Jurnal Pendidikan Jasmani Indonesia
Volume 21, Issue 2, 2025, 130-139
Available online: https://journal.uny.ac.id/index.php/jpji

Differences in physical literacy levels of students at SMP Plus Al-Musthafa based on gender and parental education level

Rizal Ahmad Maulana[1*], Yuyun Ari Wibowo[1], Aprida Agung Priambadha[2], Francis Ries[3]

[1] Department of Sports Education, Faculty of Sports and Health Sciences, Universitas Negeri Yogyakarta
[2] Department of Primary Teacher Education, Faculty of Teacher Training and Education, Universitas Ahmad Dahlan
[3] Department of Physical Education and Sport, Faculty of Educational Sciences, University of Seville
*Corresponding Author. Email: rizalahmad.2024@student.uny.ac.id

Received: 7 Juni 2025; Revised: 9 Oktober 2025; Accepted: 9 Oktober 2025

Abstract: The study aimed to identify differences in the physical literacy levels of SMP Plus Al-Musthafa students based on gender and their parents' educational levels. A quantitative approach was utilized with a cross-sectional survey design. A total of 143 students from SMP Plus Al-Musthafa participated in the study, selected through purposive sampling method. Data were collected using the Adolescent Physical Literacy Questionnaire (APLQ) and analyzed using descriptive statistics and the Independent Samples t-Test. The results indicated significant differences in physical literacy levels based on gender ($p = 0.002$) and the father's education level ($p = 0.014$), with higher scores observed in male students and those whose fathers were educated at the diploma level or higher. No significant differences were found based on the mother's education level ($p = 0.210$). These findings suggested that gender and the father's education level played a role in differentiating the physical literacy levels of adolescents. Contextually, these results are important for the development of physical literacy in Indonesia, which still faces challenges with physical activity disparities between genders. The practical implication is that physical education learning needs to be more gender-responsive and encourage parental involvement in fostering an active lifestyle for children.
Keywords: physical literacy, physical education, parental education, gender, APLQ.

How to Cite: Maulana, R. A., Wibowo, Y. A., Priambadha, A. A., & Ries, F. (2025). Differences in physical literacy levels of students at SMP Plus Al-Musthafa based on gender and parental education level. *Jurnal Pendidikan Jasmani Indonesia*, *21*(2), 130-139. https://doi.org/10.21831/jpji.v21i2.86333

INTRODUCTION

Physical literacy has gained increasing attention in physical education due to its role as a foundation for developing a lifelong active lifestyle (Liu & Chen, 2021). According to International Physical Literacy Association (IPLA) (2017), physical literacy includes elements of motivation, confidence, physical competence, knowledge, and understanding required for lifelong engagement in physical activity. UNESCO established physical literacy as a primary goal in quality physical education, from early childhood education to secondary education (UNESCO, 2015). This indicates that physical literacy is not merely the ability to move, but also a holistic competence that supports active participation in daily life.

However, technological developments and lifestyle changes have posed significant challenges to the development of physical literacy. The increase in sedentary behavior among adolescents has become a global issue affecting both physical and mental health, including obesity, metabolic disorders, decreased fitness, and reduced quality of life (Rini & Huriah, 2020; WHO, 2020). In Indonesia, this condition is increasingly concerning. According to the 2023 Sports Development Index report, 77.12% of adolescents aged 10–15 years have low levels of physical fitness (Mutohir et al., 2023). These data indicate that interventions based on physical education are urgently needed to promote an active lifestyle among young people.

In this context, physical literacy serves as a strategic solution for promoting an active lifestyle. Learners with a high level of physical literacy may better understand the benefits of physical activity, are more motivated to be active, and are able to overcome barriers to engaging in physical activity (Whitehead, 2010). Therefore, identifying various factors that contribute to students' level of physical

literacy becomes crucial, particularly gender and parental educational background (Hadier et al., 2025; Pan et al., 2022).

Gender is known to have a significant relationship with participation in and perception of physical activity. Previous research has shown that males tend to have higher levels of physical activity participation compared to females (Syahrullah et al., 2025). This may be due to social norms and gender stereotypes that limit females' opportunities in physical activities (Brown et al., 2020). In some cultural contexts, females are deemed less suitable for competing or strenuous physical activities, thus their access to and support for physical activity tend to be more limited. Investigation on whether gender is also influencing physical literacy level is important, yet still scarce in Indonesia.

