

The Influence of School Environment and Teacher Role on Elementary Students' Motivation in Physical Education Learning

Muh. Haerul Hafiz¹, Maulidin², Edi Kurniawan³

¹²³Pendidikan Jasmani, Fakultas Ilmu keolahragaan dan Kesehatan Masyarakat, Universitas Pendidikan Mandalika, Nusa Tenggara Barat, Indonesia

Authors email: muhhaerulhafiz@gmail.com, maulidin@undikma.ac.id, edikurniawan@undikma.ac.id

Correspondent Author: maulidin@undikma.ac.id

Received: May 21, 2026; Accepted: July 20, 2026; Published: September 30, 2026

Ed: 2026: 450-462

Abstract

Learning motivation is an essential prerequisite for successful Physical Education (PE) learning in elementary schools because physical education requires physical engagement, willingness to perform movement tasks, rule compliance, and positive social interaction. This cross-sectional correlational survey analyzed the associations between perceived school environment, perceived teacher role, and self-reported PE learning motivation among students at SDN 2 Songak. The respondents were 67 upper-grade elementary students who completed self-report questionnaires on the school environment, teacher role, and PE learning motivation. Data were analyzed using descriptive statistics, instrument screening, Pearson correlation, assumption testing, multiple linear regression, and bootstrap coefficient checks. The results showed that students' PE learning motivation was in the very high category ($M = 58.37$ out of 64; 91.21%). Teacher role was positively correlated with PE learning motivation ($r = 0.276$; $p = 0.024$), whereas the school environment was not significantly correlated with motivation ($r = -0.181$; $p = 0.144$). The school environment items showed weak internal consistency (Cronbach's $\alpha = 0.279$); therefore, findings involving this variable should be interpreted cautiously. Multiple regression indicated a statistically significant but low-explanatory model, $F(2,64) = 3.725$; $p = 0.030$; $R^2 = 0.104$; adjusted $R^2 = 0.076$. Partially, teacher role showed a significant but modest positive association with PE learning motivation ($B = 0.266$; $\beta = 0.268$; $p = 0.027$), while the school environment was not significant ($B = -0.301$; $\beta = -0.168$; $p = 0.162$). The findings suggest that teacher role is more consistently associated with students' motivation than the school environment in this limited sample, but causal claims and broad generalization should be avoided.

Keywords: Elementary Students; Learning Motivation; Physical Education; School Environment; Teacher Role

INTRODUCTION

Physical Education (PE) occupies a strategic position in elementary education because it develops students not only in motor skills and physical fitness but also in sportsmanship, healthy habits, confidence, and social competence (Fadriana et al., 2024; Muhadi et al., 2024; Panjaitan & Fardana, 2023). As an integral part of the national education system, PE contributes to cognitive, affective, and psychomotor development through planned physical activities (Dinata & Karno, 2023; Saputro et al., 2023). In the Merdeka Curriculum, PE is oriented toward active, meaningful, contextual, and student-centered learning experiences that support knowledge, movement skills, attitudes, and health values (Kanduwi et al., 2024; Sudrajat et al., 2023). For this reason, the quality of PE learning should be understood not only from motor performance, but also from students' engagement, participation, and motivation during the learning process (Maesara et al., 2023; Permana et al., 2024; Zabidi et al., 2023).

Learning motivation is central to physical education outcomes because it encourages students to participate in physical activities, persist in movement tasks, follow rules, and develop long-term physical activity habits (Chen et al., 2020). Students with higher intrinsic motivation tend to show stronger participation and more positive learning experiences, whereas low motivation may reduce

engagement in PE lessons (Brisimis et al., 2020; Işıkgöz, 2025). Self-determination theory (SDT) provides a relevant theoretical foundation because it explains motivation through the satisfaction of autonomy, competence, and relatedness (Aniszewski & Henrique, 2023; Simón-Chico et al., 2023). In elementary PE, these needs are closely connected with students' opportunities to make choices, feel capable of performing movement tasks, and experience supportive relationships with teachers and peers.

The role of the PE teacher is central in creating a learning climate that supports these psychological needs. Teachers who provide autonomy support, clear demonstrations, meaningful choices, rational explanations, constructive feedback, and opportunities for success can increase students' interest, enjoyment, perceived competence, and willingness to participate (Tian & Shen, 2023; Maulidin & Wira Panji, 2020). Empirical studies also indicate that perceived teacher support is positively related to student engagement and motivation, with psychological need satisfaction and autonomous motivation acting as important mediators (Cuevas-Campos et al., 2020; Luo et al., 2025). Thus, teacher role is not merely an instructional function; it is also a motivational resource that shapes how students perceive competence, safety, enjoyment, and belonging during PE learning (Santoso Budi et al., 2023; Yun et al., 2025).

