



Physical Literacy and Physical Self-Description in Youth: Cross-Sectional Insights from Supportive Academic Settings

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History Article

Received March 2026

Approved April 2026

Published vol 13 no 1 2026

Keywords

Adolescents; Physical Literacy; Physical Self-Description; Sport Students; Health Students

Abstract

Adolescent is a vital stage to form a person identity and adherence to healthy life-style. Physical literacy and physical self-description are two significant growing determinants in youth affecting their active lifestyles later in their adulthood period. However, studies directly investigating these two variables were limited. This research aimed at examining the correlation between physical literacy and physical self-description of adolescents and the difference of physical literacy level of adolescents from supportive academic programs, including sport-related programs and health-related programs. This study employed cross-sectional study with survey method. The samples of this study were 513 students, aged 17-21 years, selected from four sport-related programs and two health-related programs. The data were collected by using PPLI questionnaire, for measuring perceived physical literacy of the samples, and PSDQ questionnaire, for measuring the sample physical self-descriptions. The data were analyzed by using Pearson Correlation to determine the correlation between perceived physical literacy and physical self-description of the samples. To decide the difference between the level of physical literacy of adolescents majoring sport-related programs and adolescents majoring health-related programs, independent t-test was administered. The result of the data analysis found that there was a significant positive correlation between physical literacy and physical self-description in adolescents. A significant difference was also found on the level of physical literacy between students majoring sport-related program and students majoring health-related programs. This study implies that it is important to enhance physical literacy of adolescents and to maintain positive perceptions on their physical descriptions as these two variables would highly contribute to their physical activity level later in their adulthood period.

How to Cite

Putri, W., Hambali, B., & Gumilar, A. (2026). Physical Literacy and Physical Self-Description in Youth: Cross-Sectional Insights from Supportive Academic Settings. *Journal of Physical Education, Health and Sport*, 13 (1), 256-263.

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INTRODUCTION

The literature has discussed the potential for nurturing, optimizing, and integrating physical literacy to enhance the quality of life (Wang et al., 2024). Physical literacy provides powerful lens for examining movements in relation to physical activity and motor skill outcomes, environmental context, and broader affective and social learning processes (Cairney et al., 2019). Therefore, physical literacy is considered to play an significant role in promoting an active lifestyle during childhood and adolescence period and contribute to an individual health throughout the growing years (Villa-González et al., 2024). Adolescents with high physical literacy levels have better health, including better cardiovascular fitness and reduced obesity (Mayordomo-Pinilla et al., 2025). Individuals with higher levels of physical literacy also have been found to have a lower body fat percentage, lower resting systolic blood pressure, quicker recovery from progressive aerobic tests, and better overall quality of life (Villa-González et al., 2024).

Despite the benefits of physical activity being well documented in university students, many of them do not follow the international recommendations (Sáez et al., 2021). Nowadays, physical activity levels are alarmingly low and physical literacy has been proposed as a tool to improve physical activity levels (Mayordomo-Pinilla et al., 2025). These issues serve to remind proponents of lifelong participation in physical activity where a person-centred and holistic approach recognizing real worth of embodied engagement with the world is used (Whitehead et al., 2018). Therefore, there is increasing interest in physical literacy, particularly in the field of public health (Cairney et al., 2019).

Self-concept is one of the most researched constructs within the framework of educational psychology, social psychology, and psychology of the personality (Scarpa, 2011). Self-concept is comprised of various dimensions, including physical, social, and academic dimensions, that pose themselves in a hierarchical manner to construct the global self and have an influence on self-esteem (Scarpa, 2011). The individual physical self-concept has a significant impact on individual involvement in physical activities (Putri et al., 2019). Therefore, positive self-perceptions of one body and overall physical self has been shown to have potentially powerful effects on health (Garn, 2016). Having a positive self-concept, such as a positive appraisal of one characteristics and competencies, during adolescence has been linked to a number of

favourable outcomes, including mental and physical health and well-being (Dunton et al., 2006). Moreover, research has found that most of student physical self-concept dimensions positively predicted student physical activity outcomes and were negatively associated with sedentary behavior (Pulido et al., 2021). Overall, a significant association has been consistently demonstrated between physical activity and physical self-concept and its various sub-domains in children and adolescents, highlighting the importance of understanding the physical-self and its links to health-related behaviours in youth (Babic et al., 2014).

