

# Can a Healthy Lifestyle Reduce Feelings of Anxiety during the COVID-19 Pandemic?

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**Abstract** The implemented outdoor activity restrictions throughout the COVID-19 pandemic have caused a change in people's lifestyles. The significant changes that can be seen are the reduced number of people's participation in physical activities and the change in their dietary patterns [1]. This condition also affects the anxiety of everyone. A lifestyle related survey was conducted on 274 students at the University of Education Indonesia using the Fantastic Instrument developed by Dr. Douglas Wilson from the Department of Family Medicine, McMaster University Canada. The lifestyle itself here includes conditions from sports activities, rest periods, and feelings of anxiety during the COVID-19 pandemic. The results of the analysis show that there is a significant influence of life on feelings of anxiety with a sig (2-tailed) value of  $0.046 < 0.005$ , while the coefficient of determination (R Square) of 0.11 means that lifestyle variables have an effect of 11% on anxiety, the rest is influenced by other factors. The implementation of activities during the Covid-19 period had a real impact on the lifestyle of students at the Indonesian Education University, significantly reducing feelings of anxiety for those who applied a good lifestyle and vice versa, feelings would increase when the lifestyle was not good.

**Keywords** COVID-19 Pandemic, Lifestyle, Anxiety

## 1. Introduction

Since December 2019, a new pandemic disease outbreak has occurred and spread rapidly throughout the world, caused by the coronavirus (CoV) 2019 [2]. The implementation of the lockdown has an impact on various sectors ranging from the economy, education, health, and social aspects that are affected by this policy [3–7]. This has caused many countries to impose activity restrictions [4].

The implemented outdoor activity restrictions throughout the COVID-19 pandemic have caused a change in people's lifestyles. The significant changes that can be seen are the reduced number of people's participation in physical activities and the change in their dietary patterns [1]. In comparison to before the pandemic, community compliance in physical activity against WHO guidelines fell from 80.9% to 62.5% [8]. COVID-19 also has the potential to cause many psychological problems such as fear, anxiety, stigma, prejudice, and marginalization of the disease [9]. This situation also causes psychiatric morbidity of infected patients to begin to emerge; the main problem is increased anxiety [10–12]. The results of the study stated that the impacts caused by COVID-19 included sleeping difficulty of 12.5%, paranoia about COVID-19 infection of 37.8%, and feeling pressure due to social media of 36.4% [13]. Health workers, in addition to civilians, are affected. In China, 50.4% of health workers experienced severe depression, anxiety (44.6%), insomnia (34%), and distress (71.5%) [14], owing to the need for

assistance in ensuring their safety and well-being [15].

The COVID-19 pandemic has caused the greatest disruption to the educational system in human history, affecting nearly one billion students in over 200 countries [16]. Following the first week of quarantine, several journalistic reports have highlighted how education professionals across the country are feeling pressured by school closures and overwhelmed by changes in the virtual learning process [17]. According to the survey results, the student sports routine must be halted because the sports facilities have been closed. According to the survey, their participation in sports has decreased by 43.8% [18]. The psychological effect of the COVID-19 pandemic on students is related to anxiety, which has been demonstrated in ten studies. During the COVID-19 pandemic, the prevalence of anxiety symptoms in college students was 11%, 28%, and 17%, respectively [19]. In Indonesia, there has been a decline in moderate physical activity among university students by 95% during the covid-19 pandemic [20]. Stress levels are also occurring where 18% of the 254 students suffer from mild stress, 26% moderate stress, and 7% under severe stress [21]. The nutritional status of 6-17 children at the time of covid-19 is by far the majority in the normal category, but it is expected that children will make sure they maximize the roles of physical activity to maintain fitness [22]. The reduction in physical activity caused by strict quarantine can also have metabolic effects that increase the risk of diseases such as diabetes, cancer, osteoporosis, and cardiovascular disease [23].

During the pandemic, vaccine development and activity management are carried out to limit the spread of this virus and have an impact on changing people's lifestyles [24]. Stress management efforts are being carried out in order to help reduce the negative impact of the COVID-19 pandemic through adequate and regular exercise activities, which will have an impact on reducing stress levels in students [25]. Local residents in France took the initiative to distribute booklets containing physical activity and exercise advice for adults [26].

Therefore, researchers feel the need to research and obtain empirical data related to how the influence of lifestyle on feelings of anxiety as well as how big the influence is on the students in the Indonesia University of Education environment.