In addition, parents' educational levels are believed to affect the development of children's physical literacy. Parents with higher educational attainment typically have a better understanding of the importance of physical activity and are more capable of providing supportive environments for their children to be physically active (Muñoz-Galiano et al., 2020). They are also more involved in their children's education, including supporting sports and physical education at school. On the other hand, parents with lower educational backgrounds may lack sufficient information or awareness regarding the benefits of physical activity, and thus are less able to encourage their children to be physically active.

Research on physical literacy in Indonesia remains limited, especially at the junior high school level. Previous studies have mostly examined physical literacy to stimulate children's motor development and encourage more movement (Friskawati, 2024), but few have specifically examined differences in levels of physical literacy based on gender and parents' education. For instance, Fatimah (2024) investigated the physical literacy of junior high school students but did not compare physical literacy based on gender and parental education. Therefore, this study aimed to fill this gap by examining differences in physical literacy levels based on gender and parental education among junior high school students.

METHODS

This research used a survey method with a quantitative descriptive approach and a cross-sectional design to examine the differences in the levels of physical literacy among junior high school students at SMP Plus Al-Musthafa based on gender and parents' educational background. SMP Plus Al-Musthafa was chosen as the research location because it had students with diverse backgrounds in terms of family and physical activity habits, as well as ease in data collection. The school located in the Banjaran District area, Bandung Regency, West Java. The study was conducted in March 2025.

The population of this study consisted of students in grade 7 to grade 9 at SMP Plus Al-Musthafa (n= 198 students). A sample of 143 students was taken for the study, consisting of 78 males and 65 females. The sampling technique used was purposive sampling with criteria as follow: 1) students grade 7 to 9 at SMP Plus Al-Musthafa, 2) present during data collection, 3) willing to be respondents. The sample was grouped based on gender as well as the education level of the father and mother.

This study employed the Adolescent Physical Literacy Questionnaire (APLQ) instrument, which had been translated into Indonesian. The original instrument, developed by Mohammadzadeh et al., (2022), had been proven valid with values of 0.680-0.790 and reliable with a value of $\alpha = 0.951$. We conducted validity and reliability tests on the data from this study, and it was found that all statement items were valid (0.321 – 0.677) and had high reliability (Cronbach's $\alpha = 0.877$), making this instrument suitable for use in the research.

The questionnaire consists of 25 questions divided into three dimensions: (1) psychological and behavioral (11 questions), (2) knowledge and awareness (7 questions), and (3) physical competence and physical activity (7 questions). Each question uses a Likert scale from 1 to 5, where a score of 1 indicates very low physical literacy and a score of 5 indicates very high physical literacy.

Data were collected directly at the school by distributing the APLQ questionnaires to students who agreed to participate. Prior to completion, the researcher provided instructions on the purpose and how to answer the questions. This study received permission from the school and voluntary participation consent from the students. The principles of confidentiality and anonymity were maintained throughout the research process.

Data analysis was performed using IBM SPSS Statistics 23 and Microsoft Excel. The analysis included descriptive statistics, normality tests, homogeneity tests, and comparative tests. All statistical

ISSN 0216-1699 (print) | 2581-2300 (online)

tests were conducted with a significant level (α) of 0.05. In categorizing physical literacy levels, five categories were used according to the guidelines from Azwar (2012), as presented in Table 1.

Table 1. Guidelines for Five-Point Scale Score Conversion

No	Interval	Criteria
1	X < M – 1,5SD	Very Low
2	M – 1,5SD < X ≤ M – 0,5SD	Low
3	M – 0,5SD < X ≤ M + 0,5SD	Moderate
4	M + 0,5SD < X ≤ M + 1,5SD	High
5	M + 1,5SD < X	Very High

Source: (Azwar, 2012)

RESULT AND DISCUSSION

Results

Sample Characteristics

Information regarding the sample characteristics can be seen in Table 2. The total number of participants in this study was 143 students from grade 7 to 9, consisting of 78 males and 65 females, with an average age of 13.94 (0.97) years. The majority of students had parents with educational levels of high school/equivalent or lower, for both fathers and mothers.

Table 2. Sample Characteristics

Variable	Frequency	Percentage%
Sex		
Male	78	54.5
Female	65	45.5
Age (Years)	**M = 13.94**	**SD = 0.97**
12	8	5.6
13	48	33.6
14	31	21.7
15	56	39.2
Grade		
7	56	39.2
8	28	19.6
9	59	41.3
Father's Education		
≤ Senior High School/equivalent	99	69.2
≥ Diploma	44	30.8
Mother's Education		
≤ Senior High School/equivalent	106	74.1
≥ Diploma	37	25.9

Physical Literacy Data

The physical literacy data were analyzed descriptively and presented in Table 3**.** Data showed that the average of physical literacy score of the male students was 79.67, while for the females was 74.43. The average score of students with fathers educated to higher than Diploma was 80.36, and with mothers educated to higher than Diploma was 79.08. These values were higher compared to students whose parents had lower educational levels.

