Journal of Education, Teaching, and Learning
Volume 9 Number 1, 2024 Special Issue. Page 29-34
p-ISSN: 2477-5924 e-ISSN: 2477-8478

SPORT MONOPOLY GAMES: A PHYSICAL EDUCATION LEARNING FOR PHYSICAL FITNESS STUDENT

Sumbara Hambali[1)], Veny Juniarni Hardi[2)], Deswinta Supriyatni[3)], Ani Pristiawati[4)], Giri Verianti[5)], Yovhandra Ockta[6)]

[1)] *STKIP Pasundan, Cimahi, Indonesia*
E-mail: sumbarahambali8@gmail.com
[2)] *STKIP Pasundan, Cimahi, Indonesia*
E-mail: venyjuniarnihardi@gmail.com
[3)] *STKIP Pasundan, Cimahi, Indonesia*
E-mail:deswita291284@gmail.com
[4)] *STKIP Pasundan, Cimahi, Indonesia*
E-mail:pristianie19@gmail.com
[5)]*Universitas Nusa Putra, Sukabumi, Indonesia*
E-mail: giri.verianti@nusaputra.ac.id
[6)] *Universitas Negeri Padang, Padang, Indonesia*
Email: yovhandra1999@gmail.com

Abstract. Fitness is still an important study in life. The study of physical fitness is still a problem that seems to be currently a polemic among elementary school students. This happens because of a shift in physical activity habits in student life. The purpose of this study was to find out an overview of the impact of a Sport Monopoly Games (SMG) game on students' physical fitness. A total of 105 students spread across the Cimahi City, Indonesia area participated in this research, namely schools in the northern, central and southern regions. The research method uses experiments with research design one shoot case study. The instrument uses a measuring instrument in the form of the Indonesian Student Fitness Test (TKSI) Phase C, which consists of five test items: 1) Child Ball; 2) Tok Tok Ball; 3) Shuttle Run 4x10 m Get ball; 4) Move the Ball; 5) Run 600 m. The data analysis used a percentage approach, and using the tools of Ms Excel 2019 and IBM SPSS version 26 programs. Average physical fitness score from the northern region is greater at 15.6 than the other two regions, namely the central region 15.4 and the southern region 14.9. However, if you look at the TKSI value category table, the three regions on average have the same fitness level, which is in the medium category. The results of the study found that the average student had a moderate level of physical fitness after being given treatment using SMG. Physical education teachers can apply this game in physical fitness materials at school, so that the learning process is not monotonous and a little challenging for students.

Keywords**:** Elementary School, Monopoly Sport Games, Physical Education, Physical Fitness

I. INTRODUCTION

Fitness is still an important study in life. Fitness is a person's ability to carry out his activities, and it is the most important thing that everyone must have (Henning et al., 2022). Everyone must have good physical fitness, because it is the capital to carry out daily activities (Mohammadi-Nia et al., 2023). It is very important to maintain body fitness, because it has several benefits, including maximizing daily activities, thinking rationally and being able to regulate emotions (Amenya et al., 2021; Corrêa et al., 2022; Franklin et al., 2022). Some studies say physical fitness is related to physical activity (Zymbal et al., 2022), also has an effect on thinking ability (Daugherty et al., 2018), and there is also a positive relationship with emotional control (Kira et al., 2008).

Sports are one of the right ways to maintain physical fitness and mental health (Mikkelsen et al., 2017; van der Scheer et al., 2017), presumably by doing sports activities make the quality of body functions more optimal (Radak et al., 2019). Good and correct sports activities can not only burn calories, but can provide benefits that can make the

Journal of Education, Teaching, and Learning
Volume 9 Number 1, 2024 Special Issue. Page 29-34
p-ISSN: 2477-5924 e-ISSN: 2477-8478

body fit (Lavie et al., 2019), so that with a fit body it will provide positive energy and a good mood (Mücke et al., 2018). Maintaining body condition by exercising also not only aims to keep the body fit, but also has the potential to increase the body's immunity so as to avoid diseases caused by viruses or bacteria (da Silveira et al., 2021). Sports activities can improve the function of the heart and blood vessels, improve blood circulation, respiratory system and optimize the body's metabolic processes (Thyfault & Bergouignan, 2020).

