

CHARACTERISTICS OF PHYSICAL FITNESS LEVEL: A CASE STUDY OF NEW MEMBERS MALE AND FEMALE OF THE PASOPATI STUDENT REGIMENT

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Abstract

This study aimed to determine the characteristics of the physical fitness level of new members of the Pasopati student regiment. This study uses a survey method with test and measurement techniques. The population used were members of the Pasopati student regiment as many as 81 students. The sampling technique was carried out by purposive sampling so that a sample of 29 new members of the Pasopati student regiment was obtained. The instrument used in this study was the Indonesian Physical Fitness Test for adolescents aged 16-19 years. The data analysis technique used descriptive quantitative percentages. The results of the study show that the results of the research on the physical fitness of new members of the Pasopati Student regiment are known that the characteristics of physical fitness of new members of the Pasopati Student regiment can be described as (1) The physical fitness of new members of the male's Pasopati student regiment is included in the good category of 33.33%, (2) The level of physical fitness of new members of the female Pasopati student regiment is mostly in the good category as much as 60%, and (3) The physical fitness of all new members of the Pasopati Student regiment, both male and female, is included in the good category of 48.28%. Therefore, it is still very necessary to carry out intensive training to be able to improve physical fitness for new members of the Pasopati student regiment, especially speed, strength, and endurance exercises for the arm and shoulder muscles, and cardiorespiratory endurance because each member of the student regiment as the components of the state's defense and security reserves requires excellent physical fitness.

Keywords: *physical fitness, speed, muscle strength, and endurance, cardiorespiratory endurance*

INTRODUCTION

Physical fitness is very important in life to carry out daily activities. Physical fitness is the ability of individual students to meet ordinary needs as well as unusual demands in daily life that are carried out effectively without feeling too tired and still having energy left for leisure and recreational activities, (Hoeger et al., 2019). Physical fitness is the ability of individual students to carry out physical activities in daily life without experiencing excessive fatigue so that they still have the energy or energy to fill their spare time by relaxing and are still able to do sudden emergency work. (Nasrulloh, Apriyanto, et al., 2021). A student who has a high level of physical fitness will be able to do a good job, and the body remains fresh when he stops working and at rest. On the other hand, a low level of physical fitness is an obstacle in carrying out activities in daily life.

Physical fitness can only be obtained by doing regular physical activity. The level of student physical activity is included in the main criteria for student status, (Stepanyuk et al., 2021). Galih Prasetyo et al., (2020) in their research found that physical activity had a significant effect on physical fitness. The role of routine exercise activities at the level of physical fitness is very important to determine the balance of the student's quality of life, (Pinho et al., 2020). Physical fitness, in general, can be achieved through exercise and can be used as a measure of the student's body ability so that it can function efficiently and effectively in carrying out work and leisure activities, to become healthier, fight hypokinetic diseases, and to meet emergencies that can occur

at any time(Powell, 2011). Exercise is a systematic, planned, programmed, measurable, regular, and repeated process, and has a goal to improve or maintain one or more components of physical fitness promptly (Nasrulloh et al., 2018).

Physical fitness should be considered a fundamental aspect in terminating a student's functional capacity,(Medrano-Ureña et al., 2020). Ahn et al., (2020) in their research revealed that fitness is very important for cadets to follow basic military training. Likewise, the members of the student regiment should also consider physical fitness. Physical fitness is very important for every member of the student regiment to carry out their duties and functions properly without feeling significant fatigue. The student regiment was formed as a component of the state security reserve as a form of concern for the awareness of defending the state. The student regiment's daily activities include daily picket, physical training, self-defense training, marching training, combat techniques, disaster management, and security training on and off-campus. In addition, members of the student regiment are also required to attend education, from Pre-Basic Education, and Basic Military Education, to Consolidation and further education. Therefore, each member of the student regiment must have good physical fitness to carry out a series of student regiment activities. However, at this time it is not known with certainty how big the characteristics of physical fitness of the new members of the student regiment, especially in the Pasopati unit. So on this occasion, the researcher intends to conduct a physical fitness test for new members of the Pasopati student regiment to determine their level of physical fitness to be able to carry out a series of these activities.

METHOD

This research is a quantitative descriptive study, meaning that in this sy it describes the characteristics of physical fitness of new members of the Pasopati student regiment, at Yogyakarta State University. The method used in this research is a survey method with test and measurement techniques. The population in this study were all members of the Pasopati student regiment as many as 81 students, male and female. The sample in this study was limited to new members of the Pasopati student regiment aged 16-19 years. After taking samples by purposive sampling, a sample of 29 new active members was obtained, namely 14 boys and 15 girls. The research instrument used the Indonesian Physical Fitness Test. The value of the validity of the instrument used for males is 0,960 and for women is 0,711.

