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COPING MECHANISMS AND THEIR EFFECTIVENESS IN STRESS REDUCTION AMONG STUDENTS PRACTICING ANAEROBIC WORKOUTS

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Abstract: Stress is a prevalent and often overwhelming experience, particularly among senior secondary school students, as they navigate the pressures of academic demands and extracurricular activities. This stress can significantly impact their emotional, physical, and academic well-being, often leading to disorganization and reduced performance. The negative outcomes associated with stress are well-documented, with students frequently reporting lower health standards and diminished quality of life. While the benefits of physical fitness in mitigating stress are widely recognized, the specific role of anaerobic exercise in alleviating stress and promoting overall well-being in this demographic remains insufficiently explored. Anaerobic exercises, which are characterized by short bursts of intense activity, have shown promise in improving various components of physical fitness such as cardiovascular endurance, muscular strength, and flexibility. However, the direct relationship between such physical fitness interventions and their impact on the mental health and academic performance of secondary school students has not been fully established. This study seeks to investigate how anaerobic exercise influences stress levels and well-being among senior secondary school students, offering a closer look at the potential benefits of physical fitness in enhancing students' ability to cope with academic and personal challenges. The findings aim to contribute to a better understanding of how targeted physical activity can serve as an effective strategy for managing stress and improving students' overall health outcomes, providing valuable insights for educators, parents, and policymakers.

Keywords: Stress, Anaerobic Exercise, Physical Fitness, Secondary School Students, Well-being

Introduction

Stress is an uncomfortable feeling experienced by individuals that is too demanding and a threat to their well-being especially, when such demands exceed the personal and social resources the individuals are able to mobilize

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(American Psychological Association, 2020). These feelings called stressors cut across all ages. Students of senior secondary schools go through crowed events which involve studies and extracurricular activities that take a toll on their physical, emotional and academic performance. When these events take place, they become disorganized, disoriented and therefore less able to cope with their academic work. Students who experience such academic stressful life events often have worse health outcomes and reduced quality of life (APA, 2020).

Physical fitness, encompassing components such as cardiovascular endurance, muscular strength, flexibility, and body composition, plays a pivotal role in overall health. Engaging in anaerobic exercise, which involves short bursts of high-intensity activity, has been shown to have a positive impact on physical fitness levels. However, its specific influence on students' well-being in this particular demographic, within the context of their academic pursuits, remains underexplored (Godara, M., Silveira, S., Matthäus, H., and Singer, T., 2022).

Academic stress symptoms include but not limited to lack of energy, engaging in selfmedication, high blood pressure, feeling depressed, trouble concentrating and restlessness (Gong, Z., Wang, H., Zhong, M., and Shao, Y., 2023). A student experiencing any of these symptoms is likely to be a victim of stress. The negative effects of academic stress on students may vary from one student to another based on their previous encounters and coping strategies applied to debunk them.

Stressors for senior secondary school students are compounded because at this level of their development, they are fast developing the skills to deal with life stresses and are going through many physical, emotional and social changes. As they mature, they encounter crises, which may affect their academic, physical, social, emotional and psychological development (APA, 2019). Causes of academic stress include stress due to teachers, stress due to exams and test, stress due to peer, stress due to parental and social, stress due to time management and infrastructure, and stress due to self- 41 inflicted factors (Kuang, S., Wang, W., Yan, S., Wu, Y., Zhang, Y., Li, J.,2024). These can arise from different school-based sources of stress, such as school work, discipline and classroom management procedure, extracurricular activities, and public performance (Kuang et al., 2024).

The impacts of stress on students brings about poor academic performance, reduced initiative skills in tackling academic problems as well as creating confusion in their minds especially, when study schedules in schools appear challenging (Li, Y., and Guo, K., 2023). The act of combining a busy life along with education causes stress and depression. Limited stress is beneficial and can lead to excellent performance. However, uncontrolled stress can lead to exhaustion, depression and several other vices. Students often experience stress when examinations are around the corner, which is a litmus test for their ability to cope and adapt to the situation they find themselves in. Academic stress affecting students also leads them to have bad performance in school work due to lack of concentration (Li, Y., and Guo, K., 2023). In the long term, stress can even affect their future because it can generate a confused atmosphere of uncertainties for them. Under the influence of stress, most students easily forget what they have been taught. The ultimate effect is therefore, poor academic performance in schools (Schultchen, D., Reichenberger, J., Mittl, T., Weh, T. R. M., Smyth, J. M., Blechert, J., 2019).

