Correlating physical literacy with life skills: A study on high school students

Correlación de la alfabetización física con las habilidades para la vida: Un estudio sobre estudiantes de secundaria

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Abstract

Introduction: Physical literacy (PL) studies have noted its various contributions to students' physical and health needs. Unfortunately, PL reports that explain the relationship of PL to students' life skills (LS) are almost difficult to find, even though PL features are likely to support students' LS.
Objective: This study aimed to examine the correlation of PL with students' LS.
Methodology: The sample consisted of 2250 high school students, with 845 males (37.6%) and 1405 females (62.4%) determined using a convenience sampling technique. Physical literacy data were collected using the nine-item Perceived Physical Literacy Instrument, while LS data were collected using the 47-item Life Skills for Sport Scale, both scales using a 5-point Likert scale. The data of the two variables were then analyzed using descriptive statistics and Spearman's rank correlation using the Microsoft Excel program and SPSS version 29.
Results: The test results prove that PL is positively and significantly correlated with LS with a correlation value of 0.547, which is in the moderate category (0.40-0.69). The same thing is also recorded in the intercorrelation test, where all PL indicators correlate positively and significantly with all LS indicators.
Discussion: Physical literacy is one of the positive arenas for training students' LS, so teachers need to integrate LS into various physical activities of students. This agenda will enrich students with physical activity useful for attitudes and behaviors that are meaningful to students' lives.
Conclusions: Future studies could investigate students' transition experiences using PL and their success in implementing LS.

Keywords

Life skills; physical literacy; physical education for life skills; physical literacy for life skills.

Resumen

Introducción: Los estudios sobre alfabetización física (AF) han observado sus diversas contribuciones a las necesidades físicas y de salud de los estudiantes. Desafortunadamente, es difícil encontrar informes sobre AF que expliquen su relación con las habilidades para la vida (HP) de los estudiantes, a pesar de que es probable que sus características las respalden.
Objetivo: Este estudio tuvo como objetivo examinar la correlación entre la AF y las HP de los estudiantes.
Metodología: La muestra estuvo compuesta por 2250 estudiantes de secundaria, 845 hombres (37.6%) y 1405 mujeres (62.4%), seleccionados mediante un muestreo por conveniencia. Los datos de alfabetización física se recopilaron mediante el Instrumento de Alfabetización Física Percibida (9 ítems), mientras que los datos de HP se recopilaron mediante la Escala de Habilidades para la Vida Deportiva (47 ítems); ambas escalas utilizan una escala Likert de 5 puntos. Los datos de ambas variables se analizaron mediante estadística descriptiva y la correlación de rangos de Spearman con Microsoft Excel y SPSS versión 29.
Resultados: Los resultados de la prueba demuestran que la alfabetización física tiene una correlación positiva y significativa con las habilidades para la vida con un valor de correlación de 0.547 que se incluye en la categoría moderada (0.40-0.69). Lo mismo se registró también en la prueba de intercorrelación, donde todos los indicadores AF estaban correlacionados positiva y significativamente con todos los indicadores HP.
Discusión: La alfabetización física es un factor positivo para la formación en HP de los estudiantes, por lo que los docentes deben integrarla en diversas actividades físicas. Esta agenda enriquecerá a los estudiantes con actividad física útil para desarrollar actitudes y comportamientos significativos en sus vidas.
Conclusiones: Futuros estudios podrían investigar las experiencias de transición de los estudiantes al usar la AF y su éxito en la implementación de HP.

Palabras clave

Habilidades para la vida; alfabetización física; educación física para habilidades para la vida; alfabetización física para habilidades para la vida.

Introduction

Physical literacy (PL) has been the subject of policy discourse, advocacy, practice, and study in many countries and has become an important focus of physical education, physical activity, and sports promotion internationally (Bailey et al., 2023; Shearer et al., 2018). Physical literacy is an individual's motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for lifelong physical activity. In other words, the holistic concept of PL encompasses a range of individual-centered qualities, whether physical, cognitive, affective, and/or psychological, that are important to support them to lead a physically active lifestyle (Carl et al., 2023). In the educational context, PL is concerned with selecting students' movement needs, activities, and sports and introducing various recreational activities and sports (Basoglu, 2018). Thus, PL is important so that when students engage in their chosen sports activity, they genuinely know and interpret the benefits of their physical activity participation so that they are more motivated, more confident, more analytically and critically understanding, more appreciative, and also more responsible with the development of their physical competence over time from their physical activity preferences.

