

Influence of Physical Literacy and Motivation on Engagement in Physical Activities Towards Health and Fitness Subject

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ABSTRACT

This study investigated the effect of physical literacy and motivation on physical activity involvement of Physical Activity Towards Health and Fitness (PATHFIT) students in Davao de Oro, Philippines, in college students. The study used a quantitative, non-experimental correlational design, anchored on Self-Determination Theory (Deci & Ryan, 2002) and the student engagement framework of Fredricks et al. (2003). A total of 363 students in 3 higher education institutions were randomly selected for the study across the 2 PATHFIT courses (PATHFIT 2 and PATHFIT 4). Validated and adapted questionnaires were used to gather data regarding physical literacy, physical activity motivation and engagement. The data was analyzed by the mean, Pearson product-moment correlation and multiple regression analysis. Students had a high level of physical literacy ($M = 4.14$), very high level of motivation ($M = 4.27$) and high level of engagement in physical activities ($M = 4.11$). Physical literacy and physical motivation were both significantly related to engagement. Physical literacy accounted for 52.8% of the variance in engagement, with understanding being the strongest domain ($\beta = 0.432$). The variance explained by motivation was 64.9%, which was more than the variance explained by the other factors. In terms of all dimensions, intrinsic motivation proved to be the most significant factor for engagement in physical activities ($\beta = 0.427$, $p < .001$). Results indicated that enjoyment, interest, and internal satisfaction were the most important factors that maintained students' active involvement with PATHFIT and encouraged lifelong health and fitness.

Keywords: Physical Education, Physical Literacy, Motivation, Student Engagement, Multiple Regression Analysis, Philippines

INTRODUCTION

Physical activity is important for a student's overall health as well as for the educational and training system. The purpose of Physical Education (PE) is to develop vital motor skills necessary for work, study, and self-defense while also enhancing physical fitness. PE also has important aesthetic impacts that go beyond exercise itself; practitioners achieve harmonious bodily growth, attractiveness, and sensitivity. However, many students regard PE as less important compared to other academic subjects. Many college students still see PE as a challenging obstacle, showing that this perception persists nationwide. This situation can be attributed to several factors, including limited physical literacy and low or inconsistent motivation. These factors reduce learners' initiative and participation in physical activities. As a result, increasing students' involvement by considering these elements when teaching and studying PE becomes more important and necessary.

To support this claim, a substantial and expanding body of international evidence shows that regular physical activity (PA) is a key factor in preventing numerous chronic diseases (Cai et al., 2025; Tambalis, 2022). PA in childhood and adolescence is also associated with diverse positive outcomes, including healthier body composition, better cardiometabolic profiles, and improved mental and cognitive health (Cai et al., 2025; Tambalis, 2022). When compared with light-intensity activity, moderate-to-vigorous physical activity (MVPA) is linked to greater benefits such as better mental well-being, higher cardiorespiratory fitness, and less fat gain in adolescents (Cai et al., 2025; Sluijs et al., 2021; Ruiz-Ranz & Asín-Izquierdo, 2024). Despite this, surveillance data indicates that a large proportion of European children and adolescents fail to reach the recommended minimum of 60 minutes of MVPA per day, with many studies suggesting that only a minority meet these guidelines (Kelso et al., 2020). When MVPA is defined using accelerometer thresholds around 2000–3000

counts/min (for example, ≥ 2296 counts/min), compliance estimates often fall below 50% in European samples (Kelso et al., 2020). One crucial component of students' engagement in physical activity is motivation toward participation. School Physical Education (PE) serves as a practical strategy for promoting adolescents' PA, with PE teachers playing a significant role in influencing students' motivation (Barkoukis, Chatzisarantis, & Hagger, 2021).

Furthermore, the two independent variables in this study are grounded in Self-Determination Theory (SDT), originally formulated by Deci and Ryan (1985), a macro-theory of human motivation that explains how psychosocial and motivational processes regulate participation in physical activity and exercise (Ntoumanis & Moller, 2025). SDT examines how characteristics of the social environment and individual differences give rise to distinct forms of motivation particularly autonomous (e.g., intrinsic, identified) and controlled (e.g., introjected, external) regulation which in turn predict learning, performance, persistence, behavioral engagement, and psychological well-being across physical education and sport settings (Kruse et al., 2024; Ryan & Deci, 2020; Zhou et al., 2025). Within SDT, Basic Psychological Need Theory specifies that optimal functioning depends on satisfying three universal psychological needs: autonomy, competence, and relatedness (Slemp et al., 2024; Kruse et al., 2024). Recent meta-analytic and review evidence shows that environments supporting these needs foster more self-determined motivation, higher well-being, and better performance, whereas need-thwarting contexts are associated with maladjustment and lower activity levels (Slemp et al., 2024; Kruse et al., 2024; Ntoumanis & Moller, 2025). In physical activity and PE, autonomy-supportive, competence-supportive, and relatedness-supportive climates reliably predict greater self-determined motivation, higher moderate-to-vigorous physical activity, and stronger intentions to remain active (Cano & Gómez-Baya, 2025; Ntoumanis & Moller, 2025).

