

Review Article

Relationship between the practice of extracurricular activities and academic performance in medicine

Relação entre a prática de atividades extracurriculares e o desempenho acadêmico na medicina

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ABSTRACT

To investigate the relationship between the practice of extracurricular activities and the academic performance of medical students. An integrative literature review was conducted focusing on medical students from different countries and educational contexts. Observational and analytical studies that examined the impact of extracurricular activities on mental health and academic performance were obtained from the PubMed, SciELO, CAPES Journal Portal, and LILACS databases. Participation in extracurricular activities is associated with better academic performance, adaptation to the university environment, and the development of personal and professional skills. However, excessive involvement can generate emotional overload and harm students' well-being. It is essential to maintain a balance between curricular and extracurricular activities to promote the comprehensive development and mental health of medical students.

RESUMO

Investigar a relação entre a prática de atividades extracurriculares e o desempenho acadêmico dos estudantes de medicina. Foi realizada uma revisão integrativa da literatura com foco nos estudantes de medicina de diferentes países e contextos educacionais. Os estudos observacionais e analíticos que examinaram o impacto das atividades extracurriculares na saúde mental e desempenho acadêmico foram obtidos por meio das bases de dados PubMed, SciELO, Portal de Periódicos CAPES, e LILACS. A participação em atividades extracurriculares está associada ao melhor desempenho acadêmico, adaptação ao ambiente universitário e desenvolvimento de habilidades pessoais e profissionais. No entanto, o envolvimento excessivo pode gerar sobrecarga emocional e prejudicar o bem-estar dos estudantes. É essencial manter um equilíbrio entre atividades curriculares e extracurriculares para promover o desenvolvimento integral e a saúde mental dos estudantes de medicina.

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INTRODUCTION

The university environment fosters the development of autonomy and independence

in various aspects, particularly reflecting on teaching and learning. In this context, medical students acquire skills that contribute to improved performance and learning, taking into



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account their particularities¹. However, as various challenges arise throughout the undergraduate process and, especially, in students' lives, some factors tend to enhance this development, autonomy, and academic skills². Moreover, the opposite may also occur: there are several causes that lead to a decline in the academic performance of medical students, potentially compromising their quality of life³.

Additionally, sleep deprivation and stress caused by university pressure are concerns raised by students, indicating a lack of organization and time management. With a structured study schedule, students could allocate specific moments for leisure or rest⁴. However, in the reality of inadequate time management, there is evidence that dedicating part of their study and free time to extracurricular activities may serve as a relief from accumulated stress and emotional exhaustion, ultimately influencing the improvement of medical students' academic performance².

On the other hand, engaging in multiple extracurricular activities can be detrimental to students, as they may become overwhelmed both within and outside the curriculum. What was initially intended as a leisure activity may turn into yet another source of concern and emotional instability. Therefore, it is crucial to understand the relationship between engaging in extracurricular activities and its impact on medical students' academic performance.

On the other hand, engaging in multiple extracurricular activities can be detrimental to students, as they may become overwhelmed both within and outside the academic curriculum. What was initially intended as a leisure activity may turn into yet another source of concern and emotional destabilization. Therefore, it is essential to understand the relationship between participating in extracurricular activities and its impact on the academic performance of medical students.

In medical education, extracurricular activities are defined as any social, philanthropic,

non-mandatory, and unpaid activities. These activities foster interactions between students and the community, offering health-care services and creating learning opportunities. The rationale for this study is based on the growing demand for a deeper understanding of how extracurricular activities can contribute, both positively and negatively, to the academic performance and mental health of medical students.

MATERIALS AND METHODS

This study is characterized as an integrative literature review, in which empirical and theoretical data are combined through methodological analyses of studies on a specific topic, along with a discussion of the results obtained. This type of review allows for the identification of gaps in the investigated field. The following steps were followed in conducting this review: identification and definition of the topic, selection of the objective and guiding question, search in electronic databases according to inclusion and exclusion criteria, selection of reviewed articles, and evaluation and discussion of the obtained results.

