



# The Relationship of Physical Activity to Students' Creative Thinking Ability

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## ABSTRACT

This study aims to determine the relationship between physical activity and students' creative thinking abilities. This type of research uses the correlation method and is a population study because it uses all tenth-grade students of SMK Khoiriyah Jombang, totaling 58 students. Data collection techniques using IPAQ (International Physical Activity Questionnaire) questionnaire instruments and the Student Creative Thinking Ability Questionnaire. The results of data analysis with a coefficient interval of 0.223 for the relationship of physical activity with the ability to think creatively show that the two variables are interrelated with the interpretation of the correlation coefficient of value ( $r$ ) of the independent variable (physical activity) and the dependent variable (ability to think creatively), even though the level of relationship is low.

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## INTRODUCTION

Traditionally, physical education teaching has only focused on the knowledge side, but its practical application is often overlooked. This makes students feel that physical education classes have become monotonous, which means they are less interested in learning, which has an impact on the quality of their learning. Traditional teaching often emphasises explanation and demonstration of skills, with repeated practice to develop proficiency. Such teaching methods may not meet the needs of students and completely address only the concept of physical literacy. Future pedagogical thinking should focus more on highlighting developments in the compatibility between teaching and competition or community activities. According to Slameto (2010), one of the indicators of pedagogical quality is looking at students' creative thinking abilities. The structure of the curriculum in the field of physical education is a combination of cognition, attitudes, and skills.

As teachers, our main focus is to support students in learning how to develop actions, such as creating their own exercise plans and participating in outdoor activities, improving



their motor skills and physical fitness, and demonstrating practical behaviours and attitudes, to achieve the goal of cultivating a lifelong interest in sports. Therefore, through the curriculum structure of learning performance and learning content, it is important to pay attention to aspects of student behaviour and improve a method to create logical and creative thinking skills. Through physical activity, physically healthy humans will be formed because they process physicality (move with certain patterns), are spiritually healthy by taking the sports values taught, and are socially healthy because they provide extensive opportunities to interact with peers and the environment. Thus, it is clear that the purpose of physical education and sports is to improve health and create healthy lifestyle habits for students and their future.

In the educational context, Fernández-Ro et al. (2012) state that physical education subjects allow the greatest interaction among students, such as sharing space and materials, competing in games and matches, etc. Similarly, compared to other subjects, physical education provides a different context for the moral development of young people because it can develop values such as sportsmanship. In addition, physical education provides students with many opportunities for interaction, group cohesion, respect for others, and many other socially desirable behaviors. Teachers should focus on student-centred and situational learning perspectives, empowering students through team interaction to improve thinking and problem-solving skills in game situations. Chu and Zhang (2018) stated that physical education is useful for students by providing opportunities to engage in sports directly so as to create new experiences that are more useful for students. With the aim of developing students' motivation in sports and physical activity in fulfilment of their basic psychological needs. What's more, it can be beneficial for other aspects of education, including the development of social skills, self-confidence, and behavioural perseverance.

The reality that occurs, as reported by Sin (2003) on the results of his study in Subang Jaya in elementary school children, is that students have more time for light physical activity (83–85%), which is far unequal to moderate physical activity carried out by students (11–13%) and strenuous activity by students (3–5%) (Retnaningsih & Oktariza, 2011). This shows that the time that is widely used by elementary school children is for light activities such as just walking or making the bed. In addition, due to technological developments that are misused by children, such as the use of gadgets that make children addicted, children are often treated to watching television, which causes them to be less active and only sit passively in front of the television, as well as parents' fears of interference with their children if their children play outside the home; besides that, according to him, it is easier to control and supervise their children. The lack of children's participation in physical activity will certainly cause students to experience a decrease in their quality of health.

In fact, some experts have previously stated that physical activity in physical education is one of its scopes because, through sports competitions, students can enjoy the fun of sports, improve their interpersonal communication skills, experience the potential value of diverse sports, and cultivate independence. Paying attention to the theory of physical education and sports that can make students engage in physical activity to improve student health and create a healthy lifestyle, educational institutions (schools) need to reflect on the effectiveness of programmes that refer children to activities and help students integrate physical activity into daily life. This could help combat the habit of sedentary students and the increase in obesity among students and other adults. The revitalization of physical education and sports is considered necessary to restore the concept of physical education and sports as subjects that focus on students learning about the value of health and active lifestyles and helping them know physical activities that suit their interests and potential.

This focus entails clarifying the knowledge base and creative approaches to pedagogy that help students appreciate, adopt, and promote healthy and active lifestyles.