Physical self-concept plays a crucial role during adolescence and youth. In adolescence, self-concept, particularly in the physical domain, becomes sharply defined and realistic. In these phases of life, individuals experience many changes in their body (Scarpa, 2011). In addition, adolescent is also a period of rapid physiological development, where individuals experience significant physical, cognitive, and emotional changes. A positive self-concept is an important part of human development and participation in sports is known to contribute to it (Klomsten et al., 2004). Two related, but conceptually distinct, factors that have received considerable attention for their potential influence on physical self-concept are physical activity and physical fitness (Dunton et al., 2006). Meanwhile, physical activity and physical fitness are also considered to be closely align with physical literacy. Physical literacy can be judged to have value on account that it can provide unique opportunities and rewarding experiences that promote self-esteem (Whitehead et al., 2018). Self-esteem comprises self-confidence and self-respect, where self-confidence is usually understood as describing the development of competence (Whitehead et al., 2018).

Previous study has identified the mediating effect of physical literacy on the relationship between positive self-esteem and physical activity (She et al., 2023). In addition, the affective states have been proposed as key elements of physical literacy, supported by the valence matched associations between both positive or negative affects with physical literacy and self-esteem (Woolley et al., 2024). Overall, a significant association has been consistently demonstrated between physical activity and physical self-concept and its various sub-domains in children and adolescents (Babic et al., 2014). These theories have shed a light on the potential relationship between physical literacy and physical self-description.

Although, physical self-concept decreased with increasing age and there was a significant age by gender interaction in the global physical, body fat, appearance, sports competence, and strength dimensions (Klomsten et al., 2004). The data conclude that male students had higher physical self-concept than female students (Putri et al., 2019). These theories further emerges close line between physical literacy and physical self-description to be investigated. However, the studies mostly focused on each variable effects on health and physical competence.

Previous studies on both physical literacy and physical self-description had been frequently carried out. For example, study of (Farren et al., 2021), revealed a statistically significant positive path between physical literacy and interscholastic sport intention, suggesting that the physical literacy journey must encompass the attainment of the confidence and competence in numerous physical activities in multiple environments. Another study had evaluated the relationship between physical literacy and muscular fitness as well as muscle-strengthening activities in adolescents (Villa-González et al., 2024). Study of mayordomo et al compared physical literacy levels between rural and urban areas, showing a disparity in favor of rural areas which might be due to the restriction of play areas in cities and the difference in perceived safety (Mayordomo-Pinilla et al., 2025). Furthermore, study of maoano investigated the effects of age, gender and their interaction on global self-esteem and physical self-perceptions of French adolescents (MaÔano et al., 2004).

Although a number of studies on physical literacy and physical self-description had been carried out, the studies mostly focus on the effects of each variable on health-related aspects. There has not been any research specifically identify the relationship between physical literacy and physical description. Meanwhile, theories had shown the potential relationship between the two. Therefore, this study aimed to examine the correlation between physical literacy and physical description in adolescents, especially adolescents from supportive academic setting, namely students with sports and health educational major. This study would also further investigated the difference of physical literacy level between students from sport-related programs and health-related programs.

METHOD

This study is a cross-sectional study employing survey method. This study aimed at investigating two main problems. The first problem to

address was the correlation between perceived physical literacy and physical self-description of adolescents from supportive academic setting, namely students with sports and health educational major. The second problem was the difference between physical literacy levels of adolescents majoring sport-related programs and adolescents majoring health-related programs. The sports and health education major was considered supportive environment for this setting because, in these majors, students are indirectly required to regularly perform physical activity (especially for sport-related programs), have positive attitude towards sports, physical activity, and health-related components, and gain knowledge on the benefits of physical activity, active lifestyle, and health-related components.

The sample of this study was selected using purposive sampling. The inclusion criteria involved university students majoring sports and health related study programs, aged 17-21 years, and willing to be involved as respondents. The exclusion criteria of this study included students not majoring sports and health-related programs, aged below 17 years or above 21 years, and not willing to be involved as respondents of the study. The total sample of this study were 518 students, males and females, aged 17-21 years from a university in Indonesia, the total sample of this study were 518 students, males and females, aged 17-21 years from a university in Indonesia, consisting of 236 male students and 281 female students.

The instruments used in this study included PPLI questionnaires and PSDQ questionnaire. PPLI questionnaire was used to measure the adolescent perceived physical literacy which was developed by (Sum et al., 2018) and consisted of nine items divided into three categories, namely knowledge and understanding (3 items), self-expression and communication with others (3 items), and sense of self and self-confidence (three items). PSDQ questionnaire was employed to measure physical self-description of adolescents. It was developed by Marsh and consisted of 40 items divided into 11 categories, including health, coordination, activity, Body Fat, sport, global physical, appearance, strength, flexibility, endurance, global esteem (Marsh et al., 2010). The questionnaires were distributed online using Google Form.

