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Improving Physical Fitness with a Circuit Training Approach at State Vocational High School 1 Lamongan

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ABSTRACT
This research is classroom action research to increase the level of physical fitness of students with a circuit training approach in class XI Financial Accounting Institute 1 SMK Negeri 1 Lamongan. Based on the nutritional status of students in the average normal category with a Body Mass Index (BMI) result of 19.69 and a percentage of 43% in the normal category, This classroom action research method is based on the Kemmis and MC Taggart models of research conducted through four stages, including planning, implementing, observing, and subsequent reflection. The four stages become a cycle. Data collection used the Multistage Fitness Test (MFT) instrument and used descriptive analysis techniques to describe the percentage data from the Multistage Fitness Test (MFT) results obtained from cycles 1 and 2, with a total of 35 students. The results of the physical fitness research experienced an increase. The percentage of 60% in the very poor category in cycle 1 decreased to 28% in cycle 2, while in cycle 1, which was originally 0% in the good category, it increased by 3%. So the results of cycles 1 and 2 have increased even though they are still in the less category, so further action is needed in learning in class XI Financial Accounting at SMK Negeri Lamongan. So it can be concluded that the circuit training approach can improve the physical fitness of students.

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INTRODUCTION

The conventional implementation of physical education, sports, and health education, abbreviated as PJOK, causes most students to passively wait their turn or wait to get equipment, coupled with limited space for movement. in physical education, sports, and

health so that the lesson time runs out for the purposes of managing the class. Games and physical activities like this should be modified so that all students are actively learning at the same time. One of them is because teachers still use an approach that tends to lead to sports achievements in their teaching. Using the circuit training approach model can improve physical fitness indicators (Lee et al., 2021). In schools, there are still many teachers who determine tasks for students through physical activities such as sports achievements without considering the initial abilities of students; this is of course detrimental to students who are less skilled and feel very heavy. The results of related empirical studies explore the physical fitness of students and show that attitudes towards tests can be associated with high performance (Simonton et al., 2019). So according to Mutaqin (2018), there needs to be a breakthrough in physical education, sports, and health because of the passive condition of students due to games and internet use via mobile phones. This condition causes students to be lazy about participating in physical education, sports, and health lessons. Learning activities use actual facilities and infrastructure as well as regulations, so they tend to be less enthusiastic about learning. Alfrey (2023) reminded us that education, physical education, sports, and health teachers must work creatively and influence the pedagogy of fitness tests in various ways. According to Johansson et al. (2018), physical education, sports, and health teachers are expected to be a driving force in physical activity and need to be equipped with new knowledge and skills.

Vocational High School (SMK) is a school that prepares graduates who have skills in the world of work. According to Government Regulation No. 19 of 2005, graduates in vocational secondary education units aim to improve intelligence, noble character, and independent living skills and continue education in accordance with their vocational Good nutrition is one of the factors that supports students participation in active and enthusiastic learning (Tamim et al., 2018). In addition to good nutrition, the next factor is individual physical fitness, which can be seen through skills and abilities in completing work and daily activities (Huda, 2015). As stated by the World Health Organisation (WHO), exercise is an easy way to reduce various diseases, but obesity is a serious problem for health because there are changes in lifestyle due to intake and physical activity. So the nutritional factors and physical fitness of students support carrying out learning activities and daily work activities.

Based on the results of observations made by researchers on Tuesday, February 21, 2023, it was found that in class XI Financial Accounting Institutions, there were 35 students who were dominated by women and only one boy. The results of the observations were carried out by measuring the height and weight of students to determine their nutritional status. Measuring nutritional status was determined from the results of BMI, namely weight divided by height (kg/m2) (Previato & Behrens, 2018). The results of the nutritional status of class XI Financial Accounting Institute SMK Negeri 1 Lamongan showed an average normal or ideal category with a Body Massage Index (BMI) of 19.69 and a percentage of 43%. So based on these data, the researcher wishes to improve the physical fitness of students by using the circuit training method. The circuit training method has an effect and is recommended for improving physical condition (Zarwan et al., 2020). The formulation of the research problem is to find out whether the circuit training approach can improve the physical fitness of students in class XI Financial Accounting at SMK Negeri 1 Lamongan. The aim of the study was to increase the level of physical fitness of students with a circuit training approach in class XI Financial Accounting for Institution 1 SMK Negeri 1 Lamongan.

