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Correlations Among Nutritional Status and Physical Activity in Relation to Physical Fitness Levels of University Students in Indonesia: A Comprehensive Literature Review

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ABSTRACTS
This study aims to explore the relationship between nutritional status and physical activity on the physical fitness levels of Indonesian university students using a literature review method. The study utilized electronic databases from Google Scholar and Garuda, with a time frame limited to the past five years. The keywords used for article searches included nutritional intake, nutritional status, physical activity, physical fitness, VO2max, and university students. The inclusion criteria established were physical fitness assessments based on muscle strength and endurance, cardiovascular endurance, flexibility, agility, speed, and VO2max, as well as questionnaires/interviews, university students from all universities in Indonesia, and articles published within the last five years. The exclusion criterion was the inaccessibility of the full-text article. From the database search, 10 articles met the inclusion and exclusion criteria. Based on the analysis, the findings concluded that nutritional status and physical activity have a significant relationship with the physical fitness levels of university students in Indonesia. Students with a balanced nutritional status, sufficient macronutrient intake, and lower fat consumption tend to have higher physical fitness levels. Regular physical activity also plays an essential role in improving physical fitness and overall health. This study recommends implementing healthy lifestyle programs in academic environments and conducting further research on factors influencing physical fitness levels.
Keywords: Nutritional status, physical activity, physical fitness level, university students

INTRODUCTION

Physical fitness plays a crucial role in maintaining overall health, as good physical fitness supports daily activities more optimally (Ferozi et al., 2024; Deddy, 2025). Among adolescents, physical fitness is considered one of the most important indicators of both health and psychological outcomes, encompassing cardiorespiratory fitness, flexibility, muscular fitness, and body composition (Gantarialdha, 2021; Pranata & Kumaat, 2022). As part of the adolescent group, university students require good physical fitness to support their academic performance. However, behaviors such as inadequate dietary intake and lack of physical activity are often observed among students (Icen & Günes, 2021), which can negatively impact their physical fitness

(Sufitriyono et al., 2024). Achieving physical fitness through a combination of sufficient nutritional intake and appropriate physical activity also supports long-term physical and mental health (Shahudin et al., 2024).

Although various studies have examined the relationship between nutritional intake, nutritional status, and physical activity on the level of physical fitness, significant differences exist in research findings. Some studies, such as the one conducted by Putri et al. (2024), indicate a correlation between food consumption, physical activity, and nutritional status with the level of physical fitness. Similarly, Samudera et al. (2024) reported a significant relationship between nutritional status, a healthy lifestyle, and physical activity on physical fitness. Other studies, however, have yielded different results, showing no significant relationship between nutritional status and exercise habits with physical fitness levels (Gandasari, 2024). Meanwhile, research by Cahyono et al. (2022) suggests that nutritional status does not significantly affect physical fitness levels, whereas physical activity has a significant influence on physical fitness.

A study by Kljajević et al. (2021) previously examined the relationship between physical activity and physical fitness among university students in various countries. However, the results varied due to several factors, particularly cultural differences and variations in educational systems across countries. These discrepancies in research findings highlight the need for further exploration to understand the relationship between nutritional status and physical activity on physical fitness levels, especially among Indonesian university students who have diverse cultural backgrounds and an education system different from other countries. The findings of this study are expected to provide deeper insights and serve as recommendations for developing an integrated physical fitness program in higher education institutions.

METHODS

This study employs a literature review method. The research sources were accessed through Google Scholar and Garuda. The selected articles were limited to those published within the last five years. The keywords used for article searches included nutritional intake, nutritional status, physical activity, physical fitness, VO2max, and university students. The inclusion criteria established for this study were physical fitness assessment results based on muscle strength and endurance, cardiovascular endurance, flexibility, agility, speed (Ferozi et al., 2024), and VO2max, as well as data obtained from questionnaires or interviews. The study focused on university students from all universities in Indonesia, and only articles published within the last five years were included. The exclusion criterion was the inability to access the full text of an article. Based on database searches, 10 articles met both the inclusion and exclusion criteria.

RESULT

A total of 10 articles were selected based on the inclusion criteria, with participants consisting of university students from various institutions across Indonesia (Table 1). Five studies involved students from physical education programs (Antoni, 2021; Lubna et al., 2023; Romadhan et al., 2023; Sarageti et al., 2024; Wahyuningtyas et al., 2024), two studies focused on medical faculty students (Juliyanty et al., 2022; Qhuzairi et al., 2023), one study involved physiotherapy

students (Kalmira et al., 2023), while the remaining two studies included students from various academic programs and faculties (Arta & Fithroni, 2021; Setiawan et al., 2022).

