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Student Learning Motivation in Physical Education Learning Based on Physical Activity: A High School Analysis Study

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Abstract

Study Purpose. Articulate the key intersection points and differences between motivational indicators that can influence the occurrence of motivation to learn in physical education learning at school. This study was designed to examine the effect of physical activity participation in organized schools on indicators of learning motivation in physical education learning.

Materials and methods. Assessment of physical activity based on a questionnaire using the International Physical Activity Questionnaire (IPAQ) and motivation to learn physical education based on research on six indicators that have passed the Expert Judgment stage. Participants consisted of 202 grade 10 students who attended physical education classes at SMAN 1 Sukoharjo, Central Java. The greater the effect of physical activity on participating students to increase the overall learning motivation is higher. Perceptions of learning motivation indicators related to physical activity items.

Results. In both of these influence assessments, indicators of learning motivation can be said to be influenced by several physical activity items. Changes in physical activity can predict changes in learning motivation, except for Learning Tools and Teaching Methods. In particular, physical activity items can affect indicators of students' environmental conditions.

Conclusion. There is a dynamic influence between the participation of learning motivation indicators in physical education learning on student activities at school.

Keywords: Physical Education, Learning Motivation, Physical Activity, High School Students

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Introduction

Physical education is one of the existing subjects and must be taken and implemented by students in every educational unit. Fostering healthy living for harmonious physical, mental, social, and physical activity, as well as harmonious emotional growth and development prioritized and balanced (Khudori & Tuasikal, 2015; Metzler et al., 2013). So that students have different views on corner learning in their schools, some students do not like or underestimate learning while other students are very enthusiastic about doing physical education learning (Rahman et al., 2020). Corner learning requires the ability to design and implement the teaching and learning process effectively and efficiently, and requires teacher creativity that can stimulate student movement (Wicaksono & Utama, 2022). But in fact, the physical education learning of the first-grade high school only learns the basics of sports games, the second grade is to understand sports training, and the third grade is about game strategy patterns. Since this leads to high saturation of physical education learning, it can lead to the fact that the learning objectives are not achieved as set and the chances of student success in achieving learning achievement are reduced. Physical education learning has a role in education based on the Regulation of the Minister of Education of the Republic of Indonesia Number 22 of 2006, which contains the purpose of physical education so that students can develop skills and maintain fitness for a healthy lifestyle with selected physical activity.

High School students are generally sixteen to nineteen years old, and how many are in the adolescent stage of development (Alif & Sudirjo, 2019). Adolescence is a period of growth between children and adults, with significant changes in social, physical, cognitive, and psychological conditions. Teenagers often think about what could happen without thinking about ideal qualities for themselves, others, and the world. But in the adolescent stage (SMA) the ability to think according to one's own opinion is considered the same as the opinion of others because the opinions of others are not accompanied by evaluation (National Academies of Sciences, Engineering, 2019). The characteristics of high school students 15-17 years include; 1) Mental; a) build oneself, b) be mentally stable and immature, c) form experiences, d) like ideal things; 2) Social; a) Sensitive to the opposite sex, b) Freer, c) trying to escape from the adult environment, d) social development, e) problems of self-determination and adventure, f) Conscious of good appearance, g) Unhappy with the rules of both parents, h) Group view.

Motivation is one of the psychological aspects that drive people to express their capacity in action to achieve desired goals (Hendri & Aziz, 2020). A study conducted by Sulnawir et al (2020) shows that extrinsic factors are influenced from outside such as; teaching methods, learning tools, time, teachers, principals, parents, community, achievements, and rewards with moderate averages. If adolescents understand more social support resources, their level of interpersonal trust will be higher, and they will be increasingly able to increase courage and confidence in the face of adversity. Lack of group social interaction is identified as a contributor to obesity in adolescents (Waites-Howard, 2021). Support from family, teachers, and peers is a factor that shapes feelings of self-acceptance that can influence positive health behaviors (Bravin et al., 2019; Utama, Doewis, et al., 2023). Extrinsic motivation is also a type of motivation where a learning activity begins and continues based on outside encouragement that is not related to learning activities. On research (Sulnawir et al., 2020), Extrinsic factors affect needs, expectations, interests, and the average talent acquired is moderate.

