



Physical Activity Levels of Children Aged 9-11 Years in Indonesia

Indah Prasetyawati Tri Purnama Sari¹, Muchsin Doewes¹, Mohammad Furqon Hidayatullah¹, Awan Hariono², Indah Prasetyawati Tri Purnama Sari²

¹ Universitas Sebelas Maret, Jl. Menteri Supeno No. 13, Manahan, Banjarsari, Kota Surakarta, Jawa Tengah 57139, Indonesia

² Universitas Negeri Yogyakarta, Colombo St. No. 1 Yogyakarta, Indonesia
indahprasty14@student.uns.ac.id

Abstract. This study aims to determine the level of physical activity of children aged 9-11 years in Indonesia. This research method is a survey. The sample in this research was children aged 9-11 years, totaling 402 children. The instrument used in this research was the Physical Activity Questionnaire for Older Children (PAQ-C). The data analysis technique uses percentages. The results showed that the physical activity of children aged 9-11 years is in the category 29 (7.21%) children are in the high category, 147 (36.57%) children are in the medium category, 220 (54, 73%) children were in the low category, and six people (1.49%) are in the very low category. Based on the average value of 2.48, the overall physical activity of the majority is in the "low" category.

Keywords: Physical Activity, PAQ-C, Children

1 Introduction

The phenomenon of inactivity in children tends to be detrimental to children. Data on residents who lack physical activity shows an increase in the percentage from 26.1% (2013) to 33.5% (2018) at the age of approximately or equal to 10 years. [1]. This is characterized by the increasing incidence of obesity over the last few years. In 2008, 34.3% of men and women over 20 years old had a body mass index (BMI) ≥ 25 kg/m². It is estimated that from 1980 to 2013, the prevalence of overweight and obese men and women increased from 28.8% to 36.9%, and from 29.8% to 38%. Similarly, it was estimated in 1998 that the worldwide prevalence of diabetes in adults was 4.0% in 1995, and it is estimated that by 2025 it will rise to 5.4%. Data shows that Cardiovascular Disease causes one-third of deaths worldwide, and this figure is expected to increase [2].

Data on physical activity in Indonesia in 2013 shows that in Indonesia, the proportion of the population aged ≥ 10 years classified as having little physical activity is 26.1 percent. Furthermore, there are 22 provinces whose figures exceed this figure. The five highest are the provinces of DKI Jakarta (44.2%), Papua

(38.9%), West Papua (37.8%), Southeast Sulawesi, and Aceh (37.2% each). For the Special Region of Yogyakarta, the proportion of residents who engage in less active physical activity is 20.8%[3]. This picture of low physical activity was also seen during Covid-19. Of the 61 eligible studies, the majority (78.3%) were conducted in Asian and European countries, and only four (6.7%) were in the US. The results showed that COVID-19 was associated with significant decreases in mobility, walking, and physical activity, as well as increases in sedentary activities [4].

The rapid development of technology makes elementary school students tend to be lazy about moving. Physical activity has so far shown a decline, or in this case, many people are less mobile. The impact of sedentary behavior and lack of physical activity on children in Indonesia is vast and severe. This causes concern and can affect long-term health; these problems will impact their academic performance and life satisfaction.[5]–[7]. Another review shows that the high prevalence of insufficient physical activity and sedentary behavior among Indonesia's young generation indicates an urgent need to update policies, develop national guidelines on age-specific physical activity and sedentary behavior, and carry out more massive promotions to the public. Indonesian teenagers should increase physical activity and limit sedentary behavior.. [8].

Physical activity is any body movement produced by skeletal muscles that results in energy expenditure. Apart from being an effort to prevent excess weight, participation in sufficient physical activity is also essential for children's motor, social, and cognitive development. [9], [10]. There is evidence that engaging in regular physical activity reduces the risk of premature death and is an effective primary and secondary prevention strategy for at least 25 chronic medical conditions. [11]. This study aims to determine the level of physical activity of children aged 9-11 years in Indonesia.

2 Method

2.1 Study Design

This research uses a quantitative approach with data collection methods through surveys.

2.2 Research Participants

The population in this study were students aged 9-11 years residing in the Yogyakarta area. The sample was determined using Cluster Sampling so that a sample of 402 children was obtained. Grouping of samples based on regions, namely urban, suburban, rural, coastal area, and mountainous area.

