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Boosting physical education performance: how attitude and motivation instruments impact student success

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ABSTRACT

Background: The motivation of students plays a crucial role in their academic success by fostering enthusiasm and willingness to learn. Understanding the relationship between attitude, motivation, and learning outcomes is essential for enhancing educational practices. However, there is a need to investigate this relationship specifically in the context of high school students in Jambi City, where physical education (PE) is a vital component of the curriculum. **Research Objectives:** This study aims to explore the relationship between attitude, motivation, and learning outcomes among high school students in Jambi City. By employing a quantitative approach, the research seeks to analyze the extent to which attitude and motivation impact students' PE learning outcomes. **Methods:** A sample of 120 high school students from Jambi City was selected through saturated sampling. Data collection methods included observation, interviews, questionnaires, and documentation. The research employed various analytical techniques, including correlation analysis, prerequisite tests (normality and linearity tests), descriptive statistical analysis, and hypothesis testing (simple correlation, multiple correlation, significance tests—F-tests, and coefficients of determination). **Findings/Results:** The findings reveal a positive and significant relationship between attitude, motivation, and the PE learning outcomes of high school students in Jambi City. Descriptive analysis indicates generally positive attitudes and high motivation levels among the students. Correlation analysis demonstrates that both attitude and motivation contribute significantly to PE learning outcomes, with higher levels of attitude and motivation correlating with better outcomes. **Conclusion:** The study underscores the importance of attitude and motivation in influencing PE learning outcomes among high school students in Jambi City. These findings highlight the need for educational interventions that focus not only on academic content but also on fostering positive attitudes and motivation to enhance student engagement and performance in PE.

Keywords: Learning outcomes; motivation; attitude; physical education

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INTRODUCTION

Physical education is always included in the education curriculum in Indonesia. Physical education is an education that develops students' physical fitness and improves students' mental, social, and emotional health (Kliziene et al., 2021). According to Demchenko et al. (2021), physical education is the same as learning in schools; this term is related to the curriculum called Merdeka, which can at least encourage students to live healthy and active lives. In addition, physical education also helps build positive attitudes

in students, such as cooperation, discipline, and perseverance (Lavega et al., 2018; Parent et al., 2019; Samadov, 2019).

Students' views on physical education affect student engagement and the formation of students' skill levels in the learning process (Darling-Hammond, 2021). Physical education a positive attitude towards it makes students more enthusiastic and involved in learning activities (Akgunduz, 2016; Chinta et al., 2016; Craig et al., 2021). Several factors contribute to good attitudes, such as student motivation towards the benefits of physical education and support from the surrounding environment from supporters such as teachers and peers when possible (Correia & Harrison, 2020; Kjeldsen, 2019; Seven, 2019).

One of the motivational movements within students that can encourage their enthusiasm for learning physical education (Díez-Palomar et al., 2020; Akgunduz, 2016; Astatke et al., 2023). Motivation in physical education can be intrinsic or extrinsic facilitated by factors such as rewards and feedback, and social acceptance (Khusniati et al., 2023; Mailizar et al., 2020; Nahar, 2023). Factors such as physical conditions, learning environment, social support, and teachers' teaching methods also affect students' motivation levels in actively participating in physical education (Ugwuanyi, 2022; Fajri et al., 2021).

There is an interaction between attitude and motivation that can serve as a predictor of student achievement towards learning objectives in physical education (Aguelo & Aquino, 2023; Lukodono & Lin, 2023). For example, students who have a good attitude, as in this case, towards physical education class and tend to be more motivated tend to perform better and put more effort into completing each lesson (Mawardani et al., 2023; Ryan & Deci, 2020). Thus, there is a need to work on and develop students' attitudes and increase their motivation so that they can perform better in physical education classes.

Based on previous studies, it was found that physical education plays an important role in building students' physical and mental fitness, as well as forming positive characters (Brancaccio et al., 2020; Kusuma et al., 2021; Maulana et al., 2021). Students' attitudes towards physical education and their level of motivation have a significant relationship with learning outcomes, both in cognitive and motor skills (Alkasasbeh, 2023). However, these studies tend to be descriptive and have not explored much about how attitude and motivation measurement tools can be designed or used optimally to improve student success in this field (Demchenko et al., 2021; Lavega et al., 2018). On the other hand, physical education is often underestimated, so that research is urgently needed that can prove that managing students' attitudes and motivation can have a real impact on their physical education performance.