At least for health, sports activities are recommended for two to three hours a week with the condition that it is done gradually, consistently, measurably (Medina-Mirapeix et al., 2017), and this of course must be made a routine in his life. Physical fitness is closely related to various activities of a person in doing each job (Ozemek et al., 2018). In order for the quality of work to be carried out properly, it is necessary to perform forms of physical exercise, such as strength, flexibility, endurance, speed and coordination (Bompa & Buzzichelli, 2019). In addition, with a feed of good nutrition, adequate sleep or rest and getting used to a healthy life can maintain physical fitness (Doherty et al., 2021), The fitter a person's physical condition is, the better his health degree will be (Ahdan et al., 2021). The importance of physical fitness must certainly be applied from an early age, children should need to be educated about the importance of physical fitness (Qu et al., 2020). Children must have been given an understanding of the concept of body as the basis of their body health (Pinto et al., 2020). Children's health must be an important concern, this is to minimize regenarative diseases early (Chen & Chang, 2010), because research says the problem of regenartive diseases in children has become more serious (Ovsyannikova et al., 2021). Therefore, physical activity in children must be done programmatically, meaning that it must be done according to the child's growth and development, both physically, socially and emotionally (Brusseau et al., 2018). Basically, according to the characteristics of children, they love to play (Johnson et al., 2019), therefore every physical activity carried out and given to children should be packaged in play situations (Hambali, 2018).

Several studies on fitness exercises for children have been conducted, such as aerobic exercise and exercise with cardio circuit games that combine running, squatting and jumping movements (Purba et al., 2020; Tanzila, 2018), it is also said that physical fitness can be done through game-based activities (Patel et al., 2017). However, the research should still be carried out in the scope of school, even though what is needed is actually habituation in life, meaning that the activities carried out can not only be done at school, but outside school can also be. Researchers will try to modify a folk game that can be integrated into physical training activities, and the game is called "Sport Monopoly". Where this game combines monopoly games with physical activities, which of course can be done anywhere, indoor or outdoor, so it is expected that by applying this game the motivation of children to move higher, because games carried out outdoors or in open spaces will increase children's motivation (Andres, 2017). Based on this explanation, the objectives research is to see the extent which this SMG improves the physical fitness students.

II. Methods

Participants. The subjects involved in this study were boys in the age range of 10-12 years, who were found in various schools in the Cimahi City area, Indonesia. In determining the subject, the researcher determined three schools as representatives, namely schools in the northern, central and southern regions. So the total participants in this study were as many as 105 people.

Research Design. The research design used by researchers is *a one shoot case study*, where researchers want to know how effective this game is on children's physical fitness. For the research instrument here using the type of Indonesian Student Fitness Test (TKSI) Phase C, which consists of five test items: 1) Child Ball has a validity value of 0.511 and a reliability value of 0.494; 2) Tok Tok Ball has a validity value of 0.376 and a reliability value of 0.524; 3) Shuttle Run 4x10 m Get ball has a validity value of 0.645 and a reliability value of 0.473; 4) Move the Ball has a validity value of 0.472 and a reliability value of 0.508; 5) Run 600 m has a validity value of 0.545 and a reliability value of 0.490 (Suhardi et al., 2021). Each test item has a score range of 1-5, so the overall total score is at least 5 and the maximum is 25. Here is a table of TKSI value categories:

TABLE I
TKSI VALUE CATEGORY

No	Range of Values	Category
1	22 – 25	Very Good
2	18 – 21	Good
3	14 – 17	Keep
4	10 – 13	Less
5	5 – 9	Very Less

Statistical Analysis. Statistical analysis uses a percentage approach, aiming to see how much impact results from a treatment.

