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Original Article

Correlation Between Physical Activity During Covid-19 and the Level of Students Physical Fitness

MOCHAMAD FERDIANSYAH[1], TITE JULIANTINE[1], ALIT RAHMAT[1]

[1]Physical Education Health and Recreation Study Program, University Pendidikan Indonesia, INDONESIA

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Abstract

Introduction: Physical activity is an activity that is usually maintained in standard conditions before the Covid-19 pandemic. Currently, students are mostly staying at home without doing physical activity. How is their physical fitness hold and increase their immunity? Is there a relationship between physical activity and fitness?. **Purpose:** This study aims to determine the relationship between physical activity during the covid-19 pandemic and students' level of physical fitness at SMA Negeri 1 Majalaya. **Methods:** The method used in this research is quantitative with a correlation research design. The population used in this study were students of class X SMA Negeri 1 Majalaya totaling 304 students with a sample of 30 students of class X IPA 1 taken using the purposive sampling technique. The research instruments used were the Physical Activity Questionnaire during COVID-19 and the Indonesian Physical Fitness Test (Tes Kebugaran Jasmani Indonesia/TKJI). This hypothesis test uses Pearson Product Moment correlation analysis to determine the positive correlation between physical activity during COVID-19 and physical fitness levels. **Results:** Of 30 students of SMAN 1 Majalaya (100%), there is one student (3.3%) in the very good category, one student (3.3%) in the good class, 13 students (43.3%) in the good category. Medium type. 13 students (43.3%) were poor, and two (6.7%) were in the inferior class. **Conclusions:** The results showed a relationship between physical activity during the COVID-19 pandemic and the level of physical fitness of students in class X IPA 1 SMAN 1 Majalaya in the 2020/2021 academic year, where a high level of physical fitness indicated good physical activity of students.

KeyWords: physical fitness, physical activity, covid, level

Introduction

Health is one of the essential elements of human life. In a healthy physical and spiritual condition, humans can perform activities optimally. To get good physical and spiritual health, routine health maintenance is necessary. One of the efforts to maintain health is by doing physical activity. Physical exercise is part of physical activity that is planned, structured, and repetitive and has a final or intermediate goal for the improvement or maintenance of physical fitness (hagströmer & franzén, 2017). Physical activity can be done at home, at work, during travel, and during leisure time, such as in physical exercise. Physical activity is an activity related to sports which, when done, can help increase endurance. Physical activity has long been considered an essential component of a healthy lifestyle when practiced regularly. As attention in physical education is increasingly focused on promoting physical activity, most physical education programs continue to emphasize physical fitness testing as the primary form of assessment (welk, 2008). However, all states of human activity always require biological/material support, so the problem of physical/physical ability is an essential factor for every human activity (giriwijoyo & sidik, 2013, p. 21).To maintain physical activity for

Corresponding Author: MOCHAMAD FERDIANSYAH, E-mail: moch.ferdiansyah@upi.edu

longer or lasting longer, physical fitness need to be maintained so that body does not tire quickly. According to Bouchard, Blair & Haskell (2007, p.19), physical fitness is a setof attributes that people have or achieve that relates to the ability to perform physical work. The quote explains that fitness is a unit owned or achieved by someone associated with the ability to do a job or physical activity.

The physical fitness required by each individual varies greatly depending on the activities carried out daily. With a high physical fitness status, there is a chance of having a good level of health so that students can get high Physical Education scores. A good fitness status aims to make students more active in studying and aims to improve physical fitness and better physical activity at home. Based on the results of observations in the form of interviews conducted by researchers with sports teachers at SMA Negeri 1 Majalaya, the results were that students' physical fitness at SMA Negeri 1 Majalaya was sufficient and needed to be improved. This statement is supported by the results of tests conducted by sports teachers at SMA Negeri 1 Majalaya, shown once a year. Schools are one of the right places to start physical education efforts and cultivate active mobile living. Still, for now, the pandemic of Covid-19, all schools are closed, so sports activities usually carried out by students at school can only be done at home or work from home . WFH activities allow students to do fewer sports activities as is usually done in schools. Many students are lazy to do physical activities, but some always maintain their physical fitness by doing regular physical activities. Meanwhile, SMA Negeri 1 Majalaya does not have a program that makes students more active at home, such as the culture of maintaining physical fitness at home by doing physical activities such as jogging on the ground, gymnastics, and other exerting activities. From this problem, the researcher aims to determine the relationship between physical activity during pandemic Covid-19 and the level of physical fitness of SMA Negeri 1 Majalaya students

