LITERACY : International Scientific Journals of Social, Education, Humanities

E-ISSN: 2829-3649
P-ISSN: 2829-3908

Research/Review

The Effect of Sport Enjoyment, Physical Activity, and Physical Fitness on the Academic Achievement of Elementary School Students in Malang Regency

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Abstract. Academic achievement reflects the quality of human resources. With high academic performance, it is hoped that the country can produce a smart and competitive young generation in the global era. Sport enjoyment in the PJOK subject is an important factor in increasing active participation among elementary school students. Game-based physical activities not only encourage students to move actively but also help develop important components of physical fitness. This research aims to investigate the direct and indirect impact of sport enjoyment, physical activity levels, and physical fitness on students' academic achievement. This quantitative research uses a multivariate path analysis design involving 194 elementary school students in Malang Regency. Data collection was conducted using two standardized instruments: the Physical Activity Enjoyment Scale and the Physical Activity Questionnaire for Children, as well as through direct measurement of physical fitness using the Indonesian Student Fitness Test. Research results indicate that the excitement of exercising has a significant impact on the physical activity levels of students. Excitement and levels of physical activity also positively influence physical fitness. The excitement in exercising has been proven to have a positive influence both directly and indirectly on academic achievement through physical fitness. This finding emphasizes the importance of developing enjoyable physical activities in PJOK learning to support students' physical development and academic achievement. Teachers are advised to apply game-based learning methods to maintain student participation and foster healthy lifelong habits.

Keywords: Academic Achievement; Game-based Learning; Physical Activity; Physical Fitness; Sport Enjoyment.

Received: August 15, 2025;
Revised: August 30, 2025;
Accepted: September 21, 2025;
Online Available: September 23, 2025;
Curr. Ver.: September 23, 2025

1. Introduction

Academic achievement is a reflection of a student's ability to comprehend and apply the subject matter. With this achievement, students can enhance their self-confidence, which influences their opportunities to pursue further education at higher levels. Furthermore, academic achievement also reflects the quality of human resources. It is hoped that with high academic achievements, the country can produce a young generation that is intelligent and competitive in today's global era.

Currently, Malang Regency is striving to improve the quality of education. The objective of this enhancement is for Malang Regency to be able to send students who are not only high achievers but also champions in academic competitions such as the National Science Olympiad (OSN). According to Hoy, Tarter, and Hoy (2006), students' academic achievement is influenced by three factors, namely collective efficacy, collective trust between students and parents, and an emphasis on academics. These three elements—cognitive, affective, and behavioural—and their interactions form the construct of academic optimism.

The level of physical activity and fitness among children in Indonesia is relatively low. The Indonesian Health Survey (SKI, 2023: 505, 509) indicates that children aged 10-14 have a low level of physical activity (58%), with reasons including lack of time (34.5%), laziness (54.6%), and a lack of peers (14.4%). The impact of an inactive lifestyle and minimal movement among children in Indonesia is extensive and critical, as it can lead to long-term health problems. Based on a report from the World Health Organization (2020: 1), physical activity for children and adolescents has benefits for improving physical condition (heart and muscle strength), cardiometabolic health such as blood pressure, dyslipidemia, glucose levels, and insulin resistance, bone health, as well as cognition that affects academic achievement and executive function, along with mental health by reducing symptoms of depression and lowering levels of adiposity. In this regard, physical education teachers play a vital role in enhancing students' physical fitness through enjoyable sports learning. Optimal physical fitness is expected to improve concentration, learning endurance, and students' mental readiness to face the learning process and achieve success at the national level.

2. Theoretical Studies

Joy in sports is an important factor for initiating and maintaining engagement in physical activity, and it serves as a primary indicator of commitment to exercise (Scanlan et al., 1993). Therefore, activities in physical education should be enjoyable, uplifting, and make students eager to repeat those activities. According to Adank et al. (2023), joy in physical education is key to increasing children's participation in physical activities. Cairney et al. (2012) also state that children will enjoy physical education if the learning is enjoyable, engaging, and exciting.