The hypothesis tested in this study was that participation in extracurricular activities can either enhance medical students' academic performance or lead to emotional overload, depending on the level of involvement in such activities. Thus, the guiding question of this study was: "Does participation in extracurricular activities affect the academic performance of medical students?"

In order to address this question, the Health Sciences Descriptors (DeCS) "student health" and "quality of life" were used, along with the terms "extracurricular activity" and "medical student", combined with the Boolean operator (AND). The search strategy adopted was as follows: "Extracurricular"[All Fields] AND ("activable"[All Fields] OR "activate"[All

Fields] OR "activated"[All Fields] OR "activates"[All Fields] OR "activating"[All Fields] OR "activation"[All Fields] OR "activations"[All Fields] OR "activator"[All Fields] OR "activators"[All Fields] OR "active"[All Fields] OR "activated"[All Fields] OR "actively"[All Fields] OR "actives"[All Fields] OR "activities"[All Fields] OR "activity s"[All Fields] OR "activitys"[All Fields] OR "motor activity"[MeSH Terms] OR ("motor"[All Fields] AND "activity"[All Fields]) OR "motor activity"[All Fields] OR "activity"[All Fields]) AND ("students, medical"[MeSH Terms] OR ("students"[All Fields] AND "medical"[All Fields]) OR "medical students"[All Fields] OR ("medical"[All Fields] AND "students"[All Fields])) AND ("quality of life"[MeSH Terms] OR ("quality"[All Fields] AND "life"[All Fields]) OR "quality of life"[All Fields]).

The searches were conducted in the following databases: National Library of Medicine and National Institutes of Health (PubMed), Scientific Electronic Library Online (SciELO), CAPES Journal Portal, and Latin American and Caribbean Literature in Health Sciences (LILACS). The searches were performed using terms in Portuguese, English, or Spanish, without restrictions on the publication date, and were conducted between May and June 2024.

The inclusion criteria encompassed: original studies conducted with medical students, freely available full-text articles, reviews of all types, monographs, dissertations, and theses that specifically addressed the topic. The exclusion criteria included duplicate articles, case reports, commentaries, letters to the editor, and studies unrelated to the proposed theme.

The selection of articles was initially based on reading the title and abstract. Subsequently, a full reading of the pre-selected articles was conducted. A qualitative analysis of the studies was performed, and relevant data were extracted from the selected articles, with an emphasis on variables related to academic performance

and students' mental health. During this analysis, patterns of overload and their consequences for students were identified.

A total of 185 publications were retrieved, of which 170 were excluded based on the defined criteria. Consequently, 15 articles were selected that met the requirements established in the study selection and analysis protocol. The selection and exclusion process is detailed in **Figure 1**.

RESULTS AND DISCUSSION

The **Table 1** presents the 15 articles included in this review, summarizing the main findings regarding the relationship between participation in extracurricular activities and the academic performance of medical students. Each study provides valuable insights into how extracurricular activities influence students' adaptation, academic performance, quality of life, and professional development.

The reviewed articles highlight a positive relationship between participation in extracurricular activities and the academic performance of medical students. This topic is widely discussed in the educational field and is considered essential for medical training. Extracurricular activities, such as internships, research projects, volunteer groups, extension initiatives, sports, and cultural activities, can have a significant impact on the holistic development of students, thereby reflecting on their academic performance¹⁷.

Medical students generally exhibit a strong tendency to engage in extracurricular activities. Studies indicate that students involved in activities beyond the mandatory curriculum demonstrate better adaptation to the academic environment and higher performance in assessments²⁻⁶. These activities contribute not only to academic development but also to mental health, providing students with opportunities to alleviate stress and improve their quality of life.