Material & methods

The method used in this research is quantitative with a correlation research design. This research is a quantitative study that aims to test the predetermined hypotheses. According to Arikunto (2006, p.270), correlation research seeks to determine whether there is a relationship between variables and how closely the variables are related. This study has two variables, namely the level of physical activity and physical fitness, so this study aims to find the relationship between the independent variables, in this case, the level of physical activity and the dependent variable, namely the physical fitness of class X students at SMAN 1 Majalaya.

Participants

Participants in this study were 30 students of class X IPA 1 who were taken one class out of ten class X in SMAN 1 Majalaya, totaling 304 students. Each participant has good health and is physically and mentally healthy to take a series of TKJI tests at school. This research is about the significant relationship between physical activity during pandemic Covid-19 with students' level of physical fitness, which is felt to be seen during the Covid-19 pandemic. This research uses the purposive sampling technique. This is done by taking the subject not based on strata, random, or area but based on specific goals. In the book Research Methods by Sugiyono (2017, p. 85), purposive sampling is a sampling technique with particular considerations. The samples taken were 30 students who were in good health and could take physical fitness tests at school. The sample used in this study were students of class X IPA 1 at SMAN 1 Majalaya who had the following characteristics (1) The researcher's preliminary study shows that from ten classes, X IPA 1 students show good physical activity (2) More male students in class X IPA 1 SMAN 1 Majalaya (3) Students of X IPA 1 are more productive (4) Physical education teacher recommendations. (5) Willingness to take a physical fitness test

Instruments

The materials used for the five tests carried out are: (1) 60-meter sprint: track or field, stopwatch, start flag, stake, chest number, chalk powder, forms, and stationery. (2) Elbow bending and body lifting test: flat and clean floor, single-bar, stopwatch, powdered chalk or magnesium carbonate, and stationery. (3) 60 seconds of sitting down: flat and clean grassy floor/court, stopwatch, stationery, a mat if needed. (4) Jump straight: a board measuring 30 x 150 cm dark-colored attached to a flat wall or post, powdered chalk, board eraser, and stationery. (5) 800 and 1000 meter running tracks: stopwatch, start flag, whistle, stake, writing instruments. The instrument used in this study was an instrument that was available and standardized. Physical activity was

measured using modified PAQ-A, and physical fitness was measured using TKJI. (a) Instruments to Measure Physical Activity. The measurement of physical activity uses a data collection instrument in the form of a questionnaire from the adaptation results of The Physical Activity Questionnaire for Older Children (PAQ-C) and Adolescents (PAQ-A) Manual created by Kowalski et al. In 2004 with several modifications because it is adjusted to the conditions and habits of doing physical activity in Indonesia. (b) Instruments to Measure Physical Fitness. The instrument used to measure physical fitness in this study was the Physical Fitness Test (TKJI) from the Ministry of National Education in 2010 for ages 16-19, which were standardized. The reliability of the test series for young men and women aged 16-19 years has a value of 0.720 and 0.673, while the validity for young men and women aged 16-19 years has a value of 0.960 and 0.711 (Ministry of Education National 2010: 443). In this study, there are two variables: the independent variable (independent variable), the level of physical activity of WFH students during Covid-19, and the dependent variable (dependent variable), the level of students' physical fitness. Level of Physical Activity. Physical activity is any movement of the body caused by the muscles' contraction and support systems that require energy expenditure above the resting system level. The operational definition of the level of physical activity is the score obtained on filling out the Physical Activity Questionnaire For Adolescents (PAQ-A) instrument developed by Kent C. Kowalski et al. (2004), which has been modified into Indonesian. Physical activity level data was obtained from filling out questionnaires distributed via google form for one day on November 30, 2020. Physical activity data collection steps (1) Prepare and modify questionnaires (2) Entering the questionnaire into the google form. (3) Distribute the google form link to class X IPA 1 students. (4) Processing the survey results from google form data