2.3 Data Collection and Instrumentation

Data collection through surveys. The instrument used to measure levels of physical activity is The Physical Activity Questionnaire for Older Children (PAQ-C) [12]. Overall activity assessment with points 1 to 5 for each question item, excluding item

10. Item one; Any activity that has never been done will receive 1 points; if you do seven or more weekly activities, you will get 5 points. Item 2-8 (study hours, rest time, lunch, after school activities, evenings, weekends, and activities that at least describe the child's activities). a) Answers to each question start from the lowest activity response to the highest activity response. b) Use the checked value for each item to report (lowest activity response is one, and highest activity response is 5). Item 9. Take the average of all the days of the week (“none” is 1, “very often” is 5) to form a composite score for item 9. Item 10; can identify students who had unusual activities in the previous week, but this question is not used as part of the summary activity score to calculate the final PAQ-C activity summary score

2.4 Statistical Analysis

The data analysis technique in this research is quantitative descriptive, with data presented in percentage form. Activities in data analysis are grouping data based on variables and type of respondent, tabulating data based on variables from all respondents, and showing data for each variable studied.

3 Result

The research results on physical activity in children aged 9-11 will be presented statistically. The characteristics and data of research subjects can be seen in Table 1, as follows:

Table 1. Data Characteristics Sampel

Characteristics	Frequency
Gender	
Male	189
Female	213
Age	
9 Years	131
10 Years	144
11 Years	127
Residence	
Urban	140
Sub Urban	76
Rural	60
Coastal Areas	54
Mountainous Region	72

A description of physical activity statistical data can be seen in Table 2.

Table 2. Physical Activity Statistics Data

Statistic	
N	402
Minimum	1,30
Maximum	4,42

Mean	2,48
------	------

The results of research on the physical activity of children aged 9-11 years are presented in the form of frequency distributions as follows:

Table 3. Frequency Distribution of Physical Activity

Category	Frequency	Percentage (%)
Very low	6	1,49
Low	220	54,73
Medium	147	36,57
High	29	7,21
Very high	0	0,00
Total	402	100

The distribution of the frequency data above will then be explained in curve form. Figure 1 shows frequency distribution of physical activity.

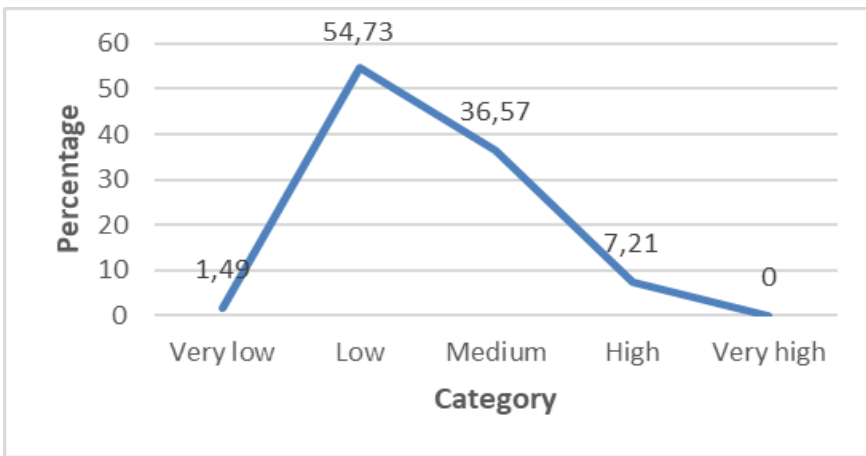


Fig. 1. Frequency Distribution of Physical Activity

Based on table 3 and the picture above, shows that the physical activity of children aged 9-11 years is in the category 29 (7.21%) children are in the high category, 147 (36.57%) children are in the medium category, 220 (54, 73%) children were in the low category, and six people (1.49%) are in the very low category. Based on the average value of 2.48, the overall f physical activity of the majority is in the "low" category.