ISSN 0216-1699 (print) | 2581-2300 (online)

Table 3. Description of Physical Literacy Test Results

Category	N	Mean	SD	Min	Max
Sex					
Male	78	79,67	9,361	53	104
Female	65	74,43	10,247	44	100
Father's Education					
≤ Senior High School/equivalent	99	75,92	9,738	44	99
≥ Diploma	44	80,36	10,280	60	104
Mother's Education					
≤ Senior High School/equivalent	106	76,66	10,065	44	100
≥ Diploma	37	79,08	10,056	60	104

Physical Literacy Level Based on Gender

The physical literacy levels of male and female students are presented in Table 4. Data showed that the majority of both male and female students were in the moderate physical literacy category. The proportion of male students in this category (38.5%) was higher than that of females (36.9%). In the low and very low categories, the cumulative percentage of female students (35.4%) was higher than that of males (32%). Then, in the high and very high categories, the proportion of male students (29.5%) was higher than that of female students (27.7%). For a diagrammatic representation, see Figure 1.

Table 4. Distribution of Physical Literacy Levels of SMP Plus Al-Musthafa Students Based on Gender

No	Category	Male			Female			Total	%
		Interval	Freq	%	Interval	Freq	%		
1	Very Low	X < 65	4	5,1	X < 59	3	4,6	7	4,9
2	Low	65 < X ≤ 75	21	26,9	59 < X ≤ 69	20	30,8	41	28.7
3	Moderate	75 < X ≤ 84	30	38,5	69 < X ≤ 80	24	36.9	54	37,8
4	High	84 < X ≤ 94	18	23,1	80 < X ≤ 90	14	21,5	32	22,4
5	Very High	94 < X	5	6,4	90 < X	4	6,2	9	6,3
	Total		**78**	**100**		**65**	**100**	**143**	**100**

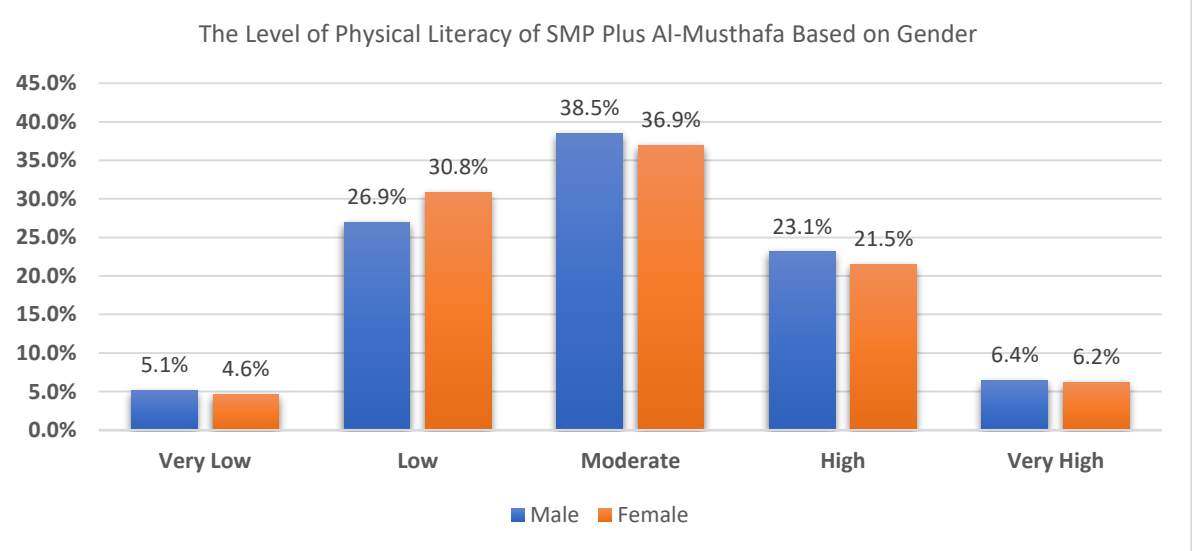

Figure 1. Percentage of Physical Literacy Level of SMP Plus Al-Musthafa Students Based on Gender

Physical Literacy Level Based on Parents' Educational Level

The physical literacy level of students based on parents' educational level (father and mother) is presented in Table 5. Most students whose fathers' education was ≤ high school/equivalent as well as ≥ Diploma fell into the moderate physical literacy category, at 37.4% and 38.6% respectively.