Most research findings indicate a significant relationship between nutritional status and students' physical fitness (Antoni, 2021; Romadhan et al., 2023; Lubna et al., 2023; Sarageti et al., 2024; Wahyuningtyas et al., 2024), whereas one study found no significant relationship between nutritional status and physical fitness (Setiawan et al., 2022). Physical activity was found to have a significant correlation with students' physical fitness across all studies that examined this aspect (Arta & Fithroni, 2021; Qhuzairi et al., 2023; Kalmira et al., 2023; Setiawan et al., 2022; Juliyanty et al., 2022). The details of the articles and research journals are presented in the following table:

Table 1. Correlations among nutritional status and physical activity on physical fitness levels among university students in Indonesia.

No.	Title	Authors; Year	Research Method	Research Findings
1.	The Relationship Between Nutritional Status and Physical Fitness Levels in Physical Education Students at Universitas Islam Indragiri	Prima Antoni; 2021	Correlational Studies	There was a significant relationship between body mass index and students' physical fitness.
2.	The Relationship Between Stress Levels and Physical Activity on Physical Fitness Among Final-Year Students at Universitas Negeri Surabaya	Radha Dwi Arta, Hijrin Fithroni; 2021	Cross Sectional	There was a significant relationship between stress levels and physical activity on physical fitness.
3.	The Relationship between Physical Activity Levels and Body Mass Index on Cardiorespiratory Endurance in Students of the Faculty of Medicine and Health Science, Warmadewa University	Ni Komang Ayu Mega Juliyanty, Suyasning Hastiko Indonesiani, Putu Arya Suryanditha; 2022	Cross Sectional	There was a significant relationship between physical activity levels and cardiorespiratory endurance, while there was no relationship between body mass index and cardiorespiratory endurance.

4.	The Correlation Between Nutritional Status and Physical Activity on Physical Fitness Levels Among University Students	Fredy Eko Setiawan, Fania Putri Luhurningtyas, Arikatus Sofia; 2022	Cross Sectional	Physical activity had a significant relationship with fitness levels, while nutritional status did not show a significant relationship.
5.	The Relationship Between Physical Activity and Cardiorespiratory Endurance in Medical Students at Universitas Mulawarman	Muhammad Rezwan Qhuzairi, Agustina Rahayu Magdaleni, Sulistiawati, Endang Sawitri, Indra Sukmana Putra; 2023	Cross Sectional	There was a significant relationship between physical activity and students' cardiorespiratory endurance.
6.	The Correlation Between Body Mass Index and Physical Activity on Cardiovascular Endurance in Physiotherapy Students at Poltekkes Surakarta	Nadya Ayu Putri Kalmira, Nur Basuki, Mei Kusumaningtyas; 2023	Cross Sectional	There was a significant relationship between BMI and physical activity on cardiovascular endurance.
7.	The Relationship Between Nutritional Status, Physical Activity, and Physical Fitness Among Physical Education Students at Universitas Tanjungpura	Ahmad Ropiq Romadhan, Victor G Simanjuntak, Muhammad Fachrurrozi Bafadal, Andika Triansyah, Fitriana Puspa Hidasari; 2023	Correlational Studies	There was a significant relationship between nutritional status and physical activity with physical fitness levels.
8.	Relationship between Consumption Pattern and Nutritional Status with the Level of Physical Fitness of Physical Education Students Class of 2022 Siliwangi University	Febya Lubna, Taufiq Firdaus Al-Ghifari, Ai Sri Kosnayani; 2023	Cross Sectional	There was a relationship between dietary patterns (energy sufficiency levels, variety of food types, and meal frequency) and nutritional status with students' physical fitness.

9.	The Relationship Between Carbohydrate Intake and Nutritional Status with Physical Fitness Among Physical Education Students at Universitas Muhammadiyah Surakarta	Pradita Wahyuningtyas, Luluk Ria Rakhma, Nur Lathifah Mardiyati; 2024	Cross Sectional	There was a significant relationship between carbohydrate intake and nutritional status with students' physical fitness.
10.	The Relationship Between Nutritional Status and Physical Fitness Levels Among Female Sports Science Students at the Faculty of Sports Science and Public Health, Universitas Negeri Manado	Pratiwi Sarageti, Anuardin Mokoagow, Melky Pangemanan; 2024	Correlational Studies	Nutritional status had a significant impact on students' physical fitness levels.

