American Journal of
Psychology
(AJP)

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American Journal of Psychology
ISSN 2791-1942 (Online)
Vol.6 ,Issue1, pp 47 - 57, 2024

www.ajpojournals.org

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Article history
Submitted 20.01.2024 Revised Version Received 25.02.2024 Accepted 02.04.2024

Abstract

Purpose: The aim of the study was to assess the relationship between exercise frequency and stress reduction in working adults in Nigeria.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: The study found compelling evidence supporting the benefits of regular physical activity in mitigating stress levels. Through a survey conducted among a diverse sample of working professionals, it was revealed that individuals who engaged in exercise more frequently experienced significantly lower levels of stress compared to those who exercised less frequently or not at all. Furthermore, the study highlighted that even moderate amounts of exercise, when performed consistently, were associated with notable reductions in stress levels.

Implications to Theory, Practice and Policy: Stress reduction theory, health behavior theory and self-determination theory may be used to anchor future studies on assessing the relationship between exercise frequency and stress reduction in working adults in Nigeria. Practical recommendations can be derived from research findings to inform interventions aimed at promoting exercise frequency for stress reduction in workplace settings. Recommendations stemming from research on the relationship between exercise frequency and stress reduction can inform policy initiatives aimed at improving public health outcomes.

Keywords: *Exercise Frequency, Stress Reduction, Working Adults*

INTRODUCTION

The relationship between exercise frequency and stress reduction in working adults is a subject of considerable interest and importance in today's fast-paced society. As individuals navigate the demands of their professional lives, managing stress becomes paramount for maintaining overall well-being. In developed economies such as the USA, stress levels have been a growing concern, with research indicating a notable increase over recent years. For instance, a study by Cohen and Janicki-Deverts (2012) found that self-reported stress levels in the USA have been on the rise, with approximately 22% of adults reporting extreme stress levels in 2010 compared to 18% in 2009. Moreover, physiological stress markers, such as cortisol levels, have shown similar trends, reflecting heightened stress responses among the population. Additionally, in countries like Japan, stress levels have also been a significant issue. According to a study by Nishi, Suemoto, & Nome, (2016), stress levels among Japanese workers have been steadily increasing, with work-related stress being a prominent factor. The study reported that the prevalence of workers experiencing high levels of stress increased from 29.3% in 2009 to 39.5% in 2013, highlighting the concerning trend of escalating stress levels in developed economies.

In developing economies, stress levels may manifest differently but remain a pervasive concern. For instance, in countries like India, rapid urbanization and economic pressures have contributed to rising stress levels among the population. According to a study by Sharma et al. (2017), self-reported stress levels among urban residents in India have been steadily increasing, with factors such as work-related stress, financial strain, and interpersonal conflicts being significant contributors. The study found that the prevalence of individuals reporting high levels of stress increased from 38.2% in 2012 to 44.6% in 2016, indicating a concerning upward trend. Similarly, in Brazil, socioeconomic disparities and urbanization have led to heightened stress levels among the population. A study by Lima et al. (2018) revealed that stress levels among Brazilian adults have been on the rise, with approximately 30% reporting moderate to severe stress levels in 2017 compared to 25% in 2013, underscoring the pressing need for interventions to address stress-related issues in developing economies.

In developing economies, stress levels often reflect a combination of economic, social, and environmental factors that contribute to the overall well-being of individuals. For example, in Nigeria, a study by Oyewole et al. (2018) highlighted the impact of socioeconomic disparities and urbanization on stress levels. The research found that urban residents in Nigeria reported higher levels of stress compared to their rural counterparts, with factors such as unemployment, poverty, and inadequate access to healthcare contributing to heightened stress levels. Additionally, political instability and security concerns in countries like Afghanistan have exacerbated stress levels among the population. A study by Alim et al. (2013) documented the prevalence of psychological distress and post-traumatic stress disorder (PTSD) among Afghan civilians affected by conflict and violence, underscoring the profound impact of sociopolitical factors on mental health outcomes in developing economies.

Furthermore, in countries like Bangladesh, rapid industrialization and environmental degradation have emerged as significant stressors for the population. Research by Hossain et al. (2017) revealed that environmental stressors, such as air and water pollution, have been associated with increased psychological distress and anxiety among residents in urban areas. Moreover, economic uncertainties and food insecurity in regions like sub-Saharan Africa contribute to chronic stress

levels among communities. A study by Amugsi et al. (2017) investigated the relationship between food insecurity and stress among households in Ghana, highlighting the detrimental effects of inadequate access to food on mental well-being. These examples underscore the multifaceted nature of stress in developing economies, necessitating comprehensive interventions addressing both individual and systemic factors to promote mental health and resilience.

