



Physical Activity (PA): Current Conditions and Correlation with Literacy and Numeracy in Elementary School Students at Pontianak City

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Abstract

The purpose of this study was to identify the level of physical activity of students and then to analyze the types of physical activity carried out to support literacy and numeracy skills and to examine the relationship between physical activity and students' literacy and numeracy skills. The method used in this research is mixed methods and implemented using a concurrent triangulation design. The instruments used were PAQ-C (Physical Activity Questioner for older Children), interview guide sheets and literacy and numeracy test sheets. The results of the interviews show that various physical activities are carried out by students at school and at home such as playing ball which is played with the feet or thrown by hand, chasing games, aquatic activities such as playing in the pool, playing roles, rubik's cube, robots and assembling puzzles. Of all these activities, it turned out that they were not structured and directed towards activities that support literacy and numeracy skills, as well as their type and duration. Physical activity data also shows that 58.54% of students are currently at a low level of physical activity and the remaining 41.47% are at a high activity level, this is adjusted to the interpretation of the data using PAQ-C. Based on the correlation test between literacy and numeracy skills and physical activity, it turns out that there is a positive relationship between the variables and the sig. ($0.000 < 0.05$).

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INTRODUCTION

Physical education through physical activity is not only a medium for improving and maintaining human health status, further activities that involve interesting and fun large muscle movements can serve to support literacy and numeracy improvement programs in schools so that the quality of human resources increases and can create a generation that is not only intelligent but also physically healthy. Physically good physical activity can help humans to optimize brain functions. Interesting physical activity can be a promising way to improve students' cognitive function (Egger et al., 2019) because it has been proven that physical activity has a positive impact on academic achievement (Chan et al., 2020; Singh et al., 2019)

However, the situation in the last two years has been very unstable because of a pandemic which requires people not to interact physically with each other and this has had an impact on the education sector in almost all regions and countries in the world. It is known that this situation really shocked the world of education as well as inspired to find a way out of a problem that had never existed before (Flores & Swennen, 2020). Students are at home for a long time, so the problems that arise are even more complex, such as limited learning tools and ignorance of using the platform to the point where there is no quota. In the end, concern for the next generation in the future is a shared responsibility to be able to recover and become empowered again.

In March 2022 Kemdikbudristekdikti has measured students' abilities in two fields, namely literacy and numeracy through AKM, namely an assessment that is carried out not only on the ability to master the material but rather to map and improve the quality of education (Rohim, 2021). Based on the results of the Minimum Competency Assessment (AKM) specifically for literacy and numeracy in 15 fifth grade students at North Pontianak 5 Public Elementary School found unsatisfactory results, then a search was carried out through observations at school and it was found that there was a learning loss phenomenon for approximately 2 years due to the pandemic. Students cannot study in face-to-face schools while online learning is also recognized as very limited. It is not yet known specifically about the type of physical activity carried out by students, but research reports (Hidasari et al., 2021) found that student activities tend to be sedentary behavior due to the high use of screen-based electronic devices such as gadgets, causing

a decrease in physical activity.

The purpose of this study was to determine the current condition of the level and type of physical activity of students and then to analyze its relationship with literacy and numeracy skills.

METHOD

The method used in this study is a combination method or known as mixed methods. This method combines quantitative methods and qualitative methods to be used together in one research activity, in order to obtain data that is more comprehensive, valid, reliable and objective (Sugiyono, 2021). The combination of the philosophy of quantitative methods (positivistic) and qualitative methods (postpositivistic or interpretive) is known as pragmatic philosophy. Researchers need these two methods in carrying out research because the data to be collected in the field is quantitative data as well as complemented by qualitative data.

The combination research method has several designs, to clarify, the researcher uses a concurrent triangulation design. The design was chosen because it fits the needs of the research. The characteristic of the concurrent triangulation design is that the research is carried out in one stage by using quantitative and qualitative methods together, at the same time but independently to answer the problem formulation. The weight between the quantitative and qualitative methods in this design is balanced but in practice one of the two may be higher/lower. Merging data is done in the presentation of data, interpretation, and discussion. The focus of merging is more on data collection and analysis techniques so that researchers can compare all data obtained from the two methods. Furthermore, it can be concluded whether the two data (quantitative and qualitative) strengthen, weaken, or contradict each other. The research sample consisted of students in grades 5 and 6, totaling 41 students. Data collection techniques used the Physical Activity Questioner for Older Children (PAQ-C) questionnaires, interviews, and literacy and numeracy skills tests.

Data collection techniques in this study are based on the need to answer the problem formulation. There are problem formulations that can be answered using only one research method and there are problem formulations that can be answered using two methods so that the data obtained is more complete.

Quantitatively: First, an indirect communication method is used which then uses a data collection tool in the form of a questionnaire

(PAQ-C) to determine the level of physical activity of students. The questionnaire consists of 10 questions and each question has 5 answer options. The method of assessment in this questionnaire is the answer A times 1, answer B times 2, answer C times 3, answer D times 4, answer E times 5, then add up the answers A, B, C, D, and E. These results will be used as the results of the PAQ-C value of each respondent. After that, the median of the total PAQ-C is sought which will later become the PAQ-C standard (Kowalski, K. C. & Ph, 2004). Second, the test method is then used as a data collection tool in the form of a test to answer literacy and numeracy questions to do a correlation test with physical activity. The resulting data is the value of the ability to answer literacy and numeracy questions by students. Qualitatively: Data collection techniques used observation and interviews in which the data collection tools were observation sheets, interview guides and field notes. The resulting data is a classification of the types of physical activity carried out by students.

