

PREVALENCE OF ANXIETY, DEPRESSION, STRESS AND LEVEL OF PHYSICAL ACTIVITY IN UNDERGRADUATE STUDENTS IN PHYSICAL EDUCATION AT THE FEDERAL UNIVERSITY OF MARANHÃO

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ABSTRACT

Introduction: Mental health is essential for global well-being, recognized as a fundamental right by the WHO. This study explores the interconnection between physical activity and mental health, highlighting widely documented benefits in scientific literature. **Objective:** The study aims to assess the level of physical activity and the prevalence of depression, anxiety, and stress in first-year students of the Physical Education course at the Federal University of Maranhão, also considering the social stratification of participants. **Materials and Methods:** The research, approved by the Ethics Committee, involved 43 students. Instruments such as the International Physical Activity Questionnaire, Depression, Anxiety, and Stress Questionnaire, and a socioeconomic questionnaire were applied. Participants were in the second semester, completing their first year of undergraduate studies. **Results:** 76.74% of participants were classified as active or very active, indicating adequate engagement in physical activity. Regarding mental health, 68.18% of students exhibited normal or mild levels of anxiety, depression, and/or stress. Most participants fell into socioeconomic stratum C. **Conclusion:** It is concluded that physical activity represents an accessible and effective strategy for promoting mental health in the academic context. At the same time, it is essential that universities adopt integrated psychosocial care policies, strengthening the holistic development of students and fostering both academic performance and overall psychological well-being among undergraduate Physical Education students.

Key words: Physical Activity. Anxiety. Depression. Stress. College Students.

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RESUMO

Prevalence of anxiety, depression, stress and level of physical activity in undergraduate students in physical education at the Federal University of Maranhão

Introdução: A saúde mental é essencial para o bem-estar global, reconhecida como um direito fundamental pela OMS. Este estudo explora a interligação entre atividade física e saúde mental, destacando os benefícios amplamente documentados na literatura científica. **Objetivos:** O estudo visa avaliar o nível de atividade física e a prevalência de depressão, ansiedade e estresse em alunos de primeiro ano do curso de Educação Física na Universidade Federal do Maranhão, considerando também a estratificação social dos participantes. **Materiais e Métodos:** A pesquisa, aprovada pelo Comitê de Ética, envolveu 43 estudantes, sendo aplicados instrumentos como o IPAQ, DASS-21 and Stress Questionnaire e um questionário socioeconômico. Os participantes eram do segundo período, concluindo o primeiro ano de graduação. **Resultados:** 76,74% dos participantes foram classificados como ativos ou muito ativos, indicando uma adequada prática de atividade física. Quanto à saúde mental, 68,18% dos estudantes apresentaram níveis normais ou leves de ansiedade, depressão e/ou estresse. A maioria dos participantes se enquadrou no estrato socioeconômico C. **Conclusão:** Conclui-se que a atividade física se configura como uma estratégia acessível e efetiva para a promoção da saúde mental no contexto acadêmico. Ao mesmo tempo, torna-se imprescindível que universidades adotem políticas integradas de cuidado psicosocial, fortalecendo a formação integral dos estudantes e favorecendo tanto o desempenho acadêmico quanto o bem-estar geral, quanto do bem-estar psicológico entre estudantes universitários de Educação Física.

Palavras-chave: Atividade Física. Ansiedade. Depressão. Estresse. Universitários.

INTRODUCTION

The preservation of mental health is a fundamental component for the comprehensive well-being of each individual, considered a fundamental right for all, as highlighted by the World Health Organization (WHO, 2022).

A positive state of mental health allows individuals to face their daily activities with controlled stress levels, thus promoting improved quality of life and development in the personal, social, and economic spheres.

The experience of mental health reveals variations among individuals in a given context, being influenced by environmental factors that can impact mental state acutely or chronically, potentially resulting in mental disorders of varying degrees (WHO, 2022).

In this context, it becomes evident that mental health transcends the mere absence of disorders, encompassing how people cope with complex environmental interactions.

Mental disorders, considered disturbances that affect behavior, decision-making, cognition, and interpersonal and professional relationships, present varied psychological and physical effects, depending on the specific nature of the disorder in question (Caspi and Moffitt, 2018; Wittchen et al., 2022).

The Diagnostic and Statistical Manual of Mental Disorders highlights the existence of approximately 300 mental disorders, impacting a considerable portion of the world's population (Shapse, 2008; WHO, 2022).