Physical literacy has become a focus in school physical education and youth sports programs (Liu & Chen, 2020) as a real opportunity to improve students' health through early habituation to a healthy lifestyle (Palit et al., 2024). At the very least, PL can overcome various adolescent health problems, considering that the health problems of children and adolescents are increasingly worrying. For example, the prevalence of childhood obesity continued to increase from 1999 to 2018, from 4.7% to 19.2% (Tsoi et al., 2022). Entering the COVID-19 period, 28 children (21.2%) from different countries in six regions of the World Health Organization (WHO) had national prevalence data on childhood obesity (78.6%), and the number even increased by 60.7% during the COVID-19 pandemic period (Pulungan et al., 2024). In response to this problem, PL is one of the concrete solutions that economically supports child and adolescent health programs (Cornish et al., 2020). It helps adolescents to be more physically active, enjoy activities more, have higher levels of physical fitness (Öztürk et al., 2023; Pavez-Adasme et al., 2023), be more compliant with physical activity guidelines (Mazzoli et al., 2024), be more confident and competitive resulting in effective and efficient movement (Nyayu Erizka et al., 2024), and has been shown to reduce adolescent adiposity while improving their long-term health (Nezondet et al., 2023).

Loucaides' (2004) study compared physical activity levels between urban and rural primary school children. As a result, children in rural schools reported more space available in parks and safer neighborhoods for physical activity. In contrast, children in urban schools collected more sports equipment at home and were often transported to places where they could be physically active. Furthermore, rural students obtained better physical fitness scores than urban students (Hian et al., 2013; Rahmansyah et al., 2020). They maintain a more active lifestyle by maximizing physical activity (Wattelez et al., 2021). Another report found that most early children in urban areas have better PL levels than children in rural areas (Tiaotrakul, 2022). This is because teachers in urban areas have a high perception of PL (Friskawati & Dwijantie, 2022). The difference in data is interesting because it may be that children in rural areas express physical activity only by utilizing space. In contrast, children in urban areas maximize modern sports equipment and are supported by their teachers who understand PL well. What needs to be agreed upon is that teachers and parents should promote PL from an early age, both in rural and urban children (Rahmatullah et al., 2023), to support their meaning of physical activity.

We have noted various recent studies of PL and its significance to the physical needs, health, and attitudes toward exercise in rural and urban children. Unfortunately, PL reports that localize the significance of PL on students' life skills (LS) are almost difficult to find, even though the features of PL have an excellent opportunity to support students' LS, which is undoubtedly very necessary for students to survive in a complex and fast-changing life. Integrating LS can be done through intentional structuring PL experiences so that students can accelerate with the complexity and changes in life demands (Anira et al., 2021; Kendellen et al., 2017; Lenzen et al., 2023; Razali, Blegur, et al., 2024) by helping students overcome various problems (Razali, Mansur, et al., 2024), including health (such as obesity) by continuously maintaining, evaluating, and improving a physically active lifestyle over time. For example, in the PL feature, students not only orient their positive attitude and interest toward sports but are also trained to compare every possible solution to get the best solution in sports activities and their daily lives (academic and non-academic).

Considering the development, problems, and significance of PL above, this study is interesting because it aims to fill the gap of previous studies by investigating the relationship between PL and LS of high school students. Thus, the study's results will provide benefits that students can diffuse PL in various non-sports activities, such as students' ability to overcome various problems in their lives. It means that the significance of PL is not only used by students to benefit physical activity, but they can also transfer it to other more real and meaningful life activities.