Coping is the ability to appraise a stressful situation in order to regain balance and develop the power to conquer new challenges (Schultchen et al., 2019). In order to attain this level, it is necessary to set cognitive and behavioural efforts that would ensure that they are achieved and sustained. Students utilize many coping strategies such as diversion, smoking and drinking, relaxation, self-reliance, avoidance, praying, day dreaming, listening to

music. Coping strategies are known to influence an individuals' experience of stress. Students are being pressured frequently by a variety of factors which cause them to have stress in many ways (Sisay, T., 2021). For most students, managing stress can be extremely challenging. Learning how to manage stress may help students to cope with every day social and academic pressures, and thus have a better education. Coping strategies are labeled as either emotion-focused or problem-focused. Emotionfocused coping involves regulating emotional response to a stressor and reducing psychological discomfort, while problem-focused coping includes altering the situation to minimize or eliminate the source of the stressor (Zhang, Y., Hasibagen, and Zhang, C., 2022).

Interconnection Between Anaerobic Exercise and Academic Stress

The interconnection between anaerobic exercise and academic stress underscores the complex relationship between physical activity and psychological well-being among students. Understanding this interconnection is crucial for addressing both physical and mental health needs effectively.

1. **Physiological Benefits of Anaerobic Exercise:** Engaging in anaerobic exercise, such as highintensity interval training or weightlifting, stimulates the release of endorphins and neurotransmitters like dopamine and serotonin, which promote feelings of well-being and reduce stress (Craft & Perna, 2014). Regular anaerobic exercise also enhances cardiovascular health, increases muscle strength, and improves overall physical fitness.
2. **Stress Reduction through Physical Activity:** Anaerobic exercise serves as a powerful stressrelief tool, helping students manage academic stress more effectively (Zhang et al., 2022). Physical activity triggers the body's relaxation response, reducing cortisol levels and promoting a sense of calmness and relaxation.
3. **Enhancement of Cognitive Functioning:** Anaerobic exercise has been linked to improved cognitive functioning, including enhanced attention, memory, and problem-solving skills (Li, Y., and Guo, K. (2023). These cognitive benefits can help students better cope with academic demands and perform more effectively in their studies.
4. **Psychological Resilience and Coping Strategies:** Regular participation in anaerobic exercise fosters psychological resilience and adaptive coping strategies, which are essential for managing academic stress (Li, Y., and Guo, K. (2023). Exercise provides students with a healthy outlet for stress, helping them build confidence, self-efficacy, and emotional stability.
5. **Promotion of Overall Well-Being:** The combination of physiological, psychological, and cognitive benefits derived from anaerobic exercise contributes to students' overall well-being and academic success (Zou, Y., Liu, S., Guo, S., Zhao, Q., and Cai, Y., 2023)). By improving physical fitness, reducing stress, and enhancing cognitive function, anaerobic exercise empowers students to thrive academically and personally.

In conclusion, the interconnection between anaerobic exercise and academic stress highlights the profound impact of physical activity on students' physical health, mental well-being, and academic performance. By incorporating regular anaerobic exercise into their routines, students can effectively manage stress, enhance cognitive functioning, and promote overall well-being, ultimately optimizing their academic success.

In summary, coping with stress for students is a dynamic and ongoing process, aimed at survival and growth. Using various coping strategies whether healthy or unhealthy, the imbalance and disequilibrium is restored (Zou, Y et al., 2023). Despite the fact that Nigerian students endure hectic academic workloads, participating in a large amount of extra-curricular activities and faced stress from all aspects of their academic efforts, such as the

challenge of hostel accommodation, amongst others, there is still little research on their impacts on students' performance. Meanwhile, evidence abounds in literature that suggests that students do experience some degree of stress ranging from moderate stress to acute stress depending on the situation (Brown, T., Bourke-Taylor, H., Isbel, S., Gustafsson, L., McKinstry, C., & Logan, A., 2019). American Psychological Association (APA, 2019) in a study conducted in the United States reported that about 48% of the students studied experienced stress in school. However, in similar research conducted by the American College Health Association (ACHA), 34% of undergraduate students reported that stress negatively affected their academic performance, while 37% of students reported that stress did not affect their performance.

Overstress can have serious effects on people by causing difficulties and distress. Overstress brings different thoughts to the mind of students and their effects could be grievous (APA, 2020). For some students, the effects of this can be debilitating to the point that it could lead to use of substance and suicidal attempts in some extreme cases (Kuang et al., 2024). In light of these identified problems, this research aims to address these gaps in knowledge and understanding by conducting a comprehensive investigation into the relationship between anaerobic exercise, physical fitness, academic stress, and coping mechanisms, this study seeks to provide valuable insights that can inform the development of culturally sensitive interventions for the benefit of senior secondary students in Afijio L.G.A, Oyo State. **Objectives of the Study**

1. To examine the relationship between anaerobic exercise frequency and physical fitness levels among senior secondary students in Afijio L. G. A, Oyo State.
2. To examine the correlation between anaerobic exercise, physical fitness, academic stress and coping strategies.