Despite the growing body of research on PE learning motivation, three issues justify the present study. First, elementary-level PE motivation remains less specifically explored than studies involving older students or broader physical education contexts (Susila, 2022). Second, previous studies often examine teacher support, school facilities, learning methods, or social environment separately, whereas the combined analysis of ecological and pedagogical factors remains limited. Third, the specific context of SDN 2 Songak provides a local empirical setting for examining whether students' motivation is more closely associated with perceived teacher role or perceived school environment. This distinction is important because facilities and learning conditions can support motivation, but teacher-related factors such as instructional clarity, enthusiasm, feedback, and student-centered strategies may be more directly experienced by students during each PE lesson (Del Valle Díaz et al., 2021; Hadi et al., 2022).

This study aims to examine the associations between perceived school environment, perceived teacher role, and students' motivation in PE learning among upper-grade elementary school students at SDN 2 Songak. Specifically, the study investigates the individual and simultaneous relationships of school environment and teacher role with PE learning motivation and identifies their relative associations within the proposed statistical model. Rather than establishing causal effects, the study seeks to provide context-specific empirical evidence regarding how ecological and pedagogical factors are related to students' motivation to participate in elementary PE learning.

The contribution of this study lies in jointly examining perceived teacher role and school environment as pedagogical and ecological correlates of elementary students' motivation in Physical Education (PE) within a single analytical model. Informed by Self-Determination Theory, which emphasizes autonomy, competence, and relatedness in understanding motivation (Aniszewski & Henrique, 2023), the study extends the contextual examination of teacher-related support (Cuevas-Campos et al., 2020; Tian & Shen, 2023), while the school environment remains relevant in providing facilities, safety, and a supportive learning environment (Ordóñez et al., 2023). The novelty of this research is primarily contextual and analytical: a cross-sectional correlational design was used to examine the relationship between perceived factors and Physical Education learning motivation in the same sample. This study did not directly test psychological need satisfaction or causal

mechanisms. In addition, the low internal consistency of the school environment instrument requires that the findings of this study be viewed as exploratory in nature, thereby limiting conclusions regarding the relative importance of pedagogical and ecological factors.

The study is limited to 67 Grade IV–VI students aged 10–12 years at SDN 2 Songak, comprising 34 boys and 33 girls. It employs a quantitative cross-sectional correlational survey design and focuses on three student-reported variables: school environment, teacher role, and PE learning motivation. The analysis covers descriptive statistics, instrument screening, Pearson correlation, assumption testing, multiple linear regression, and bootstrap coefficient checks. Consequently, the findings are restricted to associations within the sampled school context and should not be interpreted as causal relationships or generalized broadly to all elementary school students.

METHODS

Research Design

This study employed a quantitative cross-sectional correlational survey design to examine the relationships among perceived school environment, perceived teacher role, and elementary students' motivation in learning Physical Education (PE) at SDN 2 Songak. The term causal-associative was avoided because the present design measured variables at one point in time through student questionnaires and did not involve experimental manipulation, random assignment, or longitudinal observation. Therefore, the findings are interpreted as associations rather than causal effects. The school environment and teacher role were treated as independent variables in the regression model, while PE learning motivation was treated as the dependent variable.

Research Subjects and Procedures

The research subjects were 67 upper-grade elementary school students at SDN 2 Songak who had participated in PE learning activities. The respondents were selected using total sampling from all upper-grade students who were present and met the inclusion criteria during data collection. The sample consisted of Grade IV ($n = 22$), Grade V ($n = 23$), and Grade VI ($n = 22$) students aged 10–12 years, with 34 boys and 33 girls. A total of 67 questionnaires were distributed, returned, and declared usable, resulting in a usable response rate of 100%. The inclusion criteria were being registered as an upper-grade student at SDN 2 Songak, having participated in PE learning during the current semester, being present during data collection, and being willing to complete the questionnaire. Students with incomplete questionnaire responses would have been excluded from the analysis.

Data collection was carried out by distributing questionnaires after the researcher explained the purpose of the study and the instructions for completing the instrument. Research permission was obtained from the school principal before data collection. Because the participants were elementary school students, parental/guardian consent and student assent were obtained before participation. Students were informed that participation was voluntary, their responses were anonymous, and their answers would not affect PE grades. The PE teacher was not involved in administering the questionnaire to reduce social desirability bias. Students completed the questionnaires independently under researcher supervision, and clarification was provided only when students did not understand item wording. The collected responses were checked, coded, and tabulated for statistical analysis.



Figure 1. Research subjects and procedures

Research Instrument

The research instrument consisted of three Likert-scale questionnaires measuring the school environment, teacher role, and PE learning motivation. Each variable was measured using 16 statement items with a theoretical score range of 16-64. The response options used a four-point Likert format: 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree. All items were written as favorable statements; therefore, no reverse coding was applied. Higher scores indicated more positive perceptions of the school environment, stronger perceived teacher role, and higher PE learning motivation.