Physical Fitness

In this study, to be able to obtain students' physical fitness scores is to use the TKJI test aged 16-19 years, where there are 5 test items, with a series of test items, namely: (a) Fast Run (60 meters), (2) Lift the body (how much length of time obtained for girls and how many in 60 seconds for boys), (3) lying down (sit-ups / 60 seconds), (4) vertical jump, and (5) long-running (1000 m for girls and 1200 meters for boys). Physical fitness test data were collected in 1 day on November 30, 2020. The steps for taking the physical fitness test data carried out at the SMAN 1 Majalaya school include (1) Providing information via WhatsApp to students, including a test schedule of 5 people in 1 session along with information on the use of masks. (2) Check body temperature before the test. (3) Instructions for washing hands. (4) Take the test at a distance that has been adjusted according to the rules of social distancing.

Data analysis

The data analysis method used in this research is correlational analysis. The correlational analysis is a statistical analysis used to compare the measurement results of two different variables to determine the level of the relationship between these variables (Suharsimi Arikunto, 2006, p. 270). This study uses the product-moment correlation formula to determine whether there is a significant relationship between the independent and dependent variables.

Results

Level of Physical Activity

Measuring the level of physical activity was carried out on November 30, 2020. Data was obtained from filling out the PAQ-A questionnaire via a modified google form for class X IPA students of SMAN 1 Majalaya. The classification results into five, namely: (1) very high, (2) high, (3) moderate, (4) low, and (5) were very low. Data on the results of filling out the PAQ-A questionnaire can be seen in the table below:

Table 1. Results of Measurement of Physical Activity Levels

No	Physical Activity Category	Frequency	
		Absolute (f)	Percentage (%)
1	Very high	0	0%
2	High	0	0%
3	Moderate	10	33,3%

4	Low	18	60%
5	Very low	2	6,7%
	Total	30	100%

Based on the table, of the 30 students (100%), there were 0 students (0%) in the very high category, 0 students (0%) in the high class, ten students (33.3%) in the moderate category, 18 students (60%) in the low category and two students (6.7%) in the very low category. Therefore, data on the results of filling out the PAQ-A questionnaire by students of SMAN 1 Majalaya class X IPA 1 for the 2020/2021 school year can be seen in the bar chart below:

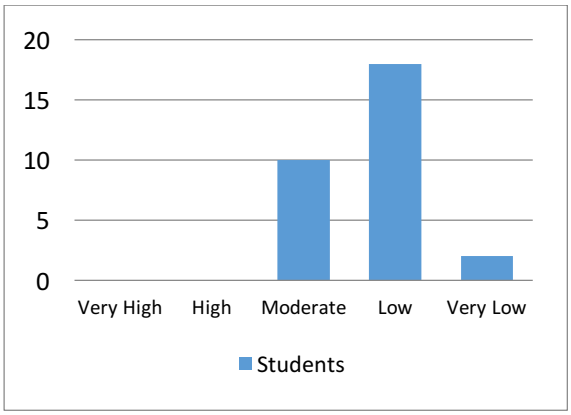

Fig 1. Diagram of Students' Physical Activity Levels

Level of Physical Fitness

Measurement of students' physical fitness levels was carried out on November 30, 2020, data obtained from a series of physical fitness tests can be seen in the table below.