Physical activity can be defined as any form of body movement that occurs as a result of skeletal muscle contraction, leading to an increase in caloric demand or caloric expenditure exceeding energy needs at rest (World Health Organization, 2010 in Wicaksono and Handoko, 2020: 17). In physical education lessons, physical activity does not always have to be related to sports that require specific skills or established rules. The most important aspect in physical education is to move the body actively and utilise the body's energy beyond a resting state, with the aim of teaching a healthy lifestyle to elementary school students. According to WHO (2020), physical activity is classified into three categories based on MET (Metabolic Equivalent Task). MET is a unit that estimates the amount of energy expended by the body during physical activity, namely light, moderate, and vigorous physical activity. It is also essential to consider the intensity, duration, and frequency of exercise (Wicaksono and Handoko, 2022: 26) to provide benefits from physical, psychological, and socio-economic aspects as stated by the Ministry of Health of the Republic of Indonesia (2015). Furthermore, physical activity for students in physical education not only provides physical benefits but also contributes to character building (responsibility, discipline, cooperation, sportsmanship, and leadership) through physical activity and sports.

The concept of physical activity relates to the acute and chronic effects of physical activity. The acute and chronic effects of physical activity significantly influence various physiological systems and health. Acute effects, characterised by short-duration activity, can lead to immediate physiological changes, such as increased heart rate and elevated levels of immunoglobulin A (IgA), particularly in trained individuals (Bentley et al., 2024). Conversely, the chronic effects of physical activity involving long-term training promote beneficial adaptations to improve cardiovascular health, reduce disease risk, and enhance immune function over time (Liu, 2024).

Physical fitness is the benefit derived from planned physical activity. Physical fitness is related to the Theory of Reasoned Action and Planned Behaviour. This theory explains human behaviour, according to Fishbein and Ajzen (Hagger, 2019). The main construct of the theory of reasoned action is intention, which is a motivational construct considered the closest determinant of behaviour. Intention reflects the extent to which an individual plans to engage in a particular action, shaped by efforts to pursue and realise specific behaviours. Physical fitness in physical education is closely related to the physical activity undertaken by elementary school students. Physical education lessons are designed to enhance students' physical activity and fitness. Giriwoyo (2005:2) states that a fit body is one that has normal bodily organs at rest and during movement or work, capable of supporting all daily activities without experiencing excessive fatigue. Good physical fitness not only provides health benefits but is also closely correlated with improvements in students' academic achievement. Dwyer et al. (2001) indicate that physical activity among students (aged 7-15 years) can enhance physical fitness, which subsequently contributes to improved academic achievement. Other studies have also mentioned that students with better physical fitness levels tend to

have higher cognitive abilities (Visier-Alfonso, 2021), better concentration (Vanheels et al., 2016; Dang, 2012), as well as improved memory (Shin et al., 2024). This is due to increased blood flow to the brain during exercise, which can support optimal brain function.

Joy in sports is an intrinsic element related to the motivation to engage in physical activity (Dishman et al., 2005). Regularly performed physical activity is believed to enhance physical fitness. Gibney et al. (2005) define physical fitness as a set of physical qualities achieved by individuals concerning their ability to perform physical activities. Students' academic achievement is influenced by many factors, including good physical fitness. Students with good physical fitness will be more prepared to learn and possess better concentration. Higher levels of physical activity will optimise physical fitness, particularly cardiorespiratory fitness. Overall, higher levels of physical fitness are associated with cognitive performance, motor skills, and better long-term memory in school-aged children (Marrero-Rivera et al., 2024).

Despite the existence of relevant research, several gaps can still be identified, as previous studies have not integrated the use of the Indonesian Student Fitness Test from the Ministry of Youth and Sports in 2022 as a measure of physical fitness. This is significant because appropriate measurement tools can provide more accurate data regarding children's fitness. Furthermore, most previous studies have used a limited or non-specific population, thus this research will focus on students from several elementary schools in Malang Regency, providing a deeper local context.

Many prior studies have relied solely on questionnaires or self-reports; however, this research will conduct direct measurements of physical fitness, which can yield more objective and valid results. Previous research often separated the analysis of joy in sports, physical activity, and physical fitness. This study will analyse the interaction between these three variables to examine their cumulative effects on academic achievement. Based on this explanation, the researcher aims to determine the extent of the influence of: 1). joy in sports (X1) on physical activity (X2), 2). joy in sports (X1) and physical activity (X2) on physical fitness (X3), and 3). joy in sports (X1), physical activity (X2), and physical fitness (X3) on (Y) academic achievement, both directly and indirectly.