Method

Study design

This study used a correlational design. According to Fraenkel et al. (2011), correlational research involves the study of the relationship between variables in a group and often shows the possibility of cause and effect. It means that the relationship between two or more variables is studied without any attempt to influence them. The variable perceived physical literacy (PL) as the independent variable whether it correlates well with life skills (LS) as the dependent variable. The results of this test will provide suitable input to teachers, parents, and children so that they can maximize PL to train and improve LS.

Samples

The sample involved in this study totaled 2250 senior high school students (M±SD = 16.2±1.4) in Aceh Province, Indonesia including: SMA Negeri 3 Banda Aceh (Banda Aceh Municipality), SMA Negeri Unggul Subulussalam (Subulussalam Municipality), SMA Negeri 1 Lhokseumawe (Lhokseumawe Municipality), SMA Negeri 1 Takengon (Central Aceh Regency), SMA Negeri 1 Jangka (Bireuen Regency), SMK Negeri 3 Lhokseumawe (Lhokseumawe Municipality), SMK Negeri Batee (Pidie Regency), and so on.

The sample consisted of 845 males (37.6%) and 1405 females (62.4%) from class X (772 people, 34.3%), class XI (717 people, 31.9%), and class XII (761 people, 33.8%) (see Table 1). The sample was determined using a convenience sampling technique, where respondents quickly participated in the study or were easily accessible to researchers using Google forms (Mahardika et al., 2024; Scholtz, 2021).

Table 1. Sample demographics

Demographics		Frequency	Percentage
Gender group	Male	845	37.6%
	Female	1405	62.4%
	Total	2250	100%
Class group	X	772	34.3%
	XI	717	31.9%
	XII	761	33.8%
	Total	2250	100%

Instrument

Perceived Physical Literacy Instrument (PPLI)

We collected physical literacy data using the nine-item Perceived Physical Literacy Instrument (PPLI) developed by Sum et al. (2018). This instrument was constructed using three leading indicators. First, the sense of self and self-confidence indicator includes three items (1, 4, and 5), including "I am physically fit, in accordance with my age." Second, the self-expression and communication with others indicators include three items (6, 7, and 8), including "I am capable of handling problems and difficulties." Third, the knowledge and understanding indicator includes three items (2, 3, and 9), including "I am aware of the benefits of sports related to health."

The instrument was piloted with 1945 respondents (47.1% were females, and the remaining 52.9% were males) with an age range of 11-19 years and less than one year to more than 14 years of sports participation experience. Perceived Physical Literacy Instrument factor loading values were between 0.51 and 0.82, with a composite reliability value on the sense of self and self-confidence indicator of 0.78 and an average variance extracted (AVE) of 0.54. The composite reliability value on the self-expression and communication with others indicator (items 6, 7, 8) is 0.70, and the AVE is 0.43. The composite

reliability value on the knowledge and understanding indicator (items 2, 3, 9) is 0.72, and the AVE is 0.47. The sample response scale uses a five-point Likert scale, strongly disagree-strongly agree.

Life Skills for Sport Scale (LSSS)

Respondents' life skills data were collected using the Life Skills for Sport Scale (LSSS) developed by Cronin and Allen (2017). When constructing the LSSS, Cronin, and Allen (2017) used eight indicators out of 47 total items, with details of the second trial (n = 338) as follows. First, the teamwork indicator (7 items, with EFA values = 0.44-0.75 and α = 0.84), including: "Suggest to team/group members how they can improve their performance." Second, the goal-setting indicator (7 items, with EFA values = 0.68-0.82 and α = 0.89) includes: "Set short-term goals to achieve long-term goals." Third, the time management indicator (4 items, with EFA values = 0.82-0.85 and α = 0.89), including: "Assess how much time I spend on various activities."

Fourth, emotional skills indicators (8 items, with EFA values = 0.66-0.81 and α = 0.89), including: "Understanding that I behave differently when emotional." Fifth, interpersonal communication indicators (4 items, with EFA values = 0.75-0.80 and α = 0.88), including: "Paying attention to what someone says." Sixth, social skills indicators (5 items, with EFA values = 0.67-0.78 and α = 0.85), including: "Helping others without them asking for help." Seventh, leadership indicators (8 items, with EFA values = 0.73-0.81 and α = 0.92), including: "Knowing how to positively influence a group of individuals." Eighth, the problem-solving and decision-making indicator (4 items, with EFA values = 0.77-0.82 and α = 0.88), including: "Creating as many solutions to a problem as possible." The response scale uses a five-point Likert scale, not at all unequal.

