

ИССЛЕДОВАНИЕ ВЛИЯНИЯ ФИЗИЧЕСКИХ УПРАЖНЕНИЙ НА ПСИХИЧЕСКОЕ ЗДОРОВЬЕ И УСПЕВАЕМОСТЬ СТУДЕНТОВ

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Аннотация. В статье рассматривается влияния физических упражнений на психическое здоровье студентов. Отражена тесная взаимосвязь физических упражнений с успеваемостью. Доказано, что регулярные физические упражнения значительно улучшают самоконтроль студентов, повышают их психологическое благополучие и смягчают депрессивные тенденции и чувство истощения.

Ключевые слова: студенты, физические упражнения, психическое здоровье, успеваемость, зависимость «доза-эффект».

RESEARCH ON THE IMPACT OF PHYSICAL EXERCISE ON STUDENTS' MENTAL HEALTH AND ACADEMIC PERFORMANCE

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Abstract. This article examines the impact of physical exercise on students' mental health. A close relationship between physical exercise and academic performance is demonstrated. Regular physical exercise has been shown to significantly improve students' self-control, enhance their psychological well-being, and mitigate depressive tendencies and feelings of exhaustion.

Keywords: students, physical exercise, mental health, academic performance, dose-response relationship.

Introduction. Against the backdrop of high-quality development of higher education and the in-depth promotion of the «five aspects of education» (moral, intellectual, physical, aesthetic, and labor education), college students' mental health and academic performance have become core indicators for measuring the effectiveness of higher education. A 2024 report from the Institute of Psychology, Chinese Academy of Sciences, pointed out that the risk of depression among young people aged 18-24 ranks first among all age groups. Increased exercise frequency can significantly reduce the risk of depression, and a single exercise session of 20 minutes or more can produce meaningful mental health benefits [1]. In 2023, the Ministry of Education and seventeen other departments incorporated sports and mental health education into the national strategy, clearly requiring that sports play an important role in regulating emotions and relieving stress. Existing research shows that physical exercise is closely related to the academic performance of adolescents and can improve learning behavior by enhancing self-control [2]. At the same time, different types of sports have different effects on the cognition and psychological function of students [3]. From the perspective of school-based practice, Donghua University students face severe challenges in

their physical and mental development: the number of students with serious psychological crises continues to rise, the physical fitness failure rate is about 30,0 %, and psychological problems and academic difficulties form a vicious cycle of «physical and mental distress». Although the demand for school mental health services remains high, existing sports interventions are mostly «one-size-fits-all» models, lacking a systematic consideration of the linkage mechanism between «sports and mental health», the path of action between «sports and learning engagement», and the «dosage-effect» of exercise volume, making it difficult to achieve precise education. Existing research mostly focuses on single-variable associations, lacking school-based empirical data on key issues such as group differences in the impact of sports on mental health, the chain-mediated path of sports on learning engagement, the dose-effect relationship, and the specificity of sports teams in universities. Therefore, systematically exploring the above core issues in a logically progressive order is of great practical urgency for solving students' physical and mental distress and improving the effectiveness of education.

This study aims to explore the relationship between physical exercise and college students' mental health and learning engagement, as well as the differences among groups.

Methods and organization of the study. This study included undergraduate students and members of the sports teams at Donghua University. For undergraduate students, 2403 valid samples were obtained through stratified proportional random sampling, and the sample structure was consistent with the overall university population. For the sports teams, 10 registered athletes from 10 sports were selected. This study employed a combination of methods, including literature review, questionnaire survey, data collection and processing, and statistical analysis.

Research results and their discussion. Thus, the correlation between physical exercise and mental health and the specifics of each sport are as follows: 1. For ordinary students, regular exercise can significantly improve self-control, improve mental state, and effectively alleviate negative states such as mental fatigue and low mood. The effects vary significantly depending on academic level. Graduate students, facing multiple pressures such as research tasks and career planning, experience a faster depletion of their mental resources, making the effects of exercise on mental well-being relatively weaker than those on undergraduates. 2. For members of sports teams, the psychological state of all 10 sports surveyed showed positive improvement, with an overall improvement rate ranging from 18,2 % to 45,5 %. Darts and orienteering showed the most significant improvement. Different sports had different focuses in terms of psychological benefits, which can be summarized into three stable and distinctive psychological improvement patterns: focused immersion, social support, and self-challenge. The chain-mediation effect of physical exercise on learning engagement undergraduate students showed a significant positive correlation between physical activity and academic engagement ($r=0,09$), while this correlation did not reach a significant level for graduate students. Further analysis revealed that physical activity does not directly increase academic engagement, but rather indirectly promotes it through a chain of «self-

control — psychological qualities». Undergraduates can form a complete virtuous cycle where exercise improves self-discipline, self-discipline stabilizes mindset, and mindset drives academic engagement. However, graduate students, burdened by multiple pressures, find it difficult to translate improved mindset into learning motivation, and can only rely on self-control as a single pathway to support their studies. There is a clear dose — response relationship between physical exercise and mental health and academic engagement. Undergraduates showed the best overall effect with moderate exercise ($p < 0,001$), performing best in psychological state, emotion regulation, and academic engagement, and were able to achieve a better balance among exercise, psychology, and learning. Graduate students showed a significant difference only in self-control ($p < 0,01$), with high-intensity exercise being more suitable for their high-pressure academic life and effectively improving self-discipline and resistance to interference.

In summary, the positive effects of physical exercise on college students' mental health and academic engagement are moderated by group characteristics, type of exercise, and level of exercise intensity.

Conclusion. This study confirms that regular physical exercise can effectively improve the mental health and learning engagement of students. The effects are influenced by academic level, type of sport, and intensity. Specifically: First, regular exercise improves the mental health of students, with differences in effectiveness between undergraduates and graduate students. Different sports in university sports teams offer varying degrees of psychological benefits, with darts and orienteering showing particularly significant improvements. Second, physical exercise indirectly promotes learning engagement by enhancing self-discipline and improving mental state. Undergraduates can achieve a virtuous cycle, while graduate students can only benefit from the improved self-control through exercise. Third, there is a significant dose-response relationship between physical exercise and the mental health and learning engagement of students. Moderate exercise is optimal for undergraduates, while high-intensity exercise is more suitable for graduate students. Therefore, sports interventions in universities need to be implemented in a tiered and categorized manner.

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