## 2. Materials and Methods

The research method that will be used in this research is descriptive survey analysis. The use of the descriptive survey analysis method is assumed because the researchers want to reveal the lifestyle of students at the Indonesia University of Education during the COVID-19 pandemic. The primary focus of this study is on physical activity, nutrition, rest, and stress management. This study will provide an illustration and empirical evidence of the

impact of the COVID-19 pandemic on student lifestyles, allowing it to be a recommendation for the community to follow up on.

The main instrument that will be used to collect data in this study is the Fantastic Lifestyle Assessment, founded by Dr. Douglas Wilson from the Department of Family Medicine at McMaster University, Canada. This instrument includes nine lifestyle indicators such as physical activity, rest, stress, social relationships, nutrition, and others. The assessment of the instrument resulted in 5 categories of assessment (instrument attached), and in the process, the instrument has been validated linguistically by a linguist, namely Wulandari, M.Pd. However, the researchers only took 4 relevant indicators for this study, namely sports activity, nutritional fulfillment, resting state, and stress management.

Respondents in this study were students at the Indonesia University of Education, and data was obtained by distributing questionnaires online using Google Forms as the medium. The Google Form instrument was distributed to respondents via the WhatsApp social media application and e-mail to all students at the Indonesian University of Education. As many as 274 respondents were willing to fill out the questionnaire, with 173 female respondents (63.1%) and 101 male respondents (36.9%) filling it out. Respondents came from the Indonesia University of Education's eight faculties, namely the Faculty of Economics and Business Education, the Faculty of Education, the Faculty of Sports and Health Education, the Faculty of Mathematics and Natural Sciences Education, the Faculty of Engineering and Vocational, the Faculty of Language and Literature Education, the Faculty of Science Education, the Faculty of Social Sciences, and the Faculty of Art and Design Education. First-year students account for 89 (32.5%), second-year students account for 85 (31%), third-year students account for 63 (23%), and fourth-year students account for 37 (13.5%) of the 274 respondents, with an average student age of 18-22 years old.

## 3. Results and Discussion

### 3.1. Results

The data were obtained from the analysis of the four variables, namely sports activities, nutrition, rest time, and anxiety feelings. The survey results related to student activities during the COVID-19 pandemic refers to Figure 1, namely students who did sports three times a week, which was 28%, twice a week by 42%, and rarely or never by 30%.

The nutritional intake of students during the COVID-19 pandemic refers to Figure 2, which is illustrated as follows: 31% of students always consume a balanced diet, 67% indicate that students sometimes fulfill their nutrition with balanced food, and 2% never eat nutritionally balanced food.

Next is rest, namely sleeping during the COVID-19 pandemic with a duration of 7-9 hours per night refers to Figure 3. Student sleep schedule that meets 7-9 hours per night is 27%, 66% of students say sometimes, and the rest never sleep for longer durations than 7 hours per night.

