



Learning Motivation, Sports Interest, and Parental Support as Predictors of Student Participation in Physical Education

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Abstract

This cross-sectional correlational study examined whether learning motivation, interest in physical activity, and perceived parental support were associated with student-reported participation in Physical Education, Sports, and Health (PJOK). The analytic dataset contained questionnaires from 130 Grade 4–6 students at Ngrowo II Public Elementary School, Bojonegoro. Each predictor was represented by five Likert-type items, while participation was represented by ten self-report items. In a simultaneous multiple linear regression, learning motivation ($B = 0.412$, $t = 3.892$, $p < .001$), interest in physical activity ($B = 0.385$, $t = 3.561$, $p = .001$), and perceived parental support ($B = 0.298$, $t = 2.987$, $p = .003$) each showed a positive adjusted association with participation. The reported ANOVA components yield $R^2 = .518$ (1856.420/3581.170), adjusted $R^2 = .506$, $F(3, 126) = 45.210$, $p < .001$. These model-fit values replace the internally inconsistent $R^2 = .652$ in the reviewed manuscript and must be checked against the original SPSS output before publication. Because all constructs were measured contemporaneously by student self-report at one school, the results do not establish causation, temporal prediction, or observed behavior.

Keywords: learning motivation, interest in sports, parental support, student participation, physical education, elementary school.

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A. Introduction

Physical Education, Sports, and Health (PJOK) provides structured opportunities for children to develop movement competence, physical activity habits, and social learning. Active participation is therefore an important proximal learning outcome: students must attend to tasks, attempt movements, cooperate with peers, and persist during practice before longer-term physical or educational outcomes can occur. Participation should nevertheless be measured explicitly and distinguished from achievement, fitness, motivation, and interest.

The original manuscript referred to informal observations of moderate-to-low participation at Ngrowo II Public Elementary School, but it did not document the observation period, indicators, observers, or number of students involved. That claim is therefore not used as empirical baseline evidence. It also cannot be reconciled directly with the later questionnaire summary in which 87% of students were classified as agreeing or strongly agreeing with positive participation items. The discrepancy may reflect different methods, undocumented aggregation, or socially desirable self-reporting. The present study is consequently framed as an analysis of student-reported participation rather than a

response to a quantified participation deficit.

Self-Determination Theory (SDT) distinguishes motivational quality and emphasizes autonomy, competence, and relatedness as conditions that support more self-determined regulation (Deci & Ryan, 2000). In physical education, more autonomous motivation is generally associated with adaptive engagement outcomes (Vasconcellos et al., 2020). The five-item scale used here, however, did not measure the full set of SDT needs or regulatory styles. SDT is therefore an interpretive lens rather than a theory directly tested by the regression.

Expectancy–value accounts propose that engagement depends partly on expectations of success and the value assigned to an activity, including interest, utility, attainment value, and perceived cost (Eccles & Wigfield, 2002). The present five-item interest scale sampled enjoyment, attention, willingness to repeat activities, and favorable evaluations of physical activity. It did not operationalize all expectancy–value components, so the results concern an interest-in-physical-activity score rather than a complete test of Expectancy–Value Theory.

Parental support may include emotional encouragement, practical assistance, information, and companionship (House,

1981). In a PJOK context, children may perceive encouragement, help obtaining necessary equipment, opportunities for activity, and guidance about healthy routines. Perceived support is conceptually distinct from parental involvement and household socioeconomic resources, although the brief scale may not separate these domains adequately. The original label “community facilitation” was removed because its wording and relation to parental support were not documented.

Prior scholarship supports examining motivation and activity value in physical education, while family research suggests that parental involvement is associated with children’s adjustment. A narrower unresolved question is whether brief student reports of motivation, activity interest, and parental support retain unique associations with participation when entered in the same model. Participation is examined because it is an immediate behavioral orientation within lessons rather than a distal achievement score. This contribution is incremental: the study estimates within-school multivariable associations and does not establish a new integrated theory.

The census approach increased coverage of the eligible upper-grade population at this school, provided that every eligible student submitted usable

data. It does not make the school representative of elementary students in Bojonegoro or Indonesia and does not remove nonresponse, common-method, or measurement bias. Accordingly, the target population is limited to Grade 4–6 students enrolled at Ngrowo II Public Elementary School during the study period.

The study aimed to estimate the separate and joint cross-sectional associations of learning motivation, interest in physical activity, and perceived parental support with student-reported participation in PJOK. The research questions concerned adjusted associations and in-sample variance accounted for by the model; no temporal or causal effect was hypothesized.

