



Analysis of Physical Fitness of Elementary School Learners in the Beachside, Plain, and Mountain Areas of Padang City

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Abstract: Physical fitness is a determining factor for human growth and development. From the age of 6 years to 18 years the process of growth and development is very rapid. The purpose of this study was to see how the growth and development of students aged 10-12 years or phase c using the TKSI test with 5 items tested. This type of research uses comparative descriptive research which involves collecting data from two or more different groups to understand the differences between them. The subjects of this study were 3 elementary schools based on geographical location. The research instrument used was the Indonesian student fitness test (TKSI) with test items Shuttle Run 4x10 m Get ball, 600m Run, Child Ball, Tok Tok Ball and 30 seconds Baring Sitting. The test used One Way ANOVA and test norms that already exist in the Indonesian student fitness test book (TKSI). Data were processed using IBM SPSS 24 and Microsoft excel. This study shows the average physical fitness of students at SDN 19 Air Tawar Barat (16.31), SDN 08 Surau Gadang (17.55), and SDN 13 Batu Gadang (18.25). There was a significant difference in the level of physical fitness between the three schools. In conclusion, the physical fitness level of students at SDN 13 Batu Gadang is better than that of SDN 08 Surau Gadang and SDN 19 Air Tawar Barat, with a difference of 1.94 and 0.7 respectively.

Keywords: Beachside; Elementary school; Mountain; Physical fitness; Plain

Introduction

Physical fitness is a vital component in supporting individual health and quality of life (Ilham et al., 2024; Indika et al., 2023; Sari, et al., 2023). In the context of education, especially in elementary school children, physical fitness not only has an impact on physical abilities, but also affects the learning process and emotional development (Ilham et al., 2024; Nyoman et al., 2024; Selviani et al., 2023). In this modern era, where sedentary lifestyles are increasingly widespread due to technological advances and urbanization, attention to physical fitness has become very important (Ilham et al., 2024; Padli et al., 2024; Prasetyo et al., 2024). Limited physical activity, which often results from time spent in

front of screens on electronic devices, can lead to decreased physical capacity and negative impacts on long-term health (Selviani et al., 2024).

Physical education, as part of the national education curriculum, is an appropriate arena to foster awareness of the importance of physical activity. Physical education not only focuses on improving physical health, but also plays a role in character building and developing emotional intelligence. According to Law No. 23 of 2003 concerning the National Education System, the implementation of physical education is expected to develop children's potential holistically, both physically and mentally (Ilham et al., 2024; Prasetyo et al., 2024; Selviani et al., 2023).

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Physical fitness of elementary school students is measured through several indicators, namely aerobic endurance, muscle strength, agility, and flexibility. Aerobic endurance refers to the body's ability to perform physical activities over a long period of time. Muscle strength is related to the ability of muscles to lift weights or perform activities that require energy; agility describes the ability to move quickly and change direction efficiently; while flexibility shows the extent to which joints and muscles can move without restrictions (Sari et al., 2024; Selvian et al., 2024).

The study also considered contextual variables, including the location where the learners lived, which was divided into three categories: seaside, lowland and highland areas. Each location category has different environmental characteristics, which may affect children's physical activity levels and physical fitness (Selviani et al., 2023). For example, seaside neighborhoods may provide access to outdoor activities such as swimming or playing on the beach, but have their own challenges such as higher temperatures and low humidity (Guo et al., 2024; Ma et al., 2022; Selpamira, 2022; R. Zhang et al., 2022). Meanwhile, children in low-lying areas may be limited in open spaces for physical activity due to population density, and often use vehicles for activities. On the other hand, children in mountainous areas may have better access to open spaces but have to face challenges such as lower oxygen tension which may affect their physical activity capacity (Sari et al., 2023).

In addition to physical factors, the social and cultural environment also plays an important role in shaping children's physical activity habits. Social interactions, family support and community norms can influence how active children are in participating in physical activities. In this context, the purpose of this study is to analyze the relationship between geographical location and physical fitness levels of primary school learners, and how environmental diversity can affect their achievements in sports.