III. Result And Discussion

A. Result of Physical Fitness

The results of the study were obtained based on the Indonesian Student Fitness Test (TKSI) which consisted of five items, where each item had a weight score range from 1 to 5, so that the fitness score obtained later had a range between 5 to 25. The following will be presented test result data from the five TKSI Phase C items so as to obtain the following fitness values:

Journal of Education, Teaching, and Learning
Volume 9 Number 1, 2024 Special Issue. Page 29-34
p-ISSN: 2477-5924 e-ISSN: 2477-8478

TABLE II
STUDENT PHYSICAL FITNESS TEST RESULTS ON EACH ITEM

Measurement Type	Region		
	North	Middle	South
	$\underline{X}$	$\underline{X}$	$\underline{X}$
Age	11.17	11.4	11.09
Child Ball	11.26	11.31	10.89
Tok Tok Ball	5.51	5.66	5.77
Shuttle Run	27.89	28.02	28.18
Move the Ball	13.03	12.51	12.57
600 m sprint	5.23.97	5.42.02	5.45.91
Fitness Score	15.6	15.4	14.9

$\underline{X}$: Mean

Based on table 2, it can be seen that the average age of each region is almost the same age of 11, but has their own advantages on each test. For example, the northern region excelled in four test items, while one test item, namely in the Move the Ball test, the average score was still inferior to the central and southern regions. Then in the middle region superior to the Move the Ball test items, the other four test items are still inferior to the north and south regions. Furthermore, the southern region excelled in the Child Ball test item, while the other 4 test items still lost to the other two regions.

Furthermore, if you look at the overall fitness score, it can be seen that the average fitness score from the northern region is greater at 15.6 than the other two regions, namely the central region 15.4 and the southern region 14.9. However, if you look at the TKSI value category table, the three regions on average have the same fitness level, which is in the medium category. For more details, the distribution of frequency scores and percentages from each region can be seen in table 2 below:

TABLE III
Frequency Distribution of Student Physical Fitness Results

Region	Category/Results									
	Very Good		Good		Keep		Less		Very Less	
	F	%	F	%	F	%	F	%	F	%
North	0	0%	9	26%	21	60%	5	14%	0	0%
Middle	0	0%	9	26%	19	54%	7	20%	0	0%
South	0	0%	5	14%	22	63%	8	23%	0	0%

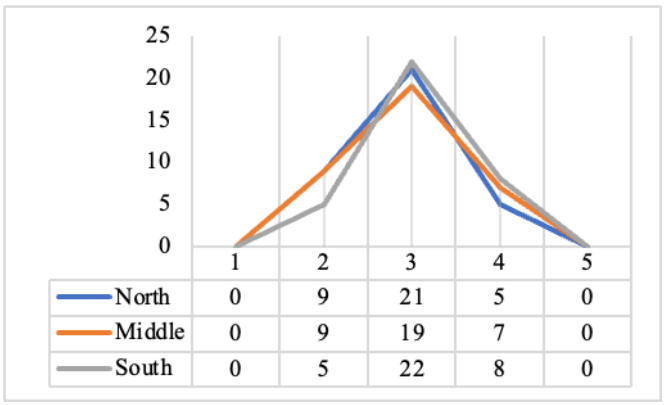

Figure 2. Physical Fitness Test Result Diagram

From table 3, it can be seen that students who have a very good fitness level do not exist at all, while for the good category there are 9 people for the northern and central regions, and 5 people from the southern region. Then students who have a moderate level of physical fitness in the north region there are 21 people, the middle is 19 people and the south there are 22 people. Furthermore, for students who have less physical fitness, in the north there are 5 people, in the middle there are 7 people and in the south there are 8 people, while for the category of less there is absolutely no in any region.

B. Discussion

The results showed that the Sport Monopoly (SM) game had a sufficient impact on students' physical fitness. This is evidenced by the acquisition of the average fitness score in students who fall into the medium category. Sport Monopoly (SM) in this study is a form of fitness game, where each item requires players to imitate or perform the movements ordered on the item.