Haosheng et al (2019), discuss the influence of the physical structure of the body on an individual's cognitive abilities. The way and steps of cognitive processes are determined by the physical properties of the body. The theory was developed because the underlying concept is that individual behavior is shaped by an individual's ability to regulate his behavior and structure his environment (Kay & Kibble, 2016). There is an interaction between the personal behavior of the individual and the environment. The premise is that the environment is capable of influencing behavior and is modified to reinforce positive behavior changes including health

habits, physical activity, and improving self-esteem. Constructs include behavioral capacity, self-control, observational learning, reinforcement, self-control, and self-efficacy (Knol et al., 2016). Motivation refers to the act of approaching work or learning with well-thought-out original ideas. thus, motivation is one aspect of determining learning outcomes (Muhammad, 2017; Satriawan et al., 2023) Motivation has a great influence on learning, in this case, physical education learning at school. Without motivation no one learns and without motivation, there is no learning activity. This is because motivation is an important component in encouraging children to learn (Prihartanta, 2015). To promote involvement in the learning process, achieve educational goals, and produce desired learning outcomes, therefore students' motivation is essential (Hendri & Aziz, 2020).

The student's learning motivation increases when someone encourages it, without it the student cannot learn as effectively as possible (Matondang, 2018). One of the psychological factors that helps and motivates a person to achieve his goals is the desire to learn. It states that the following principles can be applied to motivate learning; 1) Students are more active in lessons because they are interesting; 2) Learning objectives are formulated; 3) learning outcomes; 4) More praise and appreciation; 5) Student curiosity; 6) consider each student's differences; 7) Consistently pay attention (Filgona et al., 2020). Revealed that motivation is an important component of educational life because it encourages students to be successful so that the tendency of the soul is relatively permanent towards a person, which is followed by a feeling of happiness (Strayhorn, 2018).

Motivation is a series of actions done to try and make someone like or want to do something and if they don't like it, they try to hide their desire (Emda, 2017). Learning motivation has the function to encourage students to improve learning which affects learning success (Emda, 2017; Sanjaya, 2010). This makes students more motivated to learn and more eager to complete their teacher's assignments on time and get good grades (Sanjaya, 2010). Each individual's actions aim to satisfy his needs or achieve certain goals with a willingness to learn (Sanjaya, 2010). Learning motivation is one of the internal factors that encourage students to study harder to ensure the continuity of learning activities (Afrilia et al., 2022). Students who have low motivation in learning will have difficulty mastering the lesson. It will have an impact on learning outcomes that are less than optimal (Afrilia et al., 2022). Said that the factors that arise in one's motivation are as follows: 1) Need factors, The emergence of one's motivation is driven by the need for physical and psychological needs; 2) social motive factors; and 3) emotional factors. The success of physical education learning itself is influenced by internal factors based on biological and psychological. Then external factors are based on the school environment, community environment, and family environment (Aenon et al., 2020). Internal Factors In Physical education learning students there are biological factors (mental health) and psychological factors (intelligence, talent, interest, attention, student motivation). As in research by Yulis et al. (2016), students of SMA Negeri 1 Tanah Putih have learning motivation in the category of less good which affects learning outcomes. Construct-related motivation positively predicts the behavior of physical activity performed at leisure (Nur et al., 2019).

It was noted in several prevention protocols reviewed that targeting such individuals in determining an action, physical activity, and physical education improved students' overall health and encouraged lifestyle changes. The focus on adolescence is recognized as a significant period for sustained changes in health habits due to lifestyle changes (Waites-Howard, 2021). The purpose of this study was to facilitate behavioral change in learning motivation based on physical activity to improve overall health which influences the student's determination of action. According to research Gu et al., (2018), demonstrate that student motivation in physical education learning plays an important role in understanding the physical activity participation of school-age students and skills learning in physical education. Physical activity has a direct

effect on physical education learning motivation (Hasbullah, 2020; Utama, Doewis, et al., 2023).