4 Discussions

Based on research results, the average physical activity of children aged 9-11 years is mostly in the "low" category. Based on research results, the average physical activity of children aged 9-11 years is mainly in the "low" category. These results can also be found in previous research. In general, male students are more active than female students. Findings show that in general students' physical activity is still at a low level, so efforts must be made to improve health and active lifestyles among students [13]. Data from the World Health Organization states that obesity worldwide has almost tripled since 1975. In 2016, more than 1.9 billion adults aged 18 years and over were overweight. This number is more than 650 million people who are obese. 39% of adults aged 18 and over were overweight in 2016, and 13% were obese. Most people are fat, and obesity is one of the causes of death. Thirty-eight million children under the age of five were overweight or obese in 2019. More than 340 million children and adolescents aged 5-19 were overweight or obese in 2016 [14].

Physical activity (PA) is essential for healthy mental and physical development early in life. However, the prevalence of physical inactivity, considered the leading modifiable cause of childhood obesity, has reached alarming levels among European adolescents [15]. Regular physical activity participation has been associated with a reduced risk of premature death and is an established way to reduce the risk of more than 25 chronic medical conditions [16], [17].

Physical activity interventions that are school-based but have a home component are beneficial for preventing childhood obesity. [18]. The increasing sedentary behavior in children and adolescents, especially in girls, requires intervention proposals consistent with current social realities that guide the development of projects to encourage physical activity. Therefore, even though at the curricular level in different subjects (especially physical education) content related to healthy lifestyles, physical conditions and the cleanliness of life of school children is touched on, it seems that this is not enough to improve living habits, so it needs to be developed new curricular proposals that are interdisciplinary or cross-sectoral in nature [19]. These activities can be included in school educational initiatives and outside school hours, where motor games dominate adult sports and competitions. There is extensive literature on the terminological conception of motor actions, their classification, and their derivation in sports activities [19], [20]. The integration of physical activity into online lessons may provide benefits. Nevertheless, more needs to be done to convince teachers and education stakeholders about the importance of this issue. Teachers also need to have training to be able to incorporate physical activity effectively in their classes [21].

5 Conclusion

Based on the research results, it can be concluded that the physical activity of children aged 9-11 years is in the category 29 (7.21%) children are in the high category, 147 (36.57%) children are in the medium category, 220 (54, 73%) children were in the low category, and six people (1.49%) are in the very low category. Based on the

average value of 2.48, the overall fitness of the majority is in the "low" category. The research results show that children's physical activity is, on average, in the low category. Thus, as an alternative, guidebooks and recommendations can then be developed in an effort to promote increased physical activity, one of which is through physical education teachers.

References

- [1] Badan Penelitian dan Pengembangan Kesehatan, "Laporan_Nasional_RKD2018_FINAL.pdf," *Badan Penelitian dan Pengembangan Kesehatan*. p. 198, 2018, [Online]. Available: http://labdata.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan_Nasional_RKD2018_FINAL.pdf.
- [2] K. González, J. Fuentes, and J. L. Márquez, "Physical Inactivity , Sedentary Behavior and Chronic Diseases," *Korean J. Fam. Med.*, pp. 111–115, 2017.
- [3] Kemenkes RI, *Hasil Utama Riskesdas 2018*. 2018.
- [4] A. H. Park, S. Zhong, H. Yang, J. Jeong, and C. Lee, "Impact of COVID-19 on physical activity: A rapid review," *J. Glob. Health*, vol. 12, pp. 1–13, 2022, doi: 10.7189/JOGH.12.05003.
- [5] M. Felez-Nobrega, C. H. Hillman, E. Cirera, and A. Puig-Ribera, "The association of context-specific sitting time and physical activity intensity to working memory capacity and academic achievement in young adults," *Eur. J. Public Health*, vol. 27, no. 4, pp. 741–746, 2017, doi: 10.1093/eurpub/ckx021.
- [6] A. Maksum and N. Indahwati, "Patterns of physical activity and its impact on health risk and life satisfaction: An evidence from adults in Indonesia," *Int. J. Hum. Mov. Sport. Sci.*, vol. 9, no. 6, pp. 1087–1096, 2021, doi: 10.13189/saj.2021.090602.
- [7] L. Hanifah, N. Nasrulloh, and D. L. Sufyan, "Sedentary Behavior and Lack of Physical Activity among Children in Indonesia," *Children*, vol. 10, no. 8, 2023, doi: 10.3390/children10081283.
- [8] F. D. Andriyani, S. J. H. Biddle, N. I. Arovah, and K. de Cocker, "Physical activity and sedentary behavior research in Indonesian youth: A scoping review," *Int. J. Environ. Res. Public Health*, vol. 17, no. 20, pp. 1–15, 2020, doi: 10.3390/ijerph17207665.
- [9] G. Cardon, M. De Craemer, I. De Bourdeaudhuij, and M. Verloigne, "More physical activity and less sitting in children: Why and how?," *Sci. Sports*, vol. 29, pp. S3–S5, 2014, doi: 10.1016/j.scispo.2014.08.002.
- [10] L. Cale, J. Harris, and R. Duncombe, "Promoting physical activity in secondary schools: Growing expectations, 'same old' issues?," *Eur. Phys. Educ. Rev.*, vol. 22, no. 4, pp. 526–544, 2016, doi: 10.1177/1356336X15623774.
- [11] T. H. Cruz, S. M. Davis, O. B. Myers, E. R. O'Donald, S. G. Sanders, and J. N. Sheche, "Effects of an Obesity Prevention Intervention on Physical Activity Among Preschool Children: The CHILE Study," *Health Promot.*