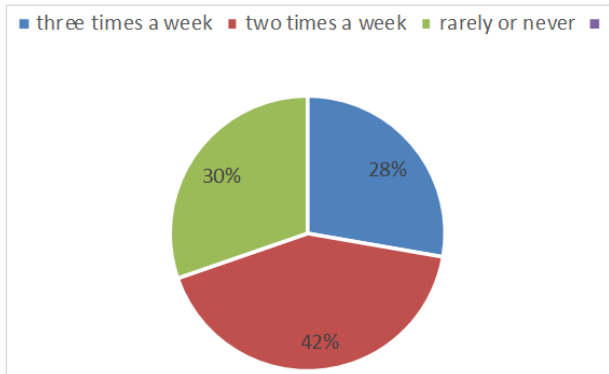


Figure 1. Sport Activities Data

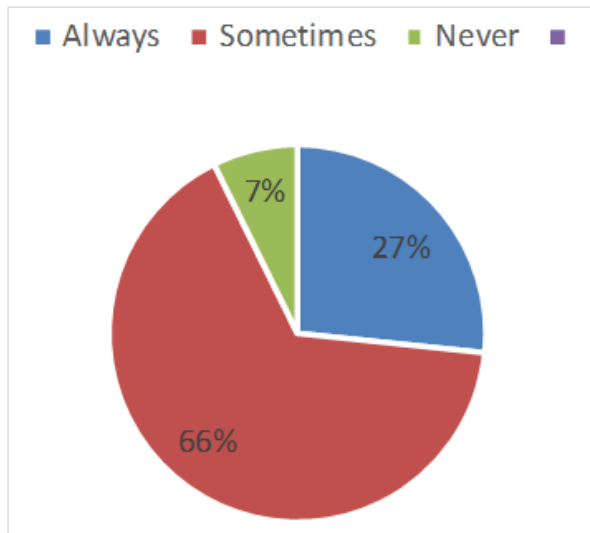


Figure 3. Sleeping Schedule 7-9 Hours Per Night

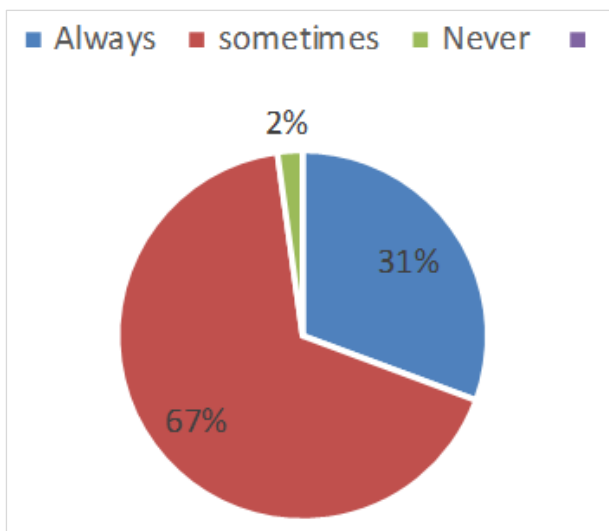


Figure 2. Nutrition Data

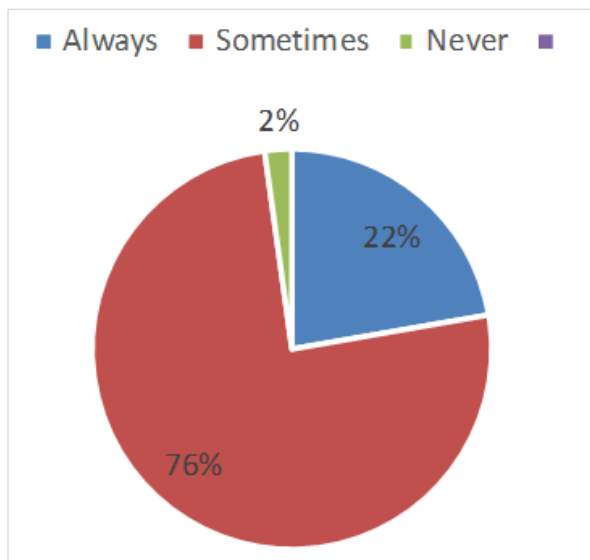


Figure 4. Feeling of Anxiety

Table 1. Lifestyle Significance Test Analysis on Feelings of Anxiety

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.121 <sup>a</sup>	.015	.011	.450	.015	4.029	1	272	.046

Figure 4 shows Anxiety condition during the COVID-19 pandemic, 22% of students always felt anxious, 76% sometimes felt anxious, and 2% of students did not feel anxious about the pandemic conditions that occurred.

In addition to the description of the percentage that shows the student's condition related to sports activities, nutrition, sleep time, and feelings of anxiety, another analysis was carried out to see the influence of lifestyle on students' feelings of stress by testing the students' lifestyle (sports activities, nutrition, and sleep time) with a score of feelings of stress; the data was calculated using SPSS, as stated in Table 1.

From the results of the analysis in Table 1, the significance value of the lifestyle variable on feelings of anxiety is 0.046. This result proves that there is a significant influence of lifestyle on feelings of anxiety because, according to the criteria that the sig value  $< 0.005$ , it means that there is an influence between the variables X and Y. While the coefficient value determination (adjusted R Square) of 0.11 means that lifestyle variables have an effect of 11% on feelings of anxiety, the rest is influenced by other factors.

### 3.2. Discussion

The analysis results show that there is a significant influence of lifestyle on anxiety feelings, with a sig value (2-tailed) of  $0.046 < 0.005$ . However, the coefficient of determination (R Square) is as high as 0.11 which can be concluded that lifestyle variables influence 11% of anxiety feelings, with the remainder influenced by other factors, implying that a healthy lifestyle has a positive impact on anxiety during the COVID-19 pandemic. Other findings indicate that 28% of students participate in sports three times per week. The following is an illustration of students' nutritional intake during the COVID-19 pandemic: 31% of students always eat a well-balanced diet. Student sleep schedule that meets 7-9 hours per night is about 27%, and during the COVID-19 pandemic, 22% of students always felt anxious, 76% sometimes felt anxious, and 2% of students did not feel anxious.