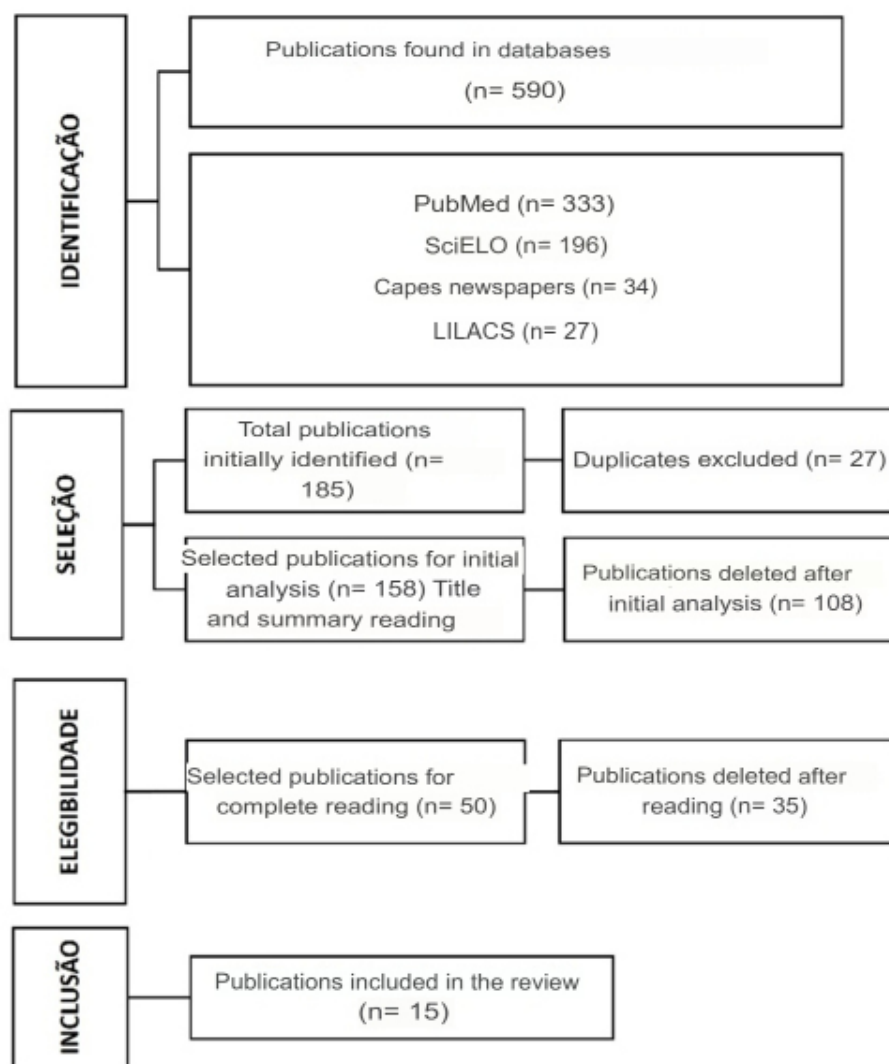


Figure 1. Flowchart of the article selection process from the databases.

Medical school has an extensive academic workload, including numerous classes, medical skills training, and frequent assessments, which occupy almost the entirety of students' time. Despite this, many students dedicate time and effort to extracurricular activities. According to studies on the subject, more than 60% of medical students participate in extracurricular activities, spending an average of 9.8 hours per week on these activities¹⁷.

Participation in extracurricular activities enables the development of interpersonal and teamwork skills while also expanding network-

ing opportunities, allowing students to connect with healthcare professionals and peers with similar interests. This fosters mentorship opportunities, internships, and future positions in the job market. Engaging in challenging activities, such as collaborating with a non-governmental organization (NGO) or leading a study group, promotes personal growth and enhances leadership, organizational, and problem-solving skills. These experiences can be highly valued in future job interviews.

These findings suggest that investing in extracurricular activities can be an effective

Table 1. Conclusions drawn from the articles analyzed in this integrative review, presented in chronological order.