Some of the activities are in the form of static and dynamic activities, but they are carried out on the spot, so they do not require large land, but still in challenging game situations. The findings in the field obtained by students are very enthusiastic in doing the game, because it is packaged into an interesting game and also new for them, because a new game can usually increase the enthusiasm of players in doing a game (Huizenga et al., 2017). In addition, students can also add other knowledge from answer cards. So in addition to obtaining physical activity for fitness, also his knowledge can develop about physical fitness. In addition to the physical and cognitive aspects, this SM game also seems to be able to train the attitude aspect, because students are required to remain honest and responsible during the game. Here it seems clear that the purpose of this game can be integrated into the purpose of physical education as a whole, which is to increase all the potential that exists in students, ranging from physical, intellectual and social aspects as the basis for the formation of their lives (Klein & Hollingshead, 2015).

Fitness is indeed very important for student survival, where fit students tend to produce a good quality of life (Gu et al., 2016), Students with good physical fitness levels tend to have strong thinking and memory (de Bruijn et al., 2018). There are many benefits that can be obtained from fitness activities, not only the physical aspects, but also the psychological and social aspects that will be affected after doing physical activity (Malm et al., 2019; Maugeri et al., 2020). From the physical aspect, it is clear that several studies show that the impact of physical exercise activities such as fitness can improve physical quality including increased cardiorespiration, muscle strength, and flexibility (Foster & Armstrong, 2018). The study also identified a link between physical fitness and risk against chronic diseases such as heart disease, type 2 diabetes, and obesity (Aune et al., 2015). Meanwhile, the impact of physical activity on

psychological aspects is said to be that fitness activities are not only beneficial for the body but also for the mind (Levine et al., 2021). Research shows that regular exercise can reduce stress levels, improve mood, and reduce the risk of depression and anxiety (Saeed et al., 2019), due to the release of endorphins and serotonin during exercise, which play an important role in mental well-being (Matei et al., 2023). Then the impact for the social aspect is that participation in fitness activities is often a social experience (Thompson, 2023), exercise groups or fitness classes can provide important social support and improve the quality of interpersonal relationships (Yorks et al., 2017). Studies of fitness activities can also explore how social interactions in these contexts influence motivation and consistency in exercise (Box et al., 2019). Another advantage of this game is that SMG can also be done anywhere, such as inside the house, yard, classroom, and so on, meaning it does not require a large field and space. This also seems to be good for students who always rarely leave the house or even in previous years where Covid-19 cases hit the world requiring everyone not to move outside the home (Hambali et al., 2021), and this game can be one solution to stay active and maintain physical fitness.

Actually, there are many studies that examine the impact of games on physical fitness, but those packaged in the form of simple games and can include the use of all three aspects (cognitive, affective and psychomotor) are still very rare. SM in its application has done that, so it is hoped that this will be a solution in dealing with the problem of motion literacy which is now sweeping several countries, one of which is Indonesia (Irmansyah et al., 2021; Lundvall, 2015). This SM game can be done anytime and anywhere, it is recommended that in a day a maximum of 2 plays with a duration of no more than one hour, this is based on exercise theory which states that for improving physical health at least fitness exercises are carried out for 15-30 minutes (Giriwijoyo, 2016). It is hoped that the results of this study will contribute a little knowledge about a simple game in Indonesia that is integrated with physical activity, so that it can be one of the solutions in the development of physical literacy in the future.

IV. Conclusions

Based on the results of the physical fitness test, it can be seen that the Sport Monopoly (SM) game has a sufficient impact on students' physical fitness, on average students have physical fitness at a moderate level after being given SM games. It can also be seen that the level of physical fitness in each test item is better in students in the northern region, and the lowest in the southern region. This study provides an idea of the impact of a simple game integrated with physical activity/fitness. Physical education teachers can apply this game in physical fitness materials at school, so that the learning process is not monotonous and a little challenging for students. This study is felt that there are still shortcomings, researchers still focus on assessing physical aspects only, while cognitive and affective aspects have not been able to see the impact.