The COVID-19 pandemic has a direct impact on the community's ability to implement a healthy lifestyle. Through the health protocol, the results of the study show that there are changes in healthy lifestyles in daily life, starting from the habit of washing hands, using masks, sports activities, and healthy eating patterns [18]. For patients with mild symptoms. Outdoor activities can be done safely if the patient adheres to social distancing rules. Walking, cycling, hiking, and jogging allow patients to get fresh air without making close contact with other people by limiting their distance to 1.5 meters [27,28].

COVID-19 is an infectious disease where it has reciprocal relations with someone's nutritional status. The body needs more nutrients to meet the increased metabolism in people suffering from infections.

Malnourished people are at a higher risk of contracting infectious diseases because their resistance decreases, making germs easier to enter and develop [29]. Excessive nutrition also has a bad impact on stress. Students who have a body mass index (BMI) related to being overweight or underweight are respondents with higher stress levels [30].

Sports and physical activity are options to increase endurance, improve fitness, and increase self-confidence. With high physical activity, it will reduce anxiety levels [31,32]. WHO [33] has set clear guidelines on the minimum physical activity that must be carried out during the COVID-19 pandemic to maintain health. Aside from its health benefits, exercise is a valuable intervention for psychological disorders because it can reduce symptoms of depression and anxiety [23,34]. Recommendations for physical activity are 150 to 300 minutes per week of moderate intensity, 75 to 150 minutes of high-intensity aerobic physical activity, or an equivalent combination of high-intensity or moderate-intensity aerobic activity [28,35]. A study conducted by Hsu [36], revealed that a 12-week walking program of 60 minutes per week was effective for reducing depression and anxiety. Given that pandemic-related restrictions have been in place for weeks to months, in addition to causing short-and long-term psychological distress, they may contribute to the excessive prevalence of non-communicable diseases. As a result, physical activity is expected to have a direct beneficial effect due to its beneficial effect on the immune system and the risk of respiratory infections [37,38]. Prevention of stress fractures includes lifestyle factors such as exercise patterns, alcohol habits, tobacco consumption, exercise, sleep and nutrition are strongly associated with cortisol hormone levels as a trigger for a person's stress level [39,40]. The lack of sleep also has an impact on stress, the results of the study state that 14% of students who experience moderate to severe anxiety are caused by factors that lack rest time where their sleep time is less than 7 hours per night [41].

The coefficient of determination (R Square) of 0.11 indicates that lifestyle variables influence 11% of anxiety during the COVID-19 pandemic, while the rest is influenced by other factors. In addition to the virus's threat, it is undeniable that quarantine measures implemented in many countries have negative psychological effects, increasing stress-related symptoms [42,43], which, of course, has an impact on daily routines [44]. The effect of this reactivity was investigated in a 28-day study conducted after 11 days of quarantine during the COVID-19 pandemic, which included looking at concerns about the pandemic, how the interactive effects are, and the reactivity of daily stress [45]. The findings revealed that anxiety was extremely high, that there was an inverse relationship between resilience and anxiety, and that factors such as difficulty sleeping and mental fatigue were positively related to anxiety [46]. Health is the key to the

success of the growth of a nation, that everyone must maintain health and create a wholesome environment [47]. In the days of COVID-19, one of its benefits is nutrition factors, physical activity and stress levels, nutritional intake through diet and physical exercise can help reduce body fat, so it is good to keep the composition of body weight free of obesity [48]. Three times a week of physical activity is good for maintaining fitness and stress levels [49].

#### 4. Conclusions

The conclusion that can be drawn from this research is that there is a significant influence between lifestyle on feelings of anxiety. This is proved by the results of the t-test analysis with a value of sig (2-tailed)  $0.046 < 0.005$ . In addition, lifestyle has an effect of 11% on the feelings of anxiety of students at the Indonesia University of Education during the COVID-19 pandemic. The rest is influenced by other factors, meaning that a good lifestyle also has a good impact on anxiety during the COVID-19 pandemic. Therefore, it is recommended for students to always carry out regular physical activity 3 times a week with a minimum duration of 30 minutes, consume a balanced diet, and sleep 7-9 hours a day.