Among the most prevalent mental disorders are depression, anxiety, and stress, whose incidence showed a significant increase during the pandemic, indiscriminately affecting people of all age groups, including university students (COVID-19 Mental Disorders, (Wells et al., 2021).

In the academic environment, some factors such as the academic routine with tight deadlines, high workloads and academic tasks, the relentless pursuit of good results, social and academic competition for internships and jobs, stigmas and social and family pressures, adaptations to new challenges, and access to mental health care can influence the mental health of students and hinder their performance and retention at the university.

However, despite these events that can be observed in universities, it is crucial to recognize in the scientific literature that the regular practice of physical activity plays a determining role in promoting mental health.

International guidelines highlight the benefits associated with physical activity, including increased self-esteem, general well-being, and reduced levels of stress, depression, and anxiety (Carneiro et al., 2018; Stubbs et al., 2018; Hallgren et al., 2017; Malhi et al., 2018; Schuch and Vancampfort, 2021). This interrelationship between physical activity and mental health is a significant dimension to be explored, offering additional perspectives on promoting psychological well-being.

Therefore, the main objective of this study was to verify the level of physical activity and the prevalence of depression, anxiety, and stress among first-year undergraduate students of the Physical Education course at the Federal University of Maranhão in São Luís. In addition, the social stratification of the students was verified in order to observe the prevalences from an economic perspective of the students.

MATERIALS AND METHODS

Ethical Considerations

This research was approved by the Research Ethics Committee with Human Beings of the Federal University of Maranhão under number CAAE 64678022.9.0000.5087 and opinion number 5.978.130. All participants were informed about the objectives of the research and signed the Informed Consent Form. The research was developed following the ethical principles of the Declaration of Helsinki and Brazilian legislation.

Sample

Forty-three students participated in this research, 14 female and 29 male, with a mean age of 22.32 ± 5.29 years. The sample was selected from the students' registration in the Integrated Academic Management System of the Federal University of Maranhão (SIGAA UFMA), and the selected students were those entering the Bachelor's degree in Physical Education at the São Luís Campus - Dom Delgado University City, who were regularly enrolled in mandatory curricular components of the second semester, that is, finishing the first year of their undergraduate studies.

Materials and Equipment

All participants were invited to answer the following instruments: The Brazilian version

of the International Physical Activity Questionnaire - Short Form (Matsudo et al., 2001); the Brazilian version of the Depression, Anxiety and Stress Questionnaire - 21 items (Vignola and Tucci, 2014) and the socioeconomic questionnaire of the Brazilian Association of Research Companies - ABEP (ABEP, 2021).

Respectively, the instruments aimed to verify and quantify the level of physical activity, the degrees of depression, anxiety and stress, and the socioeconomic stratification of the students.

Procedures

The questionnaires were adapted to an online version on the Google Forms © platform, and the students answered the questionnaires simultaneously. The data were collected in a Google Sheets © spreadsheet, processed, and statistically analyzed.

Statistical Analysis

GraphPad Prism 8® was used to perform the descriptive analyses. The data were presented in absolute and percentage values.

RESULTS

The prevalence of physical activity level, degree of depression, anxiety, stress, and socioeconomic classification will be presented in Tables 1, 2, 3, 4, and 5.

Table 1 - Physical Activity Level.

Classification	n	%
Sedentary	3	6.98
Insufficiently active	7	16.28
Active	4	9.30
Very Active	29	67.44
Total	43	100

Table 1 shows that 67.44% of the research participants were very physically active according to the International Physical Activity Questionnaire, while 4% were physically active, 7% were insufficiently physically active, and 3% did not reach significant levels of physical activity and were sedentary.

Table 2 - Prevalence of Anxiety according to its classification.

Classification	n	%
Normal/Mild	29	67.44
Minimal	1	2.33
Moderate	10	23.26
Severe	2	4.65
Very Severe	1	2.33
Total	43	100

Regarding the degrees of anxiety, the data showed that 67.44% of participants presented symptoms considered normal or mild according to the questionnaire applied. 23.26% presented moderate symptoms, 1% presented minimal symptoms, 2% presented severe symptoms, and 1% presented very severe symptoms.

Table 3 - Prevalence of Depression according to its classification.

Classification	n	%
Normal/Mild	27	62.79
Minimal	3	6.98
Moderate	10	23.26
Severe	3	6.98
Very Severe	0	0.00
Total	43	100

Regarding the degrees of depression, according to the questionnaire applied, 62.79% presented normal or mild symptoms, 23.26% presented moderate symptoms, minimal symptoms 1%, severe symptoms 1%, and no participant presented very severe symptoms of depression.