3. Method

To address the hypotheses posited in this study, a quantitative method has been employed using a multivariate analytical approach. According to Creswell (2014), quantitative research is a type of study that utilises deductive methods to validate a hypothesis and elucidate the cause-and-effect interactions between the variables under investigation. In the context of this research, it is crucial to comprehend the preliminary steps that will underpin a more in-depth analysis, namely the determination of time order, normality testing, and covariance analysis.

Time order represents a vital initial step in quantitative research, as it pertains to the establishment of the temporal sequence of the variables being examined. In this study, the researcher has conducted observations regarding the time order to ensure that the independent variable influences the dependent variable in a logical sequence. For instance, if one wishes to investigate the effect of physical activity on students' academic performance, it is imperative to ascertain that physical activity occurs prior to the measurement of academic achievement. Thus, the determination of time order not only clarifies the cause-and-effect relationship but also strengthens the internal validity of the research.

Once time order has been established, the subsequent step is normality testing. This test aims to ascertain whether the collected data follows a normal distribution. In this study, there were 194 respondents who participated, and based on the analyses conducted, the data can be categorised as normally distributed. This is significant because many statistical analysis techniques, including covariance analysis, assume a normal distribution of the data. For example, when employing t-tests or ANOVA, the assumption of normality must be fulfilled for the results to be interpreted accurately. In other words, normality testing serves as a prerequisite that must be satisfied before advancing to more complex analyses.

After confirming that the data is normally distributed, covariance analysis is performed to examine the relationships among all involved variables. This analysis is essential as it enables the researcher to evaluate the impact of independent variables on dependent variables while controlling for other variables that may influence the relationship. Riduwan and Kuncoro (2008) elucidate that the decision-making basis for covariance analysis is akin to that of correlation analysis. If the probability value (sig) is less than or equal to 0.05, the null hypothesis (H0) is accepted, and the alternative hypothesis (Ha) is rejected. This indicates that

there is no significant relationship between the tested variables. Conversely, if the probability value exceeds 0.05, one may proceed to further examine the relationships among the variables.

Following the covariance analysis, the researcher can advance to path analysis. Path analysis is a technique employed to assess the fit of a specific causal model to non-experimental multivariate data. Pedhazur (1982) explains that within the framework of path analysis, the standardised regression coefficients (beta) reflect the direct influence of independent variables on the dependent variable. In other words, path analysis enables the researcher to comprehend the magnitude of the influence exerted by each independent variable on the dependent variable within the context of a broader model. If the beta coefficient is below 0.05, the path analysis model should be discarded, whereas a higher value indicates that the model is viable for retention and further analysis.

Data collection for this research involved 194 students from several primary schools in Malang Regency, including SD Muhammadiyah 10 Pagak, SD Negeri 1 Sumberejo Pagak, SD Negeri 2 Bandungrejo Bantur, SD Negeri 2 Sumberpertung Kalipare, and SD Negeri 1 Kedung Salam Donomulyo. Data were gathered between 7 and 15 February 2025, using various instruments that have been tested for reliability. For instance, the Physical Activity Enjoyment Scale (PACES) developed by Sucipto, Hidayat, and Rustandi (2019) has a reliability coefficient of 0.850. This indicates that the instrument is reliable for measuring students' satisfaction with physical activity. Additionally, the Physical Activity Questionnaire for Children (PAQ-C) with a reliability range of 0.705 to 0.712 was also utilised to assess students' levels of physical activity. The Student Fitness Test released by the Ministry of Youth and Sports of the Republic of Indonesia (2022) was also part of the measurement instruments, which helps provide a comprehensive overview of students' physical fitness. Lastly, the recording of students' report card grades for the first semester of the 2024/2025 academic year constitutes important data that can be linked to the results of the physical activity measurements.

Throughout this entire process, it is essential to observe how each step interrelates and builds a foundation for more profound analysis. Time order ensures that the relationships being analysed are logical and valid, normality testing guarantees that the data employed meets the requisite statistical assumptions, and covariance analysis along with path analysis offers insights into the complex interrelationships among variables. Consequently, this research not only involves the collection of data but also constructs a robust and accountable argument regarding the influence of physical activity on students' academic performance.

In conclusion, this study underscores the importance of employing a systematic and structured quantitative method in addressing the proposed hypotheses. By following clear steps, from the determination of time order, normality testing, to covariance analysis and path analysis, the researcher can yield valid and reliable findings. This process not only provides a deeper understanding of the relationships among variables but also makes a significant contribution to the existing literature on physical activity and academic performance. This affirms that an appropriate analytical approach is crucial in quantitative research to achieve meaningful and beneficial outcomes for educational development.