Additionally, the framework developed by Fredricks, Blumenfeld, and Paris (2004) serves as the foundation for student engagement, which is the dependent variable of this study. As a potential solution to declining academic motivation and achievement, the concept of school engagement continues to receive increasing attention. Fredricks, Blumenfeld, and Paris (2004) assert that student engagement in the classroom is multifaceted and shares similarities with several related constructs. Engagement is considered dynamic, responsive to contextual factors, and adaptable to changing conditions. It encompasses three key dimensions: behavioral, emotional (affective), and cognitive engagement. Scholars describe engagement as a complex construct that integrates these interrelated components, highlighting its critical role in students' learning and academic success.

Following this discussion, Figure 1 presents the conceptual framework of the study. As illustrated in the framework, the first independent variable is physical literacy (Holler et al., 2023), which consists of several key indicators. These include Physical Competence (PC), which refers to an individual's ability to perform a variety of physical activities effectively and confidently. Understanding (U) represents the cognitive component of physical literacy, wherein students acquire knowledge and awareness of the importance, principles, and benefits of physical activity and health. Motivation (M) serves as a determining factor in whether students actively engage in physical education and develop lifelong physical activity habits. Confidence (C) pertains to an individual's belief in their abilities, skills, and judgment to succeed in specific physical tasks or situations. Knowledge (K) extends beyond procedural skill execution and includes understanding the benefits of physical activity, body functions, safety and injury prevention principles, and psychological factors that support lifelong engagement in movement. Lastly, Physical Activity Behavior (PAB) refers to observable patterns of participation in physical activity, including frequency, intensity, duration, and type of activities performed. Overall, physical literacy encompasses the comprehensive attributes of students in relation to their engagement in physical activities.

The second independent variable is motivation, which consists of several regulatory dimensions. These include Amotivation (A), which refers to the absence of intention or lack of motivation to engage in a particular activity. External Regulation (ER) describes behavior that is driven by external rewards, demands, or punishments. Introjected Regulation (InR) represents a form of extrinsic motivation in which behavior is influenced by internal pressures such as guilt, anxiety, or the desire to maintain self-worth. Identified Regulation (IdR) occurs when an individual engages in an activity because they recognize and accept its personal value or importance, even if the activity itself is not inherently enjoyable. Lastly, Intrinsic Motivation (IM) refers to engaging in an activity for the inherent enjoyment, interest, or satisfaction it provides, rather than for external incentives or pressures. In the academic context, motivation reflects the degree to which students develop interest in learning activities and

how they perceive the outcomes of their performance. It influences their level of effort, persistence, and overall engagement in physical education activities.