Table 4 - Prevalence of Stress according to its classification.

Classification	n	%
Normal/Mild	34	79.07
Minimal	5	11.63
Moderate	4	9.30
Severe	0	0.00
Very Severe	0	0.00
Total	43	100

In the "stress" domain of the applied questionnaire, 79.07% of participants presented symptoms classified as normal or mild, 9.30% presented moderate symptoms, 11.63% presented minimal symptoms, and no individuals with severe or very severe symptoms were found in the sample.

Table 5 - Socioeconomic Classification according to ABEP.

Classification	n	%
A	3	6.98
B1	3	6.98
B2	11	25.58
C1	10	23.26
C2	13	30.23
D/E	3	6.98
Total	43	100

Regarding socioeconomic classification, according to the questionnaire applied, it was noted that the largest portion of participants is in the C stratum, with 30.23% classified as C2 and 23.26% classified as C1. It was also found that 6.98% of participants fell into the lowest socioeconomic stratum - D/E.

The research also verified that 25.58% fell into the B2 stratum, 6.98% into the B1 stratum, and 6.98% into the highest socioeconomic stratum - A.

DISCUSSION

The results of this study indicate that most Physical Education students have satisfactory levels of physical activity, with 76.74% classified as active or very active. This high rate may be directly related to the practical nature of the course, which encourages engagement in physical activities from the first semesters.

This scenario is supported by previous studies: Luna Filho et al., (2015) also observed a high prevalence of physically active students in Physical Education courses, although they highlighted a tendency for a decrease in activity levels in the final periods of graduation, possibly due to the increase in theoretical demands. In contrast, Lopes et al., (2023), when analyzing Physiotherapy students, found a lower rate (59.4%), reinforcing the influence of the curriculum on adherence to physical practices.

Regarding mental health, it was observed that 68.18% of participants reported normal or mild levels of anxiety, depression, and stress. Although this percentage is lower than that recorded in other research with university students, about 30% of students reported symptoms to some degree-a fact that deserves attention. In Fortaleza, Leão et al., (2018) found higher prevalences of depression (28.6%) and anxiety (36.1%) among health science students, suggesting that regular

physical activity, common among Physical Education students, may act as a protective factor. However, even this group remains vulnerable to psychological distress.

National research reinforces this concern. Freitas et al., (2023) reported a high prevalence of symptoms of mental distress among health science students, highlighting its association with a worsening of quality of life.

Similarly, Leonardi et al., (2024), in a multicenter study conducted at Unifesp between 2017 and 2021, identified a worsening of mental distress during the COVID-19 pandemic, especially among women, transgender students, and people with disabilities. In this context, physical activity proved to be an important coping strategy in both periods analyzed.

Internationally, the findings follow the same line. Du and Liu (2022), in a systematic review, showed that physical exercise contributes not only to mental health, but also to cognitive and social improvements among students, functioning as an accessible and effective resource in the face of emotional challenges. In the United States, Hatton-Bowers et al., (2021) pointed out that internal factors, such as mindfulness and security in relationships, combined with healthy practices, can reduce depressive symptoms.

BlackDeer et al., (2021) demonstrated that anxiety and depression negatively impact academic performance, emphasizing the need for early and integrated interventions.

During the pandemic, the mental health of university students suffered a considerable impact.

Grineski et al., (2021) reported that more than 70% of American students involved in research presented symptoms of anxiety and depression during the period, with greater vulnerability among minorities and first-generation students.

Mauer et al., (2022) added that fear related to COVID-19 was strongly associated with anxiety, and that social support alone was not sufficient to mitigate this effect. These results are consistent with the present study by pointing out that, even in contexts favorable to physical activity, such as Physical Education, psychological vulnerability persists.

Another relevant aspect observed was the predominance of students belonging to socioeconomic class C. This condition may limit access to mental health services, therapies, and medications, making physical activity an

even more important and accessible alternative for promoting mental health. International research corroborates this relationship.

Han et al., (2025), when studying Chinese university students, identified a prevalence of 36.4% of subclinical anxiety, associated with factors such as gender, family health, and health literacy, pointing to the influence of cultural, economic, and contextual aspects on psychological distress.