Filgona et al (2020) Studying student motivation in education is important with the aim of directing student behavior in a certain direction. According to Research by Shi et al (2022), the BMI measurement of 264 middle school students in China's Shanxi Province shows that 36.68% of students with high BMI and reduced physical activity have poorer academic performance due to low learning motivation so teachers and parents need support to pay attention to this. Penelitian Hollis et al (2017) Physical education spent in moderate to vigorous physical activity (40.5%) is below so additional strategies are needed to build more active lesson time in physical education. According to Research Bailey (2017) sports and other forms of physical activity in schools can make different contributions to educational attainment with a wider range of benefits on motivation to learn focusing on cognitive functioning, psychosocial development, school engagement, and general educational attainment

In the end, this research is expected to be a guideline for teachers and parents to find out some aspects of learning motivation in physical education learning in schools in terms of physical activity carried out by students themselves with special attention. Attention to several indicators studied in learning motivation is certainly a consideration in the future always improved by both teachers and students themselves with the emergence of innovations in physical activity carried out.

Materials and methods

Analyzing indicators of learning motivation and physical activity, this study was designed to examine the relationship between participation in organized out-of-school physical activity programs and the process of determining the characteristics of the influence of these variables in physical education. The variables determining student learning motivation were measured using relevant instruments, and information about organized physical activity experiences was collected in a survey. Modeling analysis of structural equations is carried out. The designed model approach usually begins with estimating physical activity factors and measuring models that test between observed and unobserved items. Once the sufficiency of the measurement model is confirmed, the structural equation model is estimated to test the hypothesized structural relationships.

Study Participants

In the study, the author will conduct research at SMA 1 Sukoharjo, Central Java Province. It is the basis for consideration as a research location because SMA 1 Sukoharjo in January 2022 was among the 20 best public high schools in Central Java, but dropped to 38 LTMPT versions. Then there is a percentage of 25% of students entering based on achievement pathways in zoning and outside zoning. The sample in this study was by purposive sampling, where the research sample was students in 6 tenth grade of SMA Negeri 1 Sukoharjo with a vulnerable age of 15-17 years and was in good health for the last week at the time of the study.

Table 1. Analysis of research sample data

	Sample (N=202)	**Mean (SD)**	**t**	**df**	**p-value**
Age					
15	96 (47.52 %)				
16	103 (50.99 %)	15.54 (0.53)	416.400	201	0.000
17	3 (1.49 %)				
Height (Cm)	202	159.82 (7.55)	300.762	201	0.000
Weight (Kg)	202	53.11 (13.02)	57.919	201	0.000

Study Organization

After the sample is selected, we contact the relevant regional education office, the school takes care of research permits, and physical education teachers to get class hours to take sample data. This procedure helps ensure maximum participation of the entire sample. Students are informed that all responses will be confidential. In addition, they were asked to take measurements of their height and weight and answer all truthful questions and ask for help if the questions were not clear. The participants spent 30-60 minutes measuring and filling out questionnaires. Once the research is complete, a special report is written for each team, where they can see an assessment of their motivation level.

The IPAQ Group developed this questionnaire to facilitate physical activity assessments for use around the world. International Physical Activity Questionnaire consisting of Checklist, PE Class, Recess, Lunch, After school, Evenings, Weekend, and Description (Dharmansyah & Budiana, 2021) specifically for upper secondary students with the PAQ-A Physical Activity Questionnaire (Kowalski, 2014) which has been adopted in Indonesian with test results Reliability 0.721 and Validity 0.568 Valid (Erwinanto, 2017). The use of PAQ-A is carried out for SMA entering the adolescent stage aged 15-18 years (Dapan et al., 2017). The PAQ-A questionnaire question format is contained in Scaled Response Questions, which is a form of a question using a scale to measure and summarize the overall physical activity of respondents to the question (Dapan et al., 2017). In this case, physical education learning motivation uses questionnaires from previous research with six indicators; health, attention, interests, talents, teaching methods, learning tools, and environmental conditions that have passed the Expert Judgment stage (Sulaksono, 2017). Based on the validity test, the r table r hit questionnaire of 0.312 means valid. Testing the reliability of the tool using the Alpha-Cronbach formula obtained a reliability coefficient of 0.878 (Sulaksono, 2017).

Statistical analysis.

