THE ROLE OF REGULAR PHYSICAL ACITIVITY IN IMPROVING FITNESS AND CARDIOVASCULAR HEALTH OF SPORT SCIENCE.docx

by Turnitin Ku

Submission date: 10-Dec-2025 10:57PM (UTC+0700)

Submission ID: 2834212920

File name: THE_ROLE_OF_REGULAR_PHYSICAL_ACITIVITY_IN_IMPROVING_FITNESS_AND_CARDIOVASCULAR_HEALTH_OF_SPORT_SCIENCE.docx (82.13K)

Word count: 2107

Character count: 12611

Journal Physical Health Recreation (JPHR)
Volume * Nomor * ; Bulan ****
https://jurnal.stokbinaguna.ac.id/index.php/JP
e-ISSN : 2747-013X

The Role Of Regular Physical Acitivity In Improving Fitness And Cardiovascular Health Of Sport Science Students 2025 Using The TKJI 1200 Meters

Agneta Grace Sesilia[1], Rivan Adriza Fahlevi[2], Rizki[3], M. Arief Setiawan[4], Ns. Zaky Mubarak[5]

{2310631240003@student.unsika.ac.id, 2310631240039@student.unsika.ac.id, 2310631240040@student.unsika.ac.id, muhammad.arief@fikes.unsika.ac.id, zaky.mubarak@fikes.unsika.ac.id }

Universitas Singaperbangsa Karawang, Jl. HS. Ronggo Waluyo, Puserjaya, Teluk Jambe Timur, Jawa Barat, Indonesia[12345]

Abstract. This research aims to examine the role of regular physical activity in improving physical fitness and cardiovascular health among Sports Science students in 2025 using the Indonesian Physical Fitness Test (TKJI) 1200-meter run as a measurement instrument. This study employed a descriptive method with a quantitative approach conducted at the UNSIKA football field. Sixteen students participated as research samples. The measurement results showed that eight students were in the "Very Poor" category, six students in the "Poor" category, one student in the "Fair" category, and one student in the "Good" category. These findings illustrate that most students still have a low level of cardiorespiratory fitness. This study emphasizes the importance of regular physical activity such as aerobic exercise to increase VO_2 max capacity, improve heart efficiency, and reduce the risk of cardiovascular diseases. The findings are expected to serve as a basis for developing physical fitness programs for students and the general public.

Keywords: Physical Fatigue, Fitness, Cardiovascular, TKJI.

1 Introduction

Physical fitness is one of the fundamental aspects inseparable from modern human life because it describes a person's ability to carry out daily activities with a high level of efficiency and effectiveness without causing excessive physical fatigue while still having an energy reserve to perform additional activities that require effort and mental concentration. Good physical fitness indicates a functional balance between body organ systems, especially the cardiovascular, respiratory, and musculoskeletal systems that work synergistically to maintain the sustainability of human physical activity. Physiologically, good physical fitness also reflects the body's ability to adapt to physical or psychological stress, where the cardiovascular system becomes the central role in maintaining body homeostasis through the supply of oxygen and nutrients to all tissues ((Pratama, 2020; Siregar, 2021)).

In the context of sports science and public health, physical fitness is not only viewed as the physical capacity to perform activities but also as an important indicator in preventing

.
Correspondence author: First Author/Second Author/Third Author, Medan State University, Indonesia.
Email:

non-communicable diseases, particularly those related to cardiovascular disorders such as hypertension, coronary heart disease, and stroke. One of the main parameters used to assess cardiorespiratory fitness is VO_2 max, which is the maximum capacity of the body to consume oxygen during high-intensity physical activity. A high VO_2 max value indicates optimal efficiency of the heart and lungs in distributing oxygen to muscle tissue during exercise (Putri, 2022).