Therefore, Physical Education, Sports, and Health is directed at the potential aspects of student development, especially in the physical education process, which prioritises development between the social-emotional, cognitive-reflective, student movement skills, and psychological sides of students (Stephani, 2016). In sports, the ability of technical skills alone is still lacking because these skills must also be combined with others in team sports, which means they must be done collectively or in teams (Damanik, 2014). So physical education is useful for education in schools because it has cognitive, psychomotor, and affective goals and can improve social skills, self-confidence, and behavioural perseverance.

Physical education and sports as an integral part of national education provide great opportunities for students to express their creative thoughts in the realm of physical activity; in other words, students have a great opportunity to move to develop their physical potential. Through a creative approach, physical education and sports, which are broad forums in an effort to develop students' physical potential, will have a tremendous impact on Indonesia's development, which requires quality human resources who have high creativity and good health. There are two basic types of thinking skills possessed by students: critical thinking skills and creative thinking. Both differ in presenting their reasoning models. Critical thinking: Reasoning and problem solving depart from a variety of alternative choices leading to a single answer. While creative thinking, reasoning, and problem solving depart from one problem to various alternative answers, Slameto (2010: 144) explores terms that are as meaningful as critical thinking: logical thinking, convergent thinking, or reasoning. While imaginary thinking, original thinking, or divergent thinking are themes that are as meaningful as creative thinking, Ardoy et al. (2014) stated that there is a relationship between physical activity and cognitive domains and academic achievement in children and adolescents because neurocognitive physical activity in children and adolescents has important implications for physical health and can also have positive effects on cognitive, social, and emotional domains. Furthermore, Basuki (2018) stated the characteristics of creative thinking in students: a) Fluent thinking, namely: children who like to ask many questions and answer with a number of relevant answers, have many ideas about a problem, and fluently express their ideas. b) Flexible Thinking (Flexible), that is, children who give a variety of unusual uses to an object provide various interpretations (interpretations) that are different from those given by others. c) Original Thinking, i.e., children think about problems or things that no one else has ever thought of. d) Detailing Skills (Elaboration), i.e., children develop or enrich the ideas of others. Therefore, learning needs to accommodate participants' creative thinking tendencies. This integration is needed so that educators do not monotonously direct students to a single concept and method in certain learning materials (textbooks), but rather provide space for students to express their experiences freely. The diversity of answers should not be viewed as a mistake but rather as a force in affirming students exploration of their thinking potential in a balanced (critical and creative) way for the benefit of meaningful learning. Based on the background above, this study focuses on determining the relationship between physical activity and students' creative thinking skills.

## **MATERIALS AND METHODS**

This is a correlational study that aims to determine whether there is a relationship between physical activity and the ability to think creatively. The population in this study is all grade tenth students of SMK Khoiriyah Jombang, which amounted to 58, so this study is a population study. The instruments used to collect data are the IPAQ (International Physical

Activity Questionnaire) questionnaire and the Student Creative Thinking Ability Questionnaire. According to Lee et al. (2011), IPAQ is used by experts for physical activity research compiled based on global standards. The IPAQ questionnaire consists of seven questions used to measure strenuous and moderate activity, walking activity, and sitting activity in a person carried out for one week. According to Boon et al. (2010), the questionnaire has been used by 12 countries, so the IPAQ has good reliability and validity. The following are the norms used to analyse the data that has been collected:

**Table 1.** IPAQ Norms

Category	METs (minutes/week)
Heavy	≥ 3000
Keep	≥ 600
Light	< 600

Data from the results of filling out the IPAQ questionnaire was analysed in the form of categorization based on the number of METs (metabolic equivalents). As in Table 1, IPAQ norms are divided into three categories: heavy, medium, and light. The weight category is reached by doing physical activity for more than 3000 minutes per week. Then the moderate category is more than equal to 600 minutes per week. And the light category is less than 600 minutes per week. Meanwhile, creative thinking data instruments were collected using questionnaires with Likert scale designs. Based on creative thinking indicators, Siswono (2006) categorises creative thinking ability into 5 levels: level 4 (very creative), level 3 (creative), level 2 (moderately creative), level 1 (less creative), and level 0 (not creative). All research data were then analysed in a quantitative descriptive manner using percentage techniques, cross-tabulation, and moment product correlation from Pearson using SPSS 20 for Windows. Pearson's analysis is interpreted as follows: if the value of sig. (2-tailed) is smaller than 0.05, there is a positive and significant correlation between physical activity and creative thinking ability; if the results are the opposite, then there is no positive and significant relationship between the two research variables.

## RESULTS AND DISCUSSION

In this study, researchers aimed to find out whether there is a relationship between physical activity and the ability to think creatively. The results of the analysis in this study are presented in the form of a table below.