References

Ahdan, S., Gumantan, A., & Sucipto, A. (2021). Program Latihan Kebugaran Jasmani dalam Menjaga Kesehatan. *Journal of Technology and Social for Community Service (JTSCS)*, *2*(2), 102–107. https://doi.org/https://doi.org/10.33365/jsstcs.v2i2.1363

Amenya, P. C. A., Annan, R. A., Apprey, C., & Kpewou, D. E. (2021). Physical fitness and cognitive function among school–aged children in selected basic schools in the Ho Municipality of Ghana. *Heliyon*, *7*(3), e06324. https://doi.org/10.1016/j.heliyon.2021.e06324

Andres, A. S. (2017). Physical education of students, considering their physical fitness level. *Physical Education of Students*, *21*(3), 103. https://doi.org/10.15561/20755279.2017.0301

Aune, D., Norat, T., Leitzmann, M., Tonstad, S., & Vatten, L. J. (2015). Physical activity and the risk of type 2 diabetes: A systematic review and dose-response meta-analysis. *European Journal of Epidemiology*, *30*(7), 529–542. https://doi.org/10.1007/s10654-015-0056-z

Bompa, T. O., & Buzzichelli, C. A. (2019). *Periodization: Theory and Methodology of Training* (Sixth Edit). Human Kinetics.

Box, A. G., Feito, Y., Brown, C., & Petruzzello, S. J. (2019). Individual differences influence exercise behavior: how personality, motivation, and behavioral regulation vary among exercise mode preferences. *Heliyon*, *5*(4), e01459. https://doi.org/10.1016/j.heliyon.2019.e01459

Brusseau, T. A., Hannon, J. C., Fu, Y., Fang, Y., Nam, K., Goodrum, S., & Burns, R. D. (2018). Trends in physical activity, health-related fitness, and gross motor skills in children during a two-year comprehensive school physical activity program. *Journal of Science and Medicine in Sport*, *21*(8), 828–832. https://doi.org/10.1016/j.jsams.2017.12.015

Chen, W., & Chang, M. H. (2010). New growth charts for taiwanese children and adolescents based on world health organization standards and health-related physical fitness. *Pediatrics and Neonatology*, *51*(2), 69–79. https://doi.org/10.1016/S1875-9572(10)60014-9

Corrêa, R. E., Velho, P. E. N. F., do Prado Calazans, R., Camargo, C., & Tolocka, R. E. (2022). Physical activity and emotions in a period of social distancing due to the COVID-19 pandemic. *Sports Medicine and Health Science*, *4*(3), 172–176. https://doi.org/10.1016/j.smhs.2022.04.004

da Silveira, M. P., da Silva Fagundes, K. K., Bizuti, M. R., Starck, É., Rossi, R. C., & de Resende e Silva, D. T. (2021). Physical exercise as a tool to help the immune system against COVID-19: an integrative review of the current literature. *Clinical and Experimental Medicine*, *21*(1), 15–28. https://doi.org/10.1007/s10238-020-00650-3

Daugherty, A. M., Zwilling, C., Paul, E. J., Sherepa, N., Allen, C., Kramer, A. F., Hillman, C. H., Cohen, N. J., & Barbey, A. K. (2018). Multi-modal fitness and

cognitive training to enhance fluid intelligence. *Intelligence*, *66*, 32–43. https://doi.org/https://doi.org/10.1016/j.intell.2017.11.001

de Bruijn, A. G. M., Hartman, E., Kostons, D., Visscher, C., & Bosker, R. J. (2018). Exploring the relations among physical fitness, executive functioning, and low academic achievement. *Journal of Experimental Child Psychology*, *167*, 204–221. https://doi.org/10.1016/j.jecp.2017.10.010

Doherty, R., Madigan, S. M., Nevill, A., Warrington, G., & Ellis, J. G. (2021). The sleep and recovery practices of athletes. *Nutrients*, *13*(4), 1–25. https://doi.org/10.3390/nu13041330