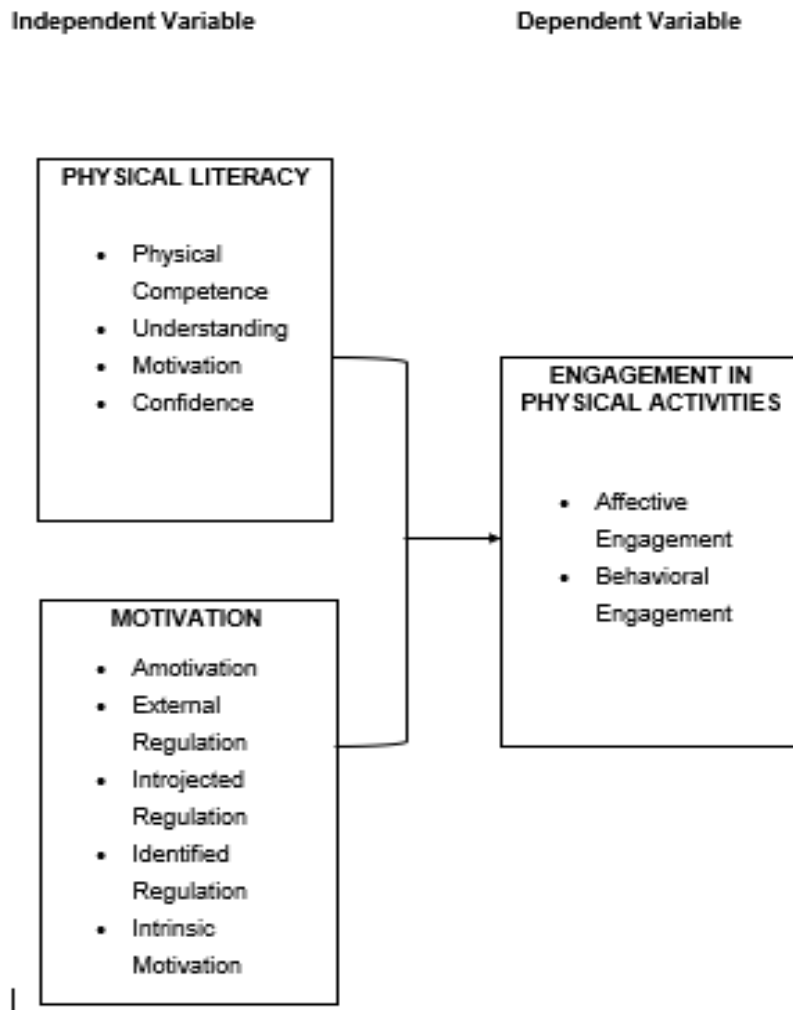


Figure 1. Conceptual Framework

Thus, this study aimed to provide a deeper understanding of the factors influencing student engagement in Physical Education (PE), which directly affects students' physical, social, and emotional development and promote healthier, more active lifestyles. Specifically, it examined how physical literacy and motivation influence students' participation, effort, and persistence in physical activities during PE classes.

The study assessed the level of perceived physical literacy among college students in terms of physical competence, understanding, motivation, confidence, knowledge, and physical activity behavior. It also evaluated students' motivation, including amotivation, external regulation, introjected regulation, identified regulation, and intrinsic motivation, as well as their engagement in terms of affective, behavioral, and cognitive dimensions. Furthermore, the study determined the significant relationship between physical literacy, motivation, and student engagement, and identified which domains significantly influenced engagement. The hypotheses were tested at a 0.05 level of significance.

The findings of this study were beneficial to the Commission on Higher Education (CHED), educators, school administrators, students, and future researchers. The results provided insights that could guide the development of policies, programs, and strategies aimed at improving student engagement in Physical Education. Teachers and administrators may also use the findings to design training and initiatives that enhance students' physical literacy and motivation.

Moreover, promoting physical literacy and motivation in physical activities supports the achievement of Sustainable Development Goal (SDG) 4, which emphasizes inclusive and quality education and lifelong learning. By fostering students' skills, confidence, and interest in physical activity, Physical Education programs contribute to students' overall well-being and holistic development.

MATERIALS AND METHODS

Research Respondents

The respondents of this study were college students enrolled in PATHFIT 2 (Physical Activity Towards Health and Fitness) and PATHFIT 4 during the second semester of the academic year 2024–2025 in Davao de Oro Province, Philippines. Only students who officially enrolled in these courses were included in the study, while those not enrolled in the specified PATHFIT courses were excluded. A total of 363 respondents participated in the study. The sample size was determined using the Raosoft Online Sample Size Calculator at a 95% confidence level from a total population of 6,295 PATHFIT students across the participating institutions. A random sampling technique was used to ensure that respondents were fairly selected from the different schools. Specifically, the respondents consisted of 101 students from Monkayo College of Arts, Sciences and Technology, 48 students from Assumption College of Nabunturan, and 181 students from Davao de Oro State College.

The study was conducted in the first district of Davao de Oro Province, which is located in the Davao Region in the southeastern part of Mindanao, Philippines. Formerly known as Compostela Valley, Davao de Oro covers a land area of approximately 4,560.09 square kilometers. According to the 2020 Census, the province had a population of 767,547, representing 14.64% of the total population of the Davao Region, 2.92% of the Mindanao island group, and 0.70% of the total population of the Philippines (DILG, 2021). The province is composed of several municipalities and hosts various educational institutions that provide opportunities for higher education and student development.

Research Instrument

In this study, the researcher utilized an adapted survey questionnaire to measure the variables of physical literacy, motivation, and student engagement. The instrument used to measure physical literacy was adapted from the Perceived Physical Literacy Questionnaire (PPLQ) developed by Holler et al. (2023) in the study titled "Development of the Perceived Physical Literacy Questionnaire (PPLQ) for the adult population." This part of the instrument consisted of indicators such as physical competence, understanding, motivation, confidence, knowledge, and physical activity behavior. The first section of the questionnaire assessed the level of perceived physical literacy among college students. Respondents rated each statement using a five-point Likert scale, with the following anchors: (5) Strongly Agree, (4) Agree, (3) Neutral, (2) Disagree, and (1) Strongly Disagree.

The second set of instruments measured the level of motivation among PATHFIT students. This questionnaire was adopted from the study "Measuring Student Motivation for Physical Education: Examining the Psychometric Properties of the Perceived Locus of Causality Questionnaire and the Situational Motivation Scale" by Lonsdale et al. (2011). The instrument included five indicators of motivation: amotivation, external regulation, introjected regulation, identified regulation, and intrinsic motivation. Like the first instrument, respondents evaluated each item using a five-point Likert scale ranging from (5) Strongly Agree to (1) Strongly Disagree. This allowed the researcher to determine the extent to which different types of motivation influenced students' participation in physical education activities.