AUTHOR	CONCLUSIONS
Almeida e Nogueira ²	Students who participate in extracurricular activities demonstrate better adaptation and academic performance. Extracurricular activities contribute to the development of social and academic skills.
Monteiro et al. ¹	Diverse study methods, including extracurricular activities, can optimize academic performance. Students who adopt varied study methods achieve better academic results.
Peres et al. ⁷	Participation in Academic Leagues was the most frequently reported activity among students, with "getting closer to medical practice" being the main reason cited in this context. Extracurricular activities, such as sports practice, help mitigate sources of stress related to the course. However, it is essential to find a balance in medical education, reconciling studies with extracurricular activities to promote students' personal development.
Pereira et al. ⁸	Students reported a lack of guidance on effective extracurricular activities to achieve professional goals, as well as the need for greater integration between incoming and graduating students to share experiences and career strategies. Universities need to adapt their approaches to market demands by promoting career planning and the development of critical and reflective skills.
Oliveira et al. ⁹	Extracurricular activities are positively associated with the academic productivity of medical students. Those engaged in activities such as sports, music, or volunteering demonstrate better performance in time management and interpersonal skills. These activities foster the holistic development of students, extending beyond theoretical learning, while also contributing to improved mental health, reinforcing the importance of balancing academic and personal demands. Despite these benefits, the study highlights the need for balance to prevent overload. The findings align with existing literature but emphasize specific nuances in the medical field, such as the role of stress and the demands of the curriculum. Additionally, the study suggests institutional strategies to support students in reconciling external activities with academic obligations.
Silva e Ehrenberg ¹⁰	Extracurricular practices, such as cultural acquisition and parental influence, enhance academic performance by developing students' cognitive, social, and motor skills. Both higher education institutions and public policies should promote access to these practices to reduce educational inequalities; however, socioeconomic barriers still limit this equity.
Anversa et al. ⁵	The quality of life of students significantly improved with participation in extracurricular activities. It is essential to balance academic and extracurricular activities to promote students' overall well-being.
Cruz et al. ¹¹	The majority of activities undertaken by students consisted of participation in scientific events. It was observed that cultural and sports activities are not fully utilized by the Medical School. The most sought-after extracurricular internships were in the field of Emergency and Urgent Care. On average, nearly one article was published per student, with Pediatrics being the field with the highest number of publications. Additionally, a significant disparity was found between the workload reported by students and the workload effectively recognized by the Medical School. Given this, there is a need to revise the Medical Course Complementary Activities Regulations to better contribute to medical education.
Bastos Neto e Campos ¹²	Regarding students' quality of life, being enrolled in a full-time course is a contributing factor to physical inactivity. Sedentarism affects medical students, with factors such as lack of time and high academic workload hindering regular exercise practice. It is recommended that universities provide greater support to encourage healthy habits among medical students, such as engaging in sports, which contribute to both academic performance and improved quality of life.

Dinis et al. ¹³	The high incidence of burnout among medical students has been observed, with factors such as perfectionism and the demands of the medical profession highlighted as primary causes. Participation in extracurricular activities has been associated with a lower frequency of burnout, especially when performed regularly. The inclusion of these activities in the curriculum is recommended, as they serve as coping mechanisms, effectively reducing burnout and improving students' quality of life. Progression through medical school is linked to a higher prevalence of burnout, particularly in the final year. In this context, it is essential to implement support programs to enhance students' mental health and well-being.
Pires et al. ³	The quality of life of medical students varies throughout their academic journey, with periods of higher and lower stress. Extracurricular activities are recommended as a strategy to improve quality of life and reduce stress during this academic period.
Machado et al. ¹⁴	Students who participated in the university percussion band until the third year of medical school demonstrated good academic performance. Regular dedication to musical activities did not significantly influence the overall grade average between groups, suggesting that this practice neither enhances nor hinders academic achievement. Moreover, it may provide other implicit benefits that are important for professional development.
Achar Fujii et al. ¹⁵	Students were motivated to participate in community-based extracurricular activities, contributing to society. This participation supported their career choices, facilitated knowledge integration, provided life experience, and helped develop communication and leadership skills. Additionally, it enhanced their ability to work in teams and fostered greater responsibility, empathy, and resilience. However, barriers to participation included the limited number of available spots, selection criteria, lack of support from stakeholders, personal issues, poor time management, the risk of reduced academic performance, and insufficient physical and financial resources. This experience contributes to curriculum improvement and helps develop essential skills and attitudes such as leadership, commitment, and responsibility. To maximize the benefits of these activities, educational institutions should support students by ensuring they have the time and opportunity to participate without overburdening their physical and mental efforts, which was one of the barriers identified by students.
Mukesh et al. ¹⁶	Atividades extracurriculares reduzem o estresse, melhoram o bem-estar e favorecem o desempenho acadêmico dos estudantes. Dessa forma, devem ser integradas aos currículos, pois contribuem significativamente para o aprimoramento tanto do bem-estar quanto do desempenho acadêmico.
Oliveira et al. ⁴	The most prevalent extracurricular activities were academic leagues, extension projects, and tutoring programs, all aimed at expanding practices and learning beyond the curriculum. However, the study observed that these activities had the highest rates of students in academic remediation. Although academic leagues and tutoring programs provide both practical and theoretical learning, they may also contribute to overload and academic difficulties. Problem-Based Learning (PBL) was found to be particularly challenging due to its high demands on time and energy, exacerbating mental distress. When well-managed, extracurricular activities can help balance academic strain, but further studies are needed to consider economic, demographic, and physical factors.