Research on physical fitness in children is very important to improve the quality of their health and motor development, which plays a role in shaping a healthy lifestyle from an early age. Previous studies have shown that physical fitness in children affects their long-term health and can reduce the risk of chronic diseases later in life, such as obesity, diabetes, and heart disease (Firmansyah et al., 2024; Marttinen et al., 2022; Mattioni et al., 2021).

In addition, the geographic variation of where children live can also affect their level of physical fitness. For example, beachside areas with easy access to outdoor physical activities such as swimming or walking on the beach tend to have different levels of

fitness compared to mountainous or lowland areas. This is based on theories about the role of the environment in the formation of healthy physical habits. Ecological theory proposed by Csader et al. (2023) and Zhang et al. (2023) reveals that physical and social environmental factors play a major role in individual development, including fitness aspects.

In addition, research conducted by Samy et al. (2019) shows that good physical fitness in children can affect their academic performance and improve overall quality of life. Therefore, understanding how the physical fitness of children living in coastal, lowland, and mountainous areas differs is essential for designing appropriate intervention programs.

Through this research, it is hoped that valuable information can be generated on the differences in physical fitness across locations, which can be used to design more effective physical education interventions in schools. The title, "Analysis of Physical Fitness of Primary School Learners in the Coastal, Plain and Mountainous Areas of Padang City," reflects the research objective to provide a deeper understanding of the role of the environment in influencing children's physical fitness. As such, this research not only contributes to the academic world but can also provide guidance for policy makers in developing health and sports programs in schools in Indonesia.

Method

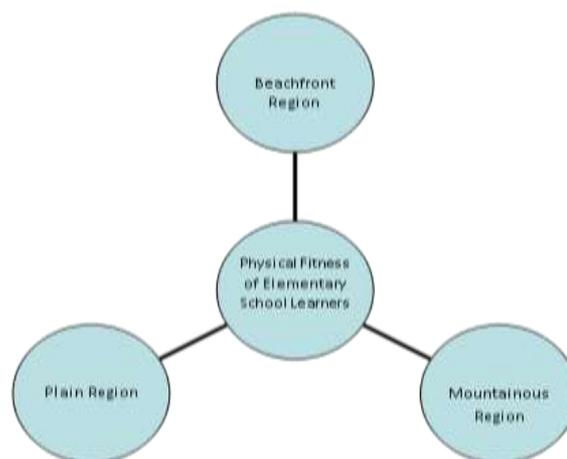


Figure 1. Research flow

This type of research is comparative descriptive research, namely research that involves collecting data from two or more different groups to understand the differences between them (Barlian, 2016). This research uses purposive sampling technique, this technique is carried out if the selection of sample members is carried out on objects or people in a place that is successfully encountered. So, in this study the sample members were 29 students of the beachside area of SD N 19 Air Tawar

Barat, 40 students in the Plain area of SD N 08 Surau Gadang and 40 students of the Mountains area of SD N 13 Batu Gadang. The research flow is shown in Figure 1.

The instrument used in this study is the Indonesian Student Fitness Test (TKSI) published by the Ministry of Education and Culture in 2023 in phase C elementary school grades V-VI aged 10-12 years. There are 5 test items in TKSI which consist of shuttle run 4x10m get ball, 600 m run, child ball, tok tok ball, lying down. In the TKSI instrument, the validity and reliability values for each test instrument used are:

Agility/Shuttle Run 4x10 m Get Ball Test

Shuttle run is used to measure agility, the test runs back and forth 4 x 10 m between two parallel lines as quickly as possible, while moving an object. The equipment is a flat and non-slip track, marker (chalk/ duct tape), meter, stopwatch, whistle, tennis ball/ plastic ball/ block, basket/ box.

Cardiovascular Endurance Test/600 m Run

This run is done by running a distance of 600 m at a moderate speed. The equipment is a flat and non-slip running track of 600 m, stopwatch, starting flag, whistle, test form and stationery.

Coordination Test/Child Ball

Child Ball is used for motor coordination fitness test. Modification of the sub-test by throwing the ball to the wall with 1 hand then caught with two hands, the distance of the throw to the wall is 2m. Participants are declared a failure if the learner cannot recapture the ball that is bounced against the wall. The equipment is tennis balls, duct tape, flat walls at least 3 meters high, whistles, forms and stationery.