ISSN 0216-1699 (print) | 2581-2300 (online)

Additionally, students with fathers educated at ≤ high school/equivalent showed higher percentages in the low and very low physical literacy categories compared to those whose fathers had at least a diploma degree. Conversely, students whose fathers had ≥ Diploma-level education had better scores in the high and very high physical literacy categories than those whose fathers had education ≤ high school/equivalent.

Table 5. Distribution of Physical Literacy Levels of SMP Plus Al-Musthafa Students Based on Parents' Educational Level

No	Physical literacy level	Father's Education				Mother's Education			
		≤ Senior High School/equivalent		≥ Diploma		≤ Senior High School/equivalent		≥ Diploma	
		Freq	%	Freq	%	Freq	%	Freq	%
1	Very Low	6	6,1%	1	2,3%	5	4,7%	2	5,4%
2	Low	32	32,3%	9	20,5%	34	32,1%	7	18,9%
3	Moderate	37	37,4%	17	38,6%	36	34%	18	48,6%
4	High	21	21,2%	11	25%	27	25,5%	5	13,5%
5	Very High	3	3%	6	13,6%	4	3,8%	5	13,5%
	Total	**99**	**100%**	**44**	**100%**	**106**	**100%**	**37**	**100%**

From the mother's education perspective, the majority of students whose mothers were educated to ≤ high school/equivalent or ≥ Diploma were in the moderate physical literacy category, at 34% and 48.6% respectively. Students with mothers educated to ≤ high school/equivalent had a higher cumulative proportion in the low and very low categories (36.8%) compared to those with mothers at ≥ Diploma (24.3%). Conversely, in the high and very high categories, the cumulative proportion of students with mothers at ≤ high school/equivalent (29.3%) was slightly higher than those at ≥ Diploma (27%).

For diagrammatic presentations, see Figure 2 (father's education) and Figure 3 (mother's education).

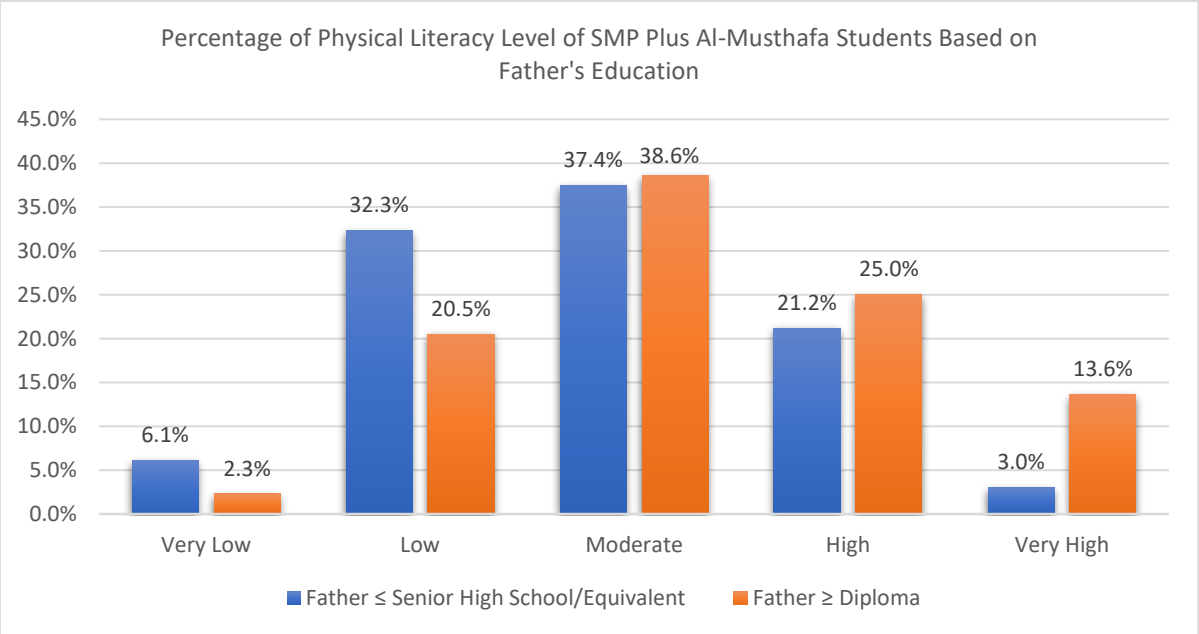

Figure 2. Percentage of Physical Literacy Level of SMP Plus Al-Musthafa Students Based on Father's Education