strategy for improving academic performance. The connection with out-of-classroom experiences, such as hospital internships or community health programs, provides a practical context for theoretical learning, making study more engaging and relevant. Moreover, motivation and engagement can be strengthened

through extracurricular activities, broadening students' knowledge²⁰⁻²². This connection leads to increased interest in subjects and, consequently, improved academic performance.

Furthermore, extracurricular activities significantly contribute to students' quality of life and well-being by reducing stress levels

and improving mental health⁵⁻⁶. Other activities are essential in medical education, as they serve as an outlet for the stress and exhaustion caused by an academically demanding environment, such as medical school. Additionally, these activities provide opportunities to build meaningful relationships with peers and enhance self-esteem^{17,19,22}.

Medicine is a profession that requires constant interaction with patients, families, and healthcare professionals. Therefore, extracurricular activities provide a space to practice and refine these skills. The development of interpersonal and professional skills is linked to acquiring competencies such as communication, empathy, and leadership, which can positively impact academic performance, as medical assessments often include practical and interpersonal components^{18,22}.

It is important to highlight that these essential skills, including social competencies, leadership, and time management, are not fully covered in the traditional curriculum²⁰⁻²². The complementarity between formal learning and extracurricular experiences is fundamental for a more comprehensive and effective medical education¹⁹.

Extracurricular activities foster both personal and professional development, and students who successfully balance their studies with these activities tend to enhance their organization and planning skills—critical for such a demanding course as medicine. Furthermore, involvement in activities outside the core curriculum promotes time management and self-discipline, essential competencies for a medical career¹²⁻¹⁴. The ability to manage time effectively significantly contributes to superior academic performance, as it enables students to meet deadlines and adequately prepare for assessments.

Additionally, students who participate in extracurricular activities frequently report a greater sense of belonging and engagement within the academic community. Participation

in projects, whether research or extension programs in interdisciplinary fields, allows students to apply their knowledge of social sciences, ethics, and humanities, broadening their understanding of the multiple dimensions of health in medical practice. This, in turn, enhances motivation and commitment to their education^{15,16,23}.

It is also important to consider that participation in simulations, academic sports or cultural competitions, or discussion groups about ethics in medicine can prepare students for the challenges they will encounter in medical practice, assisting them in developing critical thinking and problem-solving skills^{3,4}. Thus, engaging in extracurricular activities that promote mental health, such as sports or hobbies, dance, arts, and cultural activities, helps balance the pressure and stress associated with medical school^{10,11}.

Although extracurricular activities may offer several benefits, there are also certain negative aspects and challenges associated with student participation. Medical education is already extremely demanding in terms of workload and volume of content. When extracurricular activities become excessive, there is a risk of overload, which can lead to increased stress and decreased academic performance. Furthermore, such an excess of commitments can emotionally destabilize students, compromising their mental health and, consequently, their performance in academic activities^{1,3,5}.

Practicing “common sense” between academic studies and extracurricular activities can be challenging for medical students. Students unable to balance their responsibilities may neglect their studies, resulting in lower grades^{6,12,16}. Devoting a significant amount of time to extracurricular activities can heighten feelings of fatigue and reduce energy available for learning, thereby negatively impacting performance in tests and assessments. Therefore, adequate planning and balanced integration of these activities into daily routines can

maximize benefits, promoting both academic success and mental health^{3,4}.