DISCUSSION

This study aims to explore the potential relationship between nutritional status and physical activity on the level of physical fitness among Indonesian university students through a literature review. The main hypothesis analyzed in this research is that good nutritional status and optimal physical activity significantly influence the physical fitness levels of Indonesian university students. Additionally, this study identifies common lifestyle patterns among students, their health implications, and their impact on students' academic activities.

In general, the results of the literature review indicate that nutritional status and physical activity have a significant relationship with the physical fitness levels of university students in Indonesia. Consistent with previous studies, several research findings indicate a link between nutritional status and physical fitness (Istiqomah et al., 2022). However, one study found no significant relationship between nutritional status and physical fitness. Five studies reviewed involved students from physical education programs, who tend to have different levels of physical activity compared to other students. Previous research findings indicate that students from sports faculties tend to have better physical fitness compared to students from other faculties (Büyükvesek & Shahidi, 2024; Satroyo et al., 2024). Kljajević et al. (2021) stated that study results may vary due to differences in education systems and activity levels between students from sports faculties and those from other faculties.

The importance of proper dietary habits and good nutrition intake is also highlighted in the reviewed literature. In their study, Lubna et al. (2023) found a relationship between dietary patterns (energy sufficiency levels, variety of food types, and meal frequency)

and students' physical fitness. Carbohydrate intake was also found to significantly impact students' physical fitness (Wahyuningtyas et al., 2024). This finding aligns with research by Oukheda et al. (2023), which showed that adolescents with balanced nutrition—adequate macronutrient intake (carbohydrates and protein) and lower fat intake—had higher levels of physical fitness. Nutrition is essential for meeting energy needs during physical activities, especially during exercise (Putri et al., 2023).

Regular physical activity plays an important role in improving physical fitness and overall health (Pranata & Kumaat, 2022; Lagarinda & Nurhayati, 2024). Increased physical activity also plays a key role in nutritional balance by regulating metabolism and preventing excessive fat accumulation (Puspita & Rakhma, 2024). Cardiorespiratory endurance is the most important component of physical fitness, expressed in VO2max, which represents the maximum amount of oxygen that can be consumed per milliliter per kilogram of body weight per minute. VO2max reflects the maximum capability of muscles, lungs, and other organs in absorbing, delivering, and utilizing oxygen during prolonged physical activity (Lee & Zhang, 2021). Individuals with higher levels of physical fitness tend to have higher VO2max values and vice versa (Gantarialdha, 2021). Physical training is an effective way to increase VO2max (Crowley et al., 2022; Mohajan & Mohajan, 2023).

Apart from nutritional status and physical activity, physical fitness levels are also influenced by internal and external factors such as age, gender, genetics, health status, nutritional intake, exercise habits, regular physical education classes, parental support, and psychological status (Lee et al., 2021; Setiawan et al., 2022). Studies investigating the correlation between physical fitness and students' academic success have found that higher physical fitness levels contribute positively to academic achievement (Başkurt et al., 2020; Supriyatno et al., 2022). Additionally, stress has been found to be one of the factors affecting students' fitness, as students experiencing high levels of stress tend to have lower fitness levels (Arta & Fithroni, 2021). Stress among university students is often caused by a lack of leisure time due to tight academic schedules, social activities, and family responsibilities, all of which can impact physical fitness levels (Kljajević et al., 2021).

Overall, the findings of this study emphasize the importance of balancing nutrition and increasing physical activity as essential efforts to maintain physical fitness among university students in Indonesia. Given that many students face limited access to sports facilities and academic pressures, this study highlights the need for policies that promote a healthy lifestyle within academic environments. Implementing structured dietary programs and incorporating sufficient physical activity into university curricula can help students regulate their nutritional intake based on daily energy requirements (Prakoso et al., 2021) while positively impacting physical fitness and overall health (Lee et al., 2021). Several methodological factors, including sample population, dietary patterns, activity types, training frequency, and the use of technology, should be considered for more accurate comparisons. This study also highlights other factors influencing physical fitness, such as psychosocial factors. Therefore, further research using more specific methodologies is needed to explore additional factors that may affect the physical fitness of university students.