Data analysis in this study used descriptive percentages. The steps for assessing students' physical fitness according to the Indonesian Physical Fitness Test aged 16-19 years will be obtained from data or research reform results consisting of rough results and test scores,(Widiastuti, 2015). A rough result is still a different unit of measure in value. The value of the Indonesian Physical Fitness Test can be seen in table 1 and table 2, and the classification of physical fitness using the norms in table 3.

Table 1. Indonesian Physical Fitness Test ScoreAge 16-19 for Male

Run 60 Meters	Hanging Lift Body	Sit-Ups 60 Seconds	Jump Up	Run 1200 Meters	Mark
sd-7.2"	19 and above	41 and above	73 and above	SD-3.14"	5
7.3"-8.3"	14-18	30-40	60-72	3.15"-4.25"	4
8.4"-9.6"	9-13	21-29	50-59	4.26"-5.12"	3
9.7"-11.0"	5-8	10-20	39-49	5.13"-6.33"	2
11.1"-ff.	0-4	0-9	38 ff.	6.34"-ff	1

(Source: Ministry of National Education, 2010)

Table 2. Indonesian Physical Fitness Test Score 16-19 Years Old for Female

Run 60 Meters	Hang Elbow Bend	Sit-Ups 60 Seconds	Jump Up	Run 1000 Meters	Mark
SD-8.4"	41" and up	28 and above	50 and above	SD-3.52"	5
8.5"-9.8"	22"-40"	20-28	39-49	3.52"-4.56"	4
9.9"-11.4"	10"-21"	10-19	31-38	4.57"-5.58"	3
11.5"-13.4"	3"-9"	3-9	23-30	5.59"-7.23"	2
13.5"-ff.	0"-2"	0-2	22 ff.	7.24"-ff	1

(Source: Ministry of National Education, 2010)

Table 3. Indonesian Physical Fitness Test Norms for Adolescents aged 16-19 years

No	Total Value	Classification
1.	22-25	Very good
2.	18-21	Good
3.	14-17	Moderate
4.	10-13	Poor
5.	5-9	Very poor

(Source: Ministry of National Education, 2010)

After knowing the value of the Indonesian Physical Fitness Test, the next step is to analyze by measuring the description technique with the following formula:

$$P = \frac{F}{N} \times 100\%$$

Information:

F = frequency being searched percentage

N = number of individuals

P = percentage number

RESULTS AND DISCUSSION

This study was conducted to determine the characteristics of physical fitness of new members of the Pasopati Student regiment, Yogyakarta State University. The series of physical fitness tests carried out included: running 60 meters, hanging body lifts for males, hanging elbows for females, sit-ups, jump up, and running 1000 meters for females and 1200 meters for males. The results of the series of tests carried out can be classified into five namely very good, good, moderate, poor, and very poor.

The results of the 60-meter run analysis for new members of the Pasopati Student regiment showed in Table 4. Table 4 described the frequency and percentage of running 60 meters for new members of the Pasopati student regiment male are 71.42% in the moderate category, 14.29% in the good category, and 14.19% in the poor category. There were no new members who had very good and poor categories in the 60-meter run.

Table 4. Results Frequency, Classification, and Percentage of Male 60-meter Run

No	Total Value	Frequency	Classification	Percentage
1	sd-7.2"	0	Very good	0%
2	7.3"-8.3"	2	Good	14.29%
3	8.4"-9.6"	10	Moderate	71.42%
4	9.7"-11.0"	2	Poor	14.29%
5	11.1"-ff.	0	Very poor	0%
Amount		14		100%

The results of the hanging and lifting analysis of the new members of the Pasopati Student regiment showed in table 5.

Table 5. Results Frequency, Classification, and Percentage Hanging Lift Body Male

No	Total Value	Frequency	Classification	Percentage
1	19 and above	1	Very good	7.14%
2	14-18	5	Good	35.71%
3	9-13	2	Moderate	14.29%
4	5-8	4	Poor	28.57%
5	0-4	2	Very poor	14.29%
Amount		14		100%

The table can be described the frequency and percentage of hanging body lifts for new members of the Pasopati student regiment male are 35.71% in the good category, 28.57% in the poor category, 14.29% in the moderate category, 14.29% in poor category and 7, 14% is included in the very good category.

The results of the reclining analysis of the new members of the Pasopati student regiment showed in table 6.