To measure and evaluate the level of physical fitness in Indonesia, the government through the Ministry of Youth and Sports (Kemenpora, 2015) has developed the Indonesian Physical Fitness Test (TKJI) as a standardized instrument used to assess an individual's fitness level based on several main physical components such as muscle strength, cardiorespiratory endurance, speed, agility, and accuracy. For the adolescent to young adult age group (16–19 years), the 1200-meter run component is used as a measure of cardiorespiratory endurance because this activity demands simultaneous work between the heart, lungs, and muscular system over a certain period, so the test results can reflect the overall capacity of the cardiovascular system (Kurniawan, 2023). Regular physical activity plays a vital role in improving body system functions, especially the cardiovascular system. Through continuous exercise, physiological adaptations occur such as increased heart strength, decreased resting heart rate, increased stroke volume, and increased number and size of muscle capillaries. This makes the circulatory system more efficient in delivering oxygen and nutrients to active tissues, ultimately enhancing endurance against fatigue (Susanto, 2019; Syamsuddin, 2022).

In this study, we examine how strong the relationship is between regular physical activity and the results of the TKJI 1200-meter test as an indicator of fitness and cardiovascular health of Sports Science students in 2025. Therefore, scientific evidence is needed regarding how regular physical activity truly contributes to improving their physical fitness and cardiovascular function. The 1200-meter Indonesian Physical Fitness Test (TKJI) was chosen as it is a valid and reliable instrument for measuring heart-lung endurance (VO_2 max), which is the main indicator of cardiovascular health.

However, previous studies mostly used general fitness measurement methods such as multistage running tests or predicted VO_2 max without using the TKJI 1200-meter test as an instrument adjusted to Indonesian national standards. In reality, many university students in Indonesia experience a decline in fitness levels due to a modern lifestyle that tends to be sedentary. Long study hours in front of computers, minimal participation in sports, and lack of awareness of the importance of physical activity are the main causes of poor TKJI results. Several studies show that students with irregular exercise habits tend to score in the "Very Poor" and "Poor" categories on the TKJI, reflecting low heart and lung endurance (Hakim, 2023; Wahyudi, 2022). Based on these phenomena, this research aims to examine in depth the role of regular physical activity in improving physical fitness and cardiovascular health using the TKJI as a measurement instrument.

2 Method

This study used a descriptive method with a qualitative approach based on field test results, aiming to systematically describe the physical fitness level of Sports Science students at Universitas Singaperbangsa Karawang in 2025. This approach was chosen because the research did not manipulate variables but focused on describing real phenomena in the field based on measurements and observations (Priyono, 2016; Syahrul et al., 2017).

The research design used was direct field testing, in which research subjects were tested using the Indonesian Physical Fitness Test (TKJI) 1200-meter run. The study population consisted of all active students of the 2025 Sports Science program, with a sample of 16 students selected using purposive sampling — determined based on specific criteria such as age range (18–22 years), good physical health, and willingness to participate. This technique was deemed appropriate because this study required subjects who were homogeneous in physiological and age characteristics (Siyoto & Sodik, 2015).

Table 2. 1 TKJI 1200 Meter Run Score
(for males aged 16 – 19 years)

1200 – Meter Run	Score	Category
Up to 3′14	5	Very Good
3′15″ – 4′25″	4	Good
4′26″ – 5′12″	3	Fair
5′13″ – 6′33″	2	Poor
6′34″ – and above	1	Very Poor

The research was conducted at the football field of Universitas Singaperbangsa Karawang in May 2025. Before the test, all participants were briefed on the objectives and procedures, followed by a 10–15 minute warm-up to prevent injury. Afterward, participants ran 1200 meters as fast as possible according to their ability. Running time was measured using a digital stopwatch with an accuracy of 0.01 seconds. The running times were then converted into TKJI categories and analyzed using simple descriptive statistics to view the distribution of values based on fitness categories.