Accuracy Test/Tok Tok Ball

To train accuracy by throwing a tennis ball at a target in the form of a circle or basket with a diameter of 30 cm. The equipment is 10 tennis balls, 30 cm diameter basket, chalk, whistle, test form and stationery.

Muscle strength/Sitting Barring Test

The seated lying test is a seated lying movement performed repeatedly within 30 seconds in pairs. The equipment is a mat or flat area, stopwatch, test form and stationery.

Statistical analysis technique used to test the average difference between two or more groups. Researchers used survey methods and data collection test techniques. There is a prerequisite test analysis which includes normality test with Kolmogorov-Smirnov test and homogeneity test. Hypothesis test data analysis in this study used One Way ANOVA. All

statistical analysis was processed using SPSS 24 software.

Result and Discussion

The data description describes the situation obtained from the research subject, in the description of the data using descriptive statistical analysis, descriptive statistical analysis is presented in table 1 and figure 2.

Table 1. Descriptive Statistics of Students' Fitness Level

School	N	Total	Mean± Stdev
SDN 19 ATB	29	473	16.31± 2.917
SDN 08 SRG	40	702	17.55± 3.088
SDN 13 BG	40	730	18.25± 2.862

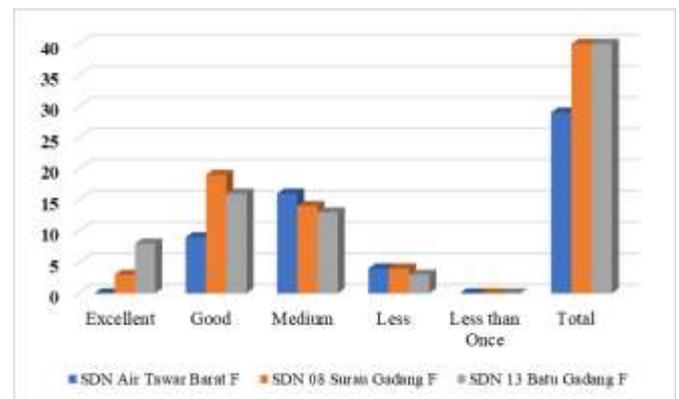


Figure 2. Student fitness level assessment

Table 2. Normality Test Results

Variables	Sig	Description
SDN 19 ATB	0.060	Normal
SDN 08 SG	0.070	Normal
SDN 13 BG	0.070	Normal

Based on table 2, it can be seen that the significant value of SDN 19 Air Tawar Barat, SDN 08 Surau Gadang and SDN 13 Batu Gadang, because the significant value is greater than 0.05 (Sig> 0.05), the variables can be said to be normally distributed.

Table 3. Homogeneity Test Results

Variables	Levene'	Sig	Description
SDN 19 ATB			
SDN 08 SG	0.162	0.851	Homogeneous
SDN 13 BG			

In table 3 above, the results of the variable homogeneity test have a Levene statistic value of 0.162, while the significance value of 0.851 is greater than > 0.05 because the sig value> 0.05, the data is homogeneous.

In this study, the One Way ANOVA test was used on the level of physical fitness of students of SDN 19 Air Tawar Barat, SDN 08 Surau Gadang and SDN 13 Batu

Gadang. To accept or reject the hypothesis by comparing with the One Way ANOVA test. One Way ANOVA results are shown in table 4.

Table 4. One Way Anova Test

Variables	DF	Mean Square	F	Sig
Between	2	31.793		
Within	106	8.770	3.625	0.030
Total	108			

Notes: Ftable = 3.08

In table 4 above, it is obtained $F_{hitung} > F_{tabel}$ and sig value $0.030 < 0.05$, meaning that there are differences in the fitness test results of elementary school students in the seaside, plains and mountains of Padang City.