Table 6. Results of Frequency, Classification, and Percentage Sit-Ups Male

No	Total Value	Frequency	Classification	Percentage
1	41 ke atas	6	Very good	42,86 %
2	30-40	6	Good	42.86 %
3	21-29	1	Moderate	7.14 %
4	10-20	1	Poor	7.14 %
5	0-9	0	Very poor	0 %
Amount		14		100 %

The table can be described the frequency and percentage of new members of the Pasopati student regiment male are 42.86% included in the very good category, 42.86% in the good category, and 7.14% in the moderate category, and 7.14% in the poor category. There are no new members who have a category that is less than once in a sitting position.

Table 7. Results Frequency, Classification, and Percentage of Male Jump Up

No	Total Value	Frequency	Classification	Percentage
1	73 and above	0	Very good	0%
2	60-72	7	Good	50%
3	50-59	6	Moderate	42.86%
4	39-49	1	Poor	7.14%
5	38 ff.	0	Very poor	0%
Amount		14		100%

The table can be described the frequency and percentage of vertical jumps for new members of the Pasopati student regiment male are 50% in the good category, 42.86% in the medium category, and 7.14% in the less category. There are no new members who have very good and very poor categories in the vertical jump.

The results of the 1200 meter run analysis for new members of the Pasopati student regiment showed in table 8.

Table 8. Results Frequency, Classification, and Percentage Male's 1200 meter run

No	Total Value	Frequency	Classification	Percentage
1	SD-3.14"	0	Very good	0%
2	3.15"-4.25"	0	Good	0%
3	4.26"-5.12"	6	Moderate	42.86%
4	5.13"-6.33"	5	Poor	35.71%
5	6.34"-ff	3	Very poor	21.43%
Amount		14		100%

The table can be described the frequency and percentage of running 1200 meters for new members of the Pasopati student regiment male are in the moderate category 42.86%, the poor category 35.71%, and the very poor category 21.43%. There are no new members who have excellent and good categories in the 1200 meter run.

The results of the 60-meter run analysis for new members of the Pasopati student regiment showed in table 9.

Table 9. Results Frequency, Classification, and Percentage Run 60 meters Female

No	Total Value	Frequency	Classification	Percentage
1	SD-8.4"	0	Very good	0%
2	8.5"-9.8"	4	Good	26.67%
3	9.9"-11.4"	9	Moderate	60%
4	11.5"-13.4"	2	Poor	13.33%
5	13.5"-ff.	0	Very poor	0%
Amount		15		100%

The table can be described the frequency and percentage of running 60 meters for new members of the Pasopati student regiment female are in the moderate category 60%, in the good category 26.67%, in the less category 13.33%. There were no new members who had very good and poor categories in the 60-meter run.

The results of the analysis of the bending and bending of the new members of the Pasopati Student regiment showed in table 10.

Table 10. Results Frequency, Classification, and Percentage Hanging Elbow Bend Female

No	Total Value	Frequency	Classification	Percentage
1	41 and above	0	Very good	0%
2	22-40	12	Good	80%
3	10-21	3	Moderate	20%
4	3-9	0	Poor	0%
5	0-2	0	Very poor	0%
Amount		15		100%

The table can be described the frequency and percentage of hanging and bending of the new members of the Pasopati student regiment female are in the good category as much as

80%, and the moderate category of 20%. There are no new members who have a very good category, less and very less on bending elbows.

The results of the reclining analysis of the new members of the Pasopati student regiment showed in table 11.

Table 11. Results Frequency, Classification, and Percentage Sit-Ups Female

No	Total Value	Frequency	Classification	Percentage
1	28 and above	9	Very good	60%
2	20-28	6	Good	40%
3	10-19	0	Moderate	0%
4	3-9	0	Poor	0%
5	0-2	0	Very poor	0%
Amount		15		100%

The table can be described the frequency and percentage of new members of the Pasopati student regiment female are new members who are in the very good category as much as 60% and in the good category of 40%. There are no new members who have moderate, less, and fewer categories in sitting down.

The results of the analysis of the new members of the Pasopati student regiment showed in table 12.

Table 12. Results Frequency, Classification, and Percentage Jump Up Female

No	Total Value	Frequency	Classification	Percentage
1	50 and above	4	Very good	26.67%
2	39-49	9	Good	60%
3	31-38	2	Moderate	13.33%
4	23-30	0	Poor	0%
5	22 ff.	0	Very poor	0%
Amount		15		100%

The table can be described the frequency and percentage of vertical jumps for new members of the Pasopati student regiment female are new members who are in the good category as much as 60%, very good category 26.67%, and 13.33% moderate category. There are no new members who have the category of less and less in the vertical jump.

