

## The correlation between students' physical ability and their academic performance

Devanti Efat Priskila<sup>1abcd</sup>, Nur Ahmad Arief<sup>2ef</sup>.

<sup>1</sup>Department of Physical Education, Health, and Recreation, Graduate School, Faculty of Sports Science, Universitas Negeri Surabaya, Jalan Ketintang, Surabaya, East Java, 60231, Indonesia.

<sup>2</sup>Department of Sports Management, Graduate School, Faculty of Sports Science, Universitas Negeri Surabaya, Jalan Ketintang, Surabaya, East Java, 60231, Indonesia.

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### Abstract

Physical fitness is often linked to various cognitive and academic benefits, with numerous studies suggesting that physical ability may influence students' learning outcomes. Understanding this relationship is crucial for promoting holistic education that balances physical and intellectual development. This study investigates the correlation between students' physical ability and academic performance using a quantitative approach and a descriptive research design. The sample was selected through purposive sampling. Data collection involved physical ability tests and academic performance scores obtained from students' reportbooks. The physical ability tests included the Vertical Jump, Sprint, Ruler Drop Test, Zigzag Run Test, Hand Wall Toss Test, and Pacer Test. Data were analyzed using correlation formulas to determine the relationship between each physical ability measure and academic performance. The results revealed varying degrees of correlation: the Vertical Jump test showed a direct correlation ( $r = 0.0026$ ), the Sprint test indicated no significant correlation ( $r = -0.065$ ), the Ruler Drop test demonstrated an indirect correlation ( $r = -0.013$ ), the Hand Wall Toss test indicated a direct correlation ( $r = 0.009$ ), the Zigzag Run test suggested an indirect correlation ( $r = -0.062$ ), and the Pacer test showed an indirect correlation ( $r = -0.008$ ). These findings suggest that some physical abilities may have a small direct or indirect relationship with academic performance, while others show no significant correlation. The findings suggest that creating well-rounded athletes requires attention to intellectual development alongside physical training, ensuring a balanced approach to nurturing future champions.

**Keywords:** Physical testing, academic performance, primary students.

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**Authors contribution:** a – Preparing concepts; b – Formulating methods; c – Conducting research; d – Processing results; e – Interpretation and conclusions; f - Editing the final version.

### INTRODUCTION

In the grand design of sport (DBON) for 2021-2045, the Indonesian government has designed several aspects that can be observed when



reviewing DBON from the achievement target perspective. First, regarding the level of community fitness, it is targeted to reach 30% in the good category by 2024 and 60% by 2045 (Tawakal, 2023). Sports are part of daily physical activities that are useful for forming a healthy body and mind (Ilham & Sepdanius, 2020). This is supported by the opinion of Abbad & Pramono (2023) that sports have a significant impact on national life, which leads to the conclusion that sports are one of the foundations of national progress toward the honor and well-being of the country via sporting accomplishments. Therefore, it is crucial to exercise regularly to support the DBON program, which is expected to realize and nurture a fit Indonesian society with good physical abilities for daily activities, thus creating a productive Indonesian community with excellent character, discipline, perseverance, sportsmanship, mutual respect, competitiveness, and achievements in the Olympics and Paralympics. A childhood that has become addicted and negatively impacted by gadgets will hinder children's development, particularly in terms of achievements (Subarkah, 2019).

Recent studies have emphasized the value of student-athletes' physical prowess in enhancing academic achievement. According to Donnelly et al. (2017), physical education and structured physical activity can enhance cognitive abilities like working memory, attention, and decision-making, all of which are critical for academic achievement. According to a different study by Howie & Pate (2012), more physically active students typically do better in topics like reading and arithmetic because physical activity promotes the development of new nerve cells and boosts the oxygen supply to the brain. This implies that the growth of student-athletes physical skills influences their academic performance both directly and indirectly, particularly when aided by a well-planned physical education curriculum.

Learning in physical education that combines academic and physical values also reflects this urgency. According to Lubans et al. (2016), physical literacy-based physical education enhanced students' motor skills while also boosting their enthusiasm and self-esteem, all of which had a favorable

effect on their academic performance. Furthermore, [Singh et al. \(2019\)](#) emphasized that regular implementation of moderate-to-intense physical activities in physical education programs might enhance students' mental and cognitive health, both of which are critical components of academic achievement. Physical education must be seen as a strategic platform to produce outstanding student-athletes, both intellectually and physically, through an all-encompassing strategy that blends aspects of learning and athletics.