Statistical analysis was performed with ANOVA after verification of the homogeneity of the variant with Levene statistics. The difference is considered statistically significant for p-values ≤ 0.05. Data is displayed in mean and standard deviation. The calculations were performed with Statistical SPSS 25 software. Following the objectives of this study, analyzing the influence of indicators of learning motivation variables is used to test the hypothesis of physical activity based on the influence between indicators of these variables. In short, this study evaluated the variables of learning motivation along with the relationship of physical activity to predict the strongest. The relationship between the variables analyzed in this study allows defined explanators for motivation and self-regulation mechanisms that lead individuals to devote time and commitment to exercise.

Results

The results showed that students' learning motivation increased when someone encouraged it, without which students could not learn as effectively as possible (Matondang, 2018). Motivation energizes learning activities, motivates students, and provides engaging learning materials that facilitate learning and memorization. The results provide support for hypotheses about physical activity levels and learning motivation variables based on their influence indicators. The results support the relationship between learning motivation variables and physical activity. Learning motivation is an indicator of assessment (health, attention, interest, talent, teaching methods, learning tools, and environmental conditions).

Analysis of learning motivation based on indicators

Some indicators with different numbers of statement items use a four-answer Likert scale. The 'health' indicator, for example, contains 5 statement items measured on a Likert scale in contrast to the 'attention' indicator which contains 6 question items. Therefore, all item scores are explained in advance with descriptive results of the answers to the statements given by students later, before testing is carried out standardized scores are calculated for each indicator. Descriptive answer scores, indicators of learning motivation, are described in the table for further analysis. Description of the answers given to provide an explanation of physical education learning motivation on health indicators.

Table 2. Health Indicators Physical education learning motivation

No	Health Indicators	Answer				N	Score	Mean	TCR
		SS	S	TS	STS				
		4	3	2	1				
1	Student fitness will be maintained when doing sports activities at school.	154	48	0	0	202	760	3.76	94.06
2	Following physical education learning, the body becomes healthy.	112	89	1	0	202	717	3.55	88.74
3	Following physical education is expected to be better fitness.	109	91	2	0	202	713	3.53	88.24
4	Attend physical education so that the body's organs function optimally.	106	94	2	0	202	710	3.51	87.87
5	Do not like to follow physical education learning because it can cause fatigue which is very meaningful.	9	12	110	71	202	363	1.80	44.93

Based on Table 2 of the health indicator learning motivation questionnaire that has been distributed, out of 202 respondents, 154 people strongly agree about the importance of maintaining physical fitness at school. That is, in point one almost all respondents know fitness is useful for motivating students at school. Similarly, to maintain a healthy life (Point 2), maintain fitness (Point 3), and make organs function optimally (Point 4), students understand that not participating in physical learning will have an impact on fatigue so that ultimately reduce their learning motivation (Point 5).

Furthermore, the description of the answers given provides an explanation of the motivation to learn physical education on the indicator of attention.

Table 3. Attention Indicators Physical education learning motivation

No	Attention Indicators	Answer				N	Score	Mean	TCR
		SS	S	TS	STS				
		4	3	2	1				
1	Pay attention when the physical education teacher is explaining the subject matter.	56	136	8	2	202	650	3.22	80.45
2	Study the material first before the teacher explains the subject matter to be given.	23	89	82	8	202	531	2.63	65.72
3	Always try to pay attention to the teacher during physical education lessons	49	135	18	0	202	637	3.15	78.84
4	Concentrate on receiving lessons, because the physical education material taught is difficult.	27	120	52	3	202	575	2.85	71.16
5	Try to do physical activity movements given by the teacher during learning.	57	115	23	7	202	626	3.10	77.48
6	Not paying attention to the teacher when explaining Physical education learning because the material is boring.	9	22	91	80	202	364	1.80	45.05

Based on Table 3 of the attention indicator learning motivation questionnaire, it was found that 156 agreed with paying attention to the teacher when explaining the important material for students to understand the physical learning taught (point 1), because this is also related to (point 4) about concentrating on learning. slightly balanced response The answers given are related of course to learning in advance the material taught by students (Point 2), so the point obtained is that most of them learn in advance the material to be delivered by the teacher but some receive material at the time of learning at the beginning (Point 3), So this is a concern that the existence of interest factors in the learning process can be said because this also answers the third pound of always paying attention to learning and (point 6) because boring learning can be the cause of this conveyed in a high agree to answer (point 5).