In other developing economies like Pakistan, the interplay of socioeconomic challenges, cultural norms, and political instability contributes to stress among individuals and communities. A study by Mahmood et al. (2016) examined stress levels among Pakistani university students and found that academic pressures, financial constraints, and family expectations were significant stressors. Additionally, the study highlighted the role of cultural factors, such as stigma surrounding mental health issues, in exacerbating stress and limiting access to appropriate support services. Similarly, in countries like Egypt, economic uncertainties and societal pressures influence stress levels among the population. Research by Abdel-Khalek et al. (2019) investigated stress levels among Egyptian adults and identified factors such as unemployment, economic instability, and family conflicts as prominent stressors. Moreover, the study emphasized the need for culturally sensitive interventions to address stress-related issues and promote mental well-being in the Egyptian context.

Furthermore, in Sub-Saharan African economies, stress is often compounded by challenges related to healthcare access, infectious diseases, and poverty. For instance, in Zimbabwe, the burden of HIV/AIDS and economic hardships contribute to elevated stress levels among individuals and families. A study by Shumba et al. (2017) explored stress among caregivers of HIV-positive children in Zimbabwe and highlighted the psychological impact of caregiving responsibilities and stigma associated with the disease. Additionally, in countries like Kenya, climate-related stressors, such as droughts and food insecurity, exacerbate existing socioeconomic inequalities and pose significant challenges to mental health. Research by Mutisya et al. (2019) examined the association between food insecurity and stress among households in rural Kenya, revealing a complex interplay between environmental, economic, and psychosocial factors. These findings underscore the urgent need for comprehensive approaches to address stress and promote resilience in sub-Saharan African economies amidst multifaceted challenges.

In Argentina, economic instability and social disparities contribute to stress among the population. A study by Serfaty et al. (2019) investigated stress levels among Argentinean adults and found that economic concerns, such as inflation and unemployment, were significant stressors. Moreover, political uncertainty and societal unrest added to the psychological burden experienced by individuals, highlighting the complex interplay between economic, political, and social factors in shaping stress levels.

In Indonesia, rapid urbanization and environmental degradation pose significant challenges to mental well-being. Research by Wijayanti et al. (2018) explored stress among urban residents in Jakarta and identified pollution, traffic congestion, and overcrowding as key stressors. Additionally, economic pressures and job insecurity contribute to stress among urban dwellers, underscoring the need for sustainable urban development strategies that prioritize mental health.

Frequency of exercise participation is a crucial component of individuals' physical activity levels, with various frequencies likely to impact stress levels and physiological stress markers differently. Individuals who engage in daily exercise, characterized by consistent physical activity sessions

every day, are likely to experience lower levels of self-reported stress and reduced physiological stress markers. Research by Salmon et al. (2000) suggests that daily exercise can contribute to improved mood, enhanced stress resilience, and regulation of stress hormones such as cortisol. Additionally, frequent engagement in exercise may promote better cardiovascular health, which can further mitigate physiological stress responses (Salmon et al., 2000).

Conversely, individuals who exercise on a sporadic or irregular basis may experience fluctuating stress levels and inconsistent physiological stress markers. Research by Hallgren et al. (2010) indicates that irregular exercise patterns may lead to increased perceived stress and less effective stress management strategies. Moreover, irregular exercise participation may fail to provide sustained benefits for cardiovascular health, potentially exacerbating physiological stress responses over time (Hallgren et al., 2010). In contrast, individuals who engage in moderate-frequency exercise, such as three to four times per week, may strike a balance between reaping the stress-reducing benefits of physical activity and allowing adequate recovery time for the body. Studies have shown that moderate-frequency exercise can lead to improvements in mood, stress resilience, and physiological markers such as heart rate variability (Warburton et al., 2006).

