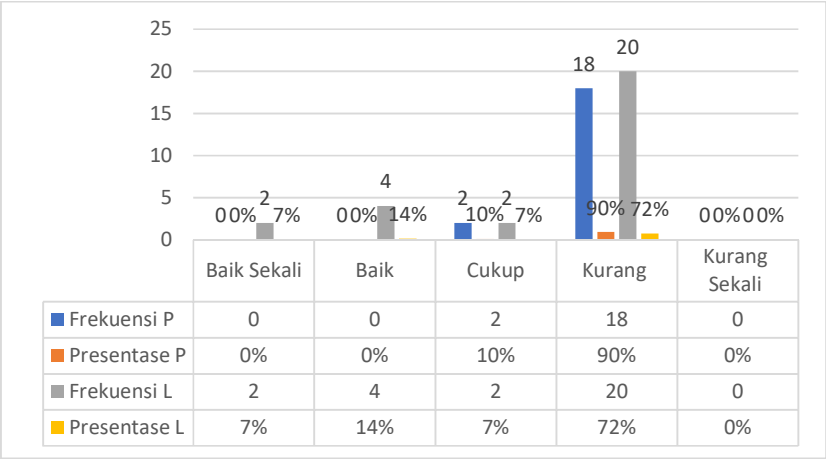


Figure 20. Female Student Pacer Results

The results of the female student pacer test found results like figure 20, above, namely female students are in the very low category with a percentage of 90%, which is 18 students. However, for the lowest value is in the very low category, totaling 2 students, which is 10%.

Physical Fitness Analysis Results According to TKPN Norms

Inter-Gender



	Baik Sekali	Baik	Cukup	Kurang	Kurang Sekali
Frekuensi P	0	0	2	18	0
Presentase P	0%	0%	10%	90%	0%
Frekuensi L	2	4	2	20	0
Presentase L	7%	14%	7%	72%	0%

Figure 21. Results of Fitness Analysis between Sexes

Figure 21 above, provides the results of the analysis of physical fitness between male and female students based on the norms of the Indonesian student fitness test with the same results, namely in the less category with a percentage of male students of 72% with a total of 20 students and female students 90%, namely 18 students. Meanwhile, for the lowest percentage of male students in the very less category is 4% or 1 student, for female students the lowest value is in the sufficient category with a total of 2 students, namely 10%.

Inter Class

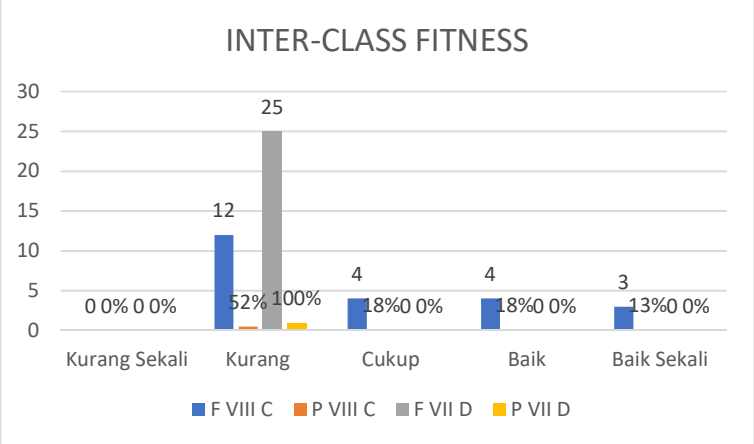


Figure 22. Results of Inter-Class Analysis

Based on the analysis results of Figure 22, above, it is known that there is no difference between students in class VII D and VIII C because the highest percentage of these two classes is in the less category, namely 52%, totaling 12 students for class VII C and 100% or 25 students from class VII D.

5. CONCLUSION AND SUGGESTIONS

This study obtained the results of the calculation data of differences in physical fitness levels using the SPSS application obtained the results of the Analysis using the hypothesis test showed no significant difference in physical fitness levels between classes VII and VIII of 0.3 (p-value> 0.05). However, there was a significant difference between male and female students, with male students showing a better level of physical fitness than female students of 0.00 (p-value <0.05). Physical Fitness by Gender: In general, the results of the fitness test showed that the physical fitness of male students was in the sufficient category (value 2.05), while female students were in the less category (value 1.20). This indicates a difference in physical fitness between the sexes.

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