Despite the contributions of this study, some limitations should be acknowledged. The sample was small ($n=43$) and restricted to a single undergraduate course, which compromises the generalizability of the findings. In addition, the data only refer to first-year students, making a longitudinal analysis of the impact of academic progression on mental health and physical activity levels impossible. Future research should expand the sample, include different courses and academic periods, and adopt longitudinal designs that allow monitoring the evolution of symptoms throughout the university trajectory.

In summary, the results reinforce the protective role of physical activity in the mental health of Physical Education students, but also highlight the significant presence of symptoms of anxiety, depression, and stress in this group. In this sense, the importance of institutional policies focused on psychosocial care, programs to encourage the practice of physical activity, and student retention strategies is emphasized.

Finally, there is a need for multicenter, national and international investigations to deepen the understanding of the factors that contribute to mental suffering and to support more effective and contextualized interventions.

CONCLUSION

This study showed that first-year Physical Education students had a high prevalence of physical activity, with most classified as active or very active, and predominantly normal or mild levels of anxiety, depression, and stress.

These results reinforce the hypothesis that the practical nature of Physical Education training acts as a protective factor for mental health, in line with national and international literature.

Despite the satisfactory findings, the identification of approximately one-third of the participants with some degree of psychological

distress highlights the need for institutional attention to the mental health of students.

Policies to promote psychological well-being, associated with programs to encourage physical activity and student retention strategies, are fundamental to mitigating risks and improving the quality of academic life.

It is concluded, therefore, that physical activity is an accessible and effective strategy for promoting mental health in the academic context.

At the same time, it is essential that universities adopt integrated psychosocial care policies, strengthening the comprehensive education of students and favoring both academic performance and general well-being.

REFERENCES

- 1-ABEP. Brazilian Association Of Research Companies. Changes in the application of the Brazil Criterion, valid from 01/06/2021. ABEP. 2021. Disponível em: https://www.abep.org/criterioBr/01_cceb_2021.pdf
- 2-Blackdeer, A.A.; Wold, D.A.P.S.; Maguin, E.; Beeler-Stinn, S. Depression and anxiety among college students: understanding the impact on grade average and differences in gender and ethnicity. *Journal of American College Health*. Vol. 70. Num. 6. 2021. p. 442-449. DOI: <https://doi.org/10.1080/07448481.2021.1920954>
- 3-Carneiro, L.F.; Mota, M.P.; Schuch, F.; Deslandes, A.; Vasconcelos Raposo, J. Portuguese and Brazilian guidelines for the treatment of depression: exercise as medicine. *Brazilian Journal of Psychiatry*. Vol. 40. Num. 2. 2018. p. 210-211.
- 4-Caspi, A.; Moffitt, T.E. All for one and one for all: Mental disorders in one dimension. *American Journal of Psychiatry*. Vol. 175. Num. 9. 2018. p. 831-844.
- 5-COVID-19 Mental Disorders Collaborators. Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *The Lancet*. Vol. 398. Num. 10312. 2021. p. 1700-1712. DOI: [10.1016/S0140-6736\(21\)02143-7](https://doi.org/10.1016/S0140-6736(21)02143-7)
- 6-Du, X.; Liu, Z. Influence of physical education on the mental health of college students.

Revista Brasileira de Medicina do Esporte. Vol. 28. Num. 4. 2022. p. 311-316.

7-Freitas, P.H.B.; Meireles, A.L.; Ribeiro, I.K.S.; Abreu, M.N.S.; Paula, W.; Cardoso, C.S. Symptoms of depression, anxiety and stress in health students and impact on quality of life. *Revista Latino-Americana de Enfermagem*. Vol. 31. 2023. p. 1-11. DOI: <https://doi.org/10.1590/1518-8345.6315.3885>

8-Grineski, S.E.; Morales, D.X.; Collins, T.W.; Nadybal, S.; Trego, S. Anxiety and depression among US college students engaging in undergraduate research during the COVID-19 pandemic. *Journal of American College Health*. Vol. 70. Num. 7. 2021. p. 1999-2008. DOI: <https://doi.org/10.1080/07448481.2021.2013237>

9-Hallgren, M.; Stubbs, B.; Vancampfort, D.; Lundin, A.; Jaakkallio, P.; Forsell, Y. Treatment guidelines for depression: Greater emphasis on physical activity is needed. *European Psychiatry*. Vol. 40. 2017. p. 1-3.