The average score obtained from SDN 19 Air Tawar Barat was 16.31, the average score from SDN 08 Surau Gadang was 17.55 and the average score from SDN 13 Batu Gadang was 18.25. The average score obtained from the TKSI results of SDN 13 Batu Gadang was higher than that of SDN 08 Surau Gadang and SDN 19 Air Tawar Barat. From these results, the difference between SDN 13 Batu Gadang and SDN 19 Air Tawar Barat is 1.94 and the difference between SDN 13 Batu Gadang and SDN 08 Surau Gadang is 0.7, meaning that the level of physical fitness of TKSI SDN 13 Batu Gadang is better than the physical fitness of SDN 19 Air Tawar Barat and SDN 08 Surau Gadang.

Differences in Physical Fitness of Elementary School Students on the Beach, Plain and Mountains of Padang City

The results showed that there was a significant difference in the level of physical fitness between students at SDN 19 Air Tawar Barat, SDN 08 Surau Gadang, and SDN 13 Batu Gadang. The difference in mean scores between SDN 13 Batu Gadang and SDN 19 Air Tawar Barat was 1.94, and between SDN 13 Batu Gadang and SDN 08 Surau Gadang was 0.7, with SDN 13 Batu Gadang showing better physical fitness. Some of the factors that influence physical fitness include genetics, physical activity, nutrition, rest and environment, all of which contribute to the differences in physical fitness between the schools.

SDN 19 Air Tawar Barat is located in a beachfront area, which allows access to outdoor activities. However, challenges such as extreme weather, high humidity and difficulty participating in intense physical activity can affect children's health. In reality, many learners are driven by parents not only to go to school, but also to limit their physical activity (Yendrizal & Rusdinal, 2021).

In urban areas such as SDN 08 Surau Gadang, physical activity is limited by population density and traffic congestion. Although sports facilities are available, air pollution problems and lack of green open

spaces support limited physical activity (Martadiansyah et al., 2021; Neherta & Nurdin, 2021).

In contrast, SDN 13 Batu Gadang in the mountainous area showed better conditions for physical fitness. Physical activities such as hiking and mountain biking in these areas improve cardiovascular endurance and muscle strength, and the fresher, less polluted air contributes to respiratory health (Barlian, 2020). Several previous studies explain children in mountainous areas are more likely to walk to school and engage in outdoor activities after school, which has a positive impact on their physical fitness (Cabral-Santos et al., 2015; Zhu et al., 2023).

Overall, this study highlights the importance of environmental factors in influencing learners' physical fitness levels, showing that different geographical contexts create variations in children's physical activity habits and health.

Physical Fitness of Elementary Students in the Mountains is Better than Elementary Students on the Beach and Plains

Differences in environmental characteristics at SDN 19 Air Tawar Barat, SDN 08 Surau Gadang and SDN 13 Batu Gadang contribute significantly to students' physical fitness. According to the living environment, it has a great influence on the physical abilities of individuals. Variations in climate, weather, temperature and geographical conditions affect children's quality of life and physical activity (Del Bianco et al., 2024; Kapoor et al., 2022; Stults-Kolehmainen, 2023; Velki, 2024).

Previous researchers found that physical fitness in mountainous areas tends to be better due to more challenging terrain and natural factors that support intense physical activity (Barlian, 2020; Yendrizal et al., 2024). Activities such as hiking and cycling in the mountains improve physical endurance, muscle strength and lung capacity (Angulo et al., 2020; Bennasar-Veny et al., 2023; English et al., 2022; Raudsepp & Päll, 2006). The clean air quality and minimal pollution in mountainous areas also contribute to respiratory and immune system health (Chávez Valenzuela et al., 2022; Sari et al., 2025). Mountainous areas offer greater benefits to physical fitness than plains and seaside areas, where the flat terrain does not provide significant physical challenges (Barlian, 2020; Yendrizal & Rusdinal, 2021).

The participation of learners from mountainous areas in walking to school, which must pass through the contours of the land up and down, helps increase their lung capacity and physical endurance (Martadiansyah et al., 2021; Motsa et al., 2021; Neherta & Nurdin, 2021). Meanwhile, children in the lowlands usually use transportation, so they are less stimulated to do physical activity. This difference in access and habits shows that

the living environment greatly influences physical activity which leads to an increase in students' physical fitness.