The third instrument measured student engagement among Physical Education students and was adapted from the Student Engagement in Schools Questionnaire (SESQ) developed by Hart et al. (2011). This instrument consisted of several indicators including affective engagement, behavioral engagement, cognitive engagement, goal orientations, attributions, learning self-efficacy, and motivating instructional contexts. Each item was rated by respondents using the same five-point Likert scale from Strongly Agree to Strongly Disagree.

Prior to the conduct of the study, the validated quantitative survey instrument was pilot tested on 50 students of Colegio de Nabunturan (CDN). After the pilot testing of the instrument, it was analyzed to determine its

reliability index. The result of the reliability index on the instrument was 0.87, which was described as good.

Design and Procedure

This quantitative study can be described as a non-experimental correlational design in which regression analysis is applied to examine how variables are statistically related and to estimate the strength and direction of those relationships within a single population. Correlational research measures two or more variables without manipulation and uses statistics such as correlation coefficients and regression models to describe how strongly variables co-vary and to make predictions based on these associations (Putri et al., 2025; Prishchenko et al., 2021; Limberg et al., 2021). In such designs, regression analysis expresses the relationship between predictors and an outcome in a mathematical form, allowing estimation of effect size and direction and, in some cases, prediction of one variable from another (Prishchenko et al., 2021). This aligns with the core purpose of correlational studies: to identify and quantify factual associations between variables and to characterize the current state of a phenomenon rather than to experimentally test interventions.

Quantitative data was collected in this survey to describe the phenomenon. The quantitative aspect of the study was conducted through a well-planned schedule for collecting data that was tailored to the needs of the target audience. Survey questionnaires were used to compile the data for this study. The focus of the study was to determine the level of Physical Literacy and motivation on the engagement of college students. The correlational approach was used to measure two variables and assessed the statistical relationship (the correlation) between them with little or no effort to control extraneous variables. It aimed to find positive, negative, or zero correlation (Creswell & Creswell, 2017).

Table 1

Level of Physical Literacy

Indicators	Mean	SD	Description
Physical Competence	4.09	0.651	High
Understanding	4.31	0.752	Very High
Motivation	4.06	0.717	High
Confidence	4.08	0.787	High
Overall	4.14	0.42	High

The researcher followed several procedures in conducting this study. First, an outline defense was completed, and the research instruments were submitted for validation by both internal and external experts to ensure their appropriateness and accuracy. The researcher also sought approval from the University of Mindanao Ethics Review Committee (UMERC) and conducted pilot testing of the survey instrument to determine its reliability. In addition, permission and certification to conduct the research were obtained from the Program Coordinator of the Graduate School and the College School Administrator. After securing the necessary approvals, the researcher administered the survey to the respondents. Prior to answering the questionnaire, the respondents were given an orientation regarding the purpose of the study and were provided with instructions to ensure that their responses were complete and accurate. After the data collection process, the responses were tabulated, analyzed, and interpreted.

To analyze the gathered data, several statistical tools were utilized. The mean was used to determine the level of physical literacy and motivation in relation to the engagement of physical education students. Pearson-r correlation was employed to determine the significant relationship between physical literacy, motivation, and student engagement. Meanwhile, multiple regression analysis was used to assess the extent to which physical literacy and motivation significantly influenced the engagement of physical education students.

Ethical considerations were also carefully observed throughout the research process. Several ethical issues were addressed to ensure that the study was conducted responsibly and respectfully. These included obtaining the right to conduct the study, maintaining the confidentiality of the respondents' information, and ensuring their anonymity. The researcher ensured that all data collected were used solely for academic purposes and that the identities of the participants were always protected. These ethical practices were implemented to safeguard the rights and welfare

of the respondents involved in the study.

RESULTS AND DISCUSSION

Level of Physical Literacy

The results presented in Table 1 indicate that the respondents demonstrated a high overall level of literacy ($M = 4.14$, $SD = 0.42$). Among the four indicators, Understanding obtained the highest mean score ($M = 4.31$, $SD = 0.752$) and was described as Very High, suggesting that students exhibited stronger proficiency in this dimension of literacy. Physical Competence ($M = 4.09$, $SD = 0.651$), C ($M = 4.06$, $SD = 0.717$), and D ($M = 4.08$, $SD = 0.787$) were all interpreted as High. The relatively small standard deviations across indicators suggest consistency in responses, indicating that students shared comparable levels of literacy across the measured domains.

Similarly, the indicator “Confidence” earned a mean of 4.08 and standard deviation 0.787 which is interpreted as high, indicating that students often manifested physical literacy. This makes a high degree of evidence of the people suggesting that confidence is oftentimes evident among the respondents. This means that learners possess beliefs in their ability to successfully perform physical activities and this leads to them participating without hesitation. As supported by Fortnum et al. (2025), confidence is an important affective component of physical literacy, and it influences people's willingness to engage and persist in physical activities.

