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A Study on the Correlation Between College Students' Participation in Physical Exercise and