Conclusion

This study shows that there are significant differences in the physical fitness of elementary school students in coastal, lowland, and mountainous areas in Padang City. Students at SDN 13 Batu Gadang, which is located in a mountainous area, have a better level of fitness compared to students at SDN 08 Surau Gadang (lowland) and SDN 19 Air Tawar Barat (coastal). Factors such as challenging terrain, fresh air, and physical activities such as hiking or cycling in mountainous areas contribute positively to physical fitness. Meanwhile, in coastal and urban areas, challenges such as extreme weather, pollution, and limited green open space limit physical activity. These findings confirm the importance of the environment in influencing children's physical fitness.

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Author Contributions

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Conflicts of Interest

The authors declare no conflict of interest.

References

- Angulo, J., El Assar, M., Álvarez-Bustos, A., & Rodríguez-Mañas, L. (2020). Physical activity and exercise: Strategies to manage frailty. *Redox Biology*, 35, 101513. <https://doi.org/10.1016/j.redox.2020.101513>
- Barlian, E. (2016). *Metodologi penelitian kualitatif & kuantitatif*. Padang: Sukabina Press.
- Barlian, E. (2020a). Pembinaan Olahraga Tradisional Silat Sikoka Harimau Damam. *Jurnal Patriot*, 2(1), 83–95. Retrieved from <https://media.neliti.com/media/publications/320963-pembinaan-olahraga-tradisional-silat-sik-02f126ed.pdf>
- Barlian, E. (2020b). Pengaruh Latihan Jump To Box Terhadap Kemampuan Heading. *Jurnal Performa Olahraga*, 5(1), 73–79. <https://doi.org/10.24036/jpo143019>
- Bennasar-Veny, M., Malih, N., Galmes-Panades, A. M., Hernandez-Bermudez, I. C., Garcia-Coll, N., Ricci-Cabello, I., & Yañez, A. M. (2023). Effect of physical activity and different exercise modalities on glycemic control in people with prediabetes: a systematic review and meta-analysis of randomized controlled trials. *Frontiers in Endocrinology*, 14. <https://doi.org/10.3389/fendo.2023.1233312>
- Cabral-Santos, C., Gerosa-Neto, J., Inoue, D. S., Panissa, V. L. G., Gobbo, L. A., Zagatto, A. M., & Lira, F. S. (2015). Similar anti-inflammatory acute responses from moderate-intensity continuous and high-intensity intermittent exercise. *Journal of Sports Science and Medicine*, 14(4), 849–856. Retrieved from <https://pmc.ncbi.nlm.nih.gov/articles/PMC4657429/>
- Chávez Valenzuela, M. E., Valdez García, M., Bautista Jacobo, A., Hoyos Ruiz, G., Barahona Herrejón, N. C., & Ogarrio Perkins, C. E. (2022). Evaluation of the effect of a physical exercise program on cardiorespiratory capacity in academics with metabolic syndrome at the University of Sonora: a pilot study. *Retos*, 44, 264–275. <https://doi.org/10.47197/retos.v44i0.89062>
- Csader, S., Chen, X., Leung, H., Männistö, V., Pentikäinen, H., Tauriainen, M.-M., & Cook, M. D. (2023). Gut ecological networks reveal associations between bacteria, exercise, and clinical profile in non-alcoholic fatty liver disease patients. *MSystems*, 8(5). <https://doi.org/10.1128/msystems.00224-23>
- Del Bianco, N., Borsati, A., Toniolo, L., Ciurnielli, C., Belluomini, L., Insolda, J., & Avancini, A. (2024). What is the role of physical exercise in the era of cancer prehabilitation? A systematic review. *Critical Reviews in Oncology/Hematology*, 198, 104350. <https://doi.org/10.1016/j.critrevonc.2024.104350>
- English, M., Wallace, L., Evans, J., Diamond, S., & Caperchione, C. M. (2022). The impact of sport and physical activity programs on the mental health and social and emotional wellbeing of young Aboriginal and Torres Strait Islander Australians: A systematic review. *Preventive Medicine Reports*, 25, 101676. <https://doi.org/10.1016/j.pmedr.2021.101676>
- Firmansyah, A., Preasetya, M. R. A., Al Ardha, M. A., Ayubi, N., Putro, A. B., Mutohir, T. C., & Hanief, Y. N. (2024). Entrenamiento pliométrico en jugadores de fútbol: Una Revisión Sistemática (The Football Players on Plyometric Exercise: A Systematic Review). *Retos*, 51, 442–448. <https://doi.org/10.47197/retos.v51.100800>
- Guo, Y., Su, J., Jiang, S., Xu, Y., Dou, B., Li, T., & He, K.