Lastly, the indicator “Motivation” got mean 4.06 having a standard deviation equal to 0.717, also labeled high, meaning that students often manifested physical literacy. This shows a high degree of evidence showing that motivation is oftentimes evident amongst the respondents. This suggests the fact that learners are normally driven and willing to participate in physical activities that are the lowest indicator. This is consistent with some current studies on motivation, which assume a key function in sustaining regular involvement and forming long-term habits of physical activity. As supported by Ha et al. (2025), motivation is widely recognized as crucial for maintaining regular participation and forming lifelong physical activity habits.

Overall, the findings imply that college students possessed well-developed literacy competencies across all indicators, with none falling below the “High” descriptive level. The very high mean score of Indicator B highlights a specific area of strength, while the remaining indicators still reflect a solid literacy foundation. Such results suggest that students are adequately equipped with the knowledge, understanding, and confidence necessary to support their academic engagement and participation in learning activities. High literacy levels may also facilitate more active involvement in classroom tasks and improve students’ capacity to benefit from instructional experiences.

These results are supported by existing literature emphasizing the role of foundational competencies in promoting student engagement and holistic development. The introduction underscores that students’ active participation in physical education and related learning contexts is strongly influenced by literacy, motivation, and confidence, which are shaped by structured educational environments and institutional support (Ryan & Deci, 2008; Fredricks et al., 2004). Moreover, higher levels of literacy and understanding enable students to recognize the value of learning tasks, thereby enhancing intrinsic motivation and sustained engagement in physical activities and academic pursuits (Barkoukis et al., 2021; Namoc, 2023). Consequently, the high literacy levels observed in this study reinforce the importance of well-designed educational programs and supportive policies in higher education institutions, as these serve as a foundation for meaningful engagement and lifelong learning.

Level of Motivation

The results in Table 2 show that the respondents exhibited a very high overall level of motivation ($M = 4.27$, $SD = 0.608$). Among the indicators, Intrinsic Motivation recorded the highest mean score ($M = 4.46$, $SD = 0.630$), followed closely by Amotivation ($M = 4.43$, $SD = 0.631$) and Identified Regulation ($M = 4.33$, $SD = 0.683$), all of which were interpreted as Very High. External Regulation ($M = 4.10$, $SD = 0.834$) and Introjected Regulation ($M = 4.04$, $SD = 0.843$) were rated as High. The standard deviation values suggest moderate variability,

indicating that while motivation levels were generally strong, some differences existed in students' motivational experiences across indicators.

Overall, the findings suggest that college students possessed a strong motivational orientation, with most indicators reaching the Very High descriptive level. The particularly high ratings of Indicators A, D, and E imply that students were highly driven and showed positive motivational dispositions toward participation and engagement. Even the indicators rated as High still reflect favorable levels of motivation, suggesting that students were generally willing to invest effort, persist in activities, and recognize the value of their learning experiences. This overall pattern highlights motivation as a key enabling factor that may enhance students' engagement and performance in academic and physical education contexts.

Table 2

Level of Motivation

Indicators	Mean	SD	Description
Amotivation	4.43	0.631	Very High
External Regulation	4.10	0.834	High
Introjected Regulation	4.04	0.843	High
Identified Regulation	4.33	0.683	Very High
Intrinsic Motivation	4.46	0.630	Very High
Overall	4.27	0.608	Very High

These findings are consistent with theoretical perspectives and empirical evidence discussed in the introduction, which emphasize motivation as a central determinant of student engagement and sustained participation in physical activities. Grounded in Self-Determination Theory, motivation—particularly autonomous and intrinsic forms—plays a crucial role in fostering persistence, enjoyment, and meaningful involvement in learning tasks (Ryan & Deci, 2008). Moreover, previous studies have shown that supportive learning environments and effective instructional practices in physical education significantly enhance students' motivation, leading to increased participation and positive educational outcomes (Barkoukis et al., 2021; García-Hermoso et al., 2020). Thus, the very high level of motivation observed in this study underscores the importance of nurturing motivational factors within higher education institutions to promote active engagement and holistic student development

Level of Engagement in Physical Activities

The results in Table 3 indicate that the respondents demonstrated a high level of physical activity (Overall $M = 4.11$, $SD = 0.548$). Among the indicators, behavioral Engagement obtained a slightly higher mean score ($M = 4.15$, $SD = 0.683$) compared to Affective Engagement ($M = 4.06$, $SD = 0.682$). Both indicators were interpreted as High, suggesting that students were actively engaged in physical activities and maintained favorable participation levels. The relatively close mean values and low standard deviations imply consistency in students' physical activity behaviors.