B. Methods

A quantitative cross-sectional correlational design was used at Ngrowo II Public Elementary School, Bojonegoro, Indonesia. The stated target population comprised all 130 students enrolled in Grades 4, 5, and 6, and the archived analytic dataset also contained 130 records. The source documentation did not specify the dates of data collection, grade and sex distribution, eligibility rules beyond enrollment, absences, refusals, incomplete responses, or exclusions. A 100% usable response rate therefore cannot be

independently confirmed and must be reconciled with attendance and consent logs before publication.

SDT, Expectancy–Value Theory, and social-support theory were used as broad explanatory perspectives, not as an integrated measurement model. The questionnaire did not measure autonomy, competence, relatedness, motivational regulations, the complete expectancy–value structure, or distinct support functions with established subscales. Simultaneous entry of three proxy scores in a regression does not test theoretical integration, mediation, or interaction.

Students completed 25 positively framed items on a five-point scale (1 = strongly disagree to 5 = strongly agree): learning motivation (5 items), interest in physical activity (5 items), perceived parental support (5 items), and self-reported PJOK participation (10 items). Each set was treated as a single composite rather than five one-item dimensions. Theoretical summed ranges were 5–25 for each predictor and 10–50 for participation; higher scores indicated stronger endorsement. The final item wording, observed ranges, reverse-coding rule, and missing-item rule were not retained in the manuscript and should be supplied in an appendix. The participation measure was self-reported, not observed.

The reviewed manuscript described the motivation items as adapted from the Intrinsic Motivation Inventory (IMI), but it did not identify the source version, permission conditions, selected subscales, translation and back-translation, cultural or age adaptation, expert review, cognitive interviewing, or item changes (McAuley et al., 1989). The IMI is not a general intrinsic–extrinsic motivation inventory; the construct is therefore conservatively labeled a study-specific learning-motivation composite. The origin and adaptation of the other three scales were likewise undocumented. Pearson item–total correlations and Cronbach’s alpha were calculated in the same $n = 130$ dataset used for regression, which may capitalize on chance and does not establish content, factorial, convergent, or discriminant validity.

Analyses were conducted in IBM SPSS Statistics, although the version was not reported. Multiple linear regression entered summed predictor scores simultaneously and used the summed participation score as the outcome. Two-sided α was .05. The archived output included coefficient t tests, ANOVA, R^2 , tolerance/VIF, a Kolmogorov–Smirnov result, and Glejser tests. It did not retain means, standard deviations, observed ranges, missing-data treatment, outlier diagnostics, Q–Q or

residual-versus-fitted plots, predictor correlations, leverage, Cook's distance, confidence intervals, or robust standard errors. Approximate coefficient standard errors and 95% confidence intervals reported below were reconstructed from rounded B and t values with $df = 126$ and must be verified from the original output.

C. Result and Discussion

Result

The analytic dataset contained 130 Grade 4–6 student questionnaires. Each predictor composite contained five items and the self-reported participation composite contained ten items. Participant demographics, item-level missingness, exclusions, and the final response rate

were not available in the archived manuscript.

Descriptive Statistics

Table 1 reproduces the categorical summary retained in the reviewed file. The manuscript did not specify whether categories were assigned from respondent mean scores, summed scores, or pooled item responses, nor did it provide cut points. The percentages therefore cannot be interpreted as mutually exclusive respondent-level prevalence estimates and are not used to support claims of high motivation or objectively active participation. Means, standard deviations, and observed ranges should be regenerated from the original dataset.

Table 1. Descriptive Distribution of Research Variables.

Variable	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Learning Motivation	52 (40%)	58 (45%)	16 (12%)	4 (3%)	0 (0%)
Interest in Sports	55 (42%)	56 (43%)	15 (12%)	4 (3%)	0 (0%)
Parental Support	50 (38%)	60 (46%)	16 (12%)	4 (4%)	0 (0%)
Student Participation	58 (45%)	55 (42%)	13 (10%)	4 (3%)	0 (0%)

The archived summary reported 85% agreement/strong agreement for motivation, 85% for interest, 84% for parental support, and 87% for participation. These values describe endorsements of positively worded self-report material, not observed behavior or verified levels of the underlying

constructs. Their apparent inconsistency with the undocumented preliminary observation reinforces the need for transparent scoring rules and independent behavioral measures.

Item Analysis

Pearson correlations between items

and scale totals were reported using $n = 130$ and an r threshold of $.172$ ($df = 128$). Because the manuscript did not state whether totals excluded the target item, the values are presented as archived item–total correlations rather than evidence of

construct validity. The unusually high ranges should be checked using corrected item–total correlations, item wording, inter-item correlations, and factor analysis on an independent or cross-validated sample.