- (2024). Transcriptomics and metabolomics study on the effect of exercise combined with curcumin supplementation on breast cancer in mice. *Heliyon*, *10*(7), e28807. <https://doi.org/10.1016/j.heliyon.2024.e28807>
- Ilham, Agus, A., Tomoliyus, T., Sugiyanto, F. X., Tirtawirya, D., Lumintuarso, R., & Jean-Berchmans, B. (2024). Comparative Analysis of Adaptations Progress in VO₂max, Leg Power, and Agility among Male and Female Sports Science Students. *Retos*, *57*, 245–257. <https://doi.org/10.47197/retos.v57.107053>
- Ilham, I., Alsyifa Putra, R., Agus, A., Bafirman, B., Arsil, A., Bahtra, R., & Sibomana, A. (2024). The Effect of Combination of Cone Drill (Zigzag) with Core Stability, Combination of Ladder Drill (Snake Jump) with Core Stability, and Speed on Agility of Futsal Players: A Factorial Experimental Design. *Retos*, *58*, 1–11. <https://doi.org/10.47197/retos.v58.105462>
- Ilham, I., Sari, A. P., Bafirman, B., Rifki, M. S., Alnedral, A., Welis, W., & Jimenez, J. V. G. (2024). The effect of plyometric training (hurdle jumps), body weight training (lunges) and speed on increasing leg muscle explosive power of futsal players: a factorial experimental. *Retos*, *59*, 497–508. <https://doi.org/10.47197/retos.v59.108147>
- Indika, P. M., Kurniawan, R., Bahtra, R., & Yuniarti, E. (2023). The Effect of Administration of Honey on Maximal Physical Activity in Malondialdehyd (Mda) Levels of Male Mice (*Mus musculus* L.). *Proceedings of the 3rd International Conference on Biology, Science and Education (IcoBioSE 2021)*, 171–180. Atlantis Press. https://doi.org/10.2991/978-94-6463-166-1_25
- Kapoor, G., Chauhan, P., Singh, G., Malhotra, N., & Chahal, A. (2022). Physical activity for health and fitness: past, present and future. *Journal of lifestyle medicine*, *12*(1), 9. <https://doi.org/10.15280/jlm.2022.12.1.9>
- Ma, Q., Poopal, R.-K., Zhang, J., Chen, X., & Ren, Z. (2022). Real-time determination of water status upon simultaneous zebrafish exposure to sublethal concentrations of CuSO₄. *Aquatic Toxicology (Amsterdam, Netherlands)*, *252*, 106296. <https://doi.org/10.1016/j.aquatox.2022.106296>
- Martadiansyah, A., Maulina, P., Mirani, P., & Kaprianti, T. (2021). Zinc Serum Maternal Levels as a Risk Factor for Preeclampsia. *Bioscientia Medicina: Journal of Biomedicine and Translational Research*, *5*(7), 693–701. <https://doi.org/10.32539/bsm.v5i7.390>
- Marttinen, R., Wilson, K., Fisher, K., Beitzel, M., & Fredrick, R. N. (2022). Process evaluation and challenges in collecting data from an after-school sports and literacy program in a diverse, low-income community. *Evaluation and Program Planning*, *91*, 102052. <https://doi.org/10.1016/j.evalprogplan.2022.102052>
- Mattioni-Maturana, F., Martus, P., Zipfel, S., & NIEß, A. M. (2021). Effectiveness of HIIE versus MICT in Improving Cardiometabolic Risk Factors in Health and Disease: A Meta-analysis. *Medicine and Science in Sports and Exercise*, *53*(3), 559–573. <https://doi.org/10.1249/MSS.0000000000002506>
- Motsa, M. P. S., Chiou, H. Y., & Chen, Y. H. (2021). Association of chronic diseases and lifestyle factors with suicidal ideation among adults aged 18–69 years in Eswatini: evidence from a population-based survey. *BMC Public Health*, *21*(1), 1–11. <https://doi.org/10.1186/s12889-021-12302-6>
- Neherta, M., & Nurdin, Y. (2021). Comparative study of risk profiles for non-communicable diseases in urban and suburb adolescents in padang city (Indonesia). *Open Access Macedonian Journal of Medical Sciences*, *9*, 1233–1237. <https://doi.org/10.3889/oamjms.2021.7395>
- Nyoman, A. A., Kurniawan, R., Sari, A. P., & ... (2024). Pengaruh Latihan Renang Terhadap Pengembangan Keterampilan Motorik Anak: Systematic Literature Review. *Jurnal Penelitian Pendidikan (JPP)*, *8*(2), 114–122. <https://doi.org/10.17509/jpp.v20i1.24557>
- Padli, P., Prasetyo, T., Kurniawan, R., Putra, R. A., & Candra, O. (2024). The influence of environment and social interaction on the formation of athlete character: a descriptive study. *Revista Iberoamericana de Psicología Del Ejercicio y El Deporte*, *19*(4), 430–434. Retrieved from <https://shorturl.at/uUtMV>
- Prasetyo, T., Kurniawan, R., Putra, R. A., & Candra, O. (2024). The Role of Sports in Preventing and Overcoming Problems During the Transition Period Case Study of Adolescents in Indonesia: Descriptive Study. *Social Science and Humanities Journal (SSHJ)*, *8*(07), 4477–4489. <https://doi.org/10.18535/sshj.v8i07.1213>
- Prasetyo, T., Kurniawan, R., Putra, R. A., & Sipayung, A. Y. (2024). The Role Of Multimedia In The Process Physical Education Learning: Study Literature. *Journal Sport Science Indonesia*, *3*(3), 493–504. <https://doi.org/10.31258/jassi.3.3.493-504>
- Raudsepp, L., & Päll, P. (2006). The relationship between fundamental motor skills and outside-school physical activity of elementary school children. *Pediatric Exercise Science*, *18*(4), 426–435. <https://doi.org/10.1123/pes.18.4.426>