ISSN 0216-1699 (print) | 2581-2300 (online)

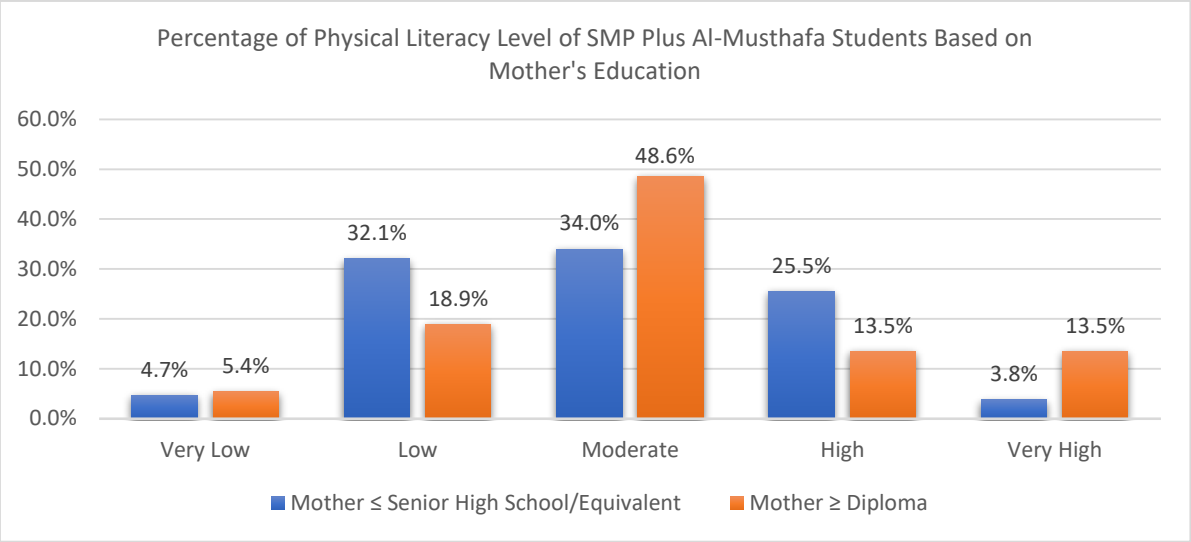

Figure 3. Percentage of Physical Literacy Level of SMP Plus Al-Musthafa Students Based on Mother's Education

Normality Test

The normality test was conducted on physical literacy scores based on gender and parental education level using the Kolmogorov-Smirnov test (n > 50) and the Shapiro-Wilk test (n < 50). The results of the normality test are presented in Table 6.

Table 6. Normality Test

	df	Sig.	Type	Description
Gender				
Male	78	0,200	Kolmogorov-Smirnov	Normal
Female	65	0,200	Kolmogorov-Smirnov	Normal
Father's Education				
≤ Senior High School/equivalent	99	0,200	Kolmogorov-Smirnov	Normal
≥ Diploma	44	0,823	Shapiro-Wilk	Normal
Mother's Education				
≤ Senior High School/equivalent	106	0,200	Kolmogorov-Smirnov	Normal
≥ Diploma	37	0,719	Shapiro-Wilk	Normal

Based on the results of the normality test in Table 6, the distribution of physical literacy scores in each group (gender, father's education, and mother's education) shows a significance value > 0.05, which indicates that the data are normally distributed.

Homogeneity Test

Before conducting the difference test, a homogeneity test was carried out as an initial step to ensure equality of variances between groups. The results of the homogeneity test are presented in Table 7.

Table 7. Homogeneity Test

	Levene's Test	
	Sig.	**Description**
Gender	0,524	Homogeneous
Father's Education	0,512	Homogeneous
Mother's Education	0,939	Homogeneous

Based on Table 7, the results of Levene's Test show that the three groups of data (gender, father's education, and mother's education) meet the assumption of homogeneity of variances (Sig. > 0.05).

ISSN 0216-1699 (print) | 2581-2300 (online)

Independent Samples t-Test

With the assumption of normality fulfilled, the analysis of differences in physical literacy levels based on gender and parental education level was conducted using the Independent Samples t-Test, as presented in Table 8.