Data analysis

The results of PL and LS data collection were then analyzed descriptively to portray the mean and standard deviation, and conduct prerequisite tests and statistical tests using correlational analysis. Suppose the results of the prerequisite test of normality and linearity prove the sig. <0.05, then the data is not normally distributed and not linear, and vice versa. While in statistical testing, if the sig. <0.05, then there is a significant correlation between PL and LS students, and vice versa. Furthermore, to assess the correlation coefficient, researchers used the categories: (1) 0.00-0.10 (negligible), (2) 0.10-0.39 (weak), (3) 0.40-0.69 (moderate), (4) 0.70-0.89 (strong), and (5) 0.90-1.00 (very strong) (Dancey & Reidy, 2020; Schober et al., 2018). The entire data tabulation and analysis process used the Microsoft Excel application and SPSS version 29.

Results

Descriptive analysis

Physical Literacy

Although this study did not examine the comparison of physical literacy (PL) based on gender group and class group, we still report the description data as additional information to the reader for the benefit of future studies. The descriptive analysis of the PL data proved that of the three indicators, all sample groups had a mean of >3.7 out of 5.0, whether based on gender groups or class groups (see Table 2). The indicator "Sense of self and self-confidence" received the highest response (3.8±0.9) in the male and XI and XII grade sample groups. The other two groups, namely the female group (3.7±0.8) and the class X group (3.7±0.9) gave low responses. Another interesting data, the indicator "Sense of self and self-confidence," received the lowest response of the other two indicators from the five sample groups, so this could be a potential study in future studies.

The second indicator, "Self-expression and communication with others," received the highest responses from the male (4.0±0.9), female (4.0±0.9), and class XII (4.0±0.9) sample groups. In contrast, the sample group with the lowest response was class X at 3.8±0.8. While in the last indicator, namely "Knowledge and understanding," the sample groups that gave the highest response were the male group (4.0±0.9) and group XII (4.0±0.8). The other groups gave a low response of 3.9±0.8. These data explain that the sample groups have "positive" PL. Furthermore, when described by PL items, the last item, "I am aware

of the benefits of sports related to health," has the highest value (4.4±0.7) of the total sample, while the items with the lowest response are items 3, 4, and 7.

Table 2. Description of indicators for each item in the physical literacy variable

No	Perceived physical literacy indicators	Gender group		Class group		
		Male	Female	X	XI	XII
		M±SD	M±SD	M±SD	M±SD	M±SD
1	Sense of self and self-confidence	3.8±0.9	3.7±0.8	3.7±0.9	3.8±0.9	3.8±0.9
2	Self-expression and communication with others	4.0±0.9	4.0±0.9	3.8±0.8	3.9±0.9	4.0±0.9
3	Knowledge and understanding	4.0±0.9	3.9±0.8	3.9±0.8	3.9±0.8	4.0±0.8

Life Skills

Of the eight indicators of life skills in sports (LS), the indicator that received the highest response from the five sample groups was the "Teamwork" indicator. On the other hand, the indicator that received the lowest response was the "Leadership" indicator, so we can also conclude that the "Leadership" indicator still has the potential to be explored in future studies, especially on how a person's participation in sports activities trains their leadership that supports life skills. In the gender group, the male group had better respondents on all eight LS indicators. Meanwhile, based on class groups, a positive trend was also traced in the higher class groups, where there was an increase in all LS indicators along with students' sports participation from grades X to XII.

The indicator "Teamwork" received the highest response from the male sample group, grade XI and grade XII, whereas grade X gave the lowest response (3.5±1.0). The indicator "Goal setting" received the highest response from the male sample group, class XI and class XII, while class X gave the lowest response. The indicator "Time management" received the highest response from the sample group of class XII (3.7±1.0), while class X gave the lowest response (3.5±1.0). The "Emotional skills" indicator received the highest response from the male sample group (3.5±1.1) and class XII (3.5±1.0), while class X gave the lowest response (3.2±1.1). The indicator "Interpersonal communication" received the highest response from the male sample group (3.5±1.1) and class XII (3.5±1.0), while class X gave the lowest response (3.1±1.1).