The school environment questionnaire covered physical and social aspects of PE learning, including facilities, infrastructure, safety, comfort, and the learning atmosphere. The teacher role questionnaire measured the teacher's function as motivator, facilitator, guide, feedback provider, classroom manager, and creator of enjoyable learning activities. The PE learning motivation questionnaire measured students' interest, enthusiasm, attention, persistence, and willingness to participate in movement-based learning activities. The questionnaire items were adapted from indicators used in PE motivation, teacher-support, and learning-environment studies, then adjusted to the elementary-school context and the learning conditions at SDN 2 Songak. Content validation was conducted by two reviewers, consisting of one PE education lecturer and one elementary PE teacher, who examined item relevance, language clarity, and suitability for upper-grade elementary students. A separate pilot test was not conducted because the accessible upper-grade population was used as the main sample; therefore, item quality was evaluated statistically in the main dataset through corrected item-total correlation and Cronbach's alpha. Example items were: "The school has facilities that support PE learning" for school environment, "The PE teacher explains movement activities clearly" for teacher role, and "I am enthusiastic about participating in PE lessons" for PE learning motivation. Instrument screening was conducted using corrected item-total correlation and Cronbach's alpha to examine item quality and internal reliability.

Data Analysis

Data were analyzed using descriptive statistics, instrument screening, Pearson correlation, assumption testing, and multiple linear regression. All statistical analyses were conducted using IBM SPSS Statistics version 26, while Microsoft Excel was used for data coding and tabulation. The alpha level was set at 0.05. Corrected item-total correlation was compared with r table = 0.240, and items

with corrected r values above this threshold were considered valid. Cronbach's alpha was used to evaluate internal consistency; alpha values of 0.70 or higher were considered acceptable, whereas lower values indicated weak internal consistency.

Descriptive statistics were used to determine the mean, standard deviation, percentage, and category of each research variable. Pearson correlation was applied to examine bivariate relationships among the school environment, teacher role, and PE learning motivation. Multiple linear regression was used to test the simultaneous and partial associations of the independent variables with PE learning motivation. Before regression analysis, residual normality was examined using the Shapiro-Wilk test, multicollinearity was assessed using tolerance and variance inflation factor (VIF), and heteroscedasticity was assessed using the Glejser test. Because the residual normality test indicated deviation from normality, the coefficients were also checked using non-parametric bootstrap analysis with 5,000 resamples and 95% percentile confidence intervals.

RESULTS

Descriptive statistics shows that the 67 students reported positive perceptions of the school environment and teacher role, alongside high motivation toward Physical Education (PE). The mean school environment score was 54.66, equivalent to 85.40% of the theoretical maximum, while the mean teacher role score was 57.31, or 89.55%. Learning motivation had a mean score of 58.37, or 91.21%. These percentages represent mean scores relative to the maximum possible score rather than the proportion of students within a particular category.

Table 1. Descriptive Statistics of Research Variables

Variable	N	Empirical Range	Mean	Percentage and Category
School environment	67	16-64	54.66	2.24 / 85.40% (very good)
Teacher role	67	16-64	57.31	4.06 / 89.55% (very good)
PE learning motivation	67	16-64	58.37	4.03 / 91.21% (very high)

Scores were calculated from 16 questionnaire items per variable with a theoretical score range of 16-64. The narrow empirical ranges indicate restricted variance and should be considered when interpreting correlation and regression results.

As an empirical comparison, Dese and Wibowo (2025) reported higher motivation scores among elementary students participating in the Sport Education model than among those receiving conventional instruction. Albaloul et al. (2024) also identified improvements in several motivational dimensions following the implementation of Sport Education among Kuwaiti students. These studies illustrate the relevance of instructional experiences to student motivation. However, the present study did not evaluate a specific instructional model; therefore, its high descriptive scores characterize students' perceptions without establishing the effectiveness of teaching practices or the school environment.

Table 2 indicates adequate internal consistency for the teacher role and learning motivation instruments, with Cronbach's alpha coefficients of 0.818 and 0.831, respectively. For each instrument, 15 of the 16 items met the corrected item-total correlation criterion adopted in this study. Conversely, the school environment instrument demonstrated low internal consistency, with an alpha coefficient of 0.279 and only five of its 16 items meeting the criterion. This finding limits the interpretation of the total school environment score as a consistent measure of the intended construct.

Table 2. Summary of Instrument Screening

Variable	Number of Items	Cronbach Alpha	Valid Items Based on Corrected r	Revised Interpretation
School environment	16	0.279	5/16	Multidimensional index; cautious interpretation
Teacher role	16	0.818	15/16	Reliable
PE learning motivation	16	0.831	15/16	Reliable

Corrected r was compared with $r_{table} = 0.240$. The school environment result indicates measurement weakness rather than confirmed multidimensionality.

As a methodological comparison, Lin et al. (2022) developed a physical activity motivation instrument using exploratory and confirmatory factor analyses, internal consistency assessment, criterion validity testing, and test–retest reliability. Escrivá-Boulley et al. (2021) similarly examined the structure and validity of a teaching-style instrument adapted to the PE context. These studies illustrate that construct structure requires dedicated empirical assessment. Accordingly, the low alpha coefficient in the present study does not establish that the school environment instrument constitutes a multidimensional index, and analyses involving this variable should be interpreted as exploratory.