The urgency of this research lies in the importance of finding innovative approaches to improving student success in physical education, given challenges such as lack of student interest, unsupportive learning environments, and negative views of physical education as a secondary subject. With an approach based on attitude and motivation instruments, this study aims to provide more measurable and practical insights.

The novelty of this research lies in examining the relationship between attitudes and motivation in the context of physical education achievement, rather than investigating them as separate factors. This study confirms a positive relationship between attitude, motivation, and student learning outcomes (Kliziene et al., 2021; Kurniawan et al., 2022). The primary objective is to identify how attitude and motivation instruments influence student success in physical education. Furthermore, this study analyzes the extent to which these factors contribute to improving students' physical education achievement

and provides recommendations for the development of more effective learning strategies in this field.

METHOD

Type of Research

This research uses qualitative research. This quantitative investigation suggests a particular type of relationship (Almonacid-Fierro et al., 2021; Gultom et al., 2020; Shelley & McCuaig, 2018). In this study, the research subjects were students. The sampling technique is saturated sampling. Saturated sampling is a sample determination technique. If all members of the population are used as a sample, another term for a saturated sample is a census, where all members of the population are used as a sample (Suriani et al., 2023). Physical education learning objectives are the only dependent variable in this research, while motivation and attitude are two independent factors.

Participants

The participants of this study consisted of high school students in Jambi City. Specifically, the sample included 120 students, selected using a saturated sampling method. This approach ensures that every member of the target population who meets the criteria is included in the sample, thus providing a comprehensive representation of the demographics of high school students in Jambi City. The selection of this sampling technique aims to maximize the reliability and validity of the research findings, as it includes a wide range of students, reflecting the various backgrounds and characteristics present in the student population in the city. In terms of gender, the sample includes male and female students with a relatively balanced proportion, allowing this study to explore possible differences or similarities in results based on gender. In terms of age, the majority of respondents are in the 16–18-year range, in accordance with the age range of high school students in general. By involving a large number of participants, this study can produce stronger and more generalizable conclusions about the experiences and educational outcomes of high school students in Jambi City.

Instrument

The instruments used in this study include recording, surveys, interviews, and observations. Questionnaires were used in this study to collect information about each student's motivation and attitude towards learning. Meanwhile, the results of the Odd Semester Daily Exam given during the 2023–2024 academic year were used to determine the learning objectives of Physical Education.

In using this observation method the researcher holds a check-list to look for existing variables determined. If the variable you are looking for exists or appears, then the researcher just needs a check or tally mark in the appropriate place. To record things of a nature free or not yet specified in the list of variables, researchers can use free sentences. Interviews are used using open interview techniques, where respondents are free to answer according to their thinking tools. As data sources are administrators of facilities and infrastructure, practicing teachers who teaches physical education subjects (Khadavi & Maulana, 2020).

The attitude questionnaire instrument in this research was developed by Yilmaz and Çavaş (2007) with 35 valid statements and a Cronbach's alpha of 0.886. Meanwhile, the motivation questionnaire instrument was adapted from Maulana et al. (2021) with 40 valid statements and a Cronbach's alpha of 0.847. The detailed grid of the attitude questionnaire items can be seen in Table 1, which provides the distribution of indicators and statement items used in this study. Furthermore, the grid of the motivation

questionnaire items is presented in Table 2, which outlines the dimensions and indicators measured to assess students' motivation levels comprehensively.

Table 1. Grid of Attitude Questionnaire Items

Indicator	Item Count
Social Implications	1,2,3,4,5
Teacher Normalization	6,7,8,9,10
Attitude towards investigation	11,12,13,14,15
Adaptation of a scientific attitude	16,17,18,19,20
Enjoyment in learning	21,22,23,24,25
Interest increases study time	26,27,28,29,30
Career linkages	31,32,33,34,35
Total	35

Table 2. Motivation Questionnaire Grid

Indicator	Item Count
Presence and Active Participation	1,2,3,4
Enthusiasm and interest	5,6,7,8,9,10
Effort and Perseverance	11,12,13,14,15
Goals and Aspirations	16,17,18,19,20
Cooperation and Healthy Competition	21,22,23,24,25
Self-confidence and Self-esteem	26, 27,28,29,30
Positive feedback and self-assessment	31,32,33,34,35
Commitment to health and fitness	36,37,38,39,40
Total	40

Research Procedures

The research procedure was carried out by selecting students according to research categories and giving them questionnaires regarding their cognitive psychology. Figure 1 shows the data collection procedures used in this study.