Physical ability includes two components: physical fitness and motor fitness. Physical fitness consists of muscle strength, muscular endurance, cardiovascular endurance, and flexibility ([Arifin, 2018](#)). Meanwhile, motor fitness components include speed, coordination, agility, explosive strength, and balance ([Iykrus, 2018](#)). Measuring physical ability is crucial for assessing students' physical capabilities and fostering healthy, fit, and high-performing Indonesian human resources. Physical ability is a primary factor and plays an important role in improving the quality of Human Resources (HR), which is a fundamental national asset in achieving national development success ([Fathimi et al., 2022](#)). Reduced physical activity and Prolonged passive behavior can negatively impact the physical health of the students, and in turn, worsening health conditions will further reduce the level of physical activity and prolong their passive behavior ([Arief et al., 2020](#)). According to [Omachar \(2016\)](#), education is defined as an organized command aimed at channeling various knowledge, skills, understanding, and attitudes necessary for daily activities. Education facilitates the development of an individual's inherent potential by effectively managing their competencies, with the objective of cultivating persons who possess quality skills and virtuous conduct. In contrast to other disciplines, physical education offers a unique framework for students' moral growth by fostering virtues such as sportsmanship, teamwork, honesty, and responsibility. Physical movement activities aim not only for short-term goals but also for students' achievement in forming good physical abilities; moreover, they

primarily support achieving optimal academic performance (Sudarsinah, 2021).

Thus, physical education is very important because this subject uses physical activity as a medium to achieve educational goals (Pratiwi & Asri, 2020). Additionally, physical education provides students with many opportunities to experience codes of conduct. The goal is to develop students' motivation for exercising and engaging in physical activities to meet their basic psychological needs. Furthermore, it can also benefit other educational aspects including social skills development, self-confidence, and perseverance behavior (Suwandaru & Hidayat, 2021). Physical activity is one way to maintain a body mass index in the normal category, so physical activity levels can influence physical fitness (Bai et al., 2024).

The physical education programs that student-athletes participate in frequently impact their academic achievement. According to research by Donnelly et al. (2017), organized physical education activities can enhance cognitive abilities like memory and focus, which have a good impact on academic achievement. Furthermore, Singh et al. (2019) discovered that interventions involving physical activity improve the academic achievement of kids and teenagers. As a result, physical education helps student-athletes succeed academically and promotes physical development.

Additionally, student-athletes benefit from physical education by learning time management and discipline skills that are critical for juggling the demands of both athletics and academics. The Harliawan (2024) study highlights how crucial it is for students' development to strike a balance between athletics and academic success. Thus, student-athletes can attain peak performance in both domains with the support of a well-integrated physical education program.

## METHOD

This research used a correlational design. Correlational research seeks to determine the relationship between one or more independent variables and the dependent variable without intervention or manipulation of these variables (Maksum, 2018). This study was undertaken to elucidate

the patterns of correlations among naturally occurring factors. This research employs a quantitative technique using a non-experimental design. This strategy involves researchers observing the interaction between existing factors rather than manipulating already happened occurrences (Maksum, 2018). This non-experimental method was selected as it aligns with the correlational research objectives, which aim to study the phenomena in its natural state.

This study employed a purposive sampling method with criteria that included upper-grade pupils from private elementary schools aged 9 to 12 years actively engaged in extracurricular sports and eager to participate. This method guarantees the sample's relevance to the research aims however it is susceptible to selection bias. The sample size of 85 students was established via interviews with physical education instructors. This strategy is pragmatic; nonetheless, it is crucial to guarantee that the selection procedure is methodical and that the sample size is sufficient for the study findings to be valid and credible. Effective sample representation is essential to provide significant outcomes in the study's context.

The testing instruments employed in this study were developed based on the "Guidelines for Implementing Physical Ability Test Identification," issued by the Deputy for Sports Cultivation of the Ministry of Youth and Sports of the Republic of Indonesia. These guidelines were coordinated through the Assistant Deputy for Educational Sports Management as part of the implementation of the National Sports Grand Design (DBON), which has been systematically, progressively, and measurably formulated (Rahayu Tandiyo et al., 2022). The physical ability tests conducted in this research included the following six types: Vertical Jump, Sprint, Ruler Drop Test, Zigzag Run Test, Hand Wall Toss Test, and Pacer Test.