The results of the analysis of the 1000 meter run for new members of the Pasopati student regiment are as follows:

Table 13. Results Frequency, Classification, and Percentage Run 1000 meters Female

No	Total Value	Frequency	Classification	Percentage
1	SD-3.52"	0	Very good	0%
2	3.52"-4.56"	0	Good	0%
3	4.57"-5.58"	2	Moderate	13.33%
4	5.59"-7.23"	12	Poor	80%
5	7.24"-ff	1	Very poor	6.67%
Amount		15		100%

The table can be described the frequency and percentage of running 1000 meters for new members of the Pasopati student regiment female are new members who are in the 80% poor category, 13.33% moderate category, and 6.67% very poor category. There are no new members who have very good and good categories in the 1000 meter run.

The results of the study are in the form of rough data on physical fitness tests which are still in different units, then the unit of measure is replaced with the same unit of measure, namely in the form of value. Physical fitness test scores are obtained by converting the data from the rough results of each test item into scores, by the Indonesian Physical Fitness Test assessment instructions for adolescents aged 16-19 years. The results of the physical fitness test for new members of the Pasopati student regiment showed in table 14.

Table 14. Physical fitness level based on physical fitness category for new members of the Pasopati Male and Female Student regiment

Category	Very poor	Poor	Moderate	Good	Very good	Total
Son	0	4	5	5	0	14
Percentage	0%	28.57%	33.33%	33.33%	0%	100%
Female	0	0	6	9	0	15
Percentage	0%	0%	40%	60%	0%	100%
Amount	0	4	11	14	0	29
Percentage	0%	13.79%	37.93%	48.28%	0%	100%

Referring to the table can describe the characteristics of physical fitness of new members of the Pasopati student regiment can be described that (1) The physical fitness of new male members is included in the good category of 33.33%, medium category 33.33%, poor category 28.57 %, and there are no new members with very good and very poor categories. (2) The physical fitness of new members of the female Pasopati student regiment is in the good category at 60%, the medium category is 40%, and there are no new members with very good, poor, and very poor categories. (3) The physical fitness of all new members of the Pasopati student regiment, both male and female, is included in the good category at 48.28%, the medium category is 37.93%, the less category is 13.79%, and there are no new members in the very good category and very less.

The physical fitness test items used by researchers aim to measure the characteristics of physical fitness of new members of the Pasopati Student regiment, where there are 5 test items, namely the 60-meter running test, hanging elbows, bending/lifting the body, sit-ups, jumping upright, running 1200 meters/1000 meters. Each test item achieves its respective goals which are used to measure running speed, arm and shoulder muscle strength and endurance, abdominal muscle endurance, and measure leg muscle explosive power and cardiorespiratory endurance.

Speed , as measured by running 60 meters on recruits Pasopati student regiment most of the male and female, were included in the moderate category, namely 71.42 and 60%. Speed is the ability to quickly propel the body or move the body from one point to another (Werner Hoeger, 2010). Pratama et al., (2018) stated that there was a significant effect of ladder drills and jump rope exercises on increasing speed, agility, and leg muscle strength. In addition, speed training can be performed with plyometric training, as a study found a significant increase in the difference in sprint time before and after six weeks of plyometric training ($t = 3.76$, $p = 0.001$), (Bin Shamshuddin et al., 2020). Therefore, it can be recommended to new members of the student regiment do ladder drills or plyometric exercises to increase speed.

Strength and muscular endurance of the arms and shoulders as measured by hanging up the body on new members of the Pasopati Putra student regiment, mostly included in the good category, namely as much as 35.71%, and for female members, the ability to hang elbows and bends was included in the good category as much as 80%. While the endurance of the abdominal muscles as measured by sit-ups on new members of the male and female Pasopati student regiments included in the very good category, namely as much as 42.86% and 60%. Muscular strength is the ability of a muscle or group of muscles to contract maximally, both pulling and pushing against resistance in the form of a lifted load. (W. Hoeger & Hoeger, 2013). While

muscular endurance is the ability of a muscle group to contract repeatedly for a certain period long enough to cause muscle fatigue, and/or the ability of the muscles to maintain the maximal contraction for a long period. (Nasrulloh, et al., 2021).