Foster, C., & Armstrong, M. E. G. (2018). What types of physical activities are effective in developing muscle and bone strength and balance? *Journal of Frailty, Sarcopenia and Falls*, *03*(02), 58–65. https://doi.org/10.22540/jfsf-03-058

Franklin, B. A., Eijsvogels, T. M. H., Pandey, A., Quindry, J., & Toth, P. P. (2022). Physical activity, cardiorespiratory fitness, and cardiovascular health: A clinical practice statement of the American Society for Preventive Cardiology Part II: Physical activity, cardiorespiratory fitness, minimum and goal intensities for exercise train. *American Journal of Preventive Cardiology*, *12*(October), 100425. https://doi.org/10.1016/j.ajpc.2022.100425

Giriwijoyo, H. Y. S. S. (2016). *Kesehatan, Olahraga dan Kinerja*. CV. Bintang WarliArtika.

Gu, X., Chang, M., & Solmon, M. A. (2016). Physical Activity , Physical Fitness , and Health-Related Quality of Life in School-Aged Children. *Journal of Teaching in Physical Education*, *35*, 117–126. https://doi.org/http://dx.doi.org/10.1123/jtpe.2015-0110 ©

Hambali, S. (2018). Pendekatan Bermain dalam Pembelajaran Passing Atas pada Permainan Bolavoli. *Journal of Teaching Physical Education in Elementary School*, *2*(1), 46–52. http://ejournal.upi.edu/index.php/tegar/index

Hambali, S., Akbaruddin, A., Bustomi, D., Rifai, A., Iskandar, T., Ridlo, A. F., Meirizal, Y., Rusmana, R., & Tyas, R. A. (2021). The effectiveness learning of physical education on pandemic covid-19. *International Journal of Human Movement and Sports Sciences*, *9*(2), 219–223. https://doi.org/10.13189/saj.2021.090208

Henning, L., Dreiskämper, D., & Tietjens, M. (2022). The interplay of actual and perceived physical fitness in children: Effects on motivation and physical activity. *Psychology of Sport and Exercise*, *58*, 102055. https://doi.org/10.1016/j.psychsport.2021.102055

Huizenga, J. C., ten Dam, G. T. M., Voogt, J. M., & Admiraal, W. F. (2017). Teacher perceptions of the value of game-based learning in secondary education. *Computers & Education*, *110*, 105–115. https://doi.org/https://doi.org/10.1016/j.compedu.2017.03.008

Irmansyah, J., Susanto, E., Lumintuarso, R., Sugiyanto, F. X., Syarif, A., & Hermansyah. (2021). Physical literacy in the culture of physical education in elementary schools: Indonesian perspectives. *International Journal of Human Movement and Sports Sciences*, *9*(5), 929–939. https://doi.org/10.13189/saj.2021.090514

Johnson, J. E., Sevimli-Celik, S., Al-Mansour, M. A., Tunçdemir, T. B. A., & Dong, P. I. (2019). Play in early childhood education. In *Handbook of research on the education of young children* (pp. 165–175). Routledge.

Kira, I. A., Templin, T., Lewandowski, L., Ramaswamy, V., Ozkan, B., & Mohanesh, J. (2008). The physical and mental health effects of Iraq war media exposure on Iraqi refugees. *Journal of Muslim Mental Health*, *3*(2), 193–215. https://doi.org/10.1080/15564900802487592

Klein, E., & Hollingshead, A. (2015). Collaboration Between Special and Physical Education. *TEACHING Exceptional Children*, *47*(3), 163–171. https://doi.org/10.1177/0040059914558945

Lavie, C. J., Ozemek, C., Carbone, S., Katzmarzyk, P. T., & Blair, S. N. (2019). Sedentary Behavior, Exercise, and Cardiovascular Health. *Circulation Research*, *124*(5), 799–815. https://doi.org/10.1161/CIRCRESAHA.118.312669