In addition to the physical ability tests, the academic performance instrument assessed students' learning achievements over one academic year. This evaluation was conducted by analyzing the average report card scores across all subjects for each student who participated in the physical ability tests.

## Equation and Formula

Data analysis is necessary to determine the correlation between the two domains and obtain the appropriate results. The prerequisite tests for the data in this study utilized normality and linearity tests. The normality test was aimed to determine and ensure that the obtained data was symmetrically and normally distributed, meaning that most values were centered, with decreasing frequencies as one moves further to the right and left. In the normality test, the criterion was that if the p-value was more significant than 0.05, the data was considered normal. Conversely, if the p-value was less than 0.05, the data was deemed non-normal. The linearity test was also employed to analyze regression and causal correlation (Maksum, 2018). In linearity testing, it was stipulated that if the significance value was not significant or greater than 0.5, then the relationship among predictors was considered linear. If the significance value was less than 0.5, then the relationship among predictors was considered non-linear. In this study, the analytical technique used to examine reciprocal relationships involved correlation testing. Correlation testing served to ascertain the strength of the relationship between dependent and independent variables.

## RESULT

This study's analyzed and interpreted results were presented and discussed as follows.

**Table 1.** Descriptive research data

	N	Range	Min.	Max.	Mean	Std. Deviation	Variance	Skewness	Kurtosis			
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Vertical Jump	85	37.00	15.00	52.00	337.529	712.959	50.831	-.009	.261	.261	-.122	.517
Sprint	85	1.68	3.20	4.88	40.019	.36827	.136	.142	.261	.261	-.078	.517
Ruller Drop Test	85	10.00	1.00	11.00	62.118	242.553	5.883	-.433	.261	.261	-.614	.517
Hand Wall Tos Test	85	25.00	9.00	34.00	184.235	536.829	28.818	.911	.261	.261	.291	.517
Zigzag Run Test	85	4.85	12.59	17.44	155.307	103.294	1.067	-.593	.261	.261	-.166	.517
Pacer Test	85	46.00	7.00	53.00	200.588	1.003.488	100.699	1.399	.261	.261	1.311	.517
Academic Performance	85	15.00	82.00	97.00	913.294	342.049	11.700	-.533	.261	.261	-.219	.517
Valid N (listwise)	85											

The descriptive data above presents statistical results from several physical tests conducted on 85 participants. These tests included Vertical Jump, Sprint, Ruler Drop Test, Hand Wall Toss Test, Zigzag Run Test, Pacer Test, and Academic Performance Scores.

1. Vertical Jump: The scores ranged from 15 to 52, with a mean of 337.529 and a standard deviation of 712.959, indicating a significant variation in performance among participants. The skewness value was -0.009, suggesting a distribution of data that approaches symmetry.
2. Sprint: The minimum score was 4.88, and the maximum was 6.56, with a mean of 40.019 and a standard deviation of 0.36827. This data exhibited a positive skewness of 0.142, indicating a slight rightward tilt in the distribution.
3. Ruler Drop Test: Scores ranged from 1 to 11, with a mean of 62.118 and a standard deviation of 242.553, demonstrating a relatively wide distribution. A negative skewness of -0.433 indicated that data was more concentrated at higher values.
4. Hand Wall Toss Test: Scores ranged from 9 to 34, with a mean of 184.235 and a standard deviation of 536.829. A skewness value of

0.911 suggested that the data distribution leaned significantly to the right.

5. Zigzag Run Test: The minimum score was 12.59, and the maximum was 17.44, with a mean of 155.307 and a standard deviation of 103.294, indicating less variation in performance among participants. A negative skewness of -0.593 suggested that data tended to be distributed at lower values.
6. Pacer Test: This test showed scores ranging from 7 to 53, with a mean of 200.588 and a standard deviation of 1.003.488. A skewness value 1.399 indicated a substantial rightward tilt in distribution, suggesting that most participants scored below average.
7. Academic Performance Scores: Scores ranged from 82 to 97, with a mean of 913.294 and a standard deviation of 342.049. A negative skewness of -0.533 indicated that most participants' scores tended to be high.

**Table 2.** Normality test

Normality test	Method	Sample (N)	Asymp. Sig. (two-tailed)	Conclusion
Research Data	Kolmogorov-Smirnov Test	85	0.647	Normal

The normality test for this research data employed the Kolmogorov-Smirnov test due to having more than 50 samples in total ( $N = 85$ ). The significance value (Asymp. Sig., two-tailed) from this test was found to be 0.647, which exceeded the threshold of 0.05. This indicated that the research data was normally distributed since the significance value did not fall below the threshold of 0.05; thus, the assumption of normality was satisfied in this analysis.