- Pract.*, vol. 17, no. 5, pp. 693–701, 2016, doi: 10.1177/1524839916629974.
- [12] R. M. Kowalski, Kent C; Crocker, Peter R.E; Donen, “The Physical Activity Questionnaire for Older Children (PAQ-C) and Adolescents (PAQ-A) Manual Kent,” *Coll. Kinesiol. Univ. Saskatchewan*, vol. 87, no. August, pp. 1–38, 2005, [Online]. Available: papers://305a9bed-f721-4261-8df7-5414758c1624/Paper/p910.
- [13] F. Widiyatmoko and H. Hadi, “Tingkat Aktivitas Fisik Siswa Di Kota Semarang,” *J. Sport Area*, vol. 3, no. 2, p. 140, 2018, doi: 10.25299/sportarea.2018.vol3(2).2245.
- [14] World Health Organization, “Obesity and overweight.” 2021, [Online]. Available: <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight#:~:text=Of these over 650 million adults were obese.,tripled between 1975 and 2016>.
- [15] S. F. Gómez *et al.*, “Study protocol of a population-based cohort investigating Physical Activity, Sedentarism, lifestyles and Obesity in Spanish youth: The PASOS study,” *BMJ Open*, vol. 10, no. 9, pp. 1–6, 2020, doi: 10.1136/bmjopen-2019-036210.
- [16] D. E. R. Warburton, S. S. D. Bredin, V. Jamnik, R. J. Shephard, and N. Gledhill, “Consensus on evidence-based preparticipation screening and risk stratification,” *Annu. Rev. Gerontol. Geriatr.*, vol. 36, no. 1, pp. 53–102, 2016, doi: 10.1891/0198-8794.36.53.
- [17] D. E. R. Warburton and S. S. D. Bredin, “Health benefits of physical activity : a systematic review of current systematic reviews,” pp. 1–16, 2017, doi: 10.1097/HCO.0000000000000437.
- [18] Y. Wang *et al.*, “What childhood obesity prevention programmes work? A systematic review and meta-analysis,” *Obes. Rev.*, vol. 16, no. 7, pp. 547–565, 2015, doi: 10.1111/obr.12277.
- [19] A. Larrinaga-Undabarrena *et al.*, “Physical Activity Levels and Sleep in Schoolchildren (6–17) with and without School Sport,” *Int. J. Environ. Res. Public Health*, vol. 20, no. 2, 2023, doi: 10.3390/ijerph20021263.
- [20] S. Angosto, J. García-Fernández, I. Valentine, and M. Grimaldi-Puyana, “The intention to use fitness and physical activity apps: A systematic review,” *Sustain.*, vol. 12, no. 16, pp. 1–24, 2020, doi: 10.3390/su12166641.
- [21] V. van den Berg, R. Salimi, R. H. M. de Groot, J. Jolles, M. J. M. Chinapaw, and A. S. Singh, “‘It’s a battle ... you want to do it, but how will you get it done?’: Teachers’ and principals’ perceptions of implementing additional physical activity in school for academic performance,” *Int. J. Environ. Res. Public Health*, vol. 14, no. 10, pp. 1–14, 2017, doi: 10.3390/ijerph14101160.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