Table 2. Results of Measurement of Physical Fitness

No	Physical Fitness Category	Frequency	
		Absolute (f)	Absolute (f)
1	Very good	1	3,3%
2	Good	1	3,3%
3	Moderate	13	43,3%
4	Less	13	43,3%
5	Very less	2	6,7%
	Total	30	100%

Based on the table, from 30 students of SMAN 1 Majalaya (100%), there is one student (3.3%) in the very good category, one student (3.3%) in the good class, 13 students (43.3%) in the intermediate class. 13 students (43.3%) were in the less category. Two students (6.7%) were in the significantly less category. Data on the physical fitness test results of students of SMAN 1 Majalaya class X IPA 1 in the 2020/2021 school year, namely:

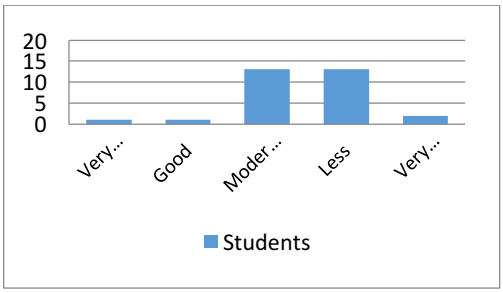

Fig 2. Diagram of Students' Physical Fitness Level

Testing Requirements Analysis

Hypothesis testing analysis includes normality test, homogeneity, and linearity test. The normality test is carried out by the One-Sample Kolmogorov-Smirnov test with the rule of judgment; if the significance is more than 0.05, it can be said that the data is usually distributed.

Table 3. One-sample Kolmogorov-Smirnov Test

		PAQA	TKJI
N		30	30
Normal Parameters [a, b]	Mean	2,19	13,47
	Std. Deviation	,602	3,192
Most Extreme Differences	Absolute	,158	,147
	Positive	,158	,147
	Negative	-,144	-,072
Test Statistic		,158	,147
Asymp. Sig. (2-tailed)		,054[c]	,098[c]

The above test shows that The significance value of the level of physical activity is 0.054> 0.05. The significance value of the physical fitness level is 0.098> 0.05. From the two statements above, it can be concluded that the significance value of the two variables is more significant than 0.05, so the two data are normally distributed. The homogeneity test was carried out to determine whether the variance between the tested groups was different or not. The variance was homogeneous or heterogeneous (Nisfiannoor, 2009: 92). The homogeneity test in this study used ANOVA using SPSS 25 software. The results of the research data homogeneity test are shown in the following table.

Table 4. Test of Homogeneity Of Variance

		Levene Statistic	df1	df2	Sig.
TKJI	Based on Mean	1,989	8	17	,111
	Based on Median	1,150	8	17	,381
	Based on Median and with adjusteddf	1,150	8	10, 593	,406
	Based on trimmed mean	1,964	8	17	,115

In the table above, the Levene Statistic column shows a significance value of 0.111. This shows that p = 0.111> 0.05, it can be said that the data comes from a homogeneous population. Linearity analysis using ANOVA in SPSS 25. It can be said to be linear if the p-value is more significant than 0.05. It can be seen that based on the value of the linearity significance table, If sig. <0.05, then there is a linear relationship, If sig. > 0.05, then there is no linear relationship. Based on the significance table value of less than 0.05, it can be concluded that there is a significant linear relationship between physical activity and physical fitness.

Table 5. Anova

			Sum of Squares	df	Mean Square	F	Sig.
PAQA * TKJI	Between Groups	(Combined)	4,983	11	,453	1,472	,225
		Linearity	3,507	1	3,507	11,395	,003
		Deviation from Linearity	1,475	10	,148	,479	,882
	Within Groups		5,540	18	,308		
	Total		10,523	29			

Hypothesis testing using the Pearson Product Moment (Karl Pearson) correlation analysis with SPSS 25 software. The results of the correlation analysis between the physical fitness level variables and the physical activity levels of class X IPA1 students of SMAN 1 Majalaya in the 2020/2021 school year are as follows In the correlation table. It is found that the correlation coefficient is 0.577 with a significance of 0.001. Based on the data above, hypothesis testing can be done by comparing the significance level (p-value). If the significance> 0.05, then Ho is accepted. If the significance <0.05, then Ho is rejected.