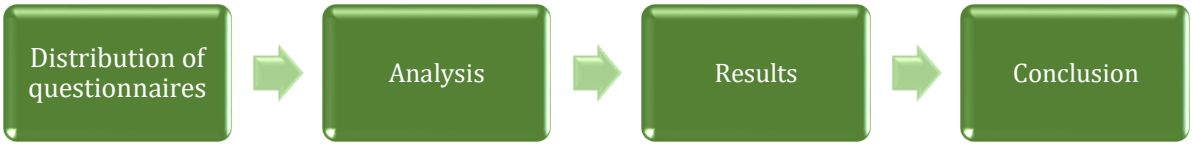

Figure 1. Research Procedure

Data Analysis

The present study employed the following data analysis techniques: (i) preliminary testing, which included assessing normal distribution, linearity, and multicollinearity; (ii) descriptive statistical analysis; and (iii) hypothesis testing, which encompassed simple correlation, multiple correlation, significance (F-tests), and coefficient of determination assessments.

RESULTS AND DISCUSSION

The study's findings are conveyed through graphical representations, tables, or descriptive summaries. The descriptive analysis results serve to characterize the data pertaining to each variable. Specifically, this research outlines descriptions of the independent variables, such as attitudes and motivation, along with descriptions of the dependent variable data, which pertains to students' physical education learning outcomes.

Results of Descriptive Analysis of Attitude

The attitude questionnaire has 35 items total in terms of statements. The following table shows the findings of the student attitude questionnaire:

Table 3. Attitude Categories

Score interval	Frequency	Percentage	Average score	Category
25 – 43	0	0 %	75.206	Good
44 – 62	0	0 %		
63 – 81	90	75 %		
82 – 100	30	25		

This table displays the distribution of student attitudes towards PE based on score intervals. Majority of students (75%) exhibit 'Good' attitudes towards physical education (PE), with an average score of 75.206. The attitude questionnaire consists of 35 items, categorizing students based on score intervals.

Results of Descriptive Analysis of Motivational

The motivation questionnaire consisted of 40 items. The outcomes of the student motivation questionnaire are displayed in the subsequent table:

Table 4. Motivation Categories

Score interval	Frequency	Percentage	Average score	Category
25 – 43	0	0 %	78.501	Good
44 – 62	0	0 %		
63 – 81	66	79.2 %		
82 – 100	30	20.8 %		

Here, the breakdown of student motivation levels towards PE is presented, categorized by score intervals. A significant portion of students (79.2%) demonstrate 'Good' motivation levels towards PE, with an average score of 78.501. The motivation questionnaire consisted of 40 items, segmented into score intervals for analysis.

Results of Descriptive Analysis of Physical Education Learning Outcome

In this study, the physical education learning outcomes were derived from the daily physical education test scores of the students. The distribution of PE learning outcomes among students, categorized by score intervals, is shown in this table.

Table 5. Physical Education learning outcome categories

Score interval	Frequency	Percentage	Average score	Category
< 70	21	17.64	78.29	Fair
70 – 79	38	31.93		
80 – 89	40	32.77		
90 – 100	21	17.64		

Students' PE learning outcomes are diverse, with varying frequencies across score intervals. Scores range from below 70 to 100, with the highest frequency observed in the 80-89 score interval.

Prerequisite Test Findings

Normality Test

Employing the Kolmogorov-Smirnov test model, the normality test aims to ascertain whether the data for each variable conforms to a normal distribution (Hernandez, 2021;

Mbah & Paothong, 2015; Psaradakis & Vávra, 2020). The normality test results show the significance value of Asymp .Sig (two-tailed) can be seen in Table 6.