Based on prerequisites for correlation testing, it was found that some relationships were non-linear; therefore, hypothesis testing for this research utilized non-parametric methods. Spearman's rank correlation analysis was used to assess the strength of the relationship between variable X and variable Y, examine the directionality of their relationship, and determine whether there was a significant association between them.



**Table 3.** Correlation Test for Vertical Jump and Academic Performance

Analysis Results	Independent Variable	Dependent variable	Correlation Coefficients (r)	Significance (Sig., two-tailed)	Conclusion
Correlations between variables	Vertical Jump	Academic Performance Scores	0.026	0.811	No significant relationship

The results indicated a positive correlation coefficient of 0.026 between vertical jump and academic performance scores; thus, it was interpreted that as vertical jump scores increased, academic performance scores would also increase collectively among students. However, the significance value (Sig., two-tailed) was found to be 0.811; therefore, based on hypothesis testing decisions, it was concluded that there was no significant relationship between these two variables—vertical jump and academic performance—since the result exceeded the threshold of 0.05. In reference to previous discussions regarding these results, it was concluded that while there was no significant relationship between vertical jump scores and academic performance scores among students, there existed a positive (unidirectional) tendency such that consistent improvement in vertical jump might lead to enhanced academic performance over time.

**Table 4.** Correlation test for sprint and academic performance

Analysis Results	Independent Variable	Dependent Variable	Correlation Coefficient (r)	Significance (Sig., two-tailed)	Conclusion
Correlation between variables	Sprint Scores	Academic Performance Scores	-0.065	0.552	No significant relationship

The results show a negative correlation coefficient of -0.065 between sprint scores and academic performance scores, thus indicating an inverse relationship where an increase in sprint scores does not guarantee an improvement in academic performance scores—and may even lead to declines in those scores as well. The significance value (Sig., two-tailed) was found to be 0.552; hence it can be concluded that there is no significant relationship between sprint scores and academic performance since this result exceeds the threshold of 0.05. Referring to the discussion of the data results above, the research findings regarding the two variables, namely sprint and students' academic performance, were stated as having no significant relationship when considering both the significance values and

the strength levels of the two data outcomes. Furthermore, it was noted that the direction of the relationship between these two variables was negative; thus, when students succeed in improving their sprint scores, there was no likelihood that their academic performance scores would also increase.

**Table 5.** Correlation test for ruler drop test and academic performance

Analysis Results	Independent Variable	Dependent Variable	Correlation Coefficient (r)	Significance (Sig., two-tailed)	Conclusion
Correlation between variables	Ruler Drop Test Scores	Academic Performance Scores	-0.013	0.236	No significant relationship

Similarly, Ruler Drop Test results showing a correlation coefficient of -0.013 suggested an inverse relationship where increases in Ruler Drop Test scores did not necessarily correlate with academic performance improvement. Rather, they might decline instead as indicated by a significance value (Sig., two-tailed) of 0.236—again exceeding the threshold for significance. Referring to the discussion of the data results above, the research findings regarding the two variables, namely the ruler drop test and students' academic performance, were stated as having no significant relationship when considering both the significance values and the strength levels of the two data outcomes. Additionally, it was noted that the direction of the relationship between these two variables was negative; therefore, when students succeed in improving their ruler drop test results, there was no possibility that their academic performance scores would increase, and they might even decline.

**Table 6.** Correlation test for hand wall toss test and academic performance

Analysis Results	Independent Variable	Dependent Variable	Correlation Coefficient (r)	Significance (Sig., two-tailed)	Conclusion
Correlation between variables	Hand Wall Toss Test Scores	Academic Performance Scores	0.009	0.934	No significant relationship

For Hand Wall Toss Test results showing a positive correlation coefficient of 0.009 indicated a unidirectional relationship where increases in Hand Wall Toss Test scores corresponded with improvements in academic performance; however, with a significance value (Sig., two-tailed) at 0.934, indicating no significant relationship existed between these variables. Referring to the discussion of the data results above, the research

findings regarding the two variables, namely the Hand Wall Toss Test and students' academic performance, indicated that there was no significant relationship; however, a positive (unidirectional) tendency existed. Thus, if this test was performed consistently, an increase in students' academic performance results might occur, albeit not significantly.