Forms of exercise that can be used to develop muscle strength and endurance include weight training, bodyweight training, medicine balls, kettle bells, stability balls, and resistance bands. Weight training is done using your weight (internal weight) or using external weights such as dumbbells, barbells, and machines. (Nasrulloh et al., 2020). As a study found that there was a significant effect of bodyweight training with total-body resistance exercise (TRX) on increasing muscle strength which included increasing leg muscle strength, back muscle strength, hand muscle strength, arm muscle pulling strength, and pushing muscle strength. arm, (Nasrulloh & Wicaksono, 2020). Another study found that weight training with a pyramid system can increase muscle strength, (Prasetyo & Nasrulloh, 2017). Another study stated that circuit weight training had a significant effect on increasing muscle strength and endurance. (Nasrulloh, 2012). From some of these studies, it is proven that weight training can have a significant effect on muscle strength and muscle endurance, so to increase muscle strength and endurance for new members of a student regiment, routinely programmed weight training is needed.

Explosive force (power) leg muscles as measured by jumping upright on new members of the Pasopati male and female student regiments are included in the very good category, namely 50% and 60%. Power is defined as the ability to produce maximum power in a short time (Werner Hoeger, 2010). Power is the main ingredient for all sports that require a high level of strength, speed, and agility. (Bompa & Buzzichelli, 2015). One of the exercises to increase power is the barbell squat exercise. (Nasrulloh, et al., 2021). Loturco et al., (2015) state that “jump squat optimum power load can be determined simply using mean propulsive velocity or jump height determination in training/testing settings, allowing it to be implemented quickly in strength/power training”. The squat exercise is a standard strength training exercise used for increasing power and strength in the lower extremity and the trunk (Sato et al., 2012). Squat movement is one of the weight training movements, namely exercises using external weights. The barbell squat is a resistance exercise that can strengthen the muscles that surround some of the joints of the lower limbs and can increase leg power. Afif & Nasrulloh, (2016) said that weight training was more effective in increasing leg muscle power compared to bodyweight training. So it can be said that to be able to increase the leg power of new members of the Pasopati student regiment, it can be done with barbell squats and jump squats.

Cardiorespiratory endurance as measured by running 1200 meters on a new member of the Pasopati male student regiment is included in the moderate category, namely 42.86%. Meanwhile, for females, which is measured by running 1000 meters, most of them are included in the poor category by 80%. Cardiorespiratory endurance is the ability of heart function that involves the function of the lungs, blood vessels, and large muscle groups in carrying out physical activities with light to heavy intensity over a long period. (Nasrulloh, et al., 2021). Exercise to increase cardiorespiratory endurance is an exercise that involves the working system of the human body's physiologic functions, which include the cardiovascular and respiratory systems. Aerobic exercise is an effective exercise method that aims to improve cardiorespiratory fitness in adolescents, (Aksović et al., 2020). In addition to aerobic exercise, variations in skipping in combination with bodyweight training can also increase cardiorespiratory endurance, (Nasrulloh, et al., 2021). The ability of cardiorespiratory endurance is very important for every member of the student regiment, therefore it is necessary to do aerobic exercises or variations regularly to increase their cardiorespiratory endurance.

The results of the research on the physical fitness of new members of the Pasopati student regiment can be seen that the characteristics of physical fitness of new members of the Pasopati student regiment can be described, namely: (1) The physical fitness of new members of the male new member is included in the good category of 33.33%, (2) The physical fitness of new members

of the female Pasopati student regiment is mostly in the good category as much as 60%, and (3) The physical fitness of all new members of the Pasopati Student regiment, both male and female, is included in the good category of 48.28%. Physical fitness is the ability of an individual to meet ordinary needs as well as unusual demands in daily life that are carried out effectively without feeling too tired and still having energy left for leisure and recreational activities, (W. Hoeger & Hoeger, 2013). Physical fitness, in general, can be achieved through exercise and can be used as a measure of one's body's ability so that it can function efficiently and effectively in carrying out work and leisure activities, become healthier, fight hypokinetic diseases, and meet emergencies that can occur at any time, (Powell, 2011b). So it can be concluded that it is necessary to carry out intensive training to be able to improve the physical fitness of new members of the Pasopati student regiment because every member of the student regiment is a component of the defense and security reserves of the State requires excellent physical fitness.

CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that the characteristics of physical fitness of new members of the Pasopati Student regiment are: (1) The physical fitness of new members of the male Pasopati student regiment is included in the good category at 33.33%, (2) The physical fitness of new members of the female Pasopati student regiment is mostly included in the category good as much as 60%, and (3) The physical fitness of all new members of the Pasopati Student regiment, both male and female, is included in the good category of 48.28%. Therefore, it is still very necessary to carry out intensive training to be able to improve physical fitness for new members of the Pasopati student regiment, especially speed, strength, and endurance exercises for the arm and shoulder muscles, and cardiorespiratory endurance, because each member of the student regiment as the components of the state's defense and security reserves require excellent physical fitness.

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