Levine, G. N., Cohen, B. E., Commodore-Mensah, Y., Fleury, J., Huffman, J. C., Khalid, U., Labarthe, D. R., Lavretsky, H., Michos, E. D., Spatz, E. S., Kubzansky, L. D., Boehm, J. K., Carney, R. M., & Smith, S. C. (2021). Psychological Health, Well-Being, and the Mind-Heart-Body Connection A Scientific Statement From the American Heart Association. *Circulation*, *143*(10), E763–E783. https://doi.org/10.1161/CIR.0000000000000947

Lundvall, S. (2015). Physical literacy in the field of physical education - A challenge and a possibility. *Journal of Sport and Health Science*, *4*(2), 113–118. https://doi.org/10.1016/j.jshs.2015.02.001

Malm, C., Jakobsson, J., & Isaksson, A. (2019). Physical Activity and Sports — Real Health Benefits : A Review with Insight into the Public Health of Sweden. *Journal Sport*, *127*(7), 1–28. https://doi.org/https://doi.org/10.3390/sports7050127

Matei, D., Trofin, D., Iordan, D. A., Onu, I., Condurache, I., Ionite, C., & Buculei, I. (2023). The Endocannabinoid System and Physical Exercise. *International Journal of Molecular Sciences*, *24*(3), 1–23. https://doi.org/10.3390/ijms24031989

Maugeri, G., Castrogiovanni, P., Battaglia, G., Pippi, R., D'Agata, V., Palma, A., Di Rosa, M., & Musumeci, G. (2020). The impact of physical activity on psychological health during Covid-19 pandemic in Italy. *Heliyon*, *6*(6), e04315. https://doi.org/10.1016/j.heliyon.2020.e04315

Medina-Mirapeix, F., Lillo-Navarro, C., Montilla-Herrador, J., Gacto-Sánchez, M., Franco-Sierra, M. A., &

Escolar-Reina, P. (2017). Predictors of parents' adherence to home exercise programs for children with developmental disabilities, regarding both exercise frequency and duration: A survey design. *European Journal of Physical and Rehabilitation Medicine*, *53*(4), 545–555. https://doi.org/10.23736/S1973-9087.17.04464-1

Mikkelsen, K., Stojanovska, L., Polenakovic, M., Bosevski, M., & Apostolopoulos, V. (2017). Exercise and mental health. *Maturitas*, *106*(September), 48–56. https://doi.org/10.1016/j.maturitas.2017.09.003

Mohammadi-Nia, M., Yaali, R., Amani-Shalamzari, S., & Clark, C. C. T. (2023). The effect of 8 weeks of child designed vs teacher designed games on physical fitness and creativity in children 8–10 years. *Physiology & Behavior*, *259*, 114030. https://doi.org/https://doi.org/10.1016/j.physbeh.2022.114030

Mücke, M., Ludyga, S., Colledge, F., & Gerber, M. (2018). Influence of Regular Physical Activity and Fitness on Stress Reactivity as Measured with the Trier Social Stress Test Protocol: A Systematic Review. *Sports Medicine*, *48*(11), 2607–2622. https://doi.org/10.1007/s40279-018-0979-0

Ovsyannikova, I. N., Tomilin, K. G., Tumasyan, Y. A., Vasilkovskaya, Y. A., & Malygina, L. V. (2021). Game method to increase students' motivation to engage in elective disciplines in physical culture and sports. *Physical Education of Students*, *25*(3), 197–204. https://doi.org/10.15561/20755279.2021.0308

Ozemek, C., Laddu, D. R., Lavie, C. J., Claeys, H., Kaminsky, L. A., Ross, R., Wisloff, U., Arena, R., & Blair, S. N. (2018). An Update on the Role of Cardiorespiratory Fitness, Structured Exercise and Lifestyle Physical Activity in Preventing Cardiovascular Disease and Health Risk. *Progress in Cardiovascular Diseases*, *61*(5–6), 484–490. https://doi.org/10.1016/j.pcad.2018.11.005