**Table 7.** Correlation Test for Zig Zag Run Test and Academic Performance

Analysis Results	Independent Variable	Dependent Variable	Correlation Coefficient (r)	Significance (Sig., two-tailed)	Conclusion
Correlation between variables	Zigzag Run Test Scores	Academic Performance Scores	-0.062	0.573	No significant relationship

The Zigzag Run Test yielded a negative correlation coefficient of -0.062, suggesting an inverse relationship where increases in Zigzag Run Test scores did not necessarily lead to improvements in academic performance, again supported by a significance value (Sig., two-tailed) at .573, indicating no significant association existed. Referring to the discussion of the data results above, the research findings regarding the two variables, namely the Zigzag Run Test and students' academic performance, was stated as having no significant relationship when considering both the significance values and the strength levels of the two data outcomes. Furthermore, it was noted that the direction of this relationship was negative; hence, when students succeed in improving their Zigzag Run Test results, there was no likelihood that their academic performance scores would also increase, and they might even decline.

**Table 8.** Correlation test for pacer test and academic performance

Analysis Results	Independent Variable	Dependent Variable	Correlation Coefficient (r)	Significance (Sig., two-tailed)	Conclusion
Correlation between variables	Pacer Test Scores	Academic Performance Scores	-0.088	0.421	No significant relationship

Lastly, Pacer Test results showed a negative correlation coefficient of -0.088, suggesting an inverse relationship where increases in Pacer Test scores did not guarantee improvements in academic performance, supported by a significance value (Sig., two-tailed) at .421, indicating no significant association existed between these variables as well. This study

examines the relationship between students' physical capability and academic achievement through a quantitative methodology and a descriptive research framework. The data examination indicated no significant association between Pacer Test results and students' academic achievement since the significance values were above 0.05. The results demonstrated a negative correlation between the two variables, indicating that enhancements in Pacer Test outcomes did not align with improved academic performance. In certain instances, an elevation in Pacer Test scores correlated with a decrease in academic achievement. However, the strength of this correlation was minimal.

These findings underscore the intricate link between physical fitness and academic achievement, indicating that not all facets of physical ability directly influence cognitive or academic results. Specific physical assessments, such as those evaluating coordination or strength, may correlate with academic achievement; however, endurance-based evaluations like the Pacer Test may not exert a similar influence. This highlights the want for a more refined comprehension of which physical capabilities are most pertinent to improving cognitive and academic performance, particularly within educational and athletic training frameworks.

## DISCUSSION

These results illustrate the complicated relationship between physical fitness and academic accomplishment, revealing that not all characteristics of physical competence are directly linked to cognitive or academic outcomes. Particular physical traits, such as coordination and strength, may have a more significant correlation with academic success, whereas endurance-based assessments, such as the Pacer Test, exert a more restricted influence. This corresponds with the conclusions of [Marques et al. \(2018\)](#), who indicated that although specific physical fitness elements enhance cognitive function, the intensity of these relationships fluctuates according to the fitness type evaluated. [Booth et al. \(2014\)](#) also highlighted that aerobic fitness, exemplified by the Pacer Test, may exert an indirect or

lesser impact on academic performance relative to other forms of physical fitness.

The results highlight the necessity for additional detailed research to identify which particular physical attributes are most pertinent to improving cognitive and academic success. [Howie and Pate \(2012\)](#) assert that holistic approaches are necessary to analyze the complex relationship between physical fitness and its effects on cognition and learning. Moreover, [Vazou et al. \(2019\)](#) proposed that including various forms of physical exercises designed to promote cognitive functions—such as those that improve coordination and executive function—could lead to improved academic performance. These observations underscore the necessity of developing educational and sports programs emphasizing certain physical activities to enhance physical and academic growth.

Physical activity is necessary to support an individual's physical capabilities; good physical ability will develop when a person engages in regular physical activity. A lack of physical activity among students can affect their health and physical fitness ([Suwandi et al., 2022](#)). Family support may influence physical activity suggested that increased parental encouragement was positively associated with boys' and girls' physical activity on school days and girls' physical activity on weekends ([Wang et al., 2016](#)). In addition to helping children build motor skills, physical literacy principles focus on enhancing positive affect, motivation, and prosocial behavior during exercise ([Goh & Leong, 2024](#)). The components of physical condition will be maximally evident when daily activities align with the needs of the students ([Firdaus, Mokhammad et al., 2020](#)). Academic performance is the outcome of education, reflecting the extent to which students, teachers, or institutions have achieved their educational goals. Academic performance is related to learning activities that encompass both knowledge and skills acquired through study and practice. Based on the research data regarding physical ability and academic performance using the test instrument from the guidebook for implementing physical ability test

identification, the results show a variety of outcomes related to the descriptive data presentation from the six tests.