The nutritional status diagram for class XI of Financial Accounting at SMK Negeri 1 Lamongan is as follows, 1) Blue (heavy fat); 2) Red (light fat); 3) Yellow (normal); 4) Green (light thin), and 5) Orange (thin).

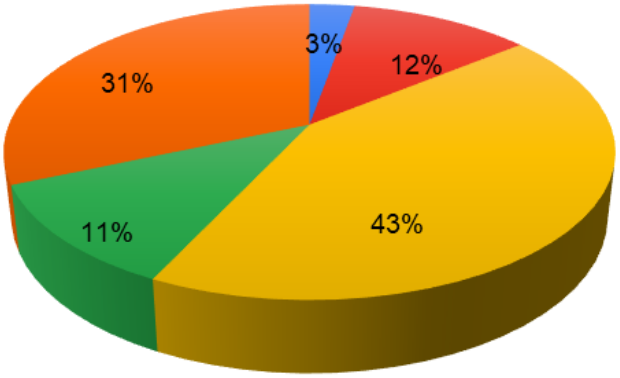

Figure 1. Nutrition Status Diagram

MATERIALS AND METHODS

The type of research used in this study is classroom-based action research using two cycles. Implementation in one cycle is carried out over two learning meetings. The classroom action research model is based on the Kemmis and MC Taggart models in research conducted through four stages, including: 1) planning, 2) implementation, 3) observation, and 3) further reflection. The four stages become a cycle followed by the next cycle (Zainal & Chotibuddin, 2018).

The subjects of this classroom action research were 35 students of class XI Financial Accounting at SMK Negeri 1 Lamongan. The implementation time is from February to March 2023 at SMK Negeri 1 Lamongan. This study used the Multistage Fitness Test (MFT) instrument to measure students' physical fitness through their Vo2Max results. According to J. Lee & Zhang (2021), Vo2Max is the maximum volume of oxygen that is used as a standard for measuring individual physical fitness.

The data analysis technique uses descriptive analysis techniques, namely describing the percentage data from the test results obtained from students in cycles 1 and 2, which are contained in the Multistage Fitness Test (MFT) test form, using the following norms:

Table 1. Vo2Max Result Norms Age 13-19 Years

No.	Category	Man	Woman
1	Very less	<35,0	<25,0
2	Not enough	35,0 - 38,3	25,0 - 30,9
3	Enough	38,4 - 45,1	31,0 - 34,9
4	Good	45,2 - 50,9	35,0 - 38,9
5	Extraordinary	51,0 - 55,9	39,0 - 41,9
6	Superior	>55,9	>41,9

Source: (Rachman, 2021)

The research process based on the Multistage Fitness Test (MFT) data is described through the stages carried out. Flow for describing data results by assembling data, summarising, classifying, and concluding (Ahwan & Basuki, 2023)

RESULTS AND DISCUSSION

Cycle 1 (Planning)

Learning with Physical Fitness Activity material in cycle 1 was carried out for 2 meetings, which were carried out according to the schedule for class XI Financial Accounting at SMK Negeri 1 Lamongan when learning Physical Education, Sports, and Health (PJOK). The material is provided through the Circuit Training game activity model with the principles of movement, speed, balance, endurance, and coordination. Because using circuit training can improve body composition and the body massage index (Ramdhanni et al., 2020), Therefore, it can be said that using the circuit training approach can be beneficial for physical fitness and is able to reduce the measured body index mass (Samodra, 2022). The learning model used is project-based learning (PjBL), with the provision of group assignments to develop training forms with a circuit training model. Project-based learning allows students to have real experiences and self-reflection, which is the key to meaningful learning in productive learning (Sunardi et al., 2015).

Cycle 1 (Class Actions)

This action plan is the implementation of an action plan whose implementation takes two meetings. As stated in the lesson plan, learning is carried out in two 45-minute meetings. Implementation of Cycle 1 was carried out on Tuesday, February 28, 2023, and March 7, 2023. In the first meeting, the teacher gave material related to physical fitness activities for 15 minutes in class, after which learning activities were continued in the field by giving the Hot Cone game to warm up so that students moved actively through the game. The next activity is given fitness activity material by the teacher through various forms of physical fitness movements, namely sprint movements, Shuttle runs, Squat Trust, Zig-zag Running, and aeroplane attitudes to train balance. Students do circuit training movements that have been compiled and exemplified by the teacher. Next, distribute Student Worksheets (LKPD) for group assignment guidelines in preparing circuit training movements according to the teaching materials implemented. In the second meeting, the students warmed up in the field with the Fish Net game. After warming up, the students, according to the groups, practised the results of composing circuit training movements, which were monitored directly by the teacher and researchers. Reflect and prepare for the Multistage Fitness Test (MFT) to measure students' physical fitness.