Furthermore, a description of the answers was given to provide an explanation of the motivation to learn physical education on the indicators of interest.

Table 4. Indicators of interest in learning motivation of physical education

No	Interest Indicators	Answer				N	Score	Mean	TCR
		SS	S	TS	STS				
		4	3	2	1				
1	Physical education lessons are preferred because they are in the field and can release boredom after attending lessons in class.	95	85	13	9	202	670	3.32	82.92
2	Attend physical education lessons happily without coercion and interference from others.	83	100	18	1	202	669	3.31	82.80
3	Excited to take physical education lessons because it is in accordance with my dream of becoming an athlete.	27	54	103	18	202	494	2.45	61.14
4	Take physical education lessons because learning is in high demand.	31	113	52	6	202	573	2.84	70.92

Based on Table 4 of the interest indicator learning motivation questionnaire, students gave respondents about (point 1) answers 95 students strongly agreed that the learning carried out in the field was very interesting because it could release boredom. So that answering that physical education learning is mostly due to the element of interest to follow not because of coercion (point 2), it can mean because there is an expectation factor to become an athlete (point 3) or because it is indeed interested in physical education learning itself (point 4) because the highest answer response is different.

Furthermore, the description of the answer given provides an explanation of the motivation to learn physical education on the aptitude indicator.

Table 5. Aptitude Indicator of physical education learning motivation

No	Aptitude Indicator	Answer				N	Score	Mean	TCR
		SS	S	TS	STS				
		4	3	2	1				
1	Do not have the ability to do one of the sports so they are not happy when attending physical education lessons at school.	7	46	103	46	202	418	2.07	51.73
2	Attending physical education learning because I want to excel in sports.	29	100	63	10	202	552	2.73	68.32
3	Participate in physical education learning to develop the talents I have	40	102	52	8	202	578	2.86	71.53
4	Participate in physical education learning because it suits my talents.	28	73	92	9	202	524	2.59	64.85

Based on Table 6 of the aptitude indicator learning motivation questionnaire, some gave different responses meaning that participating in physical education learning must have sports

(point 1) so the highest answer disagreed with 103 students, responses with the same meaning that participating in physical education only want to excel in sports (point 2). Physical education learning provides space to develop students' talents (point 3), but in the physical education learning process, students should follow everything taught to be able to find out their talents or develop them (point 4).

Furthermore, a description of the answers was given to provide an explanation of physical education learning motivation on teaching method indicators.

Table 6. Teaching Method Indicators physical education learning motivation

No	Indicators Teaching methods	Answer				N	Score	Mean	TCR
		SS	S	TS	STS				
		4	3	2	1				
1	Physical education teachers in teaching vary greatly, not monotonously, so it is not boring in receiving lessons.	45	128	24	5	202	617	3.05	76.36
2	Physical education teachers never get angry when teaching when their students cannot move correctly during KBM	53	116	30	3	202	623	3.08	77.10
3	The teacher gave praise to students who could do movement techniques well, with the aim of encouraging them to participate in physical education learning.	51	136	15	0	202	642	3.18	79.46
4	Physical education teachers can excuse students who have not been able to perform the movement techniques taught and direct the correct movements to students.	71	126	5	0	202	672	3.33	83.17
5	The way of teaching physical education teachers is very easy for students to understand and accept.	56	140	5	1	202	655	3.24	81.06
6	Participate in physical education learning because the teaching style of physical education teachers is not monotonous.	49	134	18	1	202	635	3.14	78.59

Based on Table 6 of the learning motivation questionnaire indicator of teaching methods, respondents answered the highest affirmative answers, so it is important that the role of teachers provides varied physical education learning (point 1) and provides lessons not showing anger (point 2) because students need small but memorable flattery for themselves (point 3) and excuse mistakes made by students (point 4). The teaching method becomes very important related to the understanding obtained by students and being able to implement the learning provided perfectly (point 5).

Furthermore, the description of the answer given provides an explanation of physical education learning motivation on the learning tool indicator.