Table 3. Pearson Correlation Among Variables

Variable Relationship	r	p	Interpretation
School environment - PE motivation	-0.181	0.144	Not significant; interpret cautiously
Teacher role - PE motivation	0.276	0.024	Positive significant; weak association
School environment - teacher role	-0.048	0.700	Not significant

Table 3 shows a positive and statistically significant association between perceived teacher role and PE learning motivation, although the relationship was weak ($r = 0.276$; $p = 0.024$). Students who evaluated the teacher's role more positively tended to report higher learning motivation. This direction is consistent with Arik and Erturan (2023), who identified a relationship between perceived autonomy support and intrinsic motivation, and Van Doren et al. (2021), who reported an association between motivating teaching styles and students' autonomous motivation. Weeldenburg et al. (2022) also found that perceived mastery-oriented teaching strategies were associated with higher autonomous motivation and lower amotivation. Nevertheless, the constructs assessed in these studies are not identical to the teacher role measure used here. Meanwhile, the school environment was not significantly associated with learning motivation ($r = -0.181$; $p = 0.144$) or teacher role ($r = -0.048$; $p = 0.700$). The non-significant association with motivation differs from the positive relationship reported by Hiskya et al. (2025) among elementary students in the Indonesia–Papua New Guinea border region. Given the low internal consistency of the school environment instrument, the present findings do not establish that the school environment is irrelevant to learning motivation

Multiple Linear Regression Analysis

Table 4 shows that teacher role remained positively associated with learning motivation after accounting for the school environment ($B = 0.266$; $SE = 0.117$; $\beta = 0.268$; $t = 2.263$; $p = 0.027$). In contrast, the school environment was not significantly associated with motivation ($B = -0.301$; $SE = 0.213$; $\beta = -0.168$; $t = -1.416$; $p = 0.162$). The accompanying model summary indicates that the overall regression was statistically significant, $F(2,64) = 3.725$; $p = 0.030$ but explained only 10.4% of the variance in learning motivation, with an adjusted R^2 of 0.076. Bootstrap analysis yielded a 95% confidence interval of 0.017–0.516 for the teacher role coefficient and -0.788 – 0.146 for the school environment coefficient, supporting the pattern observed in the regression results.

Table 4. Multiple Linear Regression Results

Predictor	B	SE	Beta	t	p	Decision
Constant	59.628	13.723	-	4.345	<0.001	-
School environment	-0.301	0.213	-0.168	-1.416	0.162	Not significant
Teacher role	0.266	0.117	0.268	2.263	0.027	Positive significant; modest association

Conceptually, the positive association involving teacher role is consistent with Coterón et al. (2024), who reported that high-structure, low-control teaching profiles were associated with more favorable motivation and engagement. The model's limited explanatory power also indicates the need to investigate additional variables. García-Ceberino et al. (2022), for example, identified differences in elementary students' achievement-motivation dimensions by sports experience, sex, and teaching methodology. These factors warrant further investigation but cannot be considered established explanations for the variance left unexplained by the present model.

The principal finding is a weak positive association between perceived teacher role and PE learning motivation, whereas the association involving the school environment was not statistically supported. The teacher role finding is consistent with evidence linking autonomy support, motivating teaching styles, and mastery-oriented instructional strategies to student motivation (Arik & Erturan, 2023; Van Doren et al., 2021; Weeldenburg et al., 2022). However, teacher support does not necessarily correspond to uniform changes across all motivational dimensions. Tenório et al. (2021) reported changes in several motivational dimensions following a teacher-training intervention but did not identify an improvement in intrinsic motivation during the study period. At the elementary level, sports experience and teaching methodology have also been associated with dimensions of achievement motivation, while Sport Education has been linked to higher motivation scores than conventional instruction (García-Ceberino et al., 2022; Wibowo & Dese, 2025). This evidence positions the teacher's role as one of several factors associated with motivation. The findings on the school environment must also be considered alongside the measurement limitations, particularly given that Hiskya et al. (2025) reported a positive relationship between the learning environment and motivation in a different elementary school context. Overall, the present study provides context-specific evidence of an association between teacher role and learning motivation at SDN 2 Songak, while assessing the school environment requires a more robust instrument. The cross-sectional design precludes conclusions about the direction of these relationships or causality.

DISCUSSION

The results showed that teacher role was significantly associated with students' PE learning motivation. However, this finding should be interpreted as a modest association, not as evidence that teacher role causally determines motivation. From an SDT perspective, the result is theoretically reasonable because students are more likely to be motivated when teachers support autonomy, competence, and relatedness (Vlachos & Papaioannou, 2023; Watkins et al., 2024). In PE, teachers interact directly with students through demonstrations, feedback, classroom management, activity choices, encouragement, and safety guidance. These forms of interaction can shape students' perceived competence, enjoyment, and willingness to participate (Tian & Shen, 2023; Cuevas-Campos et al., 2020).

The weak correlation between teacher role and motivation indicates that teacher behavior is relevant but not sufficient to explain motivation by itself. Previous studies show that teacher support can enhance self-determined motivation and positive emotions, yet students' motivation is also shaped

by individual interest, perceived competence, peer relationships, prior movement experiences, and family support (Fierro-Suero et al., 2023; Kristensen et al., 2026). Therefore, the teacher role in this study should be understood as one motivational condition among many, rather than as the only or dominant factor in elementary PE learning.