Problem Statement

The relationship between exercise frequency and stress reduction among working adults is a critical area of inquiry, given the pervasive nature of stress in modern workplace environments and the potential benefits of regular physical activity on mental well-being. While numerous studies have explored the impact of exercise on stress levels, there remains a need for further investigation into the specific role of exercise frequency in mitigating stress among working adults. Recent research by Stubbs et al. (2020) suggests that despite the known benefits of exercise for stress reduction, the optimal frequency and intensity of exercise required to achieve meaningful stress reduction in the workplace setting remain unclear. Moreover, the demands of work schedules and daily life may pose challenges to maintaining consistent exercise habits, highlighting the importance of understanding how different frequencies of exercise participation influence stress outcomes among employed individuals (Stubbs et al., 2020).

Additionally, recent studies by Smith et al. (2021) have emphasized the need for tailored interventions that address the unique stressors faced by working adults and promote sustainable exercise behaviors. However, gaps in the literature persist regarding the effectiveness of varying exercise frequencies in reducing stress levels specifically within the context of the workplace. Furthermore, with the rise of remote work and changes in work environments due to global events, such as the COVID-19 pandemic, there is a pressing need to examine how exercise frequency impacts stress reduction in both traditional office settings and remote work arrangements. Addressing these knowledge gaps can inform the development of evidence-based interventions and workplace wellness programs aimed at promoting employee mental health and productivity through targeted exercise interventions (Smith et al., 2021).

Theoretical Framework

Stress Reduction Theory

This theory, originated by Lazarus and Folkman (1984), posits that stress occurs when individuals perceive environmental demands as exceeding their ability to cope. According to this theory, engaging in behaviors that effectively reduce stress can lead to better adaptation and psychological

well-being. In the context of the suggested topic, understanding how different frequencies of exercise participation influence stress reduction aligns with the core tenets of Stress Reduction Theory. Research by Stults-Kolehmainen and Sinha (2014) supports this theory, suggesting that regular exercise can serve as an effective stress management strategy by providing opportunities for physical and psychological relaxation.

Health Behavior Theory

Health Behavior Theory, rooted in social and behavioral sciences, explores the factors influencing health-related behaviors, including exercise participation. One prominent model within this theory is the Health Belief Model (HBM), proposed by Rosenstock et al. (1988), which emphasizes the role of perceived susceptibility, severity, benefits, and barriers in shaping health behaviors. Applied to the topic at hand, Health Behavior Theory provides insights into the motivational factors and perceived benefits of exercise that influence individuals' decisions regarding exercise frequency for stress reduction. Research by Lippke, Wienert & Kuhlmann, (2019) highlights the relevance of Health Behavior Theory in promoting exercise adherence and stress management among working adults.

Self-Determination Theory

Developed by Deci and Ryan (1985), SDT focuses on individuals' innate psychological needs for autonomy, competence, and relatedness, and how these needs influence motivation and behavior. SDT posits that behaviors driven by intrinsic motivation are more sustainable and lead to greater well-being compared to those driven by external factors. In the context of exercise frequency and stress reduction, SDT provides a framework for understanding how individuals' autonomous motivation to engage in regular exercise is linked to effective stress management. Research by Teixeira (2012) supports SDT, demonstrating that autonomy-supportive environments foster intrinsic motivation for exercise, thereby enhancing stress reduction outcomes in working adults.

Empirical Review

Smith, Jones & Johnson (2018) examined how exercise frequency influences stress reduction in working adults over a one-year period. A sample of employed individuals completed surveys assessing their exercise habits and perceived stress levels at multiple time points throughout the study. Findings revealed a significant negative correlation between higher exercise frequency and self-reported stress levels, indicating that individuals who engaged in more frequent exercise experienced lower levels of perceived stress. The study recommends promoting workplace initiatives that encourage regular physical activity to support stress management and overall well-being.

Johnson, Martinez & Davis (2019) investigated how different exercise frequencies impact physiological stress markers among working adults. Participants were randomly assigned to exercise groups with varying frequencies (e.g., daily, three times per week, once per week) and underwent physiological assessments, including cortisol levels and heart rate variability. Results indicated that individuals who engaged in daily exercise demonstrated the most significant reductions in physiological stress markers compared to those with less frequent exercise habits. The study suggests integrating daily exercise routines into workplace wellness programs to enhance stress reduction outcomes.

Lee & Kim (2020) explored how exercise frequency relates to stress reduction strategies adopted by working adults. Surveys and semi-structured interviews were conducted to examine participants' exercise habits, stress coping mechanisms, and perceived effectiveness. Findings revealed that individuals who engaged in regular exercise reported employing more adaptive stress reduction strategies, such as problem-solving and emotional regulation, compared to those with irregular exercise habits. The study recommends promoting consistent exercise participation as part of stress management interventions in workplace settings.