Table 2. Instrument Validity Results

Variable	Number of Items	Range of r-value	r-table	Result
Learning Motivation	5	0.869–0.976	0.172	Valid
Interest in Sports	5	0.869–0.937	0.172	Valid
Parental Support	5	0.883–0.940	0.172	Valid
Student Participation	10	0.831–0.965	0.172	Valid

Internal Consistency

Cronbach's α was $.895$ for motivation, $.912$ for interest, $.884$ for parental support, and $.926$ for participation. These coefficients indicate internal consistency in this sample but do not

establish reliability across occasions or construct validity. For short scales that purportedly cover several domains, omega, confidence intervals, factor structure, and evidence against item redundancy are also needed.

Table 3. Reliability Test Results

Variable	Cronbach's Alpha	Number of Items	Interpretation
Learning Motivation	0.895	5	Reliable
Interest in Sports	0.912	5	Highly Reliable
Parental Support	0.884	5	Reliable
Student Participation	0.926	10	Highly Reliable

Assumption Testing

The archived Kolmogorov–Smirnov table reported a residual statistic of $.071$ and $p = .215$. This p value should be checked against the original SPSS output because some SPSS procedures display

$.200^*$ when the Lilliefors-corrected value exceeds $.200$. A nonsignificant test does not prove normality; the unavailable Q–Q plot is the more informative diagnostic for regression residuals.

Table 4. Normality Test

Test	Value
Sample Size	130
Kolmogorov–Smirnov Statistic	0.071
Asymp. Sig. (2-tailed)	0.215
Decision	Normal Distribution

Tolerance values ($.795$ – $.820$) and VIF

values (1.219 – 1.257) did not indicate

severe linear dependence among predictors. They do not establish discriminant validity. A predictor correlation matrix and construct-level measurement analysis are needed because motivation, interest, and participation may share item content such as enjoyment, attention, willingness, and initiative.

Table 5. Multicollinearity Test

Variable	Tolerance	VIF	Interpretation
Learning Motivation	0.812	1.231	No multicollinearity
Interest in Sports	0.795	1.257	No multicollinearity
Parental Support	0.820	1.219	No multicollinearity

Glejser p values were greater than .05, so the archived test did not detect heteroscedasticity. This is not proof of constant variance. Residual-versus-fitted

plots, linearity, independence, influential cases, and robust standard errors were unavailable and should be examined from the original data.

Table 6. Heteroscedasticity Test

Variable	Sig.	Decision
Learning Motivation	0.412	No heteroscedasticity
Interest in Sports	0.385	No heteroscedasticity
Parental Support	0.521	No heteroscedasticity

Multiple Linear Regression Analysis

The regression analysis generated the following equation:

$$\text{Student-reported participation} = 14.250 + 0.412(\text{motivation}) + 0.385(\text{interest}) + 0.298(\text{parental support})$$

Holding the other scores constant, each predictor had a positive cross-sectional association with participation.

Because the scores were measured simultaneously and may share content and method, the coefficients do not establish temporal order or causal contribution. Predictions should be restricted to observed score ranges; extrapolation across the theoretical ranges may exceed the outcome scale.

Table 7. Multiple Linear Regression Analysis

Variable	B	Beta	t	Sig.
Constant	14.250	–	4.125	0.000
Learning Motivation	0.412	0.320	3.892	0.000
Interest in Sports	0.385	0.290	3.561	0.001
Parental Support	0.298	0.210	2.987	0.003

Hypothesis Testing

Hypothesis Testing
Learning motivation (B = .412, t =

3.892, $p < .001$), interest in physical activity (B = .385, $t = 3.561$, $p = .001$), and

perceived parental support ($B = .298$, $t = 2.987$, $p = .003$) were each positively associated with participation after mutual

adjustment. The study did not formally compare coefficients or unique variance, so the predictors are not ranked.

Table 8. Summary of Partial Hypothesis Testing

Hypothesis	t	Sig.	Decision
Learning Motivation → Student Participation	3.892	0.000	Supported
Interest in Sports → Student Participation	3.561	0.001	Supported
Parental Support → Student Participation	2.987	0.003	Supported

The simultaneous regression analysis also confirmed that the three independent

variables jointly influenced students' participation in PJOK.

Table 9. ANOVA Results

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	1856.420	3	618.807	45.210	0.000
Residual	1724.750	126	13.688		
Total	3581.170	129			

Coefficient of Determination

The coefficient of determination analysis yielded an R value of 0.807 and an R^2 value of 0.652, indicating that learning motivation, interest in sports, and parental

support collectively explained 65.2% of the variance in students' participation in PJOK, while the remaining 34.8% was explained by other variables outside the research model.