After analyzing the data, there is no significant link between the different physical ability tests and how well kids do in school. There was no relevant link between the vertical jump test, the sprint test, the ruler drop test, the hand wall toss test, the zigzag run test, and the pacer test. This means that changes or improvements in how well do on these physical tests do not directly affect or match up with changes in how well do in school.

These results show that physical fitness is important for health and development in general. However, the direct effect it has on academic success may depend on the type of physical ability that was measured. There were no significant relationships between these tests, which shows that more research needs to be done to find out which specific parts of physical fitness might have a more significant effect on academic or cognitive outcomes. This also shows how important it is for education to be balanced and include physical and mental growth without thinking there is a direct link between them.

Physical activity is necessary to support an individual's physical capabilities; good physical ability will develop when a person engages in regular physical activity. A lack of physical activity among students can affect their health and physical fitness (Suwandi et al., 2022). Family support may influence physical activity suggested that increased parental encouragement was positively associated with boys' and girls' physical activity on school days and girls' physical activity on weekends (Wang et al., 2016). In addition to helping children build motor skills, physical literacy principles focus on enhancing positive affect, motivation, and prosocial behavior during exercise (Goh & Leong, 2024). The components of physical condition will be maximally evident when daily activities align with the needs of the students (Firdaus, Mokhammad et al., 2020). Academic performance is the outcome of education, reflecting the extent to which students, teachers, or institutions have achieved their educational goals. Academic performance is related to learning activities that encompass both knowledge

and skills acquired through study and practice. Based on the research data regarding physical ability and academic performance using the test instrument from the guidebook for implementing physical ability test identification, the results show a variety of outcomes related to the descriptive data presentation from the six tests.

The data analysis indicates no substantial correlation between the various physical ability assessments and children's academic performance. There was no pertinent correlation between the vertical leap test, the sprint test, the ruler drop test, the hand wall toss test, the zigzag run test, and the pacer test. This implies that the performance on these physical exams does not directly correlate with or influence the performance in school.

These results demonstrate that physical fitness is crucial for overall health and development; however, the direct impact it has on academic success may be contingent upon the specific physical ability that was assessed. There were no significant relationships between these tests, indicating that additional research is necessary to determine which specific physical fitness components may significantly impact academic or cognitive outcomes. This also demonstrates the significance of a balanced education that encompasses both physical and mental development without assuming a direct correlation between the two.

## **CONCLUSION**

An investigation of six independent factors concerning a single dependent variable—students' academic achievement measured by overall subject scores—revealed that none of the independent variables significantly correlated with academic performance. Two independent variables, specifically the Hand Wall Toss Test and the Vertical Jump, exhibited a unidirectional (positive) association. This indicates that although these two characteristics exhibited positive correlations with academic performance, the link lacked sufficient strength to be deemed statistically significant. Conversely, the remaining four variables demonstrated no correlation with students' academic achievement.

The results highlight the intricacy of comprehending the relationship between physical capabilities and academic success, especially concerning student-athletes. This study enhances the comprehension of athlete development by emphasizing the significance of evaluating both physical capabilities and academic achievement in identifying and cultivating high-performing athletes. Although physical capabilities such as coordination, assessed through the Hand Wall Toss Test, and explosive force, evaluated via the Vertical Jump, may provide advantages for academic achievement, a comprehensive assessment is crucial. Facilitating athletes' excellence in both physical and academic domains is essential for their enduring success, as it establishes a foundation for well-rounded individuals capable of achieving high performance in sports and education. Consequently, incorporating evaluations of both physical and academic accomplishments into athlete development programs is essential for recognizing and cultivating future champions.