Research Hypotheses

$H0_1$: There is no significant relationship between the frequency of anaerobic exercise and the physical fitness levels of senior secondary students in Afijio local government area, Oyo State.

$H0_2$: There is no correlation between anaerobic exercise, physical fitness level, academic stress and coping strategies employed by senior secondary students in Afijio Local Government Area of Oyo State.

Methodology

The study used description survey design, which consisted of all senior secondary students in Afijio Local Government Area (L.G.A) of Oyo State. A total of 200 respondent were selected using simple random techniques from the selected senior secondary from the study area. The completed questionnaire was analyzed using inferential statistic of matrix correlation will be used to conduct the analysis of the hypothesis at 0.05 alpha level of significant.

Results

HO_1: There will be no significant relationship between the frequency of anaerobic exercise and the physical fitness level of senior secondary school students in Afijio Local Government Area of Oyo State.

Correlation between two opinions of respondents on relationship between frequency of anaerobic exercise and physical

Correlations

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	ANAEROBIC	PHYSICAL FITNESS
ANAEROBIC	1	.787**
PHYSICAL FITNESS	.787 **	1

**. Correlation is significant at the 0.01 level (2-tailed).

It was revealed from the above table that a positive, significant relationship existed between the frequency of anaerobic exercise and the physical fitness levels ($r = 0.787$; $p<0.01$), implying that there is a level to which anaerobic exercise influence physical fitness level among students in secondary schools. This implies the ratio of anaerobic exercise prescribed or instructed to student is related to physical fitness level of students in secondary schools. The correlation implies that the extent to which anaerobic exercise is prescribed will positively influence the fitness level attained by student. This implies the ratio of anaerobic exercise prescribed or instructed to student is related to physical fitness level of students in secondary schools. An indication that the extent to which anaerobic exercise is prescribed will positively influence the fitness level attained by student that engages in such level of exercise exposure. This finding concurs with the reports of Goldfarb & Jamurtas, 2017 which states that significant improvements in both maximal strength and power output following a period of strength training, highlighting the efficacy of anaerobic exercise in enhancing muscular performance.

HO_2: There is no correlation between anaerobic exercise, physical fitness level, academic stress and coping strategies employed by senior secondary students in Afijio Local Government Area of Oyo State.

Correlation between four different opinions of respondents on relationship between anaerobic exercise, physical fitness, academic stress and coping strategies

CORRELATIONS

	ANAEROBIC EXERCISE	PHYSICAL FITNESS	ACADEMIC STRESS	COPING STRATEGIES	STRATEGIES
ANAEROBIC EXERCISE	1				
PHYSICAL FITNESS	.795**	1			
ACADEMIC STRESS	.731**	.837**	1		
COPING	.905**	.781**	.872**	1	

Correlation is significant at the 0.01 level (2-tailed).

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It was revealed that a positive, significant relationship existed between anaerobic exercise, physical fitness levels, academic stress and coping strategies towards the effect of various exercise ($r = 0.905, 0.781, 8.72, 1; p<0.01$), implying that significant relationship existed between physical fitness level of students when compared to the frequency level of anaerobic exercise given. Also, there is a significant correlation between the academic stress experienced by student with how anaerobic exercise influence the coping strategies employed to mitigate the effect of this stress. The findings indicated that anaerobic exercise influences students' ability to adopt coping strategies, fostering better academic performance and reducing stress levels in secondary schools. Anaerobic exercise served as a powerful stress-relief tool, aiding students in managing academic stress more effectively (Edwards, Loprinzi, & Kane, 2017). Physical activity triggered the body's relaxation response, lowering cortisol levels and promoting a sense of calmness and relaxation. Furthermore, anaerobic exercise was linked to improved cognitive functioning, including enhanced attention, memory, and problem-solving skills (Lambourne & Tomporowski, 2020). These cognitive benefits can help student's cope better with academic demands and perform more effectively in their studies. Regular participation in anaerobic exercise fosters psychological resilience and adaptive coping strategies, essential for managing academic stress, as reported by Stults-Kolehmainen & Sinha, 2014.