Furthermore, the "Social skills" indicator received the highest response from the male sample group and class XII, each with a value of 3.6±1.0, while class X gave the lowest response with a value of 3.4±1.0. The "Leadership" indicator received the highest response from the male sample group with a value of 3.5±1.1, while class X gave the lowest response of 3.2±1.1. Finally, the indicator "Problem solving and decision making" received the highest response from the male sample group, class XI and class XII. In contrast, class X gave the lowest response with a value of 3.3±1.0 (see Table 3).

Table 3. Description of indicators for each item in the life skills variable

No	Life skills for sport indicators	Gender group		Class group		
		Male	Female	X	XI	XII
		M±SD	M±SD	M±SD	M±SD	M±SD
1	Teamwork	3.7±1.0	3.6±0.9	3.5±1.0	3.7±0.9	3.7±0.9
2	Goal setting	3.6±1.0	3.5±0.9	3.5±1.0	3.6±0.9	3.6±0.9
3	Time management	3.6±1.0	3.6±0.9	3.5±1.0	3.6±0.9	3.7±0.9
4	Emotional skills	3.5±1.1	3.3±1.0	3.2±1.1	3.4±1.0	3.5±1.0
5	Interpersonal communication	3.5±1.1	3.4±1.0	3.3±1.1	3.5±1.0	3.5±1.0
6	Social skills	3.6±1.0	3.5±1.0	3.4±1.0	3.6±1.0	3.6±1.0
7	Leadership	3.5±1.1	3.3±1.0	3.2±1.1	3.4±1.1	3.4±1.0
8	Problem solving and decision making	3.6±1.0	3.4±1.0	3.3±1.0	3.6±1.0	3.6±0.9

Spearman's correlations

Prerequisite analysis of normality and linearity proved that the data of perceived physical literacy and life skills for sport were not normally distributed and not linear, respectively, the Kolmogorov-Smirnov and Shapiro-Wilk significance values were <0.001 (<0.050), and the deviation from linearity significance value was <0.001 (<0.050) (see Table 4). Thus, further statistical analysis used Spearman's rank correlation.

Table 4. Results of normality and linearity tests

	Kolmogorov-Smirnov	Shapiro-Wilk	Deviation from linearity
Physical literacy	<0.001	<0.001	<0.001
Life skills	<0.001	<0.001	

The total value of Spearman's correlation between the perceived physical literacy (PL) variable and the life skills for sport (LS) variable is 0.547 (sig. <0.001) which proves that there is a positive and significant correlation between PL and LS. This value (ρ = 0.547) (see Table 5) also proves that the correlation value is classified as moderate (0.40-0.69) (Dancey & Reidy, 2020; Schober et al., 2018). Furthermore, the intercorrelation test results confirm that all PL indicators significantly correlate with LS. The indicator that has the highest correlation is between "Self-expression and communication with others" and "Teamwork," with a value of 0.486 (sig. <0.001). Meanwhile, the indicator that has the lowest correlation is between "Knowledge and understanding" and "Emotional skills," with a value of 0.331 (sig. <0.001).

Table 5. Spearman's intercorrelation PL with LS

Perceived physical literacy	Life skills for sport								
	Teamwork	Goal setting	Time man-agement	Emotional skills	Interper-sonal communica-tion	Social skills	Leadership	Problem solving and dec. making	Total
Sense of self and self-confidence	0.431**	0.396**	0.392**	0.355**	0.393**	0.407**	0.386**	0.382**	0.448**
Self-expression and communication with others	0.486**	0.472**	0.441**	0.392**	0.387**	0.438**	0.406**	0.430**	0.498**
Knowledge and understanding	0.423**	0.436**	0.400**	0.331**	0.341**	0.380**	0.335**	0.357**	0.425**
Total	0.534**	0.516**	0.489**	0.428**	0.444**	0.488**	0.449**	0.467**	0.547**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Discussion