Cycle 1 (data results)

During the implementation of Cycle I, researchers and teachers collect data. The description of the data taken consists of a physical fitness test.

Table 2. Results of Cycle 1 Data

Cycle 1				
Description	**N**	**Mean**	**Value Max**	**Value Min**
Man	1	27,2	27,2	27,2
Woman	34	24,9	33,2	20,1

In the table above, it can be seen that the dominant number of students is female. Results The average VO2max for men is 27.2 ml/kg/min with a total of 1 student, while the average result for girls is 24.9 ml/kg/min with a total of 34 students. gender. Physical fitness conditions in Cycle I are presented in tabular form as follows:

Table 3. Results of Cycle 1 Fitness Data

Norm VO2MAX		Cycle 1	
Man	**Women**	**Category**	**Students**
<35,0	<25,0	Very less	21
35,0 - 38,3	25,0 - 30,9	Not enough	5
38,4 - 45,1	31,0 - 34,9	Enough	9
45,2 - 50,9	35,0 - 38,9	Good	0
51,0 - 55,9	39,0 - 41,9	Extraordinary	0
>55,9	>41,9	Superior	0
Total			35

The table above reveals that 20 students were stated to be very lacking in physical fitness, 5 students were stated to be still in the less category, and 9 students were stated to be in sufficient physical fitness condition. Clarifying the results of students' physical fitness in cycle 1 in the form of diagrams and percentages is as follows:

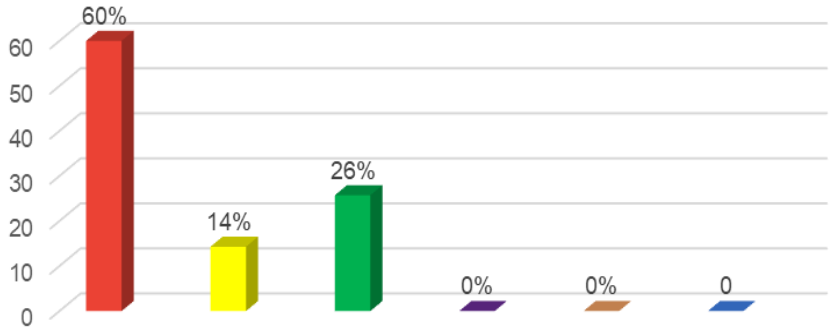

Figure 2. Diagram of Cycle 1 Fitness Results

Based on the results of the description of the first cycle, the results of physical fitness for class XI Financial Accounting Institutions SMK Negeri Lamongan totaled 35 students, with a percentage of 60% of students in the Very Poor category, 14% in the Less category, and 26% in the Fair category of physical fitness conditions. So as a whole, class XI students of the Financial Accounting Institute of Lamongan State Vocational School are in the Very Poor category of physical fitness results; the average result of VO2Max is 25.0 ml/kg/min. The results of this category are adjusted to the female VO2max norm because in this class, there are 34 female students and 1 male student.

Cycle 2 (Plan)

Cycle 2 is a follow-up to the results of analysis and reflection in Cycle 1. The results in cycle 1 of the average student's physical fitness are in the good category, but there are still 40% in the moderate category. Cycle 2 was held for 2 meetings in accordance with the schedule for class XI Financial Accounting at SMK Negeri 1 Lamongan when learning Physical Education, Sports, and Health (PJOK).

The material is provided through the Circuit Training game activity model with the principles of movement, speed, balance, endurance, and coordination. The learning model used is project-based learning (PjBL), with the provision of group assignments to compile a form of training using the circuit training method as a guide in carrying out exercises at home as a task report. Because the homework assignment is supported by the results of Takahata's research (2018), training using circuit training at home affects muscle mass and other factors. Moderate According to Lepp et al. (2015), even though the use of

mobile phones has the potential to interfere with physical activity, it can also motivate physical activity. The assignment plan is based on the results of reflection from the previous cycle.