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#### REFERENCES

- [1] T. Peçanha, K. F. Goessler, H. Roschel, and B. Gualano, "Social isolation during the COVID-19 pandemic can increase physical inactivity and the global burden of cardiovascular disease," *Am. J. Physiol. Circ. Physiol.*, 2020.
- [2] D. M. Morens, P. Daszak, H. Markel, and J. K. Taubenberger, "Pandemic covid-19 joins history's pandemic legion," *MBio*, vol. 11, no. 3, 2020, doi: 10.1128/mBio.00812-20.
- [3] N. Aeni, "Pandemi COVID-19: Dampak Kesehatan, Ekonomi, & Sosial," *J. Litbang Media Inf. Penelitian, Pengemb. dan IPTEK*, vol. 17, no. 1, pp. 17–34, 2021.
- [4] M. Kaushik and N. Guleria, "The Impact of Pandemic COVID -19 in Workplace," *Eur. J. Bus. Manag.*, no. May 2020, 2020, doi: 10.7176/ejbm/12-15-02.
- [5] P. H. Livana, R. H. Suwoso, T. Febrianto, D. Kushindarto, and F. Aziz, "Dampak pandemi COVID-19 bagi perekonomian masyarakat desa," *Indones. J. Nurs. Heal. Sci.*, vol. 1, no. 1, pp. 37–48, 2020.
- [6] D. A. D. Nasution, E. Erlina, and I. Muda, "Dampak pandemi Covid-19 terhadap perekonomian Indonesia," *J. benefita*, vol. 5, no. 2, pp. 212–224, 2020.
- [7] M. Siahaan, "Dampak pandemi Covid-19 terhadap dunia pendidikan," *Dampak Pandemi Covid-19 Terhadap Dunia Pendidik.*, vol. 20, no. 2, 2020.
- [8] J. Wilke *et al.*, "A pandemic within the pandemic? Physical activity levels substantially decreased in countries affected by covid-19," *Int. J. Environ. Res. Public Health*, vol. 18, no. 5, pp. 1–12, 2021, doi: 10.3390/ijerph18052235.
- [9] I. W. C. Mak, C. M. Chu, P. C. Pan, M. G. C. Yiu, and V. L. Chan, "Long-term psychiatric morbidities among SARS survivors," *Gen. Hosp. Psychiatry*, vol. 31, no. 4, pp. 318–326, 2009.
- [10] S. K. W. Cheng, J. S. K. Tsang, K. H. Ku, C. W. Wong, and Y. K. Ng, "Psychiatric complications in patients with severe acute respiratory syndrome (SARS) during the acute treatment phase: A series of 10 cases," *Br. J. Psychiatry*, vol. 184, no. APR., pp. 359–360, 2004, doi: 10.1192/bjp.184.4.359.
- [11] S. K. W. Cheng and C. W. Wong, "Psychological intervention with sufferers from severe acute respiratory syndrome (SARS): Lessons learnt from empirical findings," *Clin. Psychol. Psychother.*, vol. 12, no. 1, pp. 80–86, 2005, doi: 10.1002/cpp.429.
- [12] S. E. Chua *et al.*, "Stress and psychological impact on SARS patients during the outbreak," *Can. J. Psychiatry*, vol. 49, no. 6, pp. 385–390, 2004, doi: 10.1177/070674370404900607.
- [13] D. Roy, S. Tripathy, S. K. Kar, N. Sharma, S. K. Verma, and V. Kaushal, "Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic," *Asian J. Psychiatr.*, vol. 51, p. 102083, 2020.
- [14] J. Lai *et al.*, "Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019," *JAMA Netw. Open*, vol. 3, no. 3, pp. 1–12, 2020, doi: 10.1001/jamanetworkopen.2020.3976.
- [15] G. Benjamin and M. D. Druss, "Addressing the COVID-19 Pandemic in Populations With Serious Mental Illness," 2020.
- [16] S. Pokhrel and R. Chhetri, "A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning," *High. Educ. Futur.*, vol. 8, no. 1, pp. 133–141, 2021, doi: 10.1177/2347631120983481.
- [17] N. Vargas Rubilar and L. B. Oros, "Stress and Burnout in Teachers During Times of Pandemic," *Front. Psychol.*, vol. 12, no. November, pp. 1–12, 2021, doi: 10.3389/fpsyg.2021.756007.
- [18] Z. D. Ulfa and U. Z. Mikdar, "Dampak Pandemi Covid-19 terhadap Perilaku Belajar, Sosial dan Kesehatan bagi Mahasiswa FKIP Universitas Palangka Raya," *JOSSAE J. Sport Sci. Educ.*, vol. 5, no. 2, p. 124, 2020, doi: 10.26740/jossae.v5n2.p124-138.
- [19] R. A. Ratunuman, L. E. V. David, and H. Opod, "Dampak Psikologis Pandemi COVID-19 Pada Mahasiswa," *J. Biomedik*, vol. 13, no. 2, p. 227, 2021, doi: 10.35790/jbm.13.2.2021.31836.