4. Results And Discussion

Respondent distribution can be seen in table 1

Table 1. Distribution of Respondents.

Variable	Gender		Age			
	M	F	10	11	12	13
SD Muhammadiyah 10	25	18	4	23	16	0
SDN 1 Sumberejo	21	21	1	20	20	1
SDN 2 Bandungrejo	19	16	1	24	10	0
SDN 2 Sumberpetung	25	13	0	7	27	4
SDN 1 Kedungsalam	16	20	4	17	14	1

Results should be clear and concise. The results should summarize (scientific) findings rather than providing data in great detail. Please highlight differences between your results or findings and the previous publications by other researchers. The author(s) can use tables, graphs or pictures as needed to describe the results.

Please submit tables as editable text and not as images. The title of the table is writeen in a short and brief phrase (not a sentence) and is placed in the above. Table titles start with capital letters, bold, and placed in the center. The space between the table and the text before and after is 1 space. Author(s) should place explanatory matters in footnotes, not in the heading.

Table 2. Distribution of independent variables.

Variabel	Very Low	Low	Currently	High	Very High
Sport Enjoyment	0	0	6	79	109
Physical Activity	37	116	36	5	0
Physical Fitness	0	21	66	61	46

No primary school students in Malang Regency were found to exhibit very low or low levels of enthusiasm for sports. Meanwhile, there were 6 students (3.1%) classified as having a moderate level of enthusiasm for sports, with scores ranging from 42 to 54. The number of students demonstrating a high level of enthusiasm for sports was 79 (40.7%), while those in the very high category, with scores between 68 and 80, totalled 109 (56.2%).

The frequency distribution of physical activity reveals that 37 students (19.1%) were categorised as having very low physical activity, 116 students (59.8%) as having low physical activity, 36 students (18.6%) as having moderate physical activity, and 5 students (2.6%) as having high physical activity, with no students classified in the very high physical activity category.

The frequency distribution of physical fitness indicates that no primary school students in Malang Regency fell into the very low category. However, there were 21 students (20.8%) classified as having low physical fitness, 66 students (34.0%) as having moderate physical fitness, 61 students (31.4%) as having high physical fitness, and 46 students (23.7%) as having very high physical fitness.

Table 3. Distribution of Dependent Variables.

Variable	Not Complete, < 75	Complete, ≥ 75
Report Card Score	0	194

Meanwhile, the report card scores of the students show that 194 students meet the Minimum Completeness Criteria.

Table 4. Calculation of analysis of covariance.

Variable	Sport Enjoyment	Physical Activity	Physical Fitness	Report Card Score
Sport Enjoyment		0,027	0,001	0,001
Physical Activity	0,027		0,007	0,001
Physical Fitness	0,001	0,007		0,001
Report Card Score	0,001	0,001	0,001	

The results of the analysis show that all the variables studied, namely physical fitness, physical activity, enjoyment in exercising, and academic achievement, have probabilities ranging from 0.001 to 0.027 below the significance level (0.05), so these variables are suitable for the main test, which is path analysis.

Fisrt Hypothesis

To examine the first hypothesis regarding the influence of exercise-induced excitement on physical activity, reference can be made to Table 5 presented below :

Table 5. Substructural summary 1.

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	0,158[a]	0,025	0,020	17,485

Predictors : (Constant) , Sport Enjoyment

Coefficients[a]

Model		Unstandardized B	Coeffcients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	51.133	11.927		4.287	<,001
	Sport Enjoyment	.392	.176	.158	2.223	.027

a. Dependent Variable: Physical Activity

The Model Summary indicates that Exercise Excitement (R Square = 0.025, Adjusted R Square = 0.020) accounts for only approximately 2.0% of the variation in Physical Activity. Nevertheless, as evidenced in the Coefficients table, Exercise Excitement is shown to significantly predict Physical Activity (B = 0.392, Sig. = 0.027), suggesting that higher levels of exercise excitement correlate with increased physical activity..

Table 5 demonstrates that the path coefficient p21 (beta) is 0.158, which is greater than 0.05 as per Pedhazur (1982). Consequently, the hypothesis positing that there is an influence of exercise enjoyment on the physical activity of students in Malang Regency is accepted.

Second Hypothesis

To examine the second hypothesis regarding the influence of exercise-induced excitement and physical activity on physical fitness, the data can be observed in Table 6 below :

Table 6. Substructural summary 2.