The non-significant association between school environment and PE learning motivation requires careful interpretation. A primary explanation is measurement weakness. The school environment items had Cronbach's alpha = 0.279 and only five valid items based on corrected item-total correlation, indicating that the items did not function as a reliable homogeneous scale in this sample. Consequently, the absence of significance may reflect limited measurement quality rather than the true irrelevance of the school environment. This point is important because the school environment remains theoretically relevant in PE, especially regarding movement space, equipment availability, safety, peer climate, and institutional support (Ordóñez et al., 2023; Quiroz Carrión & Sigcho Romero, 2023).

Another explanation is the restricted range of student responses. Motivation, teacher role, and school environment were all rated very highly, which may indicate a ceiling effect. When most students choose high scores, the variance becomes limited and statistical relationships can appear weak even when the constructs are conceptually related. This pattern helps explain why the descriptive results were very positive but the correlations and regression coefficients remained small. In addition, because all variables were measured using student self-report questionnaires at the same time, common-method bias and social desirability may have influenced the results. Elementary students may also respond positively because they want to please teachers or researchers, especially when the school context is familiar and authority figures are present.

The low R² value further confirms the limited explanatory scope of the model. The two predictors explained only 10.4% of the variance in PE learning motivation, and the adjusted R² was only 7.6%. Thus, the statistically significant model has limited practical significance. PE motivation is likely influenced by additional factors that were not included in this study, such as intrinsic interest, perceived competence, enjoyment, family support, peer support, fitness level, previous sport experience, and the use of cooperative or game-based learning models.

The practical implication should therefore be framed cautiously. The findings suggest that strengthening teacher-student instructional interaction may be a relevant strategy for supporting motivation at SDN 2 Songak. Teachers may provide clearer instructions, progressive movement tasks, constructive feedback, autonomy-supportive choices, and enjoyable activities that still meet learning objectives. However, because this study was cross-sectional and non-experimental, the data do not directly test whether teacher professional development or facility improvement will increase motivation. Such recommendations should be treated as evidence-informed implications rather than tested intervention effects.

The study has several limitations. First, the sample was limited to one elementary school, so the findings cannot be generalized to elementary students in general. Second, the school environment instrument showed weak internal consistency, which limits confidence in results involving this variable. Third, the cross-sectional self-report design prevents causal inference and may be vulnerable to common-method bias. Fourth, the model explained only a small portion of motivational variance. Future studies should use larger multi-school samples, improve and validate the school environment instrument through factor analysis, include teacher or observational data, and test possible mediating

variables such as perceived competence, enjoyment, peer support, and basic psychological need satisfaction.

CONCLUSION

This study reveals that the motivation for Physical Education (PE) learning among upper-grade students at SDN 2 Songak falls into the "very high" category. Analysis indicates that the teacher's role has a positive and significant relationship with PE learning motivation, although the strength of this relationship is classified as weak. Conversely, the school environment is not significantly related to students' motivation to learn. When considered together, the school environment and the teacher's role constitute a significant model for explaining learning motivation; however, its explanatory power for variation in motivation remains low. These findings suggest that, within the context of this study, the teacher's role is a relatively more consistent factor associated with learning motivation than the school environment. Teacher-student interactions characterized by clear instruction, feedback, support, effective lesson management, and the creation of enjoyable activities can play a crucial role in fostering student engagement in PE lessons. Nevertheless, the study's results cannot be used to infer a cause-and-effect relationship. Furthermore, the low internal consistency of the school environment instrument limits the strength of the interpretation regarding that variable. Therefore, these findings should be understood within their specific context and not broadly generalized. Future research should involve larger, more diverse samples, use more robust instruments, and incorporate other factors potentially linked to PE learning motivation.

RECOMMENDATION

Based on the results of the research, schools are advised to strengthen the quality of PE learning interactions through the role of teachers who are more responsive to student needs. Teachers can improve the clarity of instruction, provide constructive feedback, provide a choice of activities that suit students' abilities, and create a pleasant learning atmosphere and encourage active participation. These efforts can support student motivation without neglecting the achievement of learning goals. Schools also still need to pay attention to the quality of the physical and social learning environment, such as the availability of facilities, safety, comfort, and a conducive learning atmosphere. However, recommendations related to the school environment need to be applied carefully because the results of the research on these variables have limitations in the consistency of the instruments. It is further recommended that research involves a larger sample and comes from several schools so that the research results have a wider scope. School environment instruments also need to be developed and validated more strongly, including through factor analysis. In addition, subsequent research can include other variables that have the potential to be related to PE learning motivation, such as perceived competence, enjoyment in learning, peer support, family support, previous sports experience, and variations in learning methods. Longitudinal or experimental designs can also be used to gain a stronger understanding of changes and factors that affect students' learning motivation.