CONCLUSION

The results of the literature review indicate that nutritional status and physical activity have a significant relationship with the physical fitness levels of university students in Indonesia. Students with a balanced nutritional status—characterized by adequate macronutrient intake (carbohydrates and protein) and lower fat consumption—tend to have higher physical fitness levels, as proper nutrition is essential for meeting energy needs during physical activity, particularly exercise. Regular physical activity also plays a crucial role in improving physical fitness and overall health. Physical training is an effective method to enhance VO2max, where a higher VO2max value indicates better physical fitness. This study emphasizes the importance of policies and programs that promote a healthy lifestyle within academic environments. Additionally, further research is needed to explore other factors influencing physical fitness levels.

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CONFLICT OF INTEREST

If the authors have any conflicts of interest to declare

REFERENCES

Antoni, P. (2021). Hubungan Status Gizi dengan Tingkat Kesegaran Jasmani Pada Mahasiswa Program Studi Pendidikan Jasmani Kesehatan & Rekreasi Universitas Islam Indragiri. *JOI (Jurnal Olahraga Indragiri): Olahraga, Pendidikan, Kesehatan, Rekreasi*, *5*(1), 368-382.

Arta, R. D., & Fithroni, H. (2021). Hubungan tingkat stres dan aktivitas fisik terhadap kebugaran jasmani pada mahasiswa semester akhir di Universitas Negeri Surabaya. *Jurnal Kesehatan Olahraga*, *9*(0), 261-270.

Başkurt, Z., Başkurt, F., Ercan, S., & Parpucu, T. I. (2020). Correlations of physical fitness and academic achievement in undergraduate students. *Journal of Physical Education and Human Movement*, *2*(1), 9–20. https://doi.org/10.24310/JPEHMjpehm.v2i1.6770

Büyükvesek, E., Shahidi, S. H. (2024). Cross-faculty analysis of physical fitness and health metrics among Turkish university students. *International Journal of Physical Education, Fitness and Sports*, *13*(3), 22-33. https://doi.org/10.54392/ijpefs2433

Cahyono, E. A., Wahjuni, E. S., Wibowo, S., & Cahyono, A. (2022). Analisis Faktor Yang Berhubungan Dengan Kebugaran Jasmani Ditinjau Dari Screen time, Aktivitas Fisik Dan Status Gizi. *JSES: Journal of Sport and Exercise Science*, *5*(2), 59-65. https://doi.org/10.26740/jses.v5n2.p59-65

Crowley, E., Powell, C., Carson, B. P., & W. Davies, R. (2022). The effect of exercise training intensity on VO2max in healthy adults: an overview of systematic reviews and meta-analyses. *Translational sports medicine*, *2022*(1), 9310710. https://doi.org/10.1155/2022/9310710

Deddy, D. W. (2025). Relationship between diet, body mass index and frequency of exercise per week on students' physical fitness levels. *Bravo's: Journal of Physical Education and Sport Science*, *12*(4), 374-387. https://doi.org/10.32682/bravos.v12i4/57

Ferozi, S., Taneja, A.G. & Bakshi, N. Assessment of nutritional status, physical fitness and physical activity of school going adolescents (12–15 years) in Delhi. *BMC Pediatrics,* **24**, 331. https://doi.org/10.1186/s12887-024-04733-y

Gandasari, M. F. (2024). Hubungan Aktivitas Jasmani dan Status Gizi Terhadap Tingkat Kebugaran Jasmani. *Innovative: Journal Of Social Science Research*, *4*(3), 9548–9555. https://doi.org/10.31004/innovative.v4i3.11579

Gantarialdha, N. (2021). Hubungan Indeks Massa Tubuh Terhadap Ketahanan Kardiorespirasi Dinyatakan Dalam VO2max. *Jurnal Medika Hutama*, *2*(4), 1162-1167. Retrieved from https://jurnalmedikahutama.com/index.php/JMH/article/view/242

Icen, H., & Güneş, F. (2021). The Relationship between University Students' Nutritional Status, Cardio-Metabolic Biomarkers and Physical Activity Levels. *Clinical and Experimental Health Sciences*, *11*(3), 495-503. https://doi.org/10.33808/clinexphealthsci.820145

Istiqomah, I. P. N., Kristiyanto, A., & Ardyanto, T. D. (2024). Hubungan Status Gizi dengan Kebugaran Jasmani Atlet Taekwondo Remaja. *FISIO MU: Physiotherapy Evidences*, *3*(2), 1–7. https://doi.org/10.23917/fisiomu.v3i2.4996