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	.277[a]	.077	.067	21.7632

a. Predictors : (Constant), Physical Activity, Sport Enjoyment

Coefficients[a]

Model		Unstandardized B	Coeffcients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	9.183	15.540		.591	.555
	Sport Enjoyment	.636	.222	.201	2.861	.005
	Physical Activity	.206	.090	.161	2.290	.023

a. Dependent Variable: Sport Enjoyment

In the regression model with Physical Fitness as the Dependent Variable, the Model Summary indicates that Physical Activity and Exercise Enjoyment (R Square = 0.077, Adjusted R Square = 0.067) account for approximately 6.7% of the variation in Physical Fitness. The Coefficients Table confirms that both Exercise Enjoyment (B = 0.636, Sig. = 0.005) and Physical Activity (B = 0.206, Sig. = 0.023) significantly predict Physical Fitness.

Third Hypothesis

To test the third hypothesis regarding the influence of exercise enjoyment, physical activity, and physical fitness on academic achievement, the data can be seen in Table 7 below :

Table 7. Substructural summary 3.

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	.443[a]	.196	.183	3.561

a. Predictors : (Constant), Sport Enjoyment, Physical Actifity, Physical Fitness

Coefficients[a]

Model		Unstandardized B	Coeffcients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	67.688	2.545		26.595	<.001
	Sport Enjoyment	.120	.037	.218	3.237	.001
	Physical Actifity	.071	.015	.0320	4.792	<.001
	Physical Fitness	.014	.012	.079	1.167	.245

a. Dependent Variable : Academic Achievement

Table 7 presents the path coefficients for p41 (beta) at 0.218, p42 (beta) at 0.320, and p43 (beta) at 0.079, all of which exceed the threshold of 0.05. The indirect effect of exercise enjoyment on academic achievement through physical fitness is calculated using the following formula : (p31)(p43) = (0.201)(0.079) = 0.016.

Similarly, the indirect effect of physical activity on academic achievement through physical fitness is determined using the formula : (p32)(p43) = (0.161)(0.079) = 0.013.

Based on the data presented, it is concluded that there is a significant direct influence of exercise enjoyment and physical activity on the physical fitness of students in Malang Regency. Furthermore, there is an indirect effect of exercise enjoyment and physical activity on academic achievement via physical fitness; however, the direct influence is more pronounced.

Thus, the hypothesis stating that there is a direct and indirect influence of exercise excitement and physical activity on academic achievement through the physical fitness of students in Malang Regency is accepted.

The joy of exercising is an important factor that greatly influences the level of physical activity of students, especially at the elementary school level, where children of this age are characterized by being active and participating in physical activities due to feelings of happiness. Based on the findings of the research, it is known that this enjoyment of exercising is explained by two main things (according to the questionnaire studied), namely (1) the

physical education curriculum (PJOK) that is implemented, and (2) the physical enjoyment felt directly by the students. The joy of exercising must be designed based on Curriculum Phase C (Ministry of Education, Culture, Research and Technology of the Republic of Indonesia, 2002): to shape students who are physically literate. This is carried out by teachers: (1) Developing awareness of the importance of physical activity to achieve personal growth and development, as well as an active lifestyle throughout life, (2) Developing knowledge and self-management skills in efforts to improve and maintain physical fitness, self-wellbeing, and healthy living behaviors, (3) Developing fundamental movement patterns and motor skills based on the application of concepts, principles, strategies, and tactics in general, (4) Establishing a strong moral character foundation through the internalization of values such as self-confidence, sportsmanship, honesty, discipline, cooperation, self-control, leadership, and democratic behavior in engaging in physical activities as a reflection of personal and social responsibility, (5) Creating a recreational atmosphere filled with joy, social interaction, challenges, and self-expression, (6) Developing the Pancasila Student Profile who is faithful and pious to God Almighty, creative, cooperative, globally diverse, critically reasoning, and independent through physical activities. And PJOK Learning Outcomes (1) Elements of movement skills, (2) Elements of movement knowledge, (3) Elements of movement application, (4) Elements of character development and internalization of movement values. The elements aimed at achieving the learning objectives in Phase C can be implemented through engaging and varied sports games, games that focus on active student involvement/participation rather than competition, avoiding physical punishment, and providing students the opportunity to choose or discuss the games they prefer with their peers.