10-Han, X.; Zhao, S.; Ge, P.; Liu, Y.; Li, Q.; Wang, Y.; Cai, Q.; Pan, L.; Yu, Q.; Hong, W.; Iq, J.; Wu, Y. Subthreshold anxiety in Chinese college students: prevalence, gender differences, and correlates. *BMC Psychology*. Vol. 13. Num. 803. 2025. p. 1-12. DOI: <https://doi.org/10.1186/s40359-025-03084-2>

11-Hatton-Bowers, H.H.; Lombardi, C.M.; Kemp, B.; Decker, K.B.; Virmani, E.A.; Brophy-Herb, H.; Vallotton, C.D. Risks and resources for college students' mental health: ACEs, attachment, and mindfulness. *Journal of American College Health*. Vol. 70. Num. 8. 2021. p. 2403-2412. DOI: <https://doi.org/10.1080/07448481.2021.1942007>

12-Leão, A.M.; Gomes, I.P.; Ferreira, M.J. M.; Cavalcanti, L.P.G. Prevalence and factors associated with depression and anxiety among university students in the health field in a large urban center in Northeast Brazil. *Revista Brasileira de Educação Médica*. Vol. 42. Num. 4. 2018. p. 55-65.

13-Leonardi, F.G.; Andreazza, R.; Wagner, G.A. Factors associated with mental distress among undergraduate students in São Paulo between 2017-2021. *Avaliação*. Vol. 29. 2024.

p. 1-18. DOI: <https://doi.org/10.1590/1982-57652024v29id282843>

14-Lopes, S.L.; Silva, M.L.; Fernandes, E.V.; Cunha, K.C.; Gouvea, L.F. Pain, physical activity level and sedentary behavior in physiotherapy students. *Lecturas: Educación Física y Deportes*. Vol. 27. Num. 298. 2023. p. 102-124.

15-Luna Filho, E.B.; Silva, F.T.M.; Cruz Santos, A.; Nascimento, L.S.; Rabay, A.N.; Dantas, F.F.O.; Brasileiro-Santos, M.S. Level of physical activity in college students. *Manual Therapy, Posturology & Rehabilitation Journal*. Vol. 13. 2015. p. 1-6.

16-Malhi, G.S.; Bassett, D.; Boyce, P.; Bryant, R.; Fitzgerald, P.B.; Fritz, K.; Singh, A.B. Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for mood disorders. *Australian & New Zealand Journal of Psychiatry*. Vol. 49. Num. 12. 2018. p. 1087-1206.

17-Matsudo, S.; Araújo, T.; Matsudo, V.; Andrade, D.; Andrade, E.; Braggion, G. International Physical Activity Questionnaire (IPAQ): validity and reproducibility study in Brazil. *Revista Brasileira de Atividade Física & Saúde*. Vol. 6. Num. 2. 2001. p. 5-18.

18-Mauer, V.; Littleton, H.; Lim, S.; Sall, K.E.; Siller, L.; Edwards, K.M. Fear of COVID-19, anxiety, and social support among college students. *Journal of American College Health*. Vol. 70. Num. 8. 2022. p. 2285-2292. DOI: <https://doi.org/10.1080/07448481.2022.2053689>

19-Schuch, F.B.; Vancampfort, D. Physical activity, exercise, and mental disorders: it is time to move on. *Trends in Psychiatry and Psychotherapy*. Vol. 43. Num. 3. 2021. p. 177-184.

20-Shapse, S.N. *The diagnostic and statistical manual of mental disorders*. Washington: American Psychiatric Association. 2008.

21-Stubbs, B.; Vancampfort, D.; Hallgren, M.; Firth, J.; Veronese, N.; Solmi, M.; Kahl, K.G. EPA guidance on physical activity as a treatment for severe mental illness. *European Psychiatry*. Vol. 54. 2018. p. 124-144.

22-Vignola, R.C.B.; Tucci, A.M. Adaptation and validation of the depression, anxiety, and stress scale (DASS) to Brazilian Portuguese. *Journal of Affective Disorders*. Vol. 155. 2014. p. 104-109.

23-Wells, C.R.; Townsend, J.P.; Pandey, A.; Moghadas, S.M.; Krieger, G.; Singer, B.; Galvani, A.P. Optimal COVID-19 quarantine and testing strategies. *Nature Communications*. Vol. 12. Num. 1. 2021. p. 1-10.

24-Wittchen, H.U.; Mühlig, S.; Beesdo, K. Mental disorders in primary care. *Dialogues in Clinical Neuroscience*. Vol. 24. Num. 1. 2022. p. 77-88.

25-WHO. World Health Organization. Mental health: strengthening our response. Geneva: WHO. 2022. Disponível em: <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>

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