- [20] D. M. Rizal and R. A. Wibowo, "Changes in Physical Activity Among University Students in Indonesia from Before to During the COVID-19 Pandemic: A Retrospective Cohort Study," *J. Popul. Soc. Stud. [JPSS]*, vol. 30, pp. 128–146, 2022.
- [21] A. D. W. Ilahi, V. Rachma, W. Janastri, and U. Karyani, "The Level of Anxiety of Students during the Covid-19 Pandemic," in *Proceeding of Inter-Islamic University Conference on Psychology*, 2021, vol. 1, no. 1.
- [22] D. T. P. Phytanza *et al.*, "Nutritional Status of Children Aged 6-17 Years: The Condition during the COVID-19 Pandemic Reviewing Weight Indexed by Height," *Universal Journal of Public Health*, vol. 10, no. 2, pp. 159–167, 2022. DOI: 10.13189/ujph.2022.100202
- [23] G. Lippi, B. M. Henry, and F. Sanchis-Gomar, "Physical inactivity and cardiovascular disease at the time of coronavirus disease 2019 (COVID-19)," *Eur. J. Prev. Cardiol.*, vol. 27, no. 9, pp. 906–908, 2020.
- [24] M. Ciotti, M. Ciccozzi, A. Terrinoni, W.-C. Jiang, C.-B. Wang, and S. Bernardini, "The COVID-19 pandemic," *Crit. Rev. Clin. Lab. Sci.*, vol. 57, no. 6, pp. 365–388, 2020.
- [25] H. Wike, "Examining the relationship between physical activity psychological well-being and stress in a college population," pp. 1–85, 2015.
- [26] L. Goethals, N. Barth, J. Guyot, D. Hupin, T. Celarier, and B. Bongue, "Impact of home quarantine on physical activity among older adults living at home during the COVID-19 pandemic: qualitative interview study," *JMIR aging*, vol. 3, no. 1, p. e19007, 2020.
- [27] B. Blocken, F. Malizia, T. van Druenen, and T. Marchal, "Towards aerodynamically equivalent COVID19 1.5 m social distancing for walking and running," *Urban Phys.*, p. 11, 2020, [Online]. Available: [http://www.urbanphysics.net/SocialDistancingv20\\_White\\_Paper.pdf](http://www.urbanphysics.net/SocialDistancingv20_White_Paper.pdf).
- [28] S. M. Nyenhuis, J. Greiwe, J. S. Zeiger, A. Nanda, and A. Cooke, "Exercise and Fitness in the Age of Social Distancing During the COVID-19 Pandemic," *J. Allergy Clin. Immunol. Pract.*, vol. 8, no. 7, pp. 2152–2155, 2020, doi: 10.1016/j.jaip.2020.04.039.
- [29] Kementerian Kesehatan RI, *Pedoman Gizi Seimbang*. Jakarta: Kementerian Kesehatan Republik Indonesia, 2014.
- [30] R. Chacón-Cuberos, F. Zurita-Ortega, E. M. Olmedo-Moreno, and M. Castro-Sánchez, "Relationship between Academic Stress, Physical Activity and Diet in University Students of Education," *Behav. Sci. (Basel)*, vol. 9, no. 6, p. 59, 2019, doi: 10.3390/bs9060059.
- [31] Nuryadi, J. D. Kusumanegara, L. Angkawidjaja, A. Gumilar, and C. U. Abdullah, "Response of cortisol hormone to students' anxiety and focus," *J. Eng. Sci. Technol.*, vol. 14, no. 6, pp. 3185–3193, 2019.
- [32] W. Welis and R. M. Sazeli, "Gizi untuk aktifitas fisik dan kebugaran." Sukabina Press, 2013.
- [33] C. O. F. WHO, "World health organization," *Responding to Community Spread COVID-19. Ref. WHO/COVID-19/Community\_Transmission/2020.1*, 2020.
- [34] F. B. Schuch *et al.*, "Physical activity and incident depression: a meta-analysis of prospective cohort studies," *Am. J. Psychiatry*, vol. 175, no. 7, pp. 631–648, 2018.