Table 3

Level of Engagement in Physical Activities



Indicators	Mean	SD	Description
Affective Engagement	4.06	0.682	High
Behavioral Engagement	4.15	0.683	High
Overall	4.11	0.548	High

Overall, the findings suggest that college students were generally physically active, exhibiting positive participation patterns across the measured indicators. Although the levels did not reach the "Very High" category, the

consistently high ratings indicate that students regularly engaged in physical activities to a meaningful extent. This level of participation may reflect students' awareness of the benefits of physical activity, as well as the influence of physical education classes and institutional initiatives that encourage movement, exercise, and active lifestyles.

These results align with the discussion in the introduction emphasizing the importance of physical activity in promoting students' health, fitness, and overall well-being. Prior studies cited in the introduction highlight that engagement in moderate to vigorous physical activity contributes to improved physical and mental health outcomes, particularly among college-aged individuals (Kalajas-Tilga et al., 2020). Furthermore, physical education in higher education institutions plays a crucial role in motivating students to remain active, as teachers and structured programs significantly influence participation and sustained engagement (Barkoukis et al., 2021). The high level of physical activity observed in this study therefore reinforces the value of well-designed physical education programs and supportive learning environments in fostering active lifestyles among college students.

Correlation Between Physical Literacy and Engagement in Physical Activities

Table 4

Correlation Between Physical Literacy and Engagement in Physical Activities

Independent Variables	Dependent Variable	r-value	P-value	Decision
Physical Competence	Engagement in Physical Activities	0.090	0.090	Ho is rejected
Understanding		0.670	<0.001	Ho is rejected
Motivation		0.640	<0.001	Ho is rejected
Confidence		0.210	<0.001	Ho is rejected

*p<0.05

Table 4 presents the results of the correlation analysis between the independent variables and the dependent variable. The findings reveal that all independent variables showed statistically significant relationships with the dependent variable at the 0.05 level of significance. Specifically, Physical Competence demonstrated a weak positive correlation with the dependent variable ($r = 0.090$, $p = 0.090$), leading to the rejection of the null hypothesis. In contrast, Understanding exhibited a strong positive correlation ($r = 0.670$, $p < .001$), Motivation also showed a strong positive relationship ($r = 0.640$, $p < .001$). Confidence revealed a weak to moderate positive correlation ($r = 0.210$, $p < .001$). These results indicate that increases in the independent variables were associated with corresponding increases in the dependent variable.

Overall, the findings suggest that the independent variables were significantly related to the dependent variable, although the strength of the relationships varied. Understanding and Motivation demonstrated the strongest associations, implying that these factors played a more influential role in predicting or explaining changes in the dependent variable. Meanwhile, Physical Competence and Confidence, despite showing weaker correlations, were still statistically significant, indicating that they contributed meaningfully to the dependent variable when considered within the broader model. The consistent rejection of the null hypotheses underscores the presence of meaningful relationships between the variables under investigation.

These results are supported by the theoretical and empirical discussions presented in the introduction, which emphasize that foundational factors such as literacy, motivation, and engagement-related attributes are interconnected and jointly influence students' participation and performance in physical activities. Grounded in Self-Determination Theory, motivation and related psychosocial factors are expected to significantly predict engagement outcomes, as higher levels of autonomous motivation and competence are associated with sustained involvement and positive behavioral outcomes (Ryan & Deci, 2008). Similarly, the engagement framework of Fredricks et al. (2004) highlights those cognitive, behavioral, and affective components that work together to shape student engagement. The significant correlations observed in this study therefore reinforce existing literature, suggesting that strengthening key independent variables can positively influence engagement in physical activities and related outcomes within higher education contexts

Correlation Between Motivation and Engagement in Physical Activities

Table 5 presents the correlation analysis between Motivation and the Students' engagement in Physical Activities. The results indicate that all indicators of Motivation were significantly correlated with the dependent variable at the 0.05 level of significance. Intrinsic Motivation demonstrated the strongest positive correlation ($r = 0.740, p < .001$), followed by Identified Regulation ($r = 0.703, p < .001$) and Amotivation ($r = 0.658, p < .001$), all reflecting strong associations. Introjected Regulation ($r = 0.342, p < .001$) and External Regulation ($r = 0.232, p < .001$) showed moderate to weak positive correlations. Given these results, the null hypothesis for all indicators was rejected.

Overall, the findings suggest that motivation had a substantial and meaningful relationship with the dependent variable. The strong correlations observed in Amotivation, identified Regulation, and Intrinsic Motivation imply that these motivational dimensions were particularly influential in explaining variations in the dependent variable. Although External regulation and introjected regulation yielded lower correlation coefficients, their statistically significant relationships indicate that they still contributed to the outcome. These results highlight the multidimensional nature of motivation, where certain components exert stronger predictive power while others provide supportive influence in shaping student outcomes.