Table 7. Learning Tools Indicators physical education learning motivation

No	Learning Tools Indicators	Answer				N	Score	Mean	TCR
		SS	S	TS	STS				
		4	3	2	1				
1	Complete facilities, facilities, and infrastructure are indispensable for the process of teaching and learning activities.	81	112	8	1	202	677	3.35	83.79
2	The tools used in physical education lessons are so innovative that I am motivated to follow them.	38	133	27	4	202	609	3.01	75.37
3	Follow physical education learning because teachers in teaching provide elements of play with modified tools.	11	29	131	31	202	424	2.10	52.48

4	The teacher provided the course material with interesting learning tools so I was interested in following physical education lessons	25	137	29	11	202	580	2.87	71.78

Based on Table 8 of the learning motivation questionnaires indicators of learning tools, it is important that complete facilities and infrastructure (point 1) as learning support 112 respondents answered in the affirmative. Learning tools are used by teachers to develop innovative learning processes (point 2) can also be done with modifications (Point 3) and are able to foster students' desire to follow learning (point 4) so that different student learning motivations occur.

Furthermore, a description of the answers was given to explain the motivation to learn physical education on indicators of environmental conditions.

Table 8. Environmental Condition Indicators physical education learning motivation

No	Environmental Condition Indicators	Answer				N	Score	Mean	TCR
		SS	S	TS	STS				
		4	3	2	1				
1	My parents supported me in exploring my potential in sport	44	117	34	7	202	602	2.98	74.50
2	Participating in physical education learning because of the wishes of parents.	14	41	120	27	202	446	2.21	55.20
3	Like physical education learning because many friends do sports activities	22	107	67	6	202	549	2.72	67.95
4	Follow physical education learning because it is to expand association at school	24	104	65	9	202	547	2.71	67.70
5	Enthusiasm for physical education learning due to changing locations	20	109	63	10	202	543	2.69	67.20

Based on Table 9 of the learning motivation questionnaire on environmental condition indicators, respondents answered that parental support (point 1) is important to increase learning motivation, 117 answered in the affirmative, but the role of parents here is as an encouragement to foster enthusiasm for learning not because they follow their ability (point 2). However, the perspective that the kindest of the surrounding environment of one of them is also a motivation for participating in physical education learning (point 3), expanding the experience by always participating in extramural competitions (point 40 and the process is not monotonous to follow (point 5).

Learning Motivation Analysis

Testing to determine the total of all indicators as the next step for the next analysis can be seen in the table below:

Table 9. Analysis of students' physical education learning motivation

	N	Mean	SD	t	df	p-value
Health	202	16.15	1.53	150.10	201	0.000
Attention	202	16.75	1.90	125.06	201	0.000
Interest	202	11.91	2.00	84.52	201	0.000
Talent	202	10.26	1.70	85.63	201	0.000
Teaching Method	202	15.89	1.96	115.48	201	0.000
Study Tool	202	14.48	1.66	123.69	201	0.000
Environmental conditions	202	13.30	2.20	86.03	201	0.000

Furthermore, knowing that the analysis of learning motivation variable indicator data based on p-value < 0.05 with standard deviation (Health, 1.53; Attention, 1.90; Interest, 2.00;

Talent, 1.70; Teaching Method, 1.96; Study Tool, 1.66; Environmental conditions, 2.20) data can be said to be valid and can be done for further testing. Similarly, changes in student learning motivation were assumed not to contribute to physical activity. We believe that a more internal process of change in one's motivation level will not affect the feeling of responsibility to keep teaching as this depends on more external factors.

Physical activity analysis

Descriptive analysis was performed to determine the role of physical activity as a constructed value of expectation (i.e., check the last 7 days of exercise, exercise class, recess, lunch, after school, evening, weekend, and activity description). Table 11 lists the calculation data after an assessment based on testing the most informative variables for our study.