Table 8. Independent Samples t-Test

	F	T	df	Sig. (2-tailed)	Mean Difference	Cohen's d
Gender	0,408	3,190	141	0,002	5,236	0,533
Father's Education	0,432	-2,476	141	0,014	-4,444	0,455
Mother's Education	0,006	-1,260	141	0,210	-2,421	0,24

Based on Table 8, the analysis results show that there is a significant difference in physical literacy scores based on gender (Sig. = 0.002 < 0.05; Cohen's d = 0,533), where male students have higher scores than females (Mean difference = 5,236). A significant difference is also found based on the father's education (Sig. = 0.014 < 0.05; Cohen's d = 0,455), with higher physical literacy scores in groups whose fathers have a Diploma or higher education (Mean difference = -4,444). Conversely, there is no significant difference found based on the mother's education (Sig. = 0.210 > 0.05; Cohen's d = 0,24).

Discussion

This study aimed to identify differences in physical literacy levels among students at SMP Plus Al-Musthafa based on gender and parental educational attainment. The results showed that there were significant differences in physical literacy between male and female students, with male students displaying higher levels of physical literacy. These findings are in line with previous research by Tas & Altunsoz (2021), which indicated that males have better physical literacy compared to females. This difference can be explained by a variety of social, cultural, and environmental factors that interact in shaping behaviors and attitudes towards physical activity. Inclusive and gender-responsive teaching approaches are needed to improve students' physical literacy (Metcalfe & Lindsey, 2019), especially for female students.

Socioculturally, physical activity is often associated with masculinity (Deng, 2023). For instance, physical activity is frequently promoted as a rough and challenging endeavor, making it seem less suitable for females. These stereotypes are deeply entrenched in society and impact both the perceptions and participation of females in physical activities. Additionally, females often face obstacles such as feelings of embarrassment and lack of environmental support, whether from family, peers, or educational institutions (Alliott et al., 2024; Cowley et al., 2021). These barriers can reduce motivation and opportunities for females to actively participate in physical activities, ultimately resulting in lower physical literacy levels.

Besides gender factors, this study also found significant differences in physical literacy based on the father's educational level. Children from families with highly educated fathers tend to have better physical literacy. Fathers with higher education levels have a better understanding of the importance of physical activity. They are also more capable of providing support, both emotionally and in terms of facilities, and serve as positive role models for their children (Muñoz-Galiano et al., 2020). In the context of patriarchal culture, the father figure often served as the main decision-maker in the family, so his role was very strategic in encouraging children to be physically active (Meyer et al., 2024). Fathers who possess awareness and knowledge of the importance of physical activity tend to be more proactive in encouraging their children to participate in physical activities, both by direct participation or by providing the necessary facilities.

Interestingly, this study did not find a significant difference in physical literacy based on mothers' educational background. This lack of significance does not imply that mothers' roles are irrelevant; rather, it may be influenced by socio-cultural factors in Indonesia. In many families, mothers primarily take responsibility for domestic caregiving and children's academic matters, while physical activity is still more commonly perceived as the father's domain (Alcántara-Porcuna et al., 2021, Calderwood et al., 2022). This condition contrasts with some other cultural contexts, such as in Australia, where mothers' involvement in shaping children's healthy lifestyles is more prominent (McCreery et al., 2025).

ISSN 0216-1699 (print) | 2581-2300 (online)

These findings highlight that local socio-cultural factors play a major role in explaining variations in parental roles with regard to children's physical literacy.

Our findings affirm the importance of considering gender and parental education, particularly fathers', in efforts to improve students' physical literacy. Physical literacy is a crucial competency that does not only relate to motor skills, but also involves cognitive, affective, and social aspects (Whitehead, 2010). Therefore, physical education learning strategies need to be designed inclusively and contextually, involving parents as active partners in children's physical education. Schools should provide a safe space that supports the active participation of all students, regardless of gender.

Theoretically, this study strengthens previous findings regarding the determinants of physical literacy. The result of this study support Bandura (1986) social-cognitive theory, which emphasizes the importance of the social environment, including the family, in shaping individual behavior. Parental involvement, particularly that of fathers as role models and sources of support, can enhance children's self-efficacy in participating in physical activity. Additionally, these findings are relevant to gender theory, which highlights how social constructions of masculinity and femininity influence participation in physical activity (Connell & Messerschmidt, 2005).

From a practical perspective, the findings of this study hold important implications for the development of policies and practices in physical education at schools. Schools need to design gender-responsive learning strategies by ensuring that all students have equal opportunities to participate in physical activities. In addition, parental involvement, both fathers and mothers, can be enhanced through training, workshops, and physical literacy campaigns to raise awareness of the importance of physical activity for children. Given the lack of maternal involvement identified in this study, specific programs that empower mothers to support their children's physical activity could become a priority. Collaboration among schools, families, communities, and the government also needs to be strengthened in order to build a sustainable ecosystem that supports physical literacy.