When the curriculum and learning outcomes of Physical Education, Sports, and Health and the main objectives of Physical Education, Sports, and Health (PJOK) in Phase C are applied in PJOK classes, teachers must truly create lesson plans that are intentionally made enjoyable, design enjoyable learning methods that provide opportunities for all students, not just specific students who excel in PJOK class, to move together, making students more enthusiastic and happy to participate in PJOK lessons in accordance with the learning outcomes objectives.

The teacher gives the freedom to students to choose the types of games or activities that make their bodies move. Physical education is intended for all students, not just for high-achieving or active students, but for all learners. The goal is not only to teach students to have an active lifestyle, but also to encourage students who engage in activities happily, which will yield more effective and longer-lasting learning, capturing their attention, interests, and motivation. Conversely, a lack of joy can reduce motivation and engagement, so the joy of exercising is an important factor that must be the focus of physical education. Purnama, Aswara, and Bekti (2024) in their research on the joy of exercising also stated that it is important for physical education teachers to prioritize students' happiness or enjoyment in the physical education learning process.

The joy of exercising in game-based physical education for children and adolescents was also found in the research by Mo et al. (2024). The results of their study show similarities with this research, namely that the implementation of games in physical education subjects can be an effective approach to increase students' excitement compared to conventional methods.

The joy of exercising influences the physical fitness of elementary school students in the Malang district. Students who feel happy tend to exercise longer and more actively, move with enthusiasm without feeling burdened, work out longer and more actively, and consistently enjoy physical education while looking forward to PE lessons. The appropriate intensity of movement (such as in small ball games, large ball games, and net games) supports the physiological adaptation of the body. Costigan et al. (2024), their longitudinal research shows that the joy of exercising is associated with fitness outcomes (cardiopulmonary endurance and muscle strength), suggesting that students who have positive experiences during physical education lessons are more likely to seek opportunities to be active, thus contributing to higher fitness levels.

The physical activities carried out by elementary school students have a direct impact (short-term effects) and an indirect impact (long-term effects) on physical fitness. Sandi (2016) noted that physical exercise or physical activity has a direct influence on the cardiovascular system, with both acute and chronic effects.

Enjoyable physical activities are a key prerequisite for students to remain motivated, engaged, and to make physical activity a part of their lifestyle. Fun physical activities in physical education classes provide positive experiences for students. The students do not feel bored quickly. Eberline et al. (2018), in their research findings on elementary school children,

found that the joy of exercising and engaging in physical activities significantly affects children's involvement and persistence in physical activities, and also positively affects the level of physical fitness of the students.

Sport enjoyment can lead to increased participation in physical activities, fostering positive feedback that enhances physical fitness and academic performance. The excitement that students feel through enjoyable physical education lessons can encourage them to become more actively involved in the physical education classes themselves, motivating them to want to attend each physical education lesson, thus forming a habit of consistency in physical education. Consequently, students are no longer instructed to head to the field for physical education lessons; instead, they feel prepared and eager to participate in the lessons. Findings consistent with this research were stated by Teferi (2020), that students who enjoy sports are more likely to be consistently engaged, and students who enjoy sports tend to have better mental health and achieve better academic results. Shin, You, and Kim (2024) found that students who enjoy sports are more likely to be consistently engaged, which leads to better attention and focus in academics. And, Muntaner-Mas et al. (2022), when discussing the mediating influence of physical fitness, mention that an increase in physical fitness can enhance executive function (cognitive abilities), which in turn positively affects academic performance.

The PJOK Curriculum Phase C also emphasizes the importance of active student involvement through enjoyable and interactive approaches. Elements such as 'joy in physical activities' and 'cheerful learning experiences' are not only aimed at creating a positive learning experience, but are also a strategic way to engage students with the learning process, including in other academic subjects. Based on descriptive data, it is known that students in Malang Regency mostly have moderate to high fitness levels. Students with good fitness show more stable learning abilities, are more resistant to fatigue, and have better focus for learning. The results of this study align with Abrilian and Maksum (2024) that physical fitness has a complex relationship with academic achievement. If we look at its influence, there are many factors of physical fitness that affect academic performance, such as the type of physical activity, duration, and intensity, as well as demographic and socio-economic factors.