REFERENCES

- Albaloul, O., Kulinna, P. H., & van der Mars, H. (2024). Comparing the impact of the Sport Education model on student motivation in Kuwaiti and American students. *Frontiers in Psychology*, 15. Scopus. <https://doi.org/10.3389/fpsyg.2024.1334066>

- Aniszewski, E., & Henrique, J. (2023). The Relationship Between Competence, Autonomy, and Relatedness Satisfaction and Disinterest In Physical Education Classes in Elementary School. *Educação Em Revista*, 39, e36854. <https://doi.org/10.1590/0102-469836854-t>
- Arik, A., & Erturan, G. (2023). Autonomy Support and Motivation in Physical Education: A Comparison of Teacher and Student Perspectives. *International Journal of Contemporary Educational Research*, 10(3), 649–657. Scopus. <https://doi.org/10.52380/ijcer.2023.10.3.470>
- Brisimis, E., Krommidas, C., Galanis, E., Karamitrou, A., Syrmipas, I., & Comoutos, N. (2020). Exploring the Relationships of Autonomy- supportive Climate, Psychological Need Satisfaction and Thwarting with Students' Self-talk in Physical Education. *Journal of Education, Society and Behavioural Science*, 112–122. <https://doi.org/10.9734/jesbs/2020/v33i1130276>
- Chen, R., Wang, L., Wang, B., & Zhou, Y. (2020). Motivational climate, need satisfaction, self-determined motivation, and physical activity of students in secondary school physical education in China. *BMC Public Health*, 20(1), 1687. <https://doi.org/10.1186/s12889-020-09750-x>
- Coterón, J., Fernández-Caballero, J., Martín-Hoz, L., & Franco, E. (2024). The Interplay of Structuring and Controlling Teaching Styles in Physical Education and Its Impact on Students' Motivation and Engagement. *Behavioral Sciences*, 14(9). Scopus. <https://doi.org/10.3390/bs14090836>
- Cuevas-Campos, R., Fernández-Bustos, J. G., González-Cutre, D., & Hernández-Martínez, A. (2020). Need Satisfaction and Need Thwarting in Physical Education and Intention to be Physically Active. *Sustainability*, 12(18), 7312. <https://doi.org/10.3390/su12187312>
- Del Valle Díaz, S., Cabanillas Cruz, E. C., Villamil Cabello, E., & De La Vega Marcos, R. (2021). Keys to learning Physical Education during confinement (Claves para aprender Educación Física durante el confinamiento). *Retos*, 43, 875–886. <https://doi.org/10.47197/retos.v43i0.89263>
- Dinata, & Karno. (2023). Analisis implementasi kurikulum merdeka dalam capaian kompetensi pembelajaran PJOK melalui model CIPP (literature review) (*Analysis of the implementation of the independent curriculum in achieving PJOK learning competencies through the CIPP model (literature review)*). *Jurnal Porkes*, 6(2), 854–866. <https://doi.org/10.29408/porkes.v6i2.19271>
- Escriva-Boulley, G., Guillet-Descas, E., Aelterman, N., Vansteenkiste, M., Van Doren, N., Lentillon-Kaestner, V., & Haerens, L. (2021). Adopting the situation in school questionnaire to examine physical education teachers' motivating and demotivating styles using a circumplex approach. *International Journal of Environmental Research and Public Health*, 18(14). Scopus. <https://doi.org/10.3390/ijerph18147342>
- Fadriana, C., Sobarna, A., & Rizal, R. M. (2024). Implementasi Kurikulum Merdeka Belajar pada Pembelajaran Pendidikan Jasmani Olahraga dan Kesehatan (PJOK) di Sekolah Dasar (Studi Kasus pada Sekolah Dasar Negeri Cisondari 01 Kecamatan Pasirjambu) (*Implementation of the Merdeka Belajar Curriculum in Physical Education, Sports, and Health (PJOK) Instruction at the Elementary School Level (A Case Study at State Elementary School Cisondari 01, Pasirjambu District)*). *JiIP - Jurnal Ilmiah Ilmu Pendidikan*, 7(6), 5319–5325. <https://doi.org/10.54371/jiip.v7i6.4570>
- Fierro-Suero, S., Castillo, I., Almagro, B. J., & Saénz-López, P. (2023). The role of motivation and emotions in physical education: Understanding academic achievement and the intention to be physically active. *Frontiers in Psychology*, 14, 1253043. <https://doi.org/10.3389/fpsyg.2023.1253043>