Table 5

Correlation Between Motivation and Engagement in Physical Activities

Independent Variables	Dependent Variable	r-value	P-value	Decision
Amotivation	Engagement in Physical Activities	0.658	<0.001	Ho is rejected
External Regulation		0.232	<0.001	Ho is rejected
Introjected Regulation		0.342	<0.001	Ho is rejected
Identified Regulation		0.703	<0.001	Ho is rejected
Intrinsic Motivation		0.740	<0.001	Ho is rejected

* $p < 0.05$

These findings are consistent with the theoretical foundations discussed in the introduction, particularly Self-Determination Theory, which posits that motivation—especially autonomous and intrinsic forms—plays a central role in sustaining engagement and positive behavioral outcomes (Ryan & Deci, 2008). The introduction further emphasized that supportive learning environments and motivational factors in physical education significantly influence students' engagement in physical activities and related performance outcomes (Barkoukis et al., 2021). Moreover, the engagement framework of Fredricks, Blumenfeld, and Paris (2004) underscores that motivational components interact with behavioral and cognitive engagement to influence student participation. Thus, the strong and significant correlations observed between motivation and the dependent variable reinforce existing literature, underscoring the importance of fostering motivation to enhance engagement and active participation among college students.

Regression Analysis on the Influence of Literacy on Engagement in Physical Activities

Table 6 presents the results of the regression analysis examining the influence of physical Literacy on the dependent variable. The overall regression model was statistically significant, as indicated by the F-ratio of 98.82 with a p-value of $< .001$. The model explained 52.8% of the variance in the dependent variable ($R^2 = 0.528$), suggesting that physical literacy was a substantial predictor of the outcome variable. This indicates that more than half of the changes in the dependent variable could be attributed to the combined effects of the IV1 indicators.

In terms of individual predictors, Understanding ($B = 0.423, \beta = 0.432, t = 8.939, p < .001$) and Motivation ($B = 0.294, \beta = 0.352, t = 7.368, p < .001$) emerged as statistically significant predictors of the dependent variable. These findings suggest that increases in these indicators were associated with significant increases in the dependent variable. Conversely, Physical competence ($B = -0.008, \beta = -0.009, p = .808$) and Confidence ($B = 0.050, \beta =$

0.066, $p = .080$) did not show statistically significant effects, indicating that their unique contributions to predicting the dependent variable were minimal when other variables were controlled. The constant term was also statistically significant ($B = 1.066$, $p < .001$), reflecting the baseline level of the dependent variable when all predictors were held constant.

Table 6

Regression Analysis on the Influence of Physical Literacy on Engagement in Physical Activities

Independent Variable	Unstandardized Coefficient		Standardized Coefficient	t - value	p-value	Decision
	B	SE	β			
Constant	1.066	0.208		5.125	<0.001	Ho is rejected
Physical Competence	-0.008	0.034	-0.009	-0.243	0.808	Not Rejected
Understanding	0.423	0.047	0.432	8.939	<0.001	Ho is rejected
Motivation	0.294	0.040	0.352	7.368	<0.001	Ho is rejected
Confidence	0.050	0.029	0.066	1.753	0.080	Not Rejected
Dependent Variable: Engagement in Physical Activities						
R = 726	R ² = 0.528		F-ratio = 98.82		P-value= <0.001	

* $P < 0.05$

These findings align with the discussion in the introduction, which emphasized that not all components of foundational constructs exert equal influence on student engagement and outcomes. While physical literacy is generally recognized as an important determinant of participation and performance, certain dimensions—particularly those related to understanding, competence, and meaningful application, tend to have stronger predictive power (Fredricks et al., 2004; Ryan & Deci, 2008).

The significant effects of Indicators Understanding and Motivation suggest that specific literacy-related competencies play a more critical role in shaping engagement in physical activities, whereas other components may function as supporting factors rather than direct predictors. This supports the assertion that educational interventions should prioritize the most influential dimensions of physical literacy to maximize student engagement and participation in physical activities within higher education settings.

Regression Analysis on the Influence of Motivation on Engagement in Physical Activities

Table 7 presents the results of the regression analysis examining the influence of motivation on the dependent variable. The overall regression model was statistically significant ($F = 130.70$, $p < .001$), indicating that motivation significantly predicted the dependent variable.

The model yielded a high multiple correlation coefficient ($R = 0.806$) and explained 64.9% of the variance in the dependent variable ($R^2 = 0.649$), suggesting that motivation accounted for a substantial proportion of the changes in the outcome variable. This finding highlights the strong explanatory power of motivational factors in predicting the dependent variable.