The results of this study have answered the research objectives, where there is a positive and significant correlation between PL and LS with a correlation value of 0.547, which is in the moderate category (0.40-0.69). This evidence extends the significance of PL in supporting students' self-development, which is not limited to physical and health aspects but is also beneficial for their LS development. This fact is motivated by physical literacy, offering a holistic, multidimensional concept of students' engagement in physical activities (Cornish et al., 2020) so that it becomes a meaningful determinant of student health and longevity (Lloyd et al., 2024). Physical literacy also makes students more analytical and critical in deciding the impacts and benefits of preferred physical activity participation while helping them master the movements learned (Blegur et al., 2023). It means that the concept of PL also helps students reframe alleviating their physical inactivity, poor health, and well-being by utilizing different and integrated approaches to physical activity, health, and well-being promotion (Durden-Myers, 2024). Physical literacy has also been shown to improve the quality and quantity of participation in sports and physical activity throughout life (Davids et al., 2016) by gradually increasing physical activity from moderate to vigorous (Yan et al., 2022).

In 2023, López Alonzo et al. (2023) investigated the PL perception of 2487 high school students in northern Mexico. This study also used the PPLI developed by Sum et al. (2018). As a result, men had better attitudes and skills in sports, had greater confidence to participate in physical activity, and were able to self-assess their health and physical condition than women. This study also confirms the previous study of López Alonzo et al. (2023) (see Table 2). On the other hand, the study by López Alonzo et al. (2023) found that only 31.6% of the sample considered that they could function socially during physical activity and/or sports. This data explains that high school students do not feel comfortable engaging in physical activity and sports or functioning socially. In contrast, this study found that students had better self-expression, communication with others, knowledge, and understanding than a sense of self and self-confidence (see Table 2). In addition, in testing correlations, this study found that the self-expression and communication with others indicators had a better correlation with all life skills indicators than the other two physical literacy indicators.

Physical literacy has a number of opportunities for the development of students' LS. When we look at the concept of PL, one of its components refers to the ability to be competent and confident in various sports activities and various environments and is conducive to the healthy development of the whole person, including emotions, body, and cognition (Edwards et al., 2017). It means that the simplification of PL's significance to health and education needs to be revisited, as PL also has the potential to assist students in improving their emotional and cognitive development in order for them to survive in a variety of environments (outside of physical activity and sport). Through the PL experience, students are motivated to utilize their potential to contribute significantly to quality of life. For example, improving quality of life in self-expression, regulating self-concept, increasing knowledge about the importance of physical activity, and strengthening mental health (Mayordomo-Pinilla et al., 2024). It makes them more confident, motivated, and able to understand and apply a healthy lifestyle with an active lifestyle (Gustian, 2020). The transfer of PL in good LS students makes them appreciate sports activities more to improve teamwork, goal setting, time management, emotional skills, interpersonal communication, social skills, leadership, problem-solving, and decision-making, which they need in life.

Durden-Myers et al. (2018) believe that PL can maximize human potential, thus contributing to human development. Physical literacy indicators such as sense of self and self-confidence, self-expression and communication with others, knowledge, and understanding can be expanded in their application in students' lives. For example, in the indicator of sense of self and self-confidence, students have paid attention to health by age, thus selecting what physical activities guarantee their fitness. This aspiration also coincides with their ability to self-manage, so the time, duration, intensity, and repetition of physical activities are well considered and controlled. Physical literacy teaches students to enjoy being active (Öztürk et al., 2023; Pavez-Adasme et al., 2023) and adhere to physical activity guidelines (Mazzoli et al., 2024). Students also evaluate their health periodically as a key outcome of their physical activity participation. The results serve as a reference for them to decide and re-manage their physical activity to ensure that their fitness is well maintained. This cyclical behavior helps them maintain physical fitness (Öztürk et al., 2023; Pavez-Adasme et al., 2023) and improve their long-term health (Nezondet et al., 2023). These three behaviors (perception, management, and evaluation) are also relevant to activities beyond physical activities, such as life skills. It is one of the justifications why the sense of self and self-confidence indicator (PL variable) is positively and significantly correlated with all LS indicators (see Table 5).