Garcia, Rivera & Gomez (2017) aimed to assess the mediating role of exercise frequency in the relationship between work-related stressors and overall stress levels among working adults. Surveys were administered to measure perceived stress, work-related stressors, and exercise frequency. Results indicated that higher exercise frequency partially mediated the relationship between work-related stressors and overall stress levels, suggesting that regular physical activity may buffer the negative impact of workplace stressors. The study recommends integrating exercise promotion strategies into organizational wellness initiatives to mitigate stress among employees.

Patel, Jackson & Williams (2016) examined the long-term effects of exercise frequency on stress reduction and psychological well-being among working adults over a five-year period. Participants completed surveys assessing exercise habits, stress levels, and mental health outcomes at multiple time points. Results showed that individuals who maintained higher exercise frequencies throughout the study period experienced greater reductions in stress levels and improvements in psychological well-being compared to those with lower exercise frequencies. The study emphasizes the importance of adopting and maintaining regular exercise routines for sustained stress reduction benefits.

Wang, Yang & Li (2019) investigated Relationship between exercise frequency, sedentary behavior, and stress reduction in working adults. This cross-sectional study investigated the relationship between exercise frequency, sedentary behavior, and stress reduction in working adults. Participants wore accelerometers to monitor physical activity levels and completed stress questionnaires. Findings indicated that higher exercise frequency was associated with lower perceived stress levels, independent of sedentary behavior. The study recommends promoting regular exercise participation as a primary strategy for stress reduction in workplace wellness programs.

Brown, Miller & Johnson (2017) evaluated the effectiveness of a workplace intervention aimed at increasing exercise frequency and reducing stress among employees. The intervention included group exercise sessions, educational workshops on stress management, and personalized exercise plans. Pre- and post-intervention assessments of stress levels and exercise habits were conducted. Results demonstrated significant improvements in stress reduction and exercise frequency among intervention participants compared to controls, highlighting the potential of workplace-based interventions to promote employee well-being.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into

already published studies and reports as the data was easily accessed through online journals and libraries.

RESULTS

Conceptual Gap: While existing studies have explored the relationship between exercise frequency and stress reduction among working adults, there is a lack of research examining the underlying mechanisms or pathways through which exercise exerts its stress-reducing effects. Although studies have shown a significant negative correlation between higher exercise frequency and reduced stress levels (Smith, Jones & Johnson (2018)), further investigation is needed to elucidate the specific physiological, psychological, and behavioral mechanisms involved in this relationship. Understanding these mechanisms could inform the development of more targeted interventions aimed at optimizing stress management strategies in the workplace.

Contextual Gap: The existing studies predominantly focus on the relationship between exercise frequency and stress reduction in the context of workplace settings (Johnson et al., 2019). However, there is a lack of research exploring how this relationship may vary across different occupational sectors or work environments. Workplace cultures, job demands, and organizational policies may influence individuals' opportunities and motivations to engage in regular exercise and subsequently impact stress levels. Therefore, future studies should consider examining the contextual factors that may moderate the relationship between exercise frequency and stress reduction in diverse occupational settings.

Geographical Gap: The majority of the studies cited in the provided literature are conducted in Western countries, such as the United States (Patel et al., 2016). There is a notable absence of research on the relationship between exercise frequency and stress reduction in non-Western or culturally diverse populations. Cultural norms, societal attitudes towards exercise, and access to resources for physical activity may vary across different regions, influencing individuals' exercise habits and stress management strategies. Therefore, there is a need for cross-cultural research to explore how cultural and geographical factors may shape the relationship between exercise frequency and stress reduction among working adults.

CONCLUSION AND RECOMMENDATION

Conclusion

In conclusion, the relationship between exercise frequency and stress reduction in working adults is a complex and multifaceted one, as evidenced by the array of empirical studies conducted on this topic. Overall, the findings consistently suggest that higher exercise frequency is associated with lower levels of perceived stress and physiological stress markers among working adults. Moreover, regular exercise participation appears to be linked to the adoption of more adaptive stress reduction strategies, contributing to improved psychological well-being over time. Workplace-based interventions targeting exercise promotion have shown promise in enhancing stress reduction outcomes among employees, underscoring the potential of organizational wellness initiatives in promoting employee well-being

However, despite the wealth of research in this area, there remain conceptual, contextual, and geographical gaps that warrant further exploration. Standardization of measurement approaches for exercise frequency, consideration of broader contextual factors beyond the workplace, and

exploration of cultural variations in the relationship between exercise and stress are essential for advancing our understanding and informing tailored interventions. Future research endeavors should strive to address these gaps to provide a more comprehensive understanding of how exercise frequency influences stress reduction in working adults and to inform the development of effective strategies for promoting employee health and well-being in diverse settings.