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## REFERENCES

- Abbad, T., & Pramono, B. A. (2023). Analisis Tingkat Kebugaran Atlet Dbon Sentra Latihan Olahragawan Muda Potensial Nasional (SLOMPN) Universitas Negeri Surabaya. *Jurnal Prestasi Olahraga*, 6(1), 33–40. <https://doi.org/10.1234/jpo.v6i2.55669>
- Arief, N. A., Kuntjoro, B. F. T., & Suroto, S. (2020). Gambaran aktifitas fisik dan perilaku pasif mahasiswa Pendidikan Olahraga selama pandemi covid-19. *Multilateral: Jurnal Pendidikan Jasmani Dan Olahraga*, 19(2), 175–183. <http://dx.doi.org/10.20527/multilateral.v19i2.9564>
- Arifin, Z. (2018). Pengaruh latihan senam kebugaran jasmani (skj) terhadap tingkat kebugaran siswa kelas V di Min Donomulyo Kabupaten Malang. *Al-Mudarris: Journal Of Education*, 1(1), 22–29. <https://doi.org/10.32478/al-mudarris.v1i1.96>
- Bai, D., Hashim, A. H. M., & Li, Y. (2024). Mediating role of body mass index on the relationship between physical activity and physical fitness



- among junior high school students in Shanghai. *Preventive Medicine Reports*, 41, 102718. <https://doi.org/10.1016/j.pmedr.2024.102718>
- Booth, J. N., Leary, S. D., Joinson, C., Ness, A. R., Tomporowski, P. D., Boyle, J. M., & Reilly, J. J. (2014). Associations between objectively measured physical activity and academic attainment in adolescents from a UK cohort. *British Journal of Sports Medicine*, 48(3), 265–270. <https://doi.org/10.1136/bjsports-2013-092334>
- Chen, T., Hui, E. C. M., Lang, W., & Tao, L. (2016). People, recreational facility and physical activity: New-type urbanization planning for the healthy communities in China. *Habitat International*. <https://doi.org/10.1016/j.habitatint.2016.09.001>
- Donnelly, J. E., Ed, D., Co-chair, F., Hillman, C. H., Co-chair, P. D., Ph, D., Etnier, J. L., Ph, D., Lee, S., Ph, D., Tomporowski, P., Ph, D., Lambourne, K., Ph, D., Szabo-reed, A. N., & Ph, D. (2017). Physical activity, fitness, cognitive function, and academic achievement in children: A systematic review. In *Medicine and Science in Sports and Exercise* (Vol. 48, Issue 6). <https://doi.org/10.1249/MSS.0000000000000901>.Physical
- Fathimi, F., Yasni, H., & Asmanidar, A. (2022). PEMAHAMAN KELUARGA TENTANG KONDISI FISIK RUMAH DAN IDENTIFIKASI RISIKO INFEKSI SALURAN PERNAFASAN AKUT (ISPA) PADA BALITA. *Journal Keperawatan*, 1(1), 20–28. <https://doi.org/10.58774/jourkep.v1i1.4>
- Firdaus, Mokhammad. Zawawi, Anis. Dwijayanti, K. (2020). Menghadapi Pekan Olahraga Nasional Tahun 2020 : Sejauh Mana Profil Kondisi Fisik Atlet Bola Tangan Jawa Tengah. *Journal SPORTIF*, 6(3), 821–834. [https://doi.org/10.29407/js\\_unpgri.v6i3.15215](https://doi.org/10.29407/js_unpgri.v6i3.15215)
- Goh, T. L., & Leong, C. H. (2024). Before-School Physical Activity Program on Middle School Students' Social and Emotional Learning and Energy Levels. *Journal of Teaching in Physical Education*, 43(3), 517–522. <https://doi.org/10.1123/jtpe.2023-0153>
- Harliawan, M. (2024). CJPE : Cokroaminoto Jurnal of Primary Education Keterkaitan Prestasi Olahraga dan Prestasi Akademik : Menemukan Keseimbangan Optimal dalam Tumbuh Kembang Siswa Pendahuluan. *CJPE: Cokroaminoto Journal of Primary Education*, 7(2), 385–394. <https://doi.org/10.30605/cjpe.722024.4636>
- Howie, E. K., & Pate, R. R. (2012). Physical activity and academic achievement in children: A historical perspective. *Journal of Sport and Health Science*, 1(3), 160–169. <https://doi.org/10.1016/j.jshs.2012.09.003>
- Ilham, T., & Sepdanius, E. (2020). Pengaruh Latihan Aktivitas Fisik Terhadap Kemampuan Mototrik Kasar Siswa Kelas V Sdn 09 Ppa Kota Solok. *Jurnal Stamina*, 3(6), 465–480.