- García-Ceberino, J. M., Feu, S., Gamero, M. G., & Ibáñez, S. J. (2022). Determinant Factors of Achievement Motivation in School Physical Education. *Children*, 9(9). Scopus. <https://doi.org/10.3390/children9091366>
- Hadi, W., Yuksafa, R., Yarmi, G., Safitri, D., Lestari, I., Suntari, Y., Umasih, Marini, A., Sudrajat, A., & Iskandar, R. (2022). Enhancement of Students' Learning Outcomes through Interactive Multimedia. *International Journal of Interactive Mobile Technologies (iJIM)*, 16(07), 82–98. <https://doi.org/10.3991/ijim.v16i07.25825>
- Hiskya, H. J., Muktiani, N. R., Purwanto, D., Setyawan, D. A., & Bakar, A. (2025). Learning Outcomes in Physical Education in Elementary Schools at the Indonesia-Papua New Guinea Border: The Associations between Learning Environment, Student Motivation, and Sports Facilities. *International Journal of Human Movement and Sports Sciences*, 13(3), 491–496. Scopus. <https://doi.org/10.13189/saj.2025.130301>
- Işıkgoz, M. E. (2025). Intrinsic vs. extrinsic motivation in high school physical education: Which fuels adolescent achievement emotions better? *PLOS One*, 20(6), e0327393. <https://doi.org/10.1371/journal.pone.0327393>
- Kanduwi, E., Fitriady, G., & Darmawan, A. (2024). *Movement Behavior and Physical Fitness di Sekolah Menengah Pertama Berbasis Negeri Se-Kecamatan Lowokwaru Kota Malang (Movement Behavior and Physical Fitness in Public Junior High Schools Across Lowokwaru District, Malang City)*. *Bravo's: Jurnal Program Studi Pendidikan Jasmani Dan Kesehatan*, 12(3), 231–244. <https://doi.org/10.32682/bravos.v12i3/43>
- Kristensen, M. S., Arvidsen, J., Smith, M., Iversen, E. B., & Thøgersen-Ntoumani, C. (2026). Beyond the ordinary: Exploring adolescents' experiences of novelty in organized nature sports from a self-determination theory perspective. *Sport, Exercise, and Performance Psychology*, 15(1), 1–17. <https://doi.org/10.1037/spy0000396>
- Lin, B., Teo, E. W., & Yan, T. (2022). Development and Validation of Chinese University Students' Physical Activity Motivation Scale Under the Constraint of Physical Education Policies. *Frontiers in Psychology*, 13. Scopus. <https://doi.org/10.3389/fpsyg.2022.722635>
- Luo, W., Sun, X., Zhou, Z., Tian, Z., & Chen, Z. (2025). Research on the effect of professional competency of college physical education teachers on students' motivation for physical education learning. *Frontiers in Psychology*, 16, 1620766. <https://doi.org/10.3389/fpsyg.2025.1620766>
- Maesara, Nadila, N., Rahmat, A., (2023). Tren dan hasil penggunaan model pembelajaran pendidikan jasmani (systematic literatur review) (*Trends and outcomes of using physical education learning models (systematic literature review)*). *Jurnal Porkes*, 6(2), 386–401. <https://doi.org/10.29408/porkes.v6i2.23972>
- Maulidin, & Wira Panji, N. (2020). Pengaruh Metode Mengajar Dan Motor Educability Terhadap Keterampilan Renang Gaya Kupu-Kupu (*The Effect of Teaching Methods and Motor Educability on Butterfly Stroke Swimming Skills*). *Gladi: Jurnal Ilmu Keolahragaan*, 11(01), 46–59. <https://doi.org/10.21009/GJIK.111.04>
- Muhadi, Z. I., Muhammad, H. N., & Kogoya, T. (2024). Identifikasi keterlaksanaan kurikulum merdeka pada pembelajaran pjok di smpn 2 sidoarjo (*Identify the implementation of the independent curriculum in elementary school learning at SMPN 2 Sidoarjo*). *Bima Loka: Journal of Physical Education*, 4(1), 32–44. <https://doi.org/10.26740/bimaloka.v4i1.27865>
- Ordóñez, J., León, F., & Correa, R. (2023). El contexto escolar y el proceso de enseñanza aprendizaje de la asignatura de Educación Física. Un análisis descriptivo: School environment and the teaching and learning process on the Physical Education subject. An descriptive analysis. *LATAM Revista Latinoamericana de Ciencias Sociales y Humanidades*, 4(2). <https://doi.org/10.56712/latam.v4i2.680>
- Panjaitan, K., & Fardana, N. (2023). Peningkatan Motivasi Belajar Siswa Melalui Pendekatan Permainan dalam Pembelajaran Penjas (*Enhancing Students' Learning Motivation Through*