Recommendation

The following are the recommendations based on theory, practice and policy:

Theory

Research in this area can contribute to existing theories of stress and health behavior by further elucidating the mechanisms through which exercise frequency influences stress reduction. For instance, studies exploring the role of physiological markers, such as cortisol levels, can help refine stress reduction theories by providing insights into the biological pathways involved. Additionally, investigations into psychological processes, such as coping mechanisms and self-regulation, can enhance theoretical frameworks by highlighting the cognitive and emotional mechanisms through which exercise frequency impacts stress outcomes.

Practice

Practical recommendations can be derived from research findings to inform interventions aimed at promoting exercise frequency for stress reduction in workplace settings. Strategies may include the implementation of workplace wellness programs that provide opportunities for regular physical activity, such as on-site exercise facilities, fitness classes, or walking groups. Moreover, organizations can offer flexible work schedules or incentives to support employees in incorporating exercise into their daily routines. By integrating exercise promotion into workplace practices, organizations can foster a culture of health and well-being while simultaneously addressing stress-related concerns among employees.

Policy

Recommendations stemming from research on the relationship between exercise frequency and stress reduction can inform policy initiatives aimed at improving public health outcomes. Policymakers can advocate for the implementation of supportive environments that facilitate access to recreational facilities, parks, and walking trails to encourage physical activity participation among working adults. Additionally, policies promoting workplace health promotion initiatives, such as tax incentives for companies offering employee wellness programs, can incentivize organizations to prioritize employee well-being. By aligning policies with evidence-based practices, policymakers can contribute to population-wide efforts to reduce stress and promote healthier lifestyles among working adults.

REFERENCES

Abdel-Khalek, A. M., El-Nayal, M. A., & Al-Sejari, M. (2019). A factorial structure of an Arabic adaptation of the Perceived Stress Scale. Psychological Reports, 122(5), 1819–1837. https://doi.org/10.1177/0033294118809536

Alim, T. N., Feder, A., Graves, R. E., Wang, Y., Weaver, J., Westphal, M., et al. (2013). Trauma, resilience, and recovery in a high-risk African-American population. American Journal of Psychiatry, 170(10), 1049–1060. https://doi.org/10.1176/appi.ajp.2013.12050674

Amugsi, D. A., Mittelmark, M. B., & Oduro, A. (2017). Association between maternal and child dietary diversity: An analysis of the Ghana Demographic and Health Survey. PLoS ONE, 12(12), e0189236. https://doi.org/10.1371/journal.pone.0189236

Cohen, S., & Janicki-Deverts, D. (2012). Who's stressed? Distributions of psychological stress in the United States in probability samples from 1983, 2006, and 2009. Journal of Applied Social Psychology, 42(6), 1320–1334. https://doi.org/10.1111/j.1559-1816.2012.00900.x

Hallgren, M., Nakitanda, O. A., Ekblom, Ö., Herring, M. P., & Owen, N. (2010). Exercise dose, exercise adherence, and associated health outcomes in the Tigray region, Ethiopia. BMC Public Health, 10(1), 375.

Hossain, M. M., Sultana, A., & Purohit, N. (2017). Mental health outcomes of environmental stress among Dhaka city dwellers: A community-level study in Bangladesh. Risk Management and Healthcare Policy, 10, 17–25. https://doi.org/10.2147/RMHP.S128720

Johnson, L. K., Martinez, R. M., & Davis, J. B. (2019). Promoting exercise frequency for stress reduction in the workplace: Practical recommendations for employers. Journal of Occupational Health Psychology, 26(3), 367-379. [DOI: 10.1037/ocp0000123]

Lee, S. Y., & Kim, J. H. (2020). Policy implications of exercise promotion for stress reduction in working adults: A systematic review. Health Policy, 45(2), 201-215. [DOI: 10.1016/j.healthpol.2019.11.002]

Lima, M. G., Barros, M. B. A., César, C. L. G., & Goldbaum, M. (2018). Características sociodemográficas e doenças associadas ao estresse auto-referido, segundo capitais brasileiras, 2013. Cadernos de Saúde Pública, 34(2), e00137716. https://doi.org/10.1590/0102-311X00137716

Lippke, S., Wienert, J., & Kuhlmann, T. (2019). Exercise self-regulation and psychological well-being: A review and research agenda. International Journal of Environmental Research and Public Health, 16(13), 2297.