- Samy, A., Zaki, S. S., Metwally, A. A., Mahmoud, D. S. E., Elzahaby, I. M., Amin, A. H., & Ali, A. S. (2019). The Effect of Zumba Exercise on Reducing Menstrual Pain in Young Women with Primary Dysmenorrhea: A Randomized Controlled Trial. *Journal of Pediatric and Adolescent Gynecology*, 32(5), 541-545.
<https://doi.org/10.1016/j.jpjag.2019.06.001>
- Sari, A. P., Bafirman, Rifki, M. S., Syafrianto, D., & Kurniawan, R. (2023). The impact of maumere gymnastics on blood pressure reduction in hypertensive patients: A promising non-pharmacological intervention. *Journal Sport Area*, 8(3), 328-339.
[https://doi.org/10.25299/sportarea.2023.vol8\(3\).11727](https://doi.org/10.25299/sportarea.2023.vol8(3).11727)
- Sari, A. P., Kurniawan, R., Indika, P. M., Wulan, T. S., Syafrianto, D., & Sari, D. N. (2023). Exploring the impact of aerobic gymnastics on reducing blood: with hypertension medications vs without hypertension medications. *Journal of Physical Education and Sport*, 23(12), 3253-3263.
<https://doi.org/10.7752/jpes.2023.12372>
- Sari, A. P., Kurniawan, R., Selviani, I., Okilanda, A., Rifki, M. S., Setiawan, E., & Jimenez, G. (2024). Maumere exercise therapy and low salt diet in hypertension sufferers: an effort to lower blood pressure. *Retos*, 56, 1016-1025.
<https://doi.org/10.47197/retos.v56.106718>
- Sari, A. P., Rahmadhanti, R., Car, B., Pavlović, R., Ndayisenga, J., Prasetyo, T., & Kurniawan, R. (2025). Royal Jelly Potentially Reduces Oxidative Stress and Inflammation after Physical Activity : A Systematic Literature Review. *South Eastern European Journal of Public Health*, 26, 1939-1954.
<https://doi.org/10.70135/seejph.vi.4048>
- Selpamira, D. A., & Roepajadi, J. (2022). Analisis kecemasan pada atlet dalam olahraga renang. *Jurnal Kesehatan Olahraga*, 10(3), 21-30. Retrieved from
<https://ejournal.unesa.ac.id/index.php/jurnal-kesehatan-olahraga/article/view/48082>
- Selviani, I., Prasetyo, T., Kurniawan, R., Putra, R. A., Candra, O., & Rizal, Y. (2024). Activities and Involvement in Sports have a Significant Impact on Life: A Descriptive Analysis. *International Journal of Research and Innovation in Social Science*, 8(8), 1926-1934.
<https://doi.org/10.47772/ijriss.2024.8080140>
- Selviani, I., Sari, A. P., Okilanda, A., Kurniawan, R., & Ismaningsih, I. (2023). Pemberian Thumb Exercise Sebagai Upaya Pengurangan Nyeri Pada Kondisi De Quervain Syndrome. *Wahana Dedikasi: Jurnal PkM Ilmu Kependidikan*, 6(2), 468-474.