Table 10. Statistical analysis of student physical activity variables

	PAQ-C	Physical activity assessment					t	p-value	Total	M	Med	SD	Sum
		1	2	3	4	5							
Checklist	**Q1**	79	109	12	1	1	45.25	0.000	202	1.66	1.62[a]	0.52	336
PE Class	**Q2**	12	31	63	62	34	43.04	0.000	202	3.37	3.42[a]	1.11	681
Recess	**Q3**	135	53	9	4	1	28.33	0.000	202	1.43	1.36[a]	0.72	289
Lunch	**Q4**	42	50	76	12	22	31.04	0.000	202	2.61	2.54[a]	1.20	528
After School	**Q5**	114	38	38	9	3	24.81	0.000	202	1.76	1.58[a]	1.01	354
Evenings	**Q6**	21	62	84	19	16	37.61	0.000	202	2.74	2.67[a]	1.03	553
Weekend	**Q7**	5	138	34	7	18	37.00	0.000	202	2.48	2.31[a]	0.95	501
Description	**Q8**	105	76	14	5	2	28.88	0.000	202	1.63	1.54[a]	0.80	329
PAQ-C	**Total**	513	557	330	119	97	60.55	0.000	202	17.66		4.15	

Analysis of the effect of motivational variable indicators on physical activity

The value of the coefficient on the result of the significance of the influence of each variable in more detail is described in the following table:

Table 11. Results of the Analysis of the Effect Between Learning Motivation Indicators on the Eight Components of Physical Activity Assessment

	Checklist	PE Class	Recess	Lunch	After School	Evenings	Weekend	Description	PAQ-C
Health	0.038*	0.128	0.290	0.189	0.000*	0.132	0.251	0.172	0.016*
Attention	0.001*	0.009*	0.019*	0.006*	0.006*	0.073	0.213	0.305	0.002*
Interest	0.000*	0.000*	0.317	0.000*	0.000*	0.000*	0.295	0.140	0.000*
Talent	0.000*	0.035*	0.290	0.000*	0.001*	0.000*	0.193	0.473	0.000*
Teaching Method	0.277	0.481	0.442	0.255	0.079	0.192	0.007	0.472	0.296

Study Tool	0.345	0.009*	0.105	0.214	0.149	0.475	0.371*	0.264	0.118
Environmental conditions	0.000*	0.003*	0.242	0.000*	0.070	0.000*	0.047*	0.113	0.000*
F	6.361	2.496	0.812	9.109	4.517	5.484	1.624	0.644	6.881
P-value	.000[b]*	.018[b]*	.578[b]	.000[b]*	.000[b]*	.000[b]*	.131[b]	.719[b]*	.000[b]*

* P < 0,05

Based on Table 11 it is found that, Perception indicators of learning motivation are related to physical activity items. In both assessments of influence, indicators of learning motivation can be said to be influenced by several items of physical activity. Regression analysis revealed (table 11) that changes in physical activity can predict changes in learning motivation, except for the Study Tool and Teaching Method. In particular, physical activity items (Checklist, PE Class, Lunch, After school, and Evenings) are able to influence the indicators of students' environmental conditions. The findings of Recess and Weekend showed that there was no influence on learning motivation because at that time there was no activity carried out. The practical implications of the study also include encouraging physical activity-based programs that emphasize students' motivation to learn in physical education learning on an individual perspective (Utama, Doewes, et al., 2023).

Model fit index for learning motivation and physical activity measurement test based on influence testing with p coefficient value < 0.05, so that only those depicted (fig. 1) have significant influence values only. The purpose and purpose illustrate that to be able to be considered that physical activity items and some indicators have a direct influence.