Table 6. Correlations

Correlations

		PAQA	TKJI
PAQA	Pearson Correlation	1	,577**
	Sig. (2-tailed)		,001
	N	30	30
TKJI	Pearson Correlation	,577**	1
	Sig. (2-tailed)	,001	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

From these data, it can be seen that there is a significant relationship between the variable level of physical activity and physical fitness. Furthermore, if the correlation coefficient of the Pearson Product Moment correlation analysis results is not = 0, it can be said that there is a relationship. The Pearson Product Moment correlation results yielded 0.577, which means that there is a positive correlation between physical activity and

physical fitness. Based on the results of the correlation coefficient, it can also be understood that the correlation is positive, meaning that the higher the level of physical activity, the higher the level of physical fitness with low relationship strength.

Discussion

From the results of the frequency distribution of physical activity levels, it can be seen that there are no students who have a high and very high level of physical activity. Students who have an activity level with a moderate category are only ten students. The majority of students have a lower activity level than 18 students, and the remaining two students are categorized as very low. The data shows that 60% of students fall into the low category. This is due to the lack of active habits in their daily life while at home (WFH). The results of filling out the PAQ-A questionnaire via a google form, the majority of students showed their daily activities honestly. But this has little effect on the overall level of student activity. Because a high level of physical fitness certainly indicates an excellent physical activity of students. Besides, environmental factors affect students' physical activity at home. Lack of adequate facilities and infrastructure is also an obstacle for students to perform physical activity to its full potential—the absence of a field (basketball, futsal, etc.) or land for students to play. The data also shows that most of the activity that students do after learning online (at home) is also low. Most students only do sports 1 to 2 times a week. Only a few students do sports activities up to 3 times a week. Students are also less able to take advantage of their free time at home. The majority of students relax or do activities that only require a little effort. Only a few students often do physical activity (exercise) in the past week. From some of the data above, it can be concluded that the level of physical activity of grade X IPA 1 students of SMAN 1 Majalaya tends to be below.

Based on the results of the frequency distribution of the physical fitness level, it can be seen that the data on the physical fitness level of students is linear or the same as the results of filling out the PAQ-A questionnaire. The data shows that there are students who have excellent or good fitness categories. This is also not far from the results of filling in the PAQ-A, which offers ten students who have moderate physical activity. The majority of students' physical fitness is in the low and low category once, with 20 students. The test results showed that more than 50% of the research subjects had a low level of physical fitness. There is a student with high physical fitness and a very high physical fitness student, but the two students show moderate physical activity. After reconfirming to students who have high and very high physical fitness categories, it is stated that the student filled out a questionnaire according to the habits carried out in the last week. Still, the student had suitable activities in the previous weeks. Besides having a destructive impact on health, low fitness levels can also decrease student achievement in school. Having reasonable fitness will undoubtedly benefit students when carrying out their daily activities both at school and at home; besides, good fitness will also increase body immunity which is helpful to protect them from Covid-19. To have good fitness, parents and schools should encourage (motivation) and facilities for students to be willing and responsible for their physical fitness. Good facilities for maintaining fitness are sports facilities such as bicycles, roller skates, running shoes, basketball, volleyball, etc., that parents can provide at home. Good encouragement or motivation is to invite students to carry out regular sports activities carried out by parents to get used to exercising. It will become a routine and essential training for them.

Conclusions

Based on the research that has been carried out through the product-moment correlation analysis with SPSS 25, it can be concluded that physical activity during pandemic Covid-19 has a relationship with the physical fitness level of class X IPA 1 students of SMAN 1 Majalaya in the 2020/2021 school year. Although a high level of physical fitness shows that students' physical activity is good, the activities carried out at home

during the Covid-19 pandemic are different from their usual activities. Almost some students rarely do physical exercises at home, so that the majority of students' physical fitness is moderate and low. Nevertheless, physical fitness obtained from routine physical activity can provide benefits both academically and non-academically. The academic advantage is optimal learning achievement in school, and non-academics can play with peers without feeling excessive fatigue.

Conflicts of interest

In this article, the author declares no potential conflicts of interest concerning copyright, publication, and research.

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