Cycle 2 (Class Actions)

The action plan in cycle 2 is the implementation of the follow-up plan from the reflection results in cycle 1, which takes two meetings to be implemented. Learning is done every meeting for two 45-minute sessions. Implementation of Cycle 2 was carried out on March 14 and 21, 2023. In the first meeting, the teacher provided material related to physical fitness activities through the circuit training model and informed students of further assignments on the Student Worksheets (LKPD) that had been worked on by groups in cycle 1. Assignments The follow-up is doing physical fitness exercises through circuit training that has been prepared by each group. Next, the warm-up and learning activities in the field are continued by providing a game of Rock, Paper, Scissors with a circuit that has been prepared by the teacher. The next activity is given fitness activity material by the teacher through various forms of physical fitness movement through circuit training. Furthermore, students carry out circuit training movements that have been prepared by each group. Then reflect and inform at the next meeting. In the second meeting, the students immediately gathered in the field. Reporting the results of advanced tasks of physical fitness training through circuit training that have been prepared by the group. In addition to the form of an oral report, the teacher also sends a Google Form link to students, which includes the implementation date and proof of photo documentation when carrying out physical fitness activities. After that, do a warm-up activity with the Stone Tree game model. Then reflect and prepare for the Multistage Fitness Test (MFT) to measure students' physical fitness.

Cycle 2 (data results)

Physical fitness data in Cycle 2 was conducted by researchers and teachers. The description of the data taken from the physical fitness tests of students.

Table 4. Results of Cycle 2 data

Cycle 2				
Description	**N**	**Mean**	**Value Max**	**Value Min**
PUTRA	1	29,7	29,7	29,7
PUTRI	34	26,4	32,9	20,1

The table above can be explained by the fact that the average number of male students has a VO2max of 29.7 ml/kg/min with 1 student, and the average female VO2max is 20.1 ml/kg/min with 34 students. The results of the physical fitness category of students were adjusted according to the VO2Max norms for age and gender. Physical fitness conditions in Cycle 2 are presented in tabular form as follows:

Table 4. Results of Cycle 2 Fitness Data

Norm VO2MAX		Cycle 1	
Man	**Women**	**Category**	**Students**
<35,0	<25,0	Very less	9
35,0 - 38,3	25,0 - 30,9	Not enough	19
38,4 - 45,1	31,0 - 34,9	Enough	6
45,2 - 50,9	35,0 - 38,9	Good	1

51,0 - 55,9	39,0 - 41,9	Extraordinary	0
>55,9	>41,9	Superior	0
Total			35

The table above reveals that 9 students were stated to be very lacking in physical fitness, 19 students were stated to be still in the less category, 6 students were stated to be sufficient, and 1 student was stated to be in a good category with physical fitness conditions. Clarifying the results of students' physical fitness in cycle 2 is presented in the form of diagrams and percentages as follows:

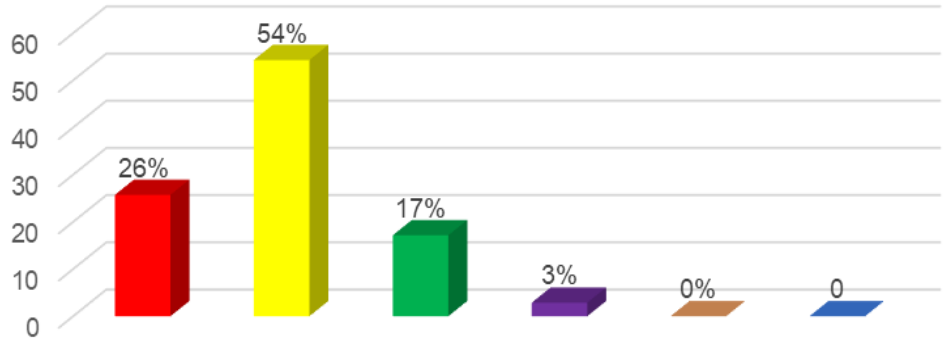

Figure 3. Diagram of Cycle 2 Fitness Results

Based on the results of the description of the second cycle, the results of the physical fitness of class XI Financial Accounting Institution of Lamongan State Vocational School totaled 35 students, with a percentage of 26% of students in the Very Poor category, 54% in the Poor category, 17% in the Enough category, and 3% in the Good Fitness category. So as a whole, class XI students of the Financial Accounting Institute of Lamongan State Vocational School are in the Poor category of physical fitness conditions with an average VO2Max result of 26.5 ml/kg/min. The results of this category are adjusted to the female VO2max norm because in this class, there are 34 female students and 1 male student.