Table 7

Regression Analysis on the influence of Motivation on Engagement in Physical Activities

Independent Variable	Unstandardized Coefficient		Standardized Coefficient	t - value	p-value	Decision
	B	SE	β			
constant	0.222	0.169		1.315	0.189	Not Rejected
Amotivation	0.167	0.044	0.176	3.794	<0.001	Ho is rejected
External Regulation	0.071	0.024	0.099	2.908	0.004	Ho is rejected
Introjected Regulation	0.058	0.025	0.082	2.357	0.019	Ho is rejected
Identified Regulation	0.210	0.043	0.239	4.846	<0.001	Ho is rejected
Intrinsic Motivation	0.405	0.046	0.427	8.872	<0.001	Ho is rejected
Dependent Variable: Engagement in Physical Activities						
R = 0.806	R ² = 0.649		F-ratio = 130.7		P-value= <0.001	

*P<0.05

Analysis of the individual predictors showed that all indicators of motivation, except the constant, were statistically significant. Intrinsic motivation emerged as the strongest predictor ($B = 0.405$, $\beta = 0.427$, $t = 8.872$, $p < .001$), followed by Identified regulation ($B = 0.210$, $\beta = 0.239$, $t = 4.846$, $p < .001$) and Amotivation ($B = 0.167$, $\beta = 0.176$, $t = 3.794$, $p < .001$). External regulation ($B = 0.071$, $\beta = 0.099$, $p = .004$) and Introjected regulation ($B = 0.058$, $\beta = 0.082$, $p = .019$) also showed significant but relatively smaller effects. The constant term was not statistically significant ($p = .189$), indicating that the dependent variable was largely explained by the combined contribution of the motivational indicators rather than by baseline effects alone.

These findings are consistent with the theoretical and empirical foundations discussed in the introduction, which emphasize motivation as a critical determinant of student engagement and participation in physical activities. Grounded in Self-Determination Theory, autonomous and intrinsic forms of motivation are posited to exert strong influences on sustained engagement, effort, and positive behavioral outcomes (Ryan & Deci, 2008). The introduction further highlighted that physical education environments that nurture motivation significantly enhances students' willingness to participate and remain engaged in physical activities (Barkoukis et al., 2021; García-Hermoso et al., 2020). The strong predictive power of motivation observed in this study reinforces these perspectives, underscoring the central role of motivation in shaping engagement-related outcomes among college students and supporting the need for motivationally supportive practices in higher education contexts.

CONCLUSION AND RECOMMENDATIONS

The findings of this study revealed that college students demonstrated high levels of physical literacy, very high levels of motivation, and high engagement in physical activities. Across the measured indicators, students showed strong competencies, positive motivational orientations, and consistent participation in physical activities. These results suggest that students possess the foundational knowledge, skills, confidence, and willingness necessary to actively engage in physical education and related movement-based activities within the higher education context.

Correlation analyses further confirmed that both physical literacy (IV1) and motivation (IV2) were significantly related to engagement in physical activities. While all indicators showed meaningful associations, motivational components generally exhibited stronger relationships with engagement compared to literacy components. This implies that although physical literacy provides an essential foundation, motivation plays a more direct and influential role in encouraging students to participate and persist in physical activities.

engagement in physical activities than physical literacy. Specific indicators under IV1 significantly influenced engagement, while others showed limited predictive power when analyzed simultaneously. In contrast, all indicators under IV2 significantly predicted engagement, with certain motivational dimensions exerting particularly strong effects. These results indicate that students' internal drive, perceived value of activities, and enjoyment are critical factors in sustaining active participation, beyond mere competence or knowledge.

The results of this study are consistent with the theoretical frameworks underpinning the research. Self-Determination Theory explains the strong influence of motivation, particularly autonomous and intrinsic motivation, on sustained engagement in physical activities. Likewise, the engagement framework highlights the interaction of cognitive, behavioral, and affective components in shaping student participation. Together, these theories support the conclusion that fostering motivation alongside physical literacy is essential in promoting meaningful and lasting engagement in physical education.

Based on the findings, it is recommended that higher education institutions continue to strengthen physical education programs that not only develop students' physical literacy but also intentionally enhance their motivation. PE instructors should employ learner-centered, autonomy-supportive strategies that promote enjoyment, personal relevance, and confidence in physical activities. Institutions may also provide varied and inclusive activity options to cater to diverse interests and abilities. Future research is encouraged to explore additional factors—such as instructional practices, learning environments, and psychosocial supports—that may further explain student engagement in physical activities. Longitudinal studies may also be conducted to examine how physical literacy and motivation influence lifelong physical activity behaviors beyond the college years and attendance percentage, demonstrating the significance of long-term results.

The model can, however, also indicate that classification is most problematic in the middle-performing groups wherein there is similarity in the academic profile of students and, in which case, they are more affected by psychological conditions such as motivation and anxiety over exams. In general, the research finds that academic performance is mainly influenced by the integration of historical performance and engagement, but emotional and behavioral attributes hold critical roles in discriminating students among the intermediary performance levels.

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