This study has several limitations. First, the data were collected through self-report questionnaires, which are prone to social desirability bias and respondents' subjectivity. Second, the study was conducted in one school within a specific area, thus not yet representing the socio-economic and cultural diversity of Indonesia. Moreover, other variables such as the role of teachers, availability of sports facilities, or community support were not further analyzed.

For future research, it is recommended to use a more representative sampling design, expand the scope of schools across different regions, and combine quantitative data with interviews or observations to minimize self-report bias. Comparative cross-national studies, particularly within the Asian region, could also enrich the understanding of how socio-cultural factors influence children's physical literacy.

CONCLUSION

This study concluded that there were significant differences in the levels of physical literacy among students at SMP Plus Al-Musthafa based on gender and the father's educational background. Male students demonstrated higher levels of physical literacy compared to female students. Likewise, students whose fathers have an education of at least a Diploma degree showed higher physical literacy scores than those whose fathers' education was at the high school level or below. Conversely, no significant differences were found in students' physical literacy levels based on the mother's educational attainment.

These findings indicated that gender and the educational role of fathers play an important part in the development of adolescent physical literacy. Therefore, physical education in schools needs to be designed to be responsive to gender and encourage active participation from all students. In addition, it is important to develop collaborative programs involving parents, especially fathers, to support children's physical activity both at home and at school.

In the future, the results of this research can serve as a foundation for formulating more inclusive physical education policies, developing school interventions that reduce gender disparities in physical activity, and creating strategies for parental engagement through outreach, workshops, or community-based activities. Therefore, schools, teachers, and policymakers need to promptly implement concrete actions to ensure that the improvement of physical literacy among adolescents in Indonesia can be achieved sustainably.

ISSN 0216-1699 (print) | 2581-2300 (online)

ACKNOWLEDGMENTS

The authors would like to thank the school principal and teachers at SMP Plus Al-Musthafa for the support provided during this research. Special thanks are also extended to all the students who participated in this research.

REFERENCES

Alcántara-Porcuna, V., Sánchez-López, M., Martínez-Vizcaíno, V., Martínez-Andrés, M., Ruiz-Hermosa, A., & Rodríguez-Martín, B. (2021). Parents' perceptions on barriers and facilitators of physical activity among schoolchildren: a qualitative study. *International Journal of Environmental Research and Public Health*, *18*(6), 1–27. https://doi.org/10.3390/ijerph18063086

Alliott, O., Fairbrother, H., & van Sluijs, E. (2024). Adolescents' physical activity during and beyond the covid-19 pandemic: a qualitative study exploring the experiences of young people living in the context of socioeconomic deprivation. *BMC Public Health*, *24*(1). https://doi.org/10.1186/s12889-024-19777-z

Azwar, S. (2012). *Penyusunan skala psikologi* (2nd ed.). Pustaka Pelajar.

Bandura, A. (1986). *Social foundations of thought and action: a social cognitive theory*. Prentice-Hall.

Brown, D. M. Y., Dudley, D. A., & Cairney, J. (2020). Physical literacy profiles are associated with differences in children's physical activity participation: a latent profile analysis approach. *Journal of Science and Medicine in Sport*, *23*(11), 1062–1067. https://doi.org/10.1016/j.jsams.2020.05.007

Calderwood, C., Minnen, M. E., Phetmisy, C. N., Kidwell, K. E., French, K. A., & King, D. D. (2022). Understanding how family demands impair health behaviors in working sole mothers: the role of perceived control over leisure time. *Applied Psychology: Health and Well-Being*, *14*(2), 362–382. https://doi.org/10.1111/aphw.12307

Connell, R. W., & Messerschmidt, J. W. (2005). Hegemonic masculinity. *Gender & Society*, *19*(6), 829–859. https://doi.org/10.1177/0891243205278639

Cowley, E. S., Watson, P. M., Foweather, L., Belton, S., Thompson, A., Thijssen, D., & Wagenmakers, A. J. M. (2021). "Girls aren't meant to exercise": perceived influences on physical activity among adolescent girls—The HERizon Project. *Children*, *8*(1). https://doi.org/10.3390/children8010031

Deng, Y. (2023). Influence of gender stereotype on participation in physical education class of high school students. *Journal of Education, Humanities and Social Sciences*, *8*, 600–606. https://doi.org/10.54097/ehss.v8i.4315

Fatimah, S. N. (2024). *Hubungan literasi fisik (physical literacy) dengan tingkat kesegaran jasmani peserta didik lelas 9 SMP Negeri 1 Depok*. Universitas Negeri Yogyakarta.