DISCUSSION

Results of the action between cycles 1 and 2 in learning physical education, sports, and health in class XI Financial Accounting at SMK Negeri Lamongan, which was held for 2 meetings in cycle 1 and cycle 2, Each meeting has two 45-minute lesson hours. The material provided is physical fitness activities with a circuit training approach. The initial data obtained was the nutritional status of class XI in Financial Accounting at SMK Negeri Lamongan, with an average normal nutritional status. The following is the initial data presented in tabular form:

Table 6. Preliminary Data Results

	DATA AWAL	
Students	**Nutritional Status**	**%**
1	Heavy Fat	3%
4	Light Fat	12%
15	Normal	43%
4	Light Skinny	11%
11	Skinny Weight	31%
	Normal	100%

The results of cycle 1 and 2 physical fitness are presented in tabular form as follows:

Table 7. Inter-Cycle Action Results

Category	Percentage of physical fitness results	
	Cycle 1	Cycle 1
Sangat Kurang	60%	26%
Kurang	14%	54%
Cukup	26%	17%
Bagus	0%	3%
Luar Biasa	0%	0%
Unggul	0%	0%
Average	Very Poor	Poor

Clarifying the results between cycles of physical fitness results is presented in the form of a diagram, with the percentage results for each cycle as follows:

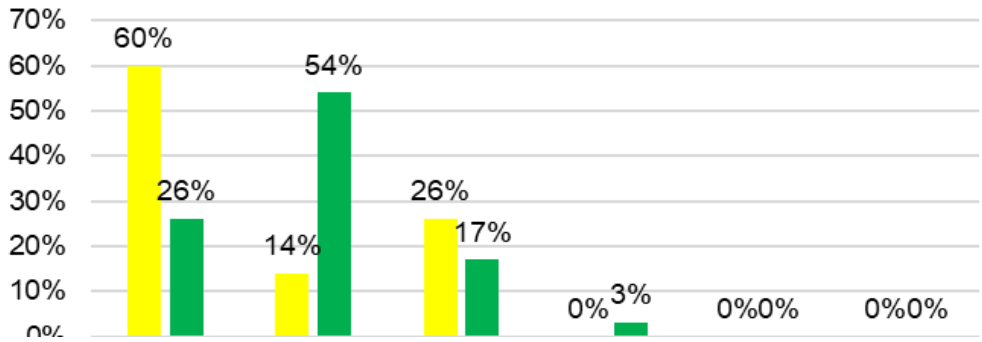

Figure 4. Diagram of Inter-Cycle Action Results

Based on the results of the initial data, the average class has a nutritional status of normal status with a percentage of 43%. As well as the results of class action research with cycle 1 and cycle 2 eating, it can be said that the condition of nutritional status is normal, but the condition of physical fitness in class XI Financial Accounting Institutions SMK Negeri Lamongan is still in the lacking category. The approach to physical fitness circuit training has increased from a percentage of 60% in the very poor category in cycle 1 to a decrease of 28% in cycle 2, while in cycle 1, which was originally 0% in the good category, it increased by 3%. So the results of cycles 1 and 2 have increased even though they are still in the less category, so there needs to be further action in learning Physical Education, Sports, and Health in class XI Financial Accounting at SMK Negeri Lamongan.

CONCLUSION

Classroom Action Research on class XI Financial Accounting Institutions at SMK Negeri 1 Lamongan, totaling 35 students, was carried out in two cycles. The material provided is physical fitness activities with a circuit training approach. The results of cycle 2 experienced an increase compared to the results of cycle 1, with 60% of physical fitness in the very poor category, and a decrease to 26% in cycle 2. Meanwhile, cycle 1 produced a percentage of 0% in a good category and increased to 3% in a good category of physical fitness in cycle 2. So it can be concluded that the learning approach with circuit training through physical fitness activity material could improve the physical fitness of students in

class XI Financial Accounting at SMK Negeri 1 Lamongan. The recommendations suggested based on the results of classroom action research for teachers are to apply educational, physical, sports, and health learning. It is necessary to apply fun learning methods and aim to improve the physical fitness of students so that learning becomes meaningful.

CONFLICT OF INTEREST

There are no conflicts of interest in this article.

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