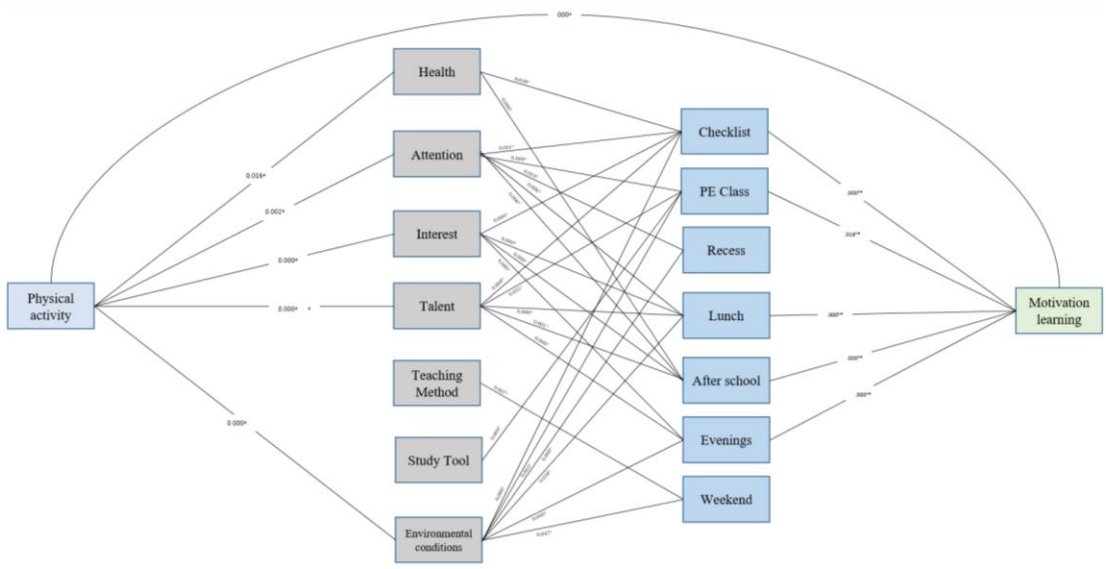

Figure 1. Final indicator model of student learning motivation and physical activity with standard coefficients. * p <.05; Significant value

Discussion

Physical education is an important component of school-based interventions aimed at promoting physical activity among children. PE has been shown to have positive effects on health, including improving physical fitness, reducing the risk of disease, and improving mental health (Jankauskiene et al., 2023). Common problem anxiety affects their academic achievement, social development, and overall well-being (Shernoff et al., 2017). Anxiety can manifest in many forms, including somatic anxiety, personality anxiety, and social anxiety

(Costache et al., 2020). There is a relationship between physical activity and academic achievement levels and there is a relationship between fatigue, learning motivation, and physical activity to academic achievement levels (Marques et al., 2018). According to Haerens et al (2015) Control of learning, this dimension of teaching along with its consequences in terms of frustration, needs, and motivational outcomes needs to be learned by itself which is influenced by a physical activity carried out. Effective teacher training can raise awareness about the risks of motivation. Physical activity carried out in schools is said to be of high quality to improve health and possible fitness in healthy adolescents thus affecting learning motivation (Bailey, 2017). According to Suwandaru & Hidayat (2021), Physical activity does not directly affect learning motivation which causes a decrease in learning achievement, but physical activity plays an important role in maintaining physical and psychological health. Students who take physical education lessons that positively impact an active lifestyle. An active lifestyle as a benefit of physical education characterized by participation in physical activity is an important determinant of health (Warburton & Bredin, 2016). Motivation theory is driven by internal and external factors, which are formulated to achieve specific goals and meet needs (Prihartanta, 2015).

The motor development of students' growth to become adults is strengthened by their physical and mental condition. Previous studies have found that teacher support, an important object of attachment for high school students in a school setting, can withstand the negative effects of negative factors on student academic achievement (Shi et al., 2022). Higher parental support can also reduce the negative impact of negative factors on academic achievement. Interventions provide insight into nutritional behavior and knowledge. This study provides an opportunity for adolescents to expand their knowledge and influence in determining their actions through a diverse program with curriculum elements with the integration of schools will facilitate this process with the utilization of resources (Waites-Howard, 2021). Biggs et al (2019) state that the role of family, peer, and professional support for healthy eating and physical activity was assessed with the results including some positive outcomes because the adolescent group provided useful information so that connections with related health behaviors showed validity regarding concurrent criteria.

Conclusions

In conclusion, this study broadens our understanding of the effect of student learning motivation participation with physical activity in physical education based on assessment indicators. There is a dynamic influence between the two contexts of student motivation indicators on physical education learning and naturally connected physical activity. Physical education interaction is closely related to physical activity that produces student learning motivation. According to these results, it seems clear that physical activity affects the motivation of students who are directly involved in it supporting a long-term commitment to physical education learning. A limitation of the study comes from the different Likert scales of questionnaire choice answers. Therefore, future projects can be implemented that can be applied to physical education in a complex way, thus encouraging students in a long term to help prevent a decrease in motivation to study in the world.

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Conflict of interest

All authors declare that there is no conflict of interest whatsoever in this research.

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