The data were analyzed both descriptively and inferentially. The prerequisite tests were carried out before performing inferential analysis. Normality test was administered before conducting Pearson Correlation test and independent t-test. Meanwhile, homogeneity test was conducted before carrying out independent t-test. To deter-

mine the correlation between perceived physical literacy and physical self-description of adolescents, Pearson Correlation test was conducted. Meanwhile, the independent t-test was conducted to find out the difference between physical literacy level of adolescent majoring sports-related programs and adolescents majoring health-related programs.

RESULTS AND DISCUSSION

The following is a description of the Physical Literacy and Physical Literacy Description data:

Table 1. Description of Physical Literacy and Physical Literacy Description Data

	Physical Literacy	Physical Literacy Description
N	517	517
Mean	33.0	118
Standard deviation	7.68	27.0

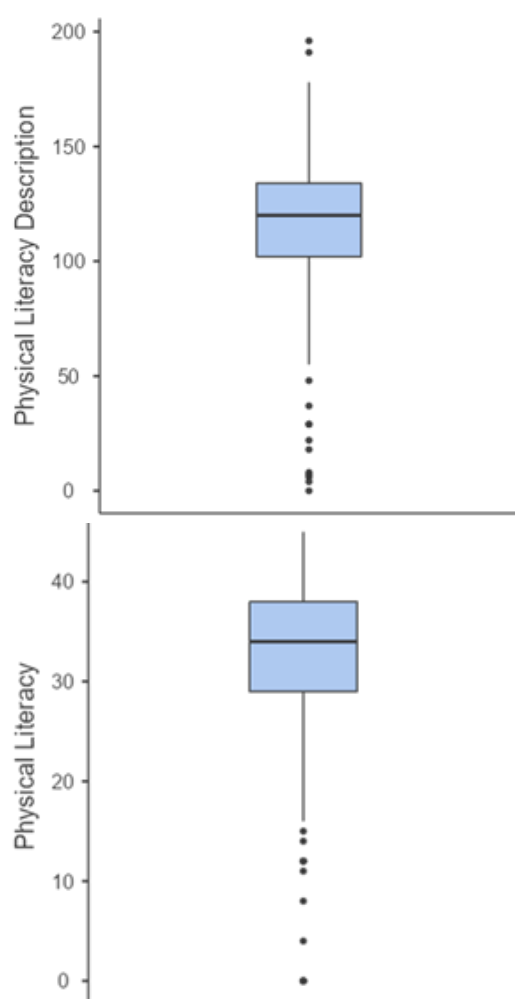


Figure 1. Boxplot of Physical Literacy and Physical Literacy Description Data

The data description in **Table 1** shows the number of respondents for both measured variables, namely 517 participants. The mean score for physical literacy was 33.0, and the mean score for physical literacy description was 118. This indicates that the overall average score for Physical Literacy Description is higher than the overall score for Physical Literacy. Meanwhile, the standard deviation score of 7.68 for physical literacy indicates relatively low variation among respondents, and the value of 27.0 for physical literacy description indicates higher variation, meaning there is a greater difference between respondents' scores on this variable. **Figure 2** shows a boxplot of the physical literacy and physical literacy description data. From **Table 1** and **Figure 1**, it can be concluded that physical literacy has a narrower and more concentrated distribution of scores. The physical literacy description shows greater variation in responses, thus possibly encompassing more complex or detailed components or dimensions of physical literacy.

Correlation between Perceived Physical Literacy and Physical Self-Description

The next analysis is the correlation between perceived physical literacy and physical self-description. This analysis was carried out to see whether there is a significant relationship between the two variables.

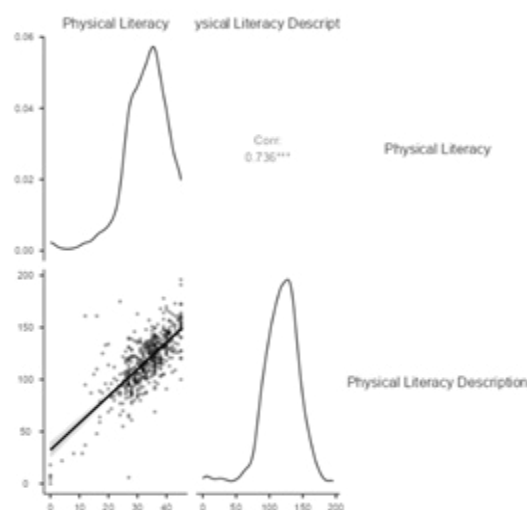


Figure 2. Correlation Plot between Perceived Physical Literacy and Physical Self-Description

Figure 2 is a scatterplot diagram with a pairwise correlation matrix between the variables Physical Literacy and Physical Literacy Description. The correlation coefficient is 0.736, indicating a strong positive correlation between the two variables. The correlation value also indicates that this result is highly statistically significant (p

< 0.001), meaning there is a very strong and significant relationship between general physical literacy and its description. Interpretation: The relationship between physical literacy and physical literacy description is very strong and significant. The data tend to be linear and positive, so a linear regression approach can be used to predict one from the other. A correlation of 0.736 means that approximately 54% of the variation ($R^2 \approx 0.54$) in one variable can be explained by the other.