Juliyanty, N. K. A. M., Indonesiani, S. H., & Suryanditha, P. A. (2022). Hubungan tingkat aktivitas fisik dan indeks massa tubuh terhadap daya tahan kardiorespirasi pada mahasiswa fakultas kedokteran dan ilmu kesehatan universitas warmadewa. *Aesculapius Medical Journal*, *2*(3), 143-149. https://doi.org/10.22225/amj.2.3.2022.143-149

Kalmira, N. A. P., Basuki, N., & Kusumaningtyas, M. (2023). Hubungan Indeks Massa Tubuh Dan Aktivitas Fisik Terhadap Daya Tahan Kardiovaskuler Pada Mahasiswa Fisioterapi Poltekkes Surakarta. *Jurnal Nasional Fisioterapi (JURNAFISIO)*, *1*(1), 33-42. Retrieved from https://jurnafisio.com/index.php/JF/article/view/9

Kljajević, V., Stanković, M., Đorđević, D., Trkulja-Petković, D., Jovanović, R., Plazibat, K., ... & Sporiš, G. (2021). Physical activity and physical fitness among university students—A systematic review. *International journal of environmental research and public health*, *19*(1), 158.

Lagarinda, E., & Nurhayati, F. (2024). Analisis Aktivitas Fisik Terhadap Tingkat Kebugaran Jasmani Siswa. *Jurnal Pena Edukasi*, *11*(1), 1-10. https://doi.org/10.54314/jpe.v11i1.1758

Lee, E.-J.; So, W.-Y.; Youn, H.-S.; Kim, J. (2021). Effects of School-Based Physical Activity Programs on Health-Related Physical Fitness of Korean Adolescents: A Preliminary Study. Int. J. Environ. Res. Public Health 2021, 18, 2976. https://doi.org/10.3390/ijerph18062976

Lee, J., & Zhang, X. L. (2021). Physiological determinants of VO2max and the methods to evaluate it: A critical review. *Science & Sports*, *36*(4), 259-271. https://doi.org/10.1016/j.scispo.2020.11.006

Lubna, F., Al-Ghifari, T. F., & Kosnayani, A. S. (2023). Hubungan Pola Makan dan Status Gizi dengan Tingkat Kebugaran Jasmani Mahasiswa Pendidikan Jasmani Angkatan 2022 Universitas Siliwangi: Relationship between Consumption Pattern and Nutritional Status with the Level of Physical Fitness of Physical Education Students Class of 2022 Siliwangi

University. *Jurnal Diskursus Ilmiah Kesehatan*, *1*(2), 55-65. https://doi.org/10.56303/jdik.v1i2.133

Mohajan, D., & Mohajan, H. (2023). Long-Term Regular Exercise Increases VO2max for Cardiorespiratory Fitness. *Innovation in Science and Technology*, *2*(2), 38-43.

Oukheda M, Bouaouda K, Mohtadi K, Lebrazi H, Derouiche A, Kettani A, Saile R & Taki H (2023) Association between nutritional status, body composition, and fitness level of adolescents in physical education in Casablanca, Morocco. *Front. Nutr*. 10:1268369. doi: 10.3389/fnut.2023.1268369

Prakoso, B. B., Suroto, S., Bulqini, A., & Priadana, B. W. (2021). Identifikasi Pola Makan, Indeks Massa Tubuh, Dan Aktivitas Fisik Mahasiswa Program Mata Kuliah Pendidikan Jasmani dan Kebugaran. *Jurnal Pendidikan Olahraga*, *10*(1), 43-56. https://doi.org/10.31571/jpo.v10i1.2092

Pranata, D., & Kumaat, N. (2022). Pengaruh Olahraga Dan Model Latihan Fisik Terhadap Kebugaran Jasmani Remaja: Literature Review. *Jurnal Universitas Negeri Surabaya*, *10*(02), 107-116.

Putri, I. F. D. A., Dhesa, D. B., Abadi, E., & Ananda, S. H. (2023). Hubungan Tingkat Kecukupan Zat Gizi Makro dan Aktivitas Fisik terhadap Status Gizi Atlet Bulutangkis di Kecamatan Kulisusu Kabupaten Buton Utara. *Jurnal Gizi Ilmiah*, *10*(2), 1-7. https://doi.org/10.46233/jgi.v10i2.1026

Putri, A. Y., Sulistiyani, S., & Adi, D. I. (2024). Hubungan antara Tingkat Konsumsi Makanan, Aktivitas Fisik dan Status Gizi dengan Tingkat Kebugaran Jasmani. *JURNAL PENDIDIKAN OLAHRAGA*, *14*(5), 355-364. https://doi.org/10.37630/jpo.v14i5.1952

Puspita, A. D., & Rakhma, L. L. (2024). Hubungan Emotional Eating dengan Status Gizi pada Mahasiswa Universitas Muhammadiyah Surakarta. *Ghidza: Jurnal Gizi dan Kesehatan*, *8*(2), 258-265.