Friskawati, G. F. (2024). *Analisis physical literacy dalam perspektif gender, status ekonomi, dan jenis layanan Pendidikan Anak Usia Dini* [Universitas Pendidikan Indonesia]. https://repository.upi.edu/128211/

Hadier, S. G., Yinghai, L., Long, L., Hamdani, S. D., & Hamdani, S. M. Z. H. (2025). Assessing physical literacy and establishing normative reference curves for 8–12 year old children from South Punjab, Pakistan: the PAK-IPPL cross-sectional study. *PLoS ONE*, *20*(2 February). https://doi.org/10.1371/journal.pone.0312916

IPLA. (2017). *No Title*. International Physical Literacy Association. https://www.physical-literacy.org.uk/

Liu, Y., & Chen, S. (2021). Physical literacy in children and adolescents: Definitions, assessments, and interventions. *European Physical Education Review*, *27*(1), 96–112. https://doi.org/10.1177/1356336X20925502

McCreery, K., Penney, D., & Jeanes, R. (2025). Mothers, social capital and children's physical literacy journeys in Rural Australia. *Sport, Education and Society*, *30*(6), 665–680. https://doi.org/10.1080/13573322.2024.2353248

ISSN 0216-1699 (print) | 2581-2300 (online)

Metcalfe, S. N., & Lindsey, I. (2019). Gendered trends in young people's participation in active lifestyles: the need for a gender-neutral narrative. *European Physical Education Review*, *20*(10), 1–17. https://doi.org/10.1177/1356336X19874095

Meyer, M. R. U., Prochnow, T., Wende, M. E., Ylitalo, K. R., Sturdivant, R. X., Johnson, C. M., Delgado, H., Trost, S. G., Gómez, L., & Sharkey, J. R. (2024). Physical activity outcomes of a culturally tailored, father-focused, and family-centered health promotion program for mexican-heritage families: ¡Haz Espacio Para Papi! (Make Room for Daddy). *International Journal of Environmental Research and Public Health*, *21*(11). https://doi.org/10.3390/ijerph21111475

Mohammadzadeh, M., Sheikh, M., Abadi, D. H. S., Bagherzadeh, F., & Kazemnejad, A. (2022). Design and psychometrics evaluation of Adolescent Physical Literacy Questionnaire (APLQ). *Sport Sciences for Health*, *18*(2), 397–405. https://doi.org/10.1007/s11332-021-00818-8

Muñoz-Galiano, I. M., Connor, J. D., Gómez-Ruano, M. A., & Torres-Luque, G. (2020). Influence of the parental educational level on physical activity in schoolchildren. *Sustainability (Switzerland)*, *12*(9), 1–11. https://doi.org/10.3390/su12093920

Mutohir, T. C., Lutan, R., Maksum, A., Kristiyanto, A., & Akbar, R. (2023). *Laporan indeks pembangunan olahraga tahun 2023*. Kementerian Pemuda dan Olahraga Republik Indonesia.

Pan, X., Wang, H., Wu, D., Liu, X., Deng, P., & Zhang, Y. (2022). Influence of family environment on the scientific fitness literacy of preschool and school children in China: a national cross-sectional study. *International Journal of Environmental Research and Public Health*, *19*(14). https://doi.org/10.3390/ijerph19148319

Rini, M. K., & Huriah, T. (2020). Prevalensi dan Dampak Kecanduan Gadget Pada Remaja: Literature Review. *Jurnal Keperawatan Muhammadiyah*, *5*(1), 185–194. https://doi.org/10.30651/jkm.v5i1.4609

Syahrullah, A., Mikdar, U. Z., Wahyudi, A. N., Gressia, G., & Nur'aeni, N. (2025). Analisis tingkat aktivitas fisik Siswa SMA Muhamadiyah 1 Palangka Raya. *SPRINTER: Jurnal Ilmu Olahraga*, *6*(1), 99–106. https://doi.org/10.46838/spr.v6i1.705

Tas, H., & Altunsoz, I. H. (2021). Evaluation of physical literacy in secondary school students*. *Egitim ve Bilim*, *46*(208), 475–491. https://doi.org/10.15390/EB.2021.9907

UNESCO. (2015). *Quality physical education*. UNESCO. http://creativecommons.org/licenses/by-sa/3.0/igo/)

Whitehead, M. (2010). *Physical literacy: throughout the lifecourse* (1st ed.). Routledge.

WHO. (2020). WHO Guidelines on physical activity and sedentary behaviour. In *Routledge Handbook of Youth Sport*.

ISSN 0216-1699 (print) | 2581-2300 (online)