Additionally, excessive participation in extracurricular activities can divert attention from academic studies, negatively affecting grades and academic performance. This is particularly concerning in a rigorous field like medicine, where cumulative knowledge is essential. Conflicts may arise between class schedules, academic responsibilities, and extracurricular activities, hindering participation in all desired areas and leading to commitments that may negatively influence academic performance^{19,21}.

An overload of activities can reduce free time, directly impacting students' personal relationships and social life, potentially leading to feelings of isolation and additional stress. The combination of academic studies, practical activities during internships, and participation in extracurricular activities may result in physical and mental fatigue. This exhaustion not only affects academic performance but also compromises the student's health and overall well-being^{3,4,12,13,20}.

Some students might feel pressured to participate in activities due to peer influence or prevailing academic culture, causing them to commit beyond their true capabilities or interests. This involvement may include activities not directly related to medicine or that do not contribute significantly to their professional development, resulting in dispersed efforts and time that could otherwise be better invested in more relevant experiences^{21,22}.

When extracurricular activities cease to be a source of learning, leisure, or pleasure, and instead become just another obligation, student engagement may become superficial, impairing genuine development of skills and knowledge. If students do not find satisfaction or perceive that these activities do not add value to their education, this may lead to demotivation and frustration regarding their academic experience^{6,13,14}.

Although extracurricular activities can offer numerous benefits, it is crucial that students choose those activities best aligned with their interests and professional objectives. A balanced management between extracurricular activities and academic responsibilities is essential. Making conscious decisions about how and when to engage, prioritizing experiences that truly contribute to personal and professional development without compromising mental health or academic performance, is of utmost importance.

The analyzed studies demonstrate that participation in extracurricular activities significantly impacts the academic performance and well-being of medical students. The relationship between academic performance during medical training and participation in extracurricular activities is a complex and multifaceted issue, varying according to context and individual differences. Some students may thrive when engaging in multiple activities, while others may find this stressful or challenging.

Indeed, medical training is notoriously stressful, and activities promoting leisure and relaxation may serve as a counterbalance to the intense academic workload. A positive mental state, combined with strong emotional support, enhances students' learning capacity and academic performance, in addition to fostering interpersonal skills, effective time management, personal motivation, and overall well-being. However, the effectiveness of these activities depends on how they are selected and integrated into the academic experience.

The quality, quantity, and relevance of extracurricular activities are crucial aspects to ensure that these positively contribute to students' education. When properly managed and carefully selected, such activities have the potential to significantly enrich the academic and professional training of future physicians, preparing them for a successful and rewarding career in healthcare. It is essential that stu-

dents achieve a balance allowing them to take advantage of extracurricular opportunities without compromising their focus on academic responsibilities.

Therefore, educational institutions should provide support and guidance to students, assisting them in choosing activities that complement their learning without adversely affecting their academic obligations, ensuring that these benefits are maximized without compromising well-being. The key lies in finding a healthy balance that favors the comprehensive development of students, benefiting both their academic formation and future professional practice.

AUTHOR CONTRIBUTIONS:

CMT was responsible for the conception and design of the study, data analysis, and manuscript writing. LNRR conducted data collection, statistical analysis, and critical revision of the manuscript. PATS provided technical support, conducted the literature review, and performed the final text revision. JTA performed the final text revision. All authors read and approved the final version of the manuscript and agree to take responsibility for its content.

CONFLICTS OF INTEREST

We confirm that there are no known conflicts of interest associated with this publication and that there was no significant financial support for this work that could have influenced its results.

STATEMENT ON THE USE OF GENERATIVE AI

The authors declare that generative artificial intelligence tools (such as ChatGPT, Grammarly, Deepseek, etc.) were not used in the preparation of the manuscript. However, the editorial board made the decision to utilize ChatGPT, an AI language model developed by OpenAI, for the translation of this manu-

script from the original language, Portuguese, to English.

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