Patel, M. S., Benjamin, E. J., Volpp, K. G., Fox, C. S., Small, D. S., Massaro, J. M., Lee, J. J., Hilbert, V., Valentino, M., Taylor, D. H., Manders, E. S., Mutalik, K., Zhu, J., Wang, W., & Murabito, J. M. (2017). Effect of a game-based intervention designed to enhance social incentives to increase physical activity among families: The BE FIT randomized clinical trial. *JAMA Internal Medicine*, *177*(11), 1586–1593. https://doi.org/10.1001/jamainternmed.2017.3458

Pinto, J. B. de C., Cruz, J. P. S., Pinho, T. M. P. de, & Marques, A. S. P. de D. (2020). Health-related physical fitness of children and adolescents in Portugal. *Children and Youth Services Review*, *117*(March). https://doi.org/10.1016/j.childyouth.2020.105279

Purba, J., Widowati, A., & Daya, W. J. (2020). Peningkatan Kebugaran Jasmani Melalui Variasi Latihan Sirkuit dan Olahraga Aerobik. *Jurnal Ilmu Keolahragaan*, *3*(1), 10–16. https://doi.org/http://dx.doi.org/10.26418/jilo.v3i1.40658

Qu, J., Shi, H., Chen, X., Li, K., Liang, H., & Cui, Y. (2020). Evaluation of Physical Fitness in Children With Congenital Heart Diseases Versus Healthy Population. *Seminars in Thoracic and Cardiovascular Surgery*, *32*(4), 906–915. https://doi.org/10.1053/j.semtcvs.2020.05.014

Radak, Z., Torma, F., Berkes, I., Goto, S., Mimura, T., Posa, A., Balogh, L., Boldogh, I., Suzuki, K., Higuchi, M., & Koltai, E. (2019). Exercise effects on physiological function during aging. *Free Radical Biology and Medicine*, *132*, 33–41. https://doi.org/10.1016/j.freeradbiomed.2018.10.444

Saeed, S. A., Cunningham, K., & Bloch, R. M. (2019). Depression and anxiety disorders: Benefits of exercise, yoga, and meditation. *American Family Physician*, *99*(10), 620–627. https://doi.org/https://www.aafp.org/pubs/afp/issues/2019/0515/p620.html

Suhardi, Widodo, D. C., Hariyani, U., & Kemala, A. (2021). *Panduan Tes Kebugaran Siswa Indonesia (TKSI) Fase C SD (Kelas 5 & 6)*. KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI (PPPPTK PENJAS DAN BK).

Tanzila, R. A. (2018). Pengaruh Latihan Aerobik Terhadap Kebugaran Kardiorespirasi Pada Siswa Smp Di Palembang. *PROCEEDING UMSURABAYA*, 14–22. http://103.114.35.30/index.php/Pro/article/view/1507/1210

Thompson, W. R. (2023). Worldwide Survey of Fitness Trends for 2023. *ACSM's Health and Fitness Journal*, *27*(1), 9–18. https://doi.org/10.1249/FIT.0000000000000834

Thyfault, J. P., & Bergouignan, A. (2020). Exercise and metabolic health: beyond skeletal muscle. *Diabetologia*, *63*(8), 1464–1474. https://doi.org/10.1007/s00125-020-05177-6

van der Scheer, J. W., Ginis, K. A. M., Ditor, D. S., Goosey-Tolfrey, V. L., Hicks, A. L., West, C. R., & Wolfe, D. L. (2017). Effects of exercise on fitness and health of adults with spinal cord injury: a systematic review. *Neurology*, *89*(7), 736–745. https://doi.org/https://doi.org/10.1212/WNL.0000000000004224

Yorks, D. M., Frothingham, C. A., & Schuenke, M. D. (2017). Effects of group fitness classes on stress and quality of life of medical students. *Journal of the American Osteopathic Association*, *117*(11), e17–e25. https://doi.org/10.7556/jaoa.2017.140