Qhuzairi, M. R., Magdaleni, A. R., Sulistiawati, S., Sawitri, E., & Putra, I. S. (2023). Hubungan aktivitas fisik dengan ketahanan kardiorespirasi pada mahasiswa Program Studi Kedokteran Universitas Mulawarman. Jurnal Kesehatan Andalas, 12(2), 76-81.

Romadhan, A. R., Simanjuntak, V. G., Bafadal, M. F., Triansyah, A., & Hidasari, F. P. (2023). Hubungan Status Gizi, Aktivitas Fisik Terhadap Kebugaran Jasmani Mahasiswa Pendidikan Jasmani Universitas Tanjungpura. *Journal Physical Health Recreation (JPHR)*, *4*(1), 113-120. https://doi.org/10.55081/jphr.v4i1.1590

Samudera, F. D. B., Wahjuni, E. S., & Hidayat, T. (2024). Dampak Status Gizi, Pola Hidup Sehat dan Aktivitas Fisik terhadap Kebugaran Jasmani pada Siswa Sekolah Dasar Pasar Ikan Sidoarjo. *EduInovasi: Journal of Basic Educational Studies*, *4*(1), 774-790. https://doi.org/10.47467/edui.v4i1.6145

Sarageti, P., Mokoagow, A., & Pangemanan, M. (2024). Hubungan Status Gizi dengan Tingkat Kebugaran Jasmani Mahasiswa Putri IKOR Fakultas Ilmu Keolahragaan dan Kesehatan Masyarakat Universitas Negeri Manado. *Olympus: Jurnal Pendidikan Kesehatan dan Rekreasi*, *5*(1), 264-268.

Satryo, D., Muhamad Herdina Setiawan, Safa Maida Arlis, Sutiyoso Komara, & Beltasar Tarigan. (2024). Perbandingan Kondisi Fisik dan Tingkat Response antara Mahasiswa Prodi Pjkr dengan Mahasiswa Prodi Bahasa Prancis Angkatan 2023. *Jurnal Ilmiah Spirit*, *24*(2), 66-69. https://doi.org/10.36728/jis.v24i2.3635

Setiawan, F. E., Luhurningtyas, F. P., & Sofia, A. (2022). Korelasi status gizi dan aktivitas fisik dengan tingkat kebugaran jasmani mahasiswa. *Jurnal Olahraga Dan Kesehatan Indonesia (JOKI)*, *2*(2), 130-136. https://doi.org/10.55081/joki.v2i2.537

Shahudin, N. N., Yulianto, A. G., & Faridah, A. (2024). Pengaruh Status Gizi terhadap Tingkat Kebugaran Jasmani pada Siswa Sekolah. *Journal Olympic (Physical Education, Health and Sport)*, *4*(2), 61-69. Retrieved from https://jolimpic.uho.ac.id/index.php/journal/article/view/128

Sufitriyono, S., Aziz, M. I. M., & Jahrir, A. S. (2024). Analisis Peningkatan Kebugaran Jasmani Melalui Mata Kuliah Fitness Pada Mahasiswa Fakultas Ilmu Keolahragaan, Universitas Negeri Makassar. *Sport Education Journal*, *1*(2), 100-112.

Supriyanto, N. A., Rasyid, A., Fepriyanto, A., & Helaprahara, D. (2021). Hubungan Aktivitas Fisik Terhadap Kebugaran Jasmani dan Prestasi Akademik Mahasiswa STKIP PGRI Sumenep. *Jurnal Sains Keolahragaan & Kesehatan*, *6*(2), 131-140. http://journals.itb.ac.id/index.php/jskk/index

Wahyuningtyas, P., Rakhma, L. R., & Mardiyati, N. L. (2024). Hubungan Asupan Karbohidrat dan Status Gizi dengan Kebugaran Jasmani pada Mahasiswa Pendidikan Jasmani Universitas Muhammadiyah Surakarta. *Ranah Research: Journal of Multidisciplinary Research and Development*, *7*(1), 207-219. https://doi.org/10.38035/rrj.v7i1.1188