3 Result

Figure 3. 1 Men's 1200 Meters TKJI Result

The results show that most students had low levels of physical fitness. A total of 87.5% of respondents were in the "Very Poor" and "Poor" categories, while only 12.5% achieved "Fair" and "Good." This indicates that the students' heart and lung endurance was not yet

optimal, likely due to the lack of regular physical activity or aerobic training. Physiologically, the low TKJI scores show that the organs' adaptation to physical activity has not yet developed properly. This condition is generally characterized by high resting heart rates, quick fatigue during physical activity, and long recovery times. Similar results were found in (Wahyudi, 2022) study, which stated that students who exercised less than three times per week tended to have low VO_2 max capacity and were in the "Poor" fitness category. Visually, the results show a dominance of low scores, indicating that Sports Science students need to increase their training intensity and modify their daily activity patterns to achieve better fitness categories. Based on the 16 test samples taken, the results varied greatly: eight students scored 1, six students scored 2, one student scored 3, and one student scored 4.

4 Discussion

The results of this study confirm that regular physical activity plays a very important role in improving physical fitness, especially cardiovascular health. When someone exercises regularly, the body's systems adapt to increased energy and oxygen demands. These physiological adaptations include an increase in heart stroke volume, a decrease in resting heart rate, an increase in the number of capillaries and mitochondria in muscles, and an improvement in lung capacity for efficient gas exchange (Prasetyo, 2022; Susanto, 2019).

Aerobic exercises such as running, cycling, and swimming continuously have been proven to increase VO_2 max by 15–25% within 8–12 weeks (Rahmawati, 2021). This increase indicates that the cardiovascular system functions more efficiently in pumping blood throughout the body and muscle tissue can utilize oxygen more effectively. These adaptations are essential in preventing cardiovascular disorders such as hypertension, coronary artery disease, and atherosclerosis (Nugroho, 2019; Putri, 2022).
Besides physiological effects, physical activity also has significant psychological impacts. Regular exercise reduces cortisol levels associated with stress and increases endorphin secretion that induces feelings of happiness and relaxation. Students who regularly exercise tend to have higher concentration levels, better sleep quality, and more stable academic productivity (Santoso, 2019; Suharjana, 2019). The low TKJI scores found in this study are caused by several factors, including low awareness of the importance of exercise, lack of training facilities, and dense academic schedules that limit exercise time. This illustrates the need for improvements in campus fitness programs through routine activities such as morning exercise, group jogging, or strengthening practical sports courses.

Applying the FITT principle (Frequency, Intensity, Time, Type) is highly recommended to improve student fitness. Exercise should be done 3–5 times per week, with moderate to high intensity (60–80% of maximum heart rate), duration of 30–60 minutes, and types of aerobic exercise such as running or cycling. According to (Hermawan, 2021), the application of TKJI-based fitness programs regularly increases student participation in exercise by up to 70% because they can monitor performance improvements quantitatively. Thus, this research reinforces previous findings that regular physical activity directly influences improved physical fitness, efficiency of heart and lung performance, and prevention of cardiovascular diseases. Students who maintain regular exercise routines are more likely to reach "Good" or "Very Good" fitness categories on TKJI and have more productive academic performance.

5 Conclusion

Regular physical activity has a significant effect on improving physical fitness and cardiovascular health. Based on the TKJI measurements, most Sports Science students at Universitas Singaperbangsa Karawang in 2025 were still in the low category, indicating that their regular physical activity levels need to be improved. Through regular training based on the FITT principle and periodic fitness monitoring using TKJI, students can enhance cardiorespiratory endurance, heart efficiency, and VO_2 max capacity. Physical activity not only has a positive impact on physical condition but also supports mental balance and academic productivity. Therefore, promoting an active lifestyle should become an integral part of students' daily habits as an early preventive measure against future cardiovascular diseases.

References

Hakim, A. (2023). Pola Aktivitas Fisik Mahasiswa dan Dampaknya terhadap Kebugaran Jasmani. *Jurnal Olahraga Dan Kesehatan*, *8*(1), 12–19.

Hermawan, D. (2021). Penerapan Tes Kebugaran Jasmani Indonesia (TKJI) untuk Meningkatkan Kesadaran Aktivitas Fisik Mahasiswa. *Jurnal Ilmu Keolahragaan Nusantara*, *7*(2), 75–83.