Conclusion

The study concluded that the results made it clear that anaerobic exercise significantly enhances physical fitness levels among senior secondary students in Afijio L. G. A, Oyo, Oyo
State. Additionally, engaging in anaerobic exercise plays a crucial role in managing academic stress and adopting effective coping strategies. Thus relationship between anaerobic exercise and stress management leads to better academic performance and reduced stress level. The findings highlight the importance of incorporating anaerobic exercise into students daily routines as a power tool for stress relief and cognitive enhancement. Regular participation in such physical activities not only promotes physical health but also fosters psychological resilience and adaptive coping mechanisms, which are essential for handling academic pressure. This study underscores the need for educational policies and programs that encourage physical activity among students to enhance overall well-being and academic success. The results align with existing research, emphasizing the benefits of exercise in Managing stress and improving cognitive function. Future research should continue to explore these connections to develop comprehensive strategies for supporting students health and academic achievements.

Recommendations

Based on the findings of the research, the following recommendations were made to support the well-being and academic success of senior secondary students in Afijio L. G. A, Oyo State:

- Schools should integrate regular anaerobic exercise programs into their curricula to enhance students' physical fitness and help manage academic stress.
- Schools should provide workshops and seminars focused on stress management techniques, emphasizing the role of physical activity in reducing stress levels and improving mental health.
- Educational policymakers should develop and implement policies that support the inclusion of physical education as a mandatory part of the school curriculum, ensuring that students have adequate opportunities for physical exercise.

- Schools should allocate resources to build or improve facilities for anaerobic exercises, such as gymnasiums and sports equipment, to provide students with necessary tools for physical activity
- Schools should engage with the broader community to promote awareness about the benefits of anaerobic exercise and to create a supportive environment for students both inside and outside the school setting.

References

American Psychological Association. (2020). Coping Strategy. American Psychological Association. Retrieved from https://dictionary.apa.org/coping-strategy American Psychological Association. (2020). Stress.

American Psychological Association. Retrieved from https://dictionary.apa.org/stress Bologna, C. (2019). The scary ways an all-nighter messes with your body and brain. HuffPost. Retrieved from https://www.huffpost.com/entry/what-happens-when-you-pull-anallnighter_l_5dd5b559e4b010f3f1d21d30

Brown, T., Bourke-Taylor, H., Isbel, S., Gustafsson, L., McKinstry, C., & Logan, A. (2019). Establishing similarities and differences among the self-reported academic integrity of Australian occupational therapy undergraduate and graduate-entry master's students. The Open Journal of Occupational Therapy. 7(3), 1-16. DOI: 10.15453/2168-6408.1558

Craft, L. L., & Perna, F. M. (2014). The benefits of exercise for the clinically depressed. Primary Care Companion to the Journal of Clinical Psychiatry, 6(3), 104–111.

Godara, M., Silveira, S., Matthäus, H., and Singer, T. (2022). The wither or thrive model of resilience: an integrative framework of dynamic vulnerability and resilience in the face of repeated stressors during the COVID-19 pandemic. Adv. Res. Sci. 3, 261–282. doi: 10.1007/s42844-022-00069-7

Gong, Z., Wang, H., Zhong, M., and Shao, Y. (2023). College students' learning stress, psychological resilience and learning burnout: status quo and coping strategies. BMC Psychiatry 23:389. doi: 10.1186/s12888-023-04783-z

Kuang, S., Wang, W., Yan, S., Wu, Y., Zhang, Y., Li, J., et al. (2024). Psychological resilience and depression among college students during the COVID-19 pandemic: the mediating role of self-forgiveness and the moderating role of isolation. Curr. Psychol. doi: 10.1007/s12144024-05701-6

Li, Y., and Guo, K. (2023). Research on the relationship between physical activity, sleep quality, psychological resilience, and social adaptation among Chinese college students: a crosssectional study. Front. Psychol. 14:1104897. doi: 10.3389/fpsyg.2023.1104897

Schultchen, D., Reichenberger, J., Mittl, T., Weh, T. R. M., Smyth, J. M., Blechert, J., et al.

(2019). Bidirectional relationship of stress and affect with physical activity and healthy eating. Br. J. Health Psychol. 24, 315–333. doi: 10.1111/bjhp.12355

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Sisay, T. (2021). Physical inactivity as a pandemic: daily activities and dietary practices. RMHP

14, 3287–3293. doi: 10.2147/RMHP.S317440

Zhang, Y., Hasibagen, and Zhang, C. (2022). The influence of social support on the physical

exercise behavior of college students: the mediating role of self-efficacy. Front. Psychol. 13:1037518. doi: 10.3389/fpsyg.2022.1037518

Zou, Y., Liu, S., Guo, S., Zhao, Q., and Cai, Y. (2023). Peer support and exercise adherence in

adolescents: the chain-mediated effects of self-efficacy and self-regulation. Children 10:401. doi: 10.3390/children10020401