**Tabel 2.** Result of Physical Activity

Category	N (Amount)	Percentage
Heavy	11	18,96 %
Keep	39	67,24 %
Light	8	13,80 %

**Table 3.** Results of Creative Thinking Ability

Category	N (Amount)	Percentage
Very Creative	2	3,44 %
Creative	15	25,87 %
Quite Creative	41	70,69 %
Less Creative	-	0 %
Not Creative	-	0 %

The results of Table 2 above show that student physical activity data based on the IPAQ questionnaire after analysis was obtained for the heavy physical activity category had

a number of 11 or 18.96%, the medium category had the highest number of students at 39 or 67.24%, and the light category had a number of 8 or 13.80%.

Based on Table 3 on Creative Thinking Ability Outcomes, it is known that there are no students who are categorised as uncreative or less creative. In the very creative category, the least number is 2 or 3.44%, while in the creative category, the most number is 15 or 25.87%, and in the creative enough category, the most number is 41 or 70.69%.

**Table 4.** Cross Tabulation Results

Physical Activity Category	Categories Creative Thinking Ability									
	Very Creative		Creative		Quite Creative		Less Creative		Not Creative	
	N	%	N	%	N	%	N	%	N	%
Heavy	1	1,73	6	10,35	4	6,90	-	-	-	-
Keep	1	1,73	7	12,06	31	53,44	-	-	-	-
Light	-	-	2	3,44	6	10,35	-	-	-	-

Based on the results of the cross-tabulation analysis in Table 4 above, it is known that the category is very creative, with physical activity in the weight category having a number of 1 or 1.73%. In the creative category, heavy physical activity has a score of 6, or 10.35%. In the moderately creative category, heavy physical activity has a score of 4, or 6.90%.

Furthermore, in the very creative category, moderate physical activity has a score of 1, or 1.73%. In the creative category, moderate physical activity has a total of 7, or 12.06%. In the category of quite creative with moderate activity, there is the highest number with a total of 31, or 53.44%. While in the creative category with light activity, there is a number of 2 or 3.44%, and in the category of quite creative with light activity, there is a number of 6 or 10.35%.

The normality test is used when performing parametric statistical hypothesis tests. Because in parametric statistics, requirements and assumptions are needed, One of the requirements and assumptions is that the data distribution of each research variable analysed should form a normal distribution. Budiwanto (2017: 193) states that the normality test is a way to establish whether the distribution of data in a sample can be plausibly attributed to a particular population with a normal distribution. To determine whether or not a distribution is normal, if  $p > 0.05$ , the spread is declared normal, and if  $p < 0.05$ , the spread is said to be abnormal. The results of the normality test analysis can be seen in the table below:

**Table 5.** Normality Test Results

Variable	p	Sig	Information
Physical Activity	0,347	0,05	Normal
Creative Thinking Ability	0,455	0,05	Normal

Based on table 5, the significance value (p) of the physical activity variable is  $p = 0.347 > 0.05$  and the ability to think creatively is  $p = 0.455 > 0.05$ , so the data variables are normally distributed.

**Table 6.** Correlation Test Results

Variable	Pearson	Sig.	Information
Physical activity with the ability to think creatively	0,223	0,000	Significant

Based on the results of the data analysis above, results have been obtained with a coefficient interval of 0.223 for the relationship of physical activity with the ability to think



creatively, this shows that the two variables are interrelated. However, judging from table 7 interpretation of the correlation coefficient value ( $r$ ) of the independent variable (physical activity) and the dependent variable (ability to think creatively) has a low level of relationship.

## CONCLUSION

These results form the basis for the fact that physical activity is often associated with doing sports with health goals rather than from a cognitive standpoint. By frequently doing sports activities, it will reflect a person's healthy lifestyle.

However, despite increasing evidence about the importance of a movement-based approach to understanding creativity and a cognitive perspective that states that body movement plays an important and active role in the development of creativity, there are still many people who are not aware that body movement plays an important and active role in the development of creativity. Physical education is believed to be a way to be physically active and can improve a healthy lifestyle. Physical activity also has a relationship with the ability to think creatively, even though in this study the results showed a low level of relationship. When someone plans a physical activity, they will often carry out the plan or exercise programme, and this, of course, unconsciously triggers creative thinking. To be able to live a healthy life, both physically and spiritually, every human being must carry out physical activity that is balanced between exercise time, adequate rest (sleep), and the food consumed. Having an understanding of how to carry out regular, programmed, measurable, and well-planned sports activities can actually improve neuromuscular development, especially in creative thinking.

## CONFLICT OF INTEREST

All authors declare that there is no conflict of interest in this research.

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