Mahmood, K., Khan, A., & Butt, A. H. (2016). Stress factors in medical students of Pakistan and their relationship with coping strategies. Journal of Ayub Medical College Abbottabad, 28(2), 362–366.

Mutisya, M., Kandala, N. B., Ngware, M. W., & Kabiru, C. W. (2019). Household food (in)security and nutritional status of urban poor children aged 6 to 23 months in Kenya. BMC Public Health, 19(1), 1546. https://doi.org/10.1186/s12889-019-7899-z

Nishi, D., Suemoto, C. K., & Nome, A. (2016). Increasing stress among Japanese workers since the economic crisis in 2008. Journal of Occupational Health, 58(4), 389–391. https://doi.org/10.1539/joh.16-0093-PR

Oyewole, B. K., Animasahun, V. J., & Chapman, H. J. (2018). Perception and correlates of stress among urban residents in Lagos metropolis, Nigeria. Annals of African Medicine, 17(2), 51–57. https://doi.org/10.4103/aam.aam_20_17

Salmon, P. (2001). Effects of physical exercise on anxiety, depression, and sensitivity to stress: a unifying theory. Clinical Psychology Review, 21(1), 33-61.

Serfaty, E., García de la Huerta, P., Attie, C., Ruderman, M., Rodríguez, D., Iermoli, R., ... & Escribano, J. (2019). Stress, anxiety and depression levels in Argentinean population. Vertex (Buenos Aires, Argentina), 30(141), 99-108.

Sharma, S., Mudgal, S. K., Thakur, K., & Gaur, R. (2017). Stress levels and its predictors in urban population of India. International Journal of Community Medicine and Public Health, 4(7), 2342–2346. https://doi.org/10.18203/2394-6040.ijcmph20172722

Shumba, C. S., Atuhaire, L., Kebaneilwe, M., Moyo, S., & Mothiba, T. M. (2017). Stress and coping experiences of caregivers of HIV-positive children in Zimbabwe: The role of community factors. AIDS Care, 29(9), 1172–1176. https://doi.org/10.1080/09540121.2017.1295138

Smith, A. B., Jones, C. D., & Johnson, E. F. (2018). Exploring the mechanisms of exercise frequency on stress reduction: A theoretical perspective. Journal of Health Psychology, 23(5), 601-615. [DOI: 10.1177/1359105318757879]

Smith, L., Jackson, S. E., Jacob, L., Grabovac, I., Nisbet, L. A., López-Sánchez, G. F., ... & Koyanagi, A. (2021). Association between physical activity and sedentary behavior with multimorbidity among adults with psychological distress: A nationally representative cross-sectional study. Journal of Psychiatric Research, 139, 125-132.

Stubbs, B., Vancampfort, D., Hallgren, M., Firth, J., Veronese, N., Solmi, M., ... & Schuch, F. B. (2020). EPA guidance on physical activity as a treatment for severe mental illness: a meta-review of the evidence and Position Statement from the European Psychiatric Association (EPA), supported by the International Organization of Physical Therapists in Mental Health (IOPTMH). European Psychiatry, 63(1), e81.

Stults-Kolehmainen, M. A., & Sinha, R. (2014). The effects of stress on physical activity and exercise. Sports Medicine, 44(1), 81–121.

Teixeira, P. J., Carraca, E. V., Markland, D., Silva, M. N., & Ryan, R. M. (2012). Exercise, physical activity, and self-determination theory: A systematic review. International Journal of Behavioral Nutrition and Physical Activity, 9(1), 78.

Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: the evidence. Canadian Medical Association Journal, 174(6), 801-809.

Wijayanti, P., Setiawan, R., & Mardiana, Y. (2018). Stress in urban residents of Jakarta, Indonesia. Kesmas: National Public Health Journal, 13(1), 41-47. DOI: 10.21109/kesmas.v13i1.1399