Comparison of Physical Literacy Levels between Sport-Related Study Programs and Health-Related Study Programs

Next is the independent sample t-test analysis, which is carried out to show whether there is a significant difference in the PSD and PPL levels between sports and non-sports students.

Table 2. Description of Data on Physical Literacy Levels between Sport-Related Study Programs and Health-Related Study Programs

	Group	N	Mean	SD	SE
Physical Literacy	Sport-Related Study Programs	331	34.4	8.24	0.453
	Health-Related Study Programs	186	30.6	5.83	0.428
Physical Literacy Description	Sport-Related Study Programs	331	124.9	27.69	1.522
	Health-Related Study Programs	186	104.8	20.05	1.470

Table 2 shows the description of the two variables measured, namely physical literacy and physical literacy description. The physical literacy of sport-related study program students had a higher mean score (34.4) than that of health-related study program students (30.6). This indicates that involvement in sports is correlated with higher physical literacy. The SD was higher in the sports group (8.24 vs. 5.83), indicating greater variation within that group. Physical Literacy Description of Sport-Related Study Program: Students also had a higher mean descriptive score (124.9) than that of Health-Related Study Program students (104.8). This means that the more in-depth description or component of physical literacy is also more developed in students who are active in sports. The relatively small SE indicates that the average estimate is quite precise. Conclusion: Sports students tend to have higher levels of physical literacy and description than those who are health-related study program students. These findings support the notion that active participation in sport activities can improve physical literacy both in general and in broader descriptive aspects (possibly including motivation, self-confidence, or movement understanding).

Table 3. Independent Samples T-Test Comparison of Physical Literacy Levels between Sport-Related Study Programs and Health-Related Study Programs

		Statistic	df	p	Mean difference	SE difference
Physical Literacy	Student's t	5.59 ^a	515	<.001	3.83	0.684
Physical Literacy Description	Student's t	8.70 ^a	515	<.001	20.10	2.310

Note. H₀: μ Sport-Related Study Programs = μ Health-Related Study Programs

^a Levene's test is significant ($p < .05$), suggesting a violation of the assumption of equal variances

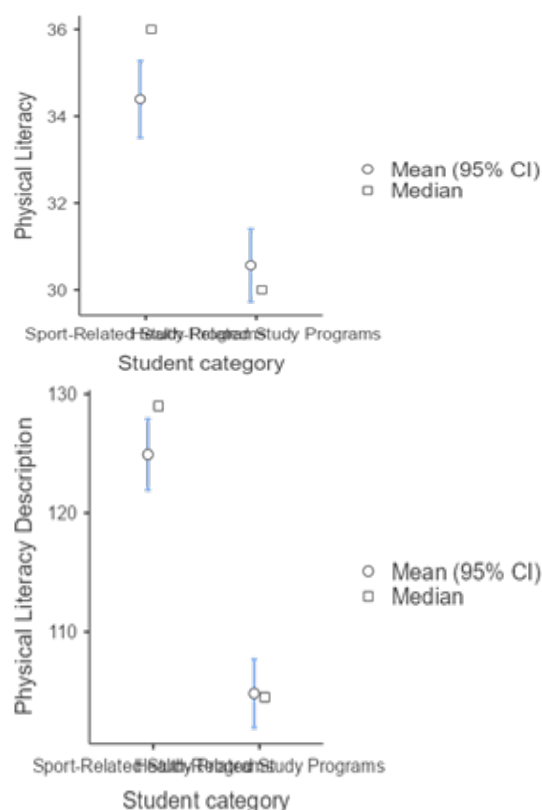


Figure 3. Box Plot Independent Samples T-Test Comparison of Physical Literacy Levels between Sport-Related Study Programs and Health-Related Study Programs

The following is an explanation and description of the independent samples t-test in table 3. Physical literacy has a value of $t = 5.59$. The results of the t-test show a significant difference between the two groups with a degree of freedom value of $df = 515$ and $p < .001$, meaning this difference is very statistically significant. The average physical literacy score in the sports study program student group is 3.83 points higher than the health study program group. Physical Literacy Description $t = 8.70$, $p < .001$, shows a very significant difference. Sports study program students

have a descriptive score of physical literacy 20.10 points higher than health study program students. Conclusion There is a significant difference between sports study program students and health study program students in terms of physical literacy and physical literacy description; students from sports study programs show higher scores in both variables.