Kemenpora. (2015). *Pedoman Tes Kebugaran Jasmani Indonesia (TKJI). Jakarta: Kementerian Pemuda dan Olahraga Republik Indonesia.*

Kurniawan, F. (2023). Penggunaan TKJI dalam Evaluasi Kebugaran Siswa SMA. *Jurnal Evaluasi Pendidikan Jasmani*, *9*(3), 60–68.

Nugroho, T. (2019). *Kesehatan Kardiovaskular dalam Perspektif Aktivitas Fisik. Malang: UB Press.*

Prasetyo, R. (2022). Latihan Aerobik dan Peningkatan VO_2 Max pada Mahasiswa. *Jurnal Keolahragaan Indonesia*, *11*(1), 22–31.

Pratama, A. (2020). *Kebugaran Jasmani dan Kaitannya dengan Kesehatan Kardiovaskular. Yogyakarta: UNY Press.*

Priyono, H. (2016). *Metode Penelitian Kuantitatif. Jakarta: Media Ilmu.*

Putri, D. A. (2022). Pengaruh Aktivitas Fisik terhadap Daya Tahan Kardiorespirasi. *Jurnal Keperawatan Dan Kesehatan*, *14*(1), 90–97.

Rahmawati, E. (2021). Efek Latihan Aerobik terhadap Kesehatan Jantung. *Jurnal Kesehatan Olahraga*, *6*(2), 35–42.

Santoso, B. (2019). *Aktivitas Fisik dan Kesehatan Mental Mahasiswa. Jakarta: Rajawali Pers.*

Siregar, F. (2021). *Konsep Kebugaran Jasmani dalam Pendidikan Jasmani Modern. Medan: USU Press.*

Siyoto, S. , & Sodik, M. A. (2015). *Dasar Metodologi Penelitian. Yogyakarta: Literasi Media Publishing.*

Suharjana, A. (2019). *Aktivitas Fisik dan Kebugaran Jasmani. Yogyakarta: UNY Press.*

Susanto, T. (2019). Latihan Fisik Aerobik dan Adaptasi Kardiovaskular. *Jurnal Ilmu Faal Olahraga*, *5*(1), 18–27.

Syahrul, N. , Tressyalina, & Zuve, S. (2017). *Metode Penelitian Pendidikan Jasmani. Padang: UNP Press.*

Syamsuddin, H. (2022). Hubungan Gaya Hidup Sedentari dengan Kebugaran Jasmani Mahasiswa. *Jurnal Olahraga Pendidikan*, *8*(3), 101–110.

Wahyudi, R. (2022). Analisis Kebugaran Jasmani Mahasiswa di Masa Pandemi. *Jurnal Pendidikan Dan Kesehatan*, *4*(2), 77–84.

THE ROLE OF REGULAR PHYSICAL ACITIVITY IN IMPROVING FITNESS AND CARDIOVASCULAR HEALTH OF SPORT SCIENCE.docx

ORIGINALITY REPORT

7%	4%	3%	2%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Sriwijaya University Student Paper	1%
2	jurnal.stokbinaguna.ac.id Internet Source	1%
3	Okta Riadi, M. Haris Satria. "Physical Fitness Levels of Students in Public Elementary School 8 Semende Darat Laut (Implementation of Physical Education in the New Normal Era)", Journal Coaching Education Sports, 2023 Publication	1%
4	Submitted to Universitas Pendidikan Indonesia Student Paper	1%
5	vdocument.in Internet Source	1%
6	www.researchgate.net Internet Source	1%
7	www.coursehero.com Internet Source	1%
8	eprints.uny.ac.id Internet Source	<1%

9	Dewi - Sartika. "THE EFFECT OF PLEASE STRATEGY AND WRITING INTEREST TOWARD STUDENTS' WRITING SKILL", Edu-Ling: Journal of English Education and Linguistics, 2019 Publication	<1%
10	Yudabbirul Arif. "Identification Of Jasmani Physical Fitness Through (TKJI) Children Age 10-12 Years In Class V Students Of SD Inpres Bertingkat Kelapa Lima 1, 2 And 3 Kupang Cities", Kinestetik : Jurnal Ilmiah Pendidikan Jasmani, 2020 Publication	<1%

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		