Table 6. Normality Test Results

Data Normality Test	Asymp.Sig (Two-Tailed)	Significance Threshold	Conclusion
Attitude	0.200	0.05	Data is normally distributed (assumptions met)
Motivation	0.200	0.05	Data is normally distributed (assumptions met)

The results of the normality test above show that the attitude and motivation data are normally distributed with a significance value of 0.200, which means > 0.05.

Linearity Test

In a statistical context, a linearity test is a procedure for testing whether the relationship between two variables meets the assumption of linearity (Basri et al., 2022; Kuhfeld & Soland, 2021; Li et al., 2021). The following linearity test results can be seen in Table 7.

Table 7. Linearity Test Results

Independent Variable	Dependent Variable	Significance (Deviation from Linearity)	Threshold Significance	Conclusion
Attitude	Physical education learning outcomes	0.213	0.05	The relationship is linear
Motivation	Physical education learning outcomes	0.734	0.05	The relationship is linear

The assessment of the linearity of the attitude variable with the learning outcomes of physical education produces a significant value for deviation from linearity of 0.213, exceeding 0.05. Therefore, it can be concluded that there is a linear relationship between attitudes and learning outcomes of physical education. Likewise, the assessment of the linearity of the motivation variable with the learning outcomes of physical education shows a significant value for deviation from linearity of 0.734, exceeding 0.05. As a result, it can be concluded that there is a linear relationship between motivation and learning outcomes of physical education.

Multicollinearity Test

The results of the multicollinearity test indicate that the variance inflation factor (VIF) values for the two independent variables, namely attitude and motivation, are 1.328, which falls below the threshold of 10. Furthermore, the tolerance value is 0.634, surpassing the threshold of 0.10. Thus, it can be inferred that there is no evidence of multicollinearity among the independent variables.

Table 8. Multicollinearity Test Results

Independent Variable	VIF	Threshold VIF	Tolerance	Threshold Tolerance	Conclusion
Attitude	1.328	< 10	0.634	> 0.10	No indication of multicollinearity
Motivation	1.328	< 10	0.634	> 0.10	No indication of multicollinearity

Hypothesis Analysis

This research employs various techniques for hypothesis analysis, including simple correlation analysis, multiple correlation analysis, significance tests (F-test), and coefficient of determination test.

The Relationship between Attitudes and Learning Outcomes

The research utilizes the product moment correlation test for simple correlation analysis, conducted with the assistance of the SPSS program. The calculated results are presented in the following table:

Table 9. Correlation Test Results of Attitudes and Physical education learning outcomes

r count	Error level	Sig.	Determination Test
0.734	0.05	0,000	55 %

Based on Table 9, the outcomes of the simple correlation test between attitude variables and physical education learning outcomes indicate that the calculated correlation coefficient (r value) surpasses the critical value (r table), with a value of 0.734 > 0.195. Moreover, the significance value (sig) is 0.000, signifying significance at the 0.05 level. Consequently, the alternative hypothesis (Ha 2) is accepted. Attitudes contribute to 55% of physical education learning outcomes, implying that 55% of the variance in physical education learning outcomes can be ascribed to attitudes, while the remaining 45% is influenced by other undetermined factors. Based on these findings, it can be inferred that there exists a positive and significant relationship between attitudes and physical education learning outcomes among high school students in Jambi City. This suggests that higher levels of student attitudes correlate with better physical education learning outcomes, and vice versa. Regarding the relationship between motivation and learning outcomes, the research utilizes the product moment correlation test for simple correlation analysis, facilitated by the SPSS program. The calculated results are outlined in the subsequent table.

Table 10. Correlation Test Results of Motivation and Physical Education Learning Outcomes

r count	Error level	Sig.	Determination Test
0.546	0.05	0,000	21 %

Table 10 presents the results of the motivation correlation test with physical education learning outcomes, showing that the calculated correlation coefficient (r value) exceeds the critical value (r table), namely 0.546 > 0.195. Therefore, it can be concluded that there is a significant relationship between motivation and physical education learning outcomes among high school students in Jambi City. This finding indicates that the higher the level of student motivation, the greater the improvement in physical education learning outcomes, and vice versa. Furthermore, to examine the relationship between attitude, motivation, and learning outcomes, this study employed a simple correlation test using the product-moment correlation method with the assistance of the SPSS program. The calculation results are presented in Table 11.