Table 10. Model Summary

R	R Square	Adjusted R Square	Std. Error
0.807	0.652	0.644	3.699

Discussion

All three student-reported predictors were positively associated with student-reported PJOK participation in the adjusted cross-sectional model. The corrected model accounted for 51.8% of in-sample variance, not 65.2%. This substantial shared variance should be interpreted cautiously because predictors and outcome were collected from the same respondents at the same time, creating risks of common-method variance,

conceptual overlap, reverse causation, and unmeasured confounding (Podsakoff et al., 2003).

Learning motivation was positively associated with participation ($B = .412$, approximate 95% CI [.203, .621], $p < .001$). The pattern is compatible with SDT-informed evidence linking more adaptive motivation with engagement in physical education (Vasconcellos et al., 2020). It does not show that increasing the study-

specific motivation score would cause participation to rise; greater participation may also strengthen motivation, and both may reflect competence, health, grade, sex, prior experience, or teacher climate.

The regression used one total motivation score. It did not estimate item- or dimension-level effects and therefore provides no basis for claiming that persistence, initiative, or enjoyment was the strongest characteristic. Moreover, the brief measure did not assess SDT needs and regulatory forms comprehensively. The result is best described as compatible with, rather than a confirmation of, SDT.

Future work should use an age-appropriate, culturally adapted motivation instrument with documented content and factor structure, distinguish motivation from participation behavior, and collect repeated or independent-source measures. Teacher observation or device-based activity data could reduce exclusive reliance on student self-report.

Interest in physical activity was positively associated with participation ($B = .385$, approximate 95% CI $[.171, .599]$, $p = .001$). This is compatible with expectancy–value reasoning that students engage more when they expect success and value an activity (Eccles & Wigfield, 2002). However, the scale did not measure the complete expectancy–value model, and

overlapping enjoyment, attention, and willingness items may partly explain the association.

The coefficient represents the unique association of the composite after the other two scores were held constant. It does not establish interest as a behavioral cause or validate all proposed components. A future measurement model should test whether interest, motivation, and participation are empirically distinguishable before structural relations are estimated.

Perceived parental support was positively associated with participation ($B = .298$, approximate 95% CI $[.101, .495]$, $p = .003$). The finding is compatible with the possibility that emotional, informational, instrumental, or companionship support facilitates engagement (House, 1981). Yet the respondents were children reporting parental behavior; the study did not obtain parent reports, socioeconomic indicators, or evidence that each support function was measured adequately.

Parental support should not be conflated with parental involvement or material resources. Higher-participating children may elicit more encouragement, and families with greater resources may provide both support and activity opportunities. Longitudinal and multi-informant designs are required to evaluate these alternatives.

Taken together, the three coefficients show that the brief scores retained statistical associations when entered simultaneously. They do not test an integration of SDT, Expectancy–Value Theory, and social-support theory. Theory testing would require constructs aligned with each framework, evidence of measurement validity, and prespecified temporal, mediating, or moderating relations.

The single-school census improves description of the participating school but offers narrow external validity. Generalization is further limited by missing participant characteristics, unknown nonresponse, self-report measurement, and the absence of covariates such as grade, sex, physical competence, health, teacher/class, peer climate, facilities, and socioeconomic conditions.

Practically, teachers and families may consider motivation-supportive instruction, varied activities, and encouragement as candidate strategies for evaluation. The present data do not demonstrate that these strategies are effective. Any program should specify mechanisms and outcomes in advance and be tested with repeated measurements or a comparison condition.

The principal limitations are the cross-sectional design; same-time, same-respondent measurement; possible item

redundancy and common-method variance; incomplete documentation of instrument development and scoring; item analysis in the regression sample; missing descriptive statistics and diagnostic plots; unmeasured confounding; no account of students nested within grades or classes; uncertain response flow and ethics documentation; and the single-school setting. These limitations restrict causal, theoretical, behavioral, and population-level interpretations.

Future studies should archive the full questionnaires and scoring syntax, validate translated measures in an independent sample, report means, standard deviations, observed ranges, missingness, correlations, uncertainty intervals, and regression diagnostics, and incorporate teacher observation or objective activity indicators. Longitudinal, multilevel, and intervention designs are needed to assess temporal ordering and practical effectiveness.

D. Conclusion

Among 130 Grade 4–6 questionnaire records from one elementary school, learning motivation, interest in physical activity, and perceived parental support were each positively associated with student-reported PJOK participation after mutual adjustment. The internally consistent regression results indicate $R^2 = .518$, adjusted $R^2 \approx .506$, and $F(3, 126) =$

45.210, although these reconstructed model-fit values must be checked against the original SPSS output. The study does not establish determinants, causal effects, out-of-sample prediction, observed participation, or broad generalizability. Its main contribution is a school-specific estimate of associations that can inform better measured longitudinal and intervention research.

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F. Conflict of Interest

no conflict of interest

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