Based on the results of the analysis, it shows that there is a significant difference between physical literacy and physical self-description between students of sport-related study programs and health-related study programs. There is also a significant relationship between physical literacy and physical self-description, which means that the higher the level of self-description in physical activity, the higher the physical literacy will be. Recent studies have explored the relationship between physical literacy and physical activity across age groups. In children and adolescents, higher levels of self-perceived fitness are associated with higher physical literacy (Pastor-Cisneros et al., 2021). A low but significant correlation between levels of perceived physical literacy and physical activity was found in Hong Kong adolescents, with variations across grade levels, school groups, and socioeconomic status (Choi et al., 2018). For adults, physical literacy is a significant predictor of moderate to vigorous physical activity, both in self-reported and device-based assessments (Naylor et al., 2025). The PLAYself, a self-reported measure of physical literacy for children and adolescents, demonstrated strong psychometric properties, including good fit to the Rasch model, test-retest reliability, and construct validity (Jefferies et al., 2021). These findings indicate a consistent relationship between physical literacy and activity, particularly at higher intensities, across age groups and assessment methods.

Recent research highlights a significant relationship between physical literacy and physical self-description, particularly in children and adolescents. Pastor-Cisneros et al. found that higher self-perceived physical fitness correlated with higher levels of physical literacy, emphasizing the role of motivation in this relationship (Pastor-Cisneros et al., 2021). Adolescents with stronger cognitive and affective domains of physical literacy demonstrated better physical fitness, with significant gender differences in self-description (Gilic et al., 2022). Inactive adults with limited prior sporting experience demonstrated lower physical literacy scores, suggesting that prior involvement

influences self-efficacy and motivation (Elsborg et al., 2021). A systematic review revealed a positive correlation between physical literacy and cardio-respiratory fitness, underscoring the importance of developing physical literacy for improving health outcomes (Jiang et al., 2025). Collectively, these studies underscore the multifaceted nature of physical literacy and its implications for self-perception and fitness (Elsborg et al., 2021; Gilic et al., 2022; Jiang et al., 2025; Pastor-Cisneros et al., 2021).

Physical literacy has emerged as a multi-dimensional concept related to physical activity and health outcomes. Studies have shown that higher physical literacy in children is associated with positive health indicators, including improved body composition, aerobic fitness, blood pressure, and quality of life (Caldwell et al., 2020). Physical literacy is also associated with health-related fitness variables, total physical activity, and well-being across age groups (Fortnum et al., 2025). A pilot physical literacy-based intervention program demonstrated potential in maintaining fitness and reducing decline in physical activity behavior among first-year college students (Kwan et al., 2020). Although empirical evidence linking physical literacy directly to health outcomes is limited, this presents a promising holistic framework for health-promoting physical activity interventions (Cornish et al., 2020). Further research is needed to explore the relationship between physical literacy, physical activity, and health across diverse populations and across the lifespan. The PLAYself tool has been validated as a reliable measure of physical literacy in children and adolescents (Jefferies et al., 2021). Research indicates that physical literacy is positively correlated with participation in organized sports and self-organized physical activity among adolescent girls (Parpa et al., 2023). Furthermore, components of physical literacy are correlated with various aspects of physical fitness in young athletes (Parpa et al., 2023). A significant association between physical literacy and resilience has been observed in children, suggesting potential benefits for overall well-being (Jefferies et al., 2019). Promoting physical literacy is crucial for all age groups and populations, including young children, adolescents, adults, and special groups such as elite athletes and individuals with disabilities (Eun-young et al., 2016). Developing physical literacy early in life can contribute to lifelong participation in physical activity and improved health outcomes

CONCLUSION

The findings of the study found that most of adolescents from supportive academic setting gained Physical Literacy and Physical Self-Description. This study also showed a positive correlation between physical literacy and physical self-description in adolescents. In addition, the findings also show differences in physical literacy levels between students from sports-related study programs and health-related study programs. This difference might be caused by the nature of courses given to these programs, where sports-related study program students are indirectly required to perform physical activity in their courses. This study indicates that supportive environment is important to enhance both physical literacy and physical activity of adolescents. Further study comparing physical activity levels and physical self-description of students from sports and health study programs and students from non-sports and health study programs is needed to investigate the contribution of educational environment on these two variables.

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