Interpretation of research data that is quantitative in nature uses descriptive percentage techniques, both for data sourced from questionnaires and litnum test results. Furthermore, the product moment correlation test is used to test the relationship between variables. The research data analysis in this section adopts steps from (John W Creswell, 2009), namely: organizing and preparing data, read or look at all the data, start coding all of the data, used coding process to generate a description, and interrelating theme.

RESULTS AND DISCUSSION

Data collection was carried out by involving students who were in the upper classes (5 and 6). The research data was obtained quantitatively based on the research questionnaire provided and the assistance provided to students, the following **Table 1** results were obtained.

Table 1. Student Profiles

Number of Samples	N = 41
Age range	10-12 years
Gender	
Male	25 students
Female	16 students

The following data was obtained from the results of interviews with students and observations at school, the data collected is the description of students regarding play activities or physical activities at school or at home. The research

data are in the following **Table 2**.

Table 2. Types of Physical Activity

Types of physical activity
Playing soccer, throwing the ball, chasing.
Playing in the playground / city park, mall playground.
Aquatic activity/swimming in pools, rivers/big ditches.
Drawing, cutting, coloring, and making patterns from textbook paper.
Playing toys in the house such as playing dolls, role playing, puzzles, building blocks, rubik, and robots.

Based on observations, student activities carried out at school during recess, most students carried out physical activities which were dominated by playing activities such as mini football, chasing, some female students carried out artistic activities in class related to fine motor skills for example drawing and coloring. The school environment allows for the creation of physical activity for students because it has a middle ground between two classroom buildings and the location of the school which is in the middle of a housing estate makes the atmosphere quite conducive for the exploration of outdoor activities.

Furthermore, the results of the PAQ-C (Physical Activity Questioner for older Children) questionnaire. The data is presented in the following **Table 3**.

Table 3. PAQ-C results

N	Total score	Mean	Median	Standard deviation
41	3909	95.34	90	37.79

Based on the data above, it is known that 41 students were involved in filling out the questionnaire. The total score was 3909 and the mean (mean) score of physical activity was 95.34, the median was 90, with a standard deviation of 37.79. Furthermore, the median value of the total PAQ-C will become the PAQ-C standard. The median result of the total PAQ-C for each respondent in this study was 90. So using nominal data < median (90) and \geq median (90) (Kowalski, K. C. & Ph, 2004).

The following is a **Table 4** describing the distribution of data on students' physical activity levels based on the results of completing the questionnaire. The questionnaire was filled out by 41 students on the same day as other data collection with assistance from the field team and teachers of Physical Education, Sports and Health.

Table 4. Description of Physical Activity Level

PAQ-C	f _{absolute}	f _{relative}
Low Physical Activity (<90)	24	58.53 %
High Physical Activity(>90)	17	41.47 %
Total	41	100%

Based on the data presented above, it is known that as many as 24 people (58.53%) students are at a low level of physical activity, while there are 17 people (41.47%) students who are at a high/good level of physical activity.

Furthermore, based on tests on students and observations at school, the questionnaire filling activity was carried out with team assistance in the field because information was obtained from the Physical Education, Sports and Health (PJOK) teacher that some students were still unable to read fluently. Researchers tested the relationship of 3 variables to see the relationship between literacy and numeracy skills and physical activity.

Based on the test results using the Pearson correlation with a significance level of 5%, the results obtained are from sig. of 0.031 <0.05 which means that there is a positive relationship between literacy skills and physical activity.

Based on the test results using the Pearson correlation with a significance level of 5%, the results obtained are from sig. of 0.000 <0.05 which means that there is a positive relationship between numeracy skills and physical activity.

Physical activity is highly recommended for children in their infancy, especially elementary school age children. There are many kinds of activities that can be done, such as exercising, running, and playing active games during recess (Rahma & Wirjatmadi, 2020), but what needs to be considered is to fill these physical activities with various interesting activities and provide learning experiences without realizing it. Based on the results of the study, it can be seen that the description of the level of physical activity of 58.53% is in the low category and 41.47% is in the level of physical activity in the high/good category. The distribution of physical activities carried out by students also refers to various activities as the results of the interviews, these activities are very possible to be designed to be more meaningful and provide benefits for students. The interview results also strengthen the data on low physical activity seen from the type of activity carried out where some activities are carried out at home with simple types of games that involve fine motor skills, although some others play out-

doors.

Forms of physical activity that support literacy and numeracy based on the habits of students in the school and home environment can be presented in a planned manner by teachers and parents. Based on qualitative data collection, all activities carried out by students can support students' knowledge related to literacy and numeracy. Literacy and numeracy must be practical (Ministry of Education and Culture, 2017), so an analysis of real/real daily activities is needed and experienced by children so that the stimulation provided is also in natural, planned conditions. In the statements of the students, there are daily physical activities which are mostly done by playing soccer and using modified rules based on group agreement. This activity can be designed to foster numeracy awareness, for example the number of players who will take part in a soccer game is 9 people but because they have to be divided into two teams, only 1 person remains. So, students need to add 1 more person or make the remaining 1 person a match referee. Numerical abilities by raising local socio-cultural issues present new forms and give the impression of being friendly and needed by children (Wulandari, 2021) and of course not forgetting the basic principles of literacy and numeracy are contextual in nature, in accordance with the geographical conditions of the region and socio-culture (Kemdikbud, 2017).

Referring to the results of the correlation test of literacy and numeracy abilities with physical activity also shows a positive trend where both have a positive relationship with physical activity. This is also in line with research results which show that children with relevant integrated physical activity perform better than children in other conditions (Mavilidi et al., 2018).

CONCLUSION

Based on the research findings it can be concluded that; 1) The physical activity of students is carried out with various but unstructured activities and more than 50% of students are at a low activity level. 2) All physical activities of students can be presented to support the development of literacy and numeracy through adult assistance. 3) There is a positive relationship between literacy and numeracy abilities with physical activity.

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