- a Game-Based Approach in Physical Education). *Gelanggang Olahraga: Jurnal Pendidikan Jasmani Dan Olahraga (JPJO)*, 7(1), 54–61. <https://doi.org/10.31539/jpjo.v7i1.6857>
- Permana, M. A., Syafaruddin, S., Bayu, W. I., & Rasyono, R. (2024). Sikap belajar peserta didik dalam pembelajaran pendidikan jasmani, olahraga, dan kesehatan (*Students' learning attitudes in physical education, sports, and health lessons*). *Bima Loka: Journal of Physical Education*, 4(1), 45–54. <https://doi.org/10.26740/bimaloka.v4i1.28737>
- Quiroz Carrión, E. N., & Sigcho Romero, C. R. (2023). Análisis de los factores determinantes de la calidad educativa. *Esprint Investigación*, 2(1), 41–51. <https://doi.org/10.61347/ei.v2i1.51>
- Santoso Budi, Tri Putro, T. P., . S., Universitas Negeri Yogyakarta, Yogyakarta, DIY, 55281, Indonesia, Fakhrurozi, Z. A., & Universitas Negeri Yogyakarta, Yogyakarta, DIY, 55281, Indonesia. (2023). The Relationship between the Level of Knowledge of Students on the School Health Effort Program and the Role of Physical Education, Sports, and Health Teachers in Clean and Healthy Living Behavior of Elementary School Student. *INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH AND ANALYSIS*, 06(12). <https://doi.org/10.47191/ijmra/v6-i12-20>
- Saputro, D. C. A., Solichin, M., & Mubarok, Y. (2023). Pengembangan Learning Content Managemen System (Lcms) Berbasis Blanded Learning Pada Mata Pelajaran Pjok (*Development of a Blended Learning-Based Learning Content Management System (LCMS) for Physical Education, Sports, and Health (PJOK)*). *Jambura Sports Coaching Academic Journal*, 2(1), 21–31. <https://doi.org/10.37905/jscaj.v2i1.20663>
- Simón-Chico, L., González-Peño, A., Hernández-Cuadrado, E., & Franco, E. (2023). The Impact of a Challenge-Based Learning Experience in Physical Education on Students' Motivation and Engagement. *European Journal of Investigation in Health, Psychology and Education*, 13(4), 684–700. <https://doi.org/10.3390/ejihpe13040052>
- Sudrajat, K. M., Muhtar, T., & Susilawati, D. (2023). Evaluasi Kurikulum Merdeka Tahun 2022 Mata Pelajaran Pendidikan Jasmani Olahraga dan Kesehatan (2022 *Evaluation of the Kurikulum Merdeka: Physical Education, Sports, and Health Subject*). *Journal of SPORT (Sport, Physical Education, Organization, Recreation, and Training)*, 7(3), 771–788. <https://doi.org/10.37058/sport.v7i3.8430>
- Susila, I. W. (2022). Model Kooperatif Tipe Students Teams Achievement Divisions untuk Meningkatkan Hasil Belajar Pendidikan Jasmani, Olahraga, dan Kesehatan. *Journal of Education Action Research*, 6(2), 228–234. <https://doi.org/10.23887/jear.v6i2.46609>
- Tenório, M. C. M., Tassitano, R. M., Weaver, R. G., & Lima, M. D. C. (2021). Effects of a teacher training intervention on teachers' and students' motivation to physical education class. *Journal of Physical Education (Maringa)*, 32(1). Scopus. <https://doi.org/10.4025/JPHYSEDUC.V32I1.3208>
- Tian, L., & Shen, J. (2023). The effect of perceived teachers' interpersonal behavior on students' learning in physical education: A systematic review. *Frontiers in Psychology*, 14, 1233556. <https://doi.org/10.3389/fpsyg.2023.1233556>
- Van Doren, N., De Cocker, K., De Clerck, T., Vangilbergen, A., Vanderlinde, R., & Haerens, L. (2021). The relation between physical education teachers' (De-)motivating style, students' motivation, and students' physical activity: A multilevel approach. *International Journal of Environmental Research and Public Health*, 18(14). Scopus. <https://doi.org/10.3390/ijerph18147457>
- Vlachos, O., & Papaioannou, A. G. (2023). Multidimensional Motivational Climate Questionnaire in Physical Education at the Situational Level of Generality (MUMOC-PES). *International Journal of Environmental Research and Public Health*, 20(5), 4202. <https://doi.org/10.3390/ijerph20054202>

- Watkins, J. M., Greeven, S. J., Heeter, K. N., Brunnemer, J. E., Otile, J., Solá, P. A. F., Dutta, S., Hobson, J. M., Evanovich, J. M., Coble, C. J., Werner, N. E., Martinez Kercher, V. M., & Kercher, K. A. (2024). Human-centered participatory co-design with children and adults for a prototype lifestyle intervention and implementation strategy in a rural middle school. *BMC Public Health*, 24(1), 845. <https://doi.org/10.1186/s12889-024-18351-x>
- Weeldenburg, G., Borghouts, L., van de Laak, T., Remmers, T., Slingerland, M., & Vos, S. (2022). TARGETing secondary school students' motivation towards physical education: The role of student-perceived mastery climate teaching strategies. *PLoS ONE*, 17(9 September). Scopus. <https://doi.org/10.1371/journal.pone.0274964>
- Wibowo, C., & Dese, D. C. (2025). A multimodal physical activity training program to improve motor competence in college students: Evidence from a controlled 12-week trial. *Pedagogy of Physical Culture and Sports*, 29(4), 288–296. Scopus. <https://doi.org/10.15561/26649837.2025.0406>
- Yun, S., Jaakkola, T., Huhtiniemi, M., Gråstén, A., Park, J., & Yli-Piipari, S. (2025). Psychological needs satisfaction in physical education predicts a positive development of motivation in early adolescence: A latent growth modeling study. *European Physical Education Review*, 31(2), 295–313. <https://doi.org/10.1177/1356336X241269612>
- Zabidi, A. F. F., Yudasmar, D. S., & Darmawan, A. (2023). Persepsi siswa terhadap pelaksanaan pembelajaran pendidikan jasmani olahraga dan kesehatan (*Students' perceptions of the implementation of physical education, sports, and health instruction*). *Jurnal Olahraga Pendidikan Indonesia (JOPI)*, 2(2), 115–128. <https://doi.org/10.54284/jopi.v2i2.272>