5. Conclusion

This study concludes that there is an influence of sports excitement on the physical activity of students in Malang Regency, there is an influence of sports excitement and physical activity of students on the physical fitness of students in Malang Regency, and there is both a direct and indirect influence of sports excitement, physical activity, and physical fitness on the academic achievement of students in Malang Regency. It is recommended that physical activities in PJOK be designed to be enjoyable, structured, and oriented towards positive learning experiences. The PJOK subject for Phase C elementary school (grades V and VI) aims to develop physically literate students and should be intentionally designed to emphasize sport enjoyment, one of which is through fun games. All students in PJOK lessons should be properly involved in physical activities.

References

Abrilian, M. N., & Maksum, A. (2024). Hubungan antara kebugaran jasmani, nilai PJOK dan prestasi akademik. *Jurnal Pendidikan Olahraga dan Kesehatan, 12*(1), 79–83.

Adank, A. M., Van Kann, D. H. H., Borghouts, L. B., Kremers, S. P. J., & Vos, S. B. (2024). That's what I like! Fostering enjoyment in primary physical education. *European Physical Education Review, 30*(2), 283–301. https://doi.org/10.1177/1356336X231205686

Bentley, R. F., Dorian, P., Vecchiarelli, E., Banks, L., Connelly, K. A., Yan, A. T., Osman, W., & Goodman, J. M. (2024). The effect of chronic exercise training and acute exercise on power spectral analysis of heart rate variability. *Applied Physiology, Nutrition, and Metabolism, 49*(2), 148–156. https://doi.org/10.1139/apnm-2023-0007

Cairney, J., Kwan, M. Y., Velduizen, S., Hay, J., Bray, S. R., & Faught, B. E. (2012). Gender, perceived competence and the enjoyment of physical education in children: A longitudinal examination. *International Journal of Behavioral Nutrition and Physical Activity, 9*, 26. https://doi.org/10.1186/1479-5868-9-26

Costigan, S., Gråstén, A., Huhtiniemi, M., Kolunsarka, I., Lubans, D., & Jaakkola, T. (2024). Longitudinal associations between enjoyment of physical education, cardiorespiratory fitness, and muscular fitness among Finnish adolescents. *Scandinavian Journal of Medicine & Science in Sports, 34*(1), e14678. https://doi.org/10.1111/sms.14678

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.

Dishman, R., Motl, R., Saunders, R., Felton, G., Ward, D., & Pate, R. (2005). Enjoyment mediates the effects of a school-based physical activity intervention among adolescent girls. *Medicine & Science in Sports & Exercise, 37*(3), 478–487. https://doi.org/10.1249/01.MSS.0000155391.62733.A7

Dwyer, T., Sallis, J. F., Blizzard, L., Lazarus, R., & Dean, K. (2001). Relation of academic performance to physical activity and fitness in children. *Pediatric Exercise Science, 13*(3), 225–237. https://doi.org/10.1123/pes.13.3.225

Eberline, A. D., Judge, L. W., Walsh, A., & Hensley, L. D. (2018). Relationship of enjoyment, perceived competence, and cardiorespiratory fitness to physical activity levels of elementary school children. *The Physical Educator, 75*(3), 394–413. https://doi.org/10.18666/TPE-2018-V75-I3-8161

Gibney, M. J., Margetts, B. M., Kearney, J. M., & Arab, L. (2005). *Gizi kesehatan masyarakat*. EGC.

Giriwijoyo, S. Y. S. (2005). *Manusia dan olahraga*. Institut Teknologi Bandung.

Hagger, M. S. (2019). The reasoned action approach and the theories of reasoned action and planned behavior. In D. S. Dunn (Ed.), *Oxford bibliographies in psychology*. Oxford University Press. https://doi.org/10.1093/obo/9780199828340-0240

Hoy, W. K., Tarter, C. J., & Woolfolk Hoy, A. (2006). Academic optimism of schools: A force for student achievement. *American Educational Research Journal, 43*(3), 425–446. https://doi.org/10.3102/00028312043003425

Kementerian Kesehatan Republik Indonesia. (2015). *Infodatin: Pembinaan kesehatan olahraga di Indonesia*. Kementerian Kesehatan RI.

Kementerian Pemuda dan Olahraga Republik Indonesia. (2022). *Pedoman pelaksanaan tes kebugaran pelajar nusantara*.

Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia. (2002). *Capaian pembelajaran mata pelajaran pendidikan jasmani, olahraga dan kesehatan (PJOK) fase A–fase F untuk SD/MI/Program Paket A, SMP/MTs/Program Paket B, dan SMA/MA/SMK/MAK Program Paket C*.