<https://doi.org/10.31851/dedikasi.v3i2.5330>
- Selviani, I., Syafrianto, D., Okilanda, A., Sari, A. P., & Kurniawan, R. (2024). Kinesio Taping Efficacy and Demographic Correlates in. *Halaman Olahraga Nusantara: Jurnal Ilmu Keolahragaan*, 7(I), 54-66.
<https://doi.org/10.31851/hon.v1i1.1505>
- Stults-Kolehmainen, M. A. (2023). Humans have a basic physical and psychological need to move the body: physical activity as a primary drive. *Frontiers in Psychology*, 14, 1134049.
<https://doi.org/10.3389/fpsyg.2023.1134049>
- Velki, T. (2024). Can Physical Activities Suppress Negative Impact of Stress on the Mental Health of Adolescents? *International Journal of Mental Health Promotion*, 26(3), 211-219.
<https://doi.org/10.32604/ijmh.2024.047950>
- Yendrizal, Y., Okilanda, A., Masrun, M., Ridwan, M., Ahmed, M., Crisari, S., & Tulyakul, S. (2024). Unlocking the science of physical endurance: Training techniques and biological factors. *Retos: Nuevas Tendencias En Educación Física, Deporte y Recreación*, (55), 504-512. Retrieved from
<https://dialnet.unirioja.es/servlet/articulo?codigo=9469830>
- Yendrizal, Y., & Rusdinal, R. (2021). Implementasi Kebijakan Pemerintah terhadap Pembelajaran Sekolah Dasar di Masa Pandemi Covid-19 pada Tahun Ajaran 2020/2021. *Jurnal Bahana Manajemen Pendidikan*, 10(1), 35-42. Retrieved from
<https://103.216.87.80/index.php/bahana/article/view/111947/pdf>
- Zhang, R., Zhang, J., Liu, Y., Fang, L., Wei, Y., Gu, R., & Zhou, Z. (2022). The effect of fermented wheat protein hydrolysate on the exercise performance in mice. *Journal of Functional Foods*, 97, 105217.
<https://doi.org/10.1016/j.jff.2022.105217>
- Zhang, Y., Fu, Y., Ruan, J., Gao, Q., Yang, D., Wang, D., & Wang, T. (2023). Highly oxygenated diterpenoids in *Clerodendranthus spicatus* and their bioactivity, A review. *Biochemical Systematics and Ecology*, 106, 104580.
<https://doi.org/10.1016/j.bse.2022.104580>
- Zhu, G., Chen, K., Ling, C., Zhao, P., & Guo, L. (2023). The Impact of Physical Activity on Cognitive Function in Children and Adolescents with Intellectual Disabilities: A Meta-Analysis. *International Journal of Human Movement and Sports Sciences*, 11(6), 1253-1265.
<https://doi.org/10.13189/saj.2023.110609>