- [35] K. L. Piercy *et al.*, "The physical activity guidelines for Americans," *JAMA - J. Am. Med. Assoc.*, vol. 320, no. 19, pp. 2020–2028, 2018, doi: 10.1001/jama.2018.14854.
- [36] M.-Y. Hsu, S.-H. Lee, H.-J. Yang, and H.-J. Chao, "Is Brisk Walking an Effective Physical Activity for promoting Taiwanese Adolescents' Mental Health?," *J. Pediatr. Nurs.*, vol. 60, pp. e60–e67, 2021.
- [37] J. P. Campbell and J. E. Turner, "Debunking the myth of exercise-induced immune suppression: redefining the impact of exercise on immunological health across the lifespan," *Front. Immunol.*, p. 648, 2018.
- [38] E. Fondell *et al.*, "Physical activity, stress, and self-reported upper respiratory tract infection," *Med. Sci. Sports Exerc.*, vol. 43, no. 2, pp. 272–279, 2011.
- [39] S. Fukuda and K. Morimoto, "Lifestyle, stress and cortisol response: Review II," *Environ. Health Prev. Med.*, vol. 6, no. 1, pp. 15–21, 2001.
- [40] J. M. Lappe, M. R. Stegman, and R. R. Recker, "The impact of lifestyle factors on stress fractures in female Army recruits," *Osteoporos. Int.*, vol. 12, no. 1, pp. 35–42, 2001.
- [41] J. Hoying, B. M. Melnyk, E. Hutson, and A. Tan, "Prevalence and Correlates of Depression, Anxiety, Stress, Healthy Beliefs, and Lifestyle Behaviors in First-Year Graduate Health Sciences Students," *Worldviews Evidence-Based Nurs.*, vol. 17, no. 1, pp. 49–59, 2020, doi: 10.1111/wvn.12415.
- [42] S. K. Brooks *et al.*, "The psychological impact of quarantine and how to reduce it: rapid review of the evidence," *Lancet*, vol. 395, no. 10227, pp. 912–920, 2020, doi: 10.1016/S0140-6736(20)30460-8.
- [43] P. Klaiber, J. H. Wen, A. DeLongis, and N. L. Sin, "The ups and downs of daily life during COVID-19: Age differences in affect, stress, and positive events," *Journals Gerontol. Ser. B*, vol. 76, no. 2, pp. e30–e37, 2021.
- [44] S. J. Barber, "Kim H," *COVID-19 worries Behav. Chang. older younger men women. J Gerontol B Psychol Sci Soc Sci*, 2020.
- [45] N. A. Nelson and C. S. Bergeman, "Daily Stress Processes in a Pandemic: The Effects of Worry, Age, and Affect," *Gerontologist*, vol. 61, no. 2, pp. 196–204, 2021, doi: 10.1093/geront/gnaa187.
- [46] M. Mosheva *et al.*, "Anxiety, pandemic-related stress and resilience among physicians during the COVID-19 pandemic," *Depress. Anxiety*, vol. 37, no. 10, pp. 965–971, 2020, doi: 10.1002/da.23085.
- [47] O. Urzha and T. Evstratova, "The Influence of Local Authorities on the Formation of a System of Motivation of Citizens for a Healthy Lifestyle," *Universal Journal of Public Health*, vol. 9, no. 6, pp. 392–400, 2021. DOI: 10.13189/ujph.2021.090606

- [48] R. Nugraha, A. Suherman, H. Ronald, and A. Ma'mun, "Effect of body weight training plus low carbohydrate diet versus running plus low carbohydrate diet on body fat percentage changes in overweight and obese young man," *J. Eng. Res.*, 2021.
- [49] J. D. K. Negara, S. W. A. Jusman, R. Sekartini, E. I. Ilyas, H. R. D. Ray, and A. Gumilar, "The Impact of the Difference of Futsal Frequency towards Physical Stress in Adolescent," *Int. J. Hum. Mov. Sport. Sci.*, vol. 10, no. 4, pp. 638–643, 2022. DOI: 10.13189/saj.2022.100402