- Iyakrus, I. (2018). Pendidikan Jasmani, Olahraga Dan Prestasi. *Altius: Jurnal Ilmu Olahraga Dan Kesehatan*, 7(2).  
<https://doi.org/10.36706/altius.v7i2.8110>
- Lubans, D., Richards, J., Hillman, C., Faulkner, G., Beauchamp, M., Nilsson, M., Kelly, P., Smith, J., Raine, L., & Biddle, S. (2016). Physical Activity for Cognitive and Mental Health in Youth: A Systematic Review of Mechanisms. *Pediatrics*, 138(3), e20161642.  
<https://doi.org/10.1542/peds.2016-1642>
- Maksum, A. (2018). *Metodologi Penelitian Dalam Olahraga*. University Press.
- Marques, A., Santos, D. A., Hillman, C. H., & Sardinha, L. B. (2018). How does academic achievement relate to cardiorespiratory fitness, self-reported physical activity and objectively reported physical activity: a systematic review in children and adolescents aged 6-18 years. *British Journal of Sports Medicine*, 52(16), 1039.  
<https://doi.org/10.1136/bjsports-2016-097361>
- Omachar, B. S. (2016). History of education; unending persona, demystifying and demythologizing; demonization, perception, and superstition. *International Journal of Education and Research*, 4(9), 301–312.
- Pratiwi, E., & Asri, N. (2020). *Dasar-Dasar Pendidikan Jasmani Untuk Guru Sekolah Dasar*.
- Rahayu Tandiyo, S. H. A. K. D. A. A. N. S. T. M. I. W. I. B. Ayub. (2022). *Buku Pedoman Pelaksanaan Identifikasi Tes Kemampuan Fisik* (Asisten Deputi Olahraga Pendidikan Kemempora RI, Ed.; 1st ed., Vol. 1, pp. 1–6). Asisten Deputi Olahraga Pendidikan Kemempora RI.
- Singh, A. S., Saliasi, E., Van Den Berg, V., Uijtdewilligen, L., De Groot, R. H. M., Jolles, J., Andersen, L. B., Bailey, R., Chang, Y. K., Diamond, A., Ericsson, I., Etnier, J. L., Fedewa, A. L., Hillman, C. H., McMorris, T., Pesce, C., Pühse, U., Tomporowski, P. D., & Chinapaw, M. J. M. (2019). Effects of physical activity interventions on cognitive and academic performance in children and adolescents: A novel combination of a systematic review and recommendations from an expert panel. *British Journal of Sports Medicine*, 53(10), 640–647.  
<https://doi.org/10.1136/bjsports-2017-098136>
- Subarkah, M. A. (2019). Pengaruh gadget terhadap perkembangan anak. *Rausyan Fikr: Jurnal Pemikiran Dan Pencerahan*, 15(1).  
<http://dx.doi.org/10.31000/rf.v15i1.1374>
- Sudarsinah. (2021). Pentingnya Pendidikan Jasmani Olahraga Dan Kesehatan Bagi Anak Usia Sekolah Dasar. *Jurnal PGSD STKIP PGRI Banjarmasin*, 3(3November), 1–10.
- Suwandaru, C., & Hidayat, T. (2021). Hubungan Aktivitas Fisik Dengan Prestasi Belajar Siswa Smk Negeri 1 Surabaya. *Jurnal Pendidikan Olahraga Dan Kesehatan*, 9(1), 113–119.

- Suwandi, R., Hariyanto, F. A., & Kurnianto, H. (2022). Level Aktivitas Fisik dan Pola Hidup Sehat Siswa di Masa Pandemi Covid-19. *Discourse of Physical Education*, 1(2), 125–135. <https://doi.org/10.36312/dpe.v1i2.883>
- Tawakal, M. I. ,. (2023). *Evaluasi Program Kebugaran Jasmani Pelajar Beorientasi Kesehatan Mendukung Implementasi Desain Besar Olahraga Nasional (DBON)*. Universitas Negeri Jakarta.
- Vazou, S., Pesce, C., Lakes, K., & Smiley-Oyen, A. (2019). More than one road leads to Rome: A narrative review and meta-analysis of physical activity intervention effects on cognition in youth. *International Journal of Sport and Exercise Psychology*, 17(2), 153–178. <https://doi.org/10.1080/1612197X.2016.1223423>
- Wang, X., Hui, Z., Terry, P. D., Ma, M., Cheng, L., Deng, F., Gu, W., & Zhang, B. (2016). Correlates of insufficient physical activity among junior high school students: a cross-sectional study in Xi'an, China. *International Journal of Environmental Research and Public Health*, 13(4), 397. <https://doi.org/10.3390/ijerph13040397>