Self-expression and communication with others help students to use their PL to develop strong social skills so that they can interact in various social environments, maintain friendships, start conversations, participate in group activities, and help others without being asked, which is also an indicator of LS (Cronin & Allen, 2017). Not only that, PL also teaches students to rationalize their physical activity participation, which they can transfer to other activities outside of physical activities. The knowledge experience, psychological experience, and also social experience that students apply and develop in PL can be tested and developed outside of the sports environment so that the habituation and cultivation of students' positive skills in physical activity apply wherever they are, which are used to improve and develop students' holistic competence. Self-expression and communication with others are helpful for students in their daily lives by being able to handle problems and difficulties through their life skills in problem-solving and decision-making by thinking about a problem carefully, creating as many solutions as possible to a problem, comparing every possible solution to get the best solution, or evaluating solutions to a problem (Cronin & Allen, 2017).

The last, the knowledge and understanding indicator was also positively and significantly correlated with all LS indicators. A positive attitude towards their interest in physical activity, respecting themselves and others when exercising, and realizing the health benefits of their physical activity helps students have positive LS. If we look further, this indicator is highly correlated with goal setting ($\rho = 0.436$; sig. <0.001). It means that knowledge and understanding are vital for students to develop and formulate the quality of physical activity they do so that they can appreciate and be responsible for their long-term fitness and health (lifelong physical activity) (Cale & Harris, 2018). The better the students' knowledge and understanding, the better the quality of the goal-setting formulation. Of course, this is also very useful in formulating their goals, both for academic purposes, such as exploring forms of assignments and assessment techniques (cognitive, affective, and psychomotor), finding assessment strategies, and evaluating their performance results to assess the level of achievement or success (Blegur et al., 2021). Thus, positive experiences about knowledge and understanding developed in PL must also be optimized

for students' quality of life, which is not limited to health and education but is also used in career development and overcoming various phenomena in students' lives wherever they are and wherever they are active.

Conclusions

This study's results prove a positive and significant correlation between physical literacy and life skills in high school students. Features (indicators) in PL such as sense of self and self-confidence, self-expression and communication with others, and knowledge and understanding provide opportunities for developing students' LS in physical activity participation. The indicator that has the highest correlation is between "Self-expression and communication with others" and "Teamwork," with a value of 0.486 (sig. <0.001). If observed more specifically, the indicators "Sense of self and self-confidence" and "Self-expression and communication with others" (PL variables) correlate most highly with the indicator "Teamwork." While the indicator "Knowledge and understanding" correlates most highly with "Goal setting." Conversely, the indicator that has the lowest correlation is between "Knowledge and understanding" and "Knowledge and understanding" with "Emotional skills," which has a value. Furthermore, the indicator "Self-expression and communication with others" has the lowest correlation with the indicator "Interpersonal communication." Thus, students involved in physical activities throughout their lives can analyze various good practices and be transferred to various real-life practices.

Physical literacy benefits students' physical activity or health alone and contributes to the significance of LS indicators so that they can survive in organizing social-community and academic life appropriately. This positive correlation will not occur naturally but requires instruction, design, and intervention on how students use and maximize their PL. The results of this study show that PL is one of the positive arenas for training students' LS, so teachers need to integrate LS into various physical activities of students. This agenda will enrich students with physical activity useful for attitudes and behaviors that are meaningful to students' lives. Recently, many researchers have developed more complex physical literacy instruments by adding new indicators or using different indicators and also new items. For example, the Senior Perceived Physical Literacy Instrument (SPPLI) (Liu et al., 2022) and the Perceived Physical Literacy Questionnaire (PPLQ) (Holler et al., 2023) for future research can use new instruments to re-examine the correlation between PL and LS. Qualitative investigations on students' transition experiences using PL and their success in implementing LS are needed. The results will be beneficial for developing new PL indicators that support the efficacy of PL in students' meaningful lives.

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