Table 11. Correlation Test Results of Attitudes and Motivation with Physical Education Learning Outcomes

r count	Error level	Sig.	Determination Test
0.734	0.05	0,000	55 %

The results of the correlation test of attitude and motivation with physical education learning outcomes found a significant value of 0.002, which means it is smaller than the alpha value of 0.05, so it can be concluded that there is a relationship between attitude and motivation with physical education learning outcomes.

Based on the results of the study, it shows that there is a positive and significant relationship between attitude, motivation, and physical education learning outcomes in high school students in Jambi City. With a multiple correlation coefficient of 0.734 and a calculated F value of 71.304, which far exceeds the F table value of 3.09, it can be concluded that attitude and motivation influence students' physical education learning outcomes.

This study provides empirical evidence that strengthens the importance of the role of psychological factors, namely attitude and motivation, in supporting the achievement of physical education learning outcomes. These findings have important implications for the world of education, especially in efforts to improve the quality of physical education learning in high schools (Hahn & Klein, 2022; Oh et al., 2021).

These findings suggest that an approach that only focuses on the physical and cognitive aspects of learning is not fair. Positive attitudes and high motivation are important elements that can increase student engagement and student learning outcomes (Asmal et al., 2023; Fatonah & Wicaksana, 2023; Herpratiwi & Tohir, 2022). Therefore, educators and policy makers need to develop strategies that prioritize strengthening student attitudes and motivation, for example through more interactive learning programs and rewarding student efforts.

In line with previous studies that both highlight the important role of psychological factors. In previous studies, psychological factors, especially sleep quality, influencing emotional well-being and self-regulation abilities in mothers and children. This study concludes the need for psychological support and special programs for families in facing these challenges (Tang et al., 2023; Whitney, 2014). The alignment between the two studies lies in the emphasis on the important role of psychological factors in positive outcomes, both in the context of emotional well-being during difficult times (previous research) and in the success of formal education (current research) (Syahrizal & Pamungkas, 2021). Both suggest that interventions that address psychological aspects such as attitudes, motivation, and emotional well-being are key to supporting individual well-being and educational achievement.

Based on previous research that shows the importance of psychological factors in education (Dai et al., 2021; Ryan & Deci, 2020). Positive attitudes towards a subject and high motivation have been shown to encourage deep student engagement and improve their learning outcomes (Saltan & Arslan, 2017). In the context of this study, students' physical education learning outcomes in Jambi City are supported by good attitudes and motivation, indicating that these two factors are strong predictors of student success in physical education.

The novelty of this study lies in the integrative approach that combines attitudes and motivation as the main psychological variables in predicting physical education learning outcomes. This is different from previous studies that only explored these variables separately or in the context of other subjects (Hamzah et al., 2021; Irmansyah et al., 2020). This study highlights the importance of psychological factors in physical education, thus

providing a new perspective in learning management. One limitation of this study is that the data collected only came from high school students in Jambi City, so the results may not be generalizable to other contexts or populations.

The implementation of this research can explore the complex interactions between factors that influence learning outcomes, both in physical education and other subjects. In addition, further research is recommended for the development of effective interventions to improve students' attitudes and motivation, such as non-cognitive skills training or teacher empowerment in creating a supportive learning environment. This research makes a significant contribution to understanding the factors that influence the success of physical education, while also offering strategic directions to improve the overall quality of learning.

CONCLUSION

This study concludes that both attitude and motivation play a crucial role in shaping students' physical education learning outcomes. The findings reveal that attitude alone contributes 55% and motivation contributes 21% to learning outcomes, while their combined influence, reflected in a multiple correlation coefficient of 0.734 with a highly significant F value, demonstrates a strong and meaningful relationship. These results highlight that positive attitudes and high motivation are not only supportive factors but also key predictors of student success in physical education. The study emphasizes that fostering psychological aspects such as enthusiasm, persistence, and engagement is just as important as focusing on physical and cognitive skills. Therefore, educators and policymakers are encouraged to design learning strategies that strengthen student attitudes and motivation, ensuring a more holistic approach to improving achievement in physical education.

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CONFLICT OF INTEREST

No conflicts of interest related to the research were reported.

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