Liu, A. D. (2024). Evaluating the therapeutic impact of exercise on chronic diseases: A comprehensive review and future directions. *International Journal of Education and Humanities, 4*(3), 359–369. https://doi.org/10.58557/ijeh.v4i3.250

Marrero-Rivera, J. P., Sobkowiak, O., Jenkins, A. S., Bagnato, S. J., Kline, C. E., Gordon, B. D., & Taverno Ross, S. E. (2024). The relationship between physical activity, physical fitness, cognition, and academic outcomes in school-aged Latino children: A scoping review. *Children, 11*(3), 363. https://doi.org/10.3390/children11030363

Mo, W., Saibon, J. B., Li, Y., Li, J., & He, Y. (2024). Effects of game-based physical education program on enjoyment in children and adolescents: A systematic review and meta-analysis. *BMC Public Health, 24*(1), 517. https://doi.org/10.1186/s12889-024-18043-6

Muntaner-Mas, A., Mazzoli, E., Abbott, G., Mavilidi, M.-F., & Galmes-Panades, A. M. (2022). Do physical fitness and executive function mediate the relationship between physical activity and academic achievement? An examination using structural equation modelling. *Children, 9*(6), 823. https://doi.org/10.3390/children9060823

Pedhazur, E. J. (1982). *Multiple regression in behavioral research: Explanation and prediction* (2nd ed.). Holt, Rinehart, & Winston.

Prihatin, R. (2015). *Pengelompokan prestasi akademik siswa SMK Teknik Mesin As'Saadah Bungah Gresik tahun pertama sekolah menggunakan metode fuzzy c-means* [Skripsi, Universitas Muhammadiyah Gresik].

Purnama, Y., Aswara, A. Y., & Bekti, S. (2024). Kegiatan fisik, kegembiraan berolahraga, kebugaran fisik, dan ketangguhan pribadi siswa SMK di Indonesia. *Multilateral: Jurnal Pendidikan Jasmani dan Olahraga, 23*(1), 62–75. https://doi.org/10.20527/multilateral.v23i1.17015

Sandi, I. N. (2016). Pengaruh latihan fisik terhadap frekuensi denyut nadi. *Sport and Fitness Journal, 4*(2), 1–6.

Scanlan, T. K., Carpenter, P. J., Lobel, M., & Simons, J. P. (1993). Sources of enjoyment for youth sport athletes. *Pediatric Exercise Science, 5*(3), 275–285. https://doi.org/10.1123/pes.5.3.275

Shin, K., You, S., & Kim, M.-H. (2024). Longitudinal effects of moderate to vigorous physical activity in physical education classes on attention and academic achievement. *Behavioral Sciences, 14*(11), 982. https://doi.org/10.3390/bs14110982

Sucipto, Hidayat, Y., & Rustandi, E. (2019). Konstruksi enjoyment: Dasar-dasar konseptual pengembangan skala psikologis. *Jurnal Pendidikan Jasmani Indonesia, 15*(2), 80–86. https://doi.org/10.21831/jpji.v15i2.30004

Survey Kesehatan Indonesia. (2023). *Survei kesehatan Indonesia (SKI): Dalam angka data akurat kebijakan tepat*. Kementerian Kesehatan RI.

Teferi, G. (2020). The effect of physical activity on academic performance and mental health: Systematic review. *American Journal of Science, Engineering and Technology, 5*(3), 118–123. https://doi.org/10.11648/j.ajset.20200503.12

Vanhels, J., Béghin, L., Duhamel, A., Manios, Y., Molnar, D., De Henauw, S., & Petraki, I. (2016). Physical activity is associated with attention capacity in adolescents. *Journal of Pediatrics, 168*, 126–131. https://doi.org/10.1016/j.jpeds.2015.09.029

Visier-Alfonso, M. E., Álvarez-Bueno, C., Sánchez-López, M., Cavero-Redondo, I., Martínez-Hortelano, J. A., Nieto-López, M., & Martínez-Vizcaíno, V. (2021). Fitness and executive function as mediators between physical activity and academic achievement. *Journal of Sports Sciences, 39*(14), 1576–1584. https://doi.org/10.1080/02640414.2021.1886665

Wicaksono, A., & Handoko, W. (2020). *Aktivitas fisik dan kesehatan*. IAIN Pontianak Press.

World Health Organization. (2020). *WHO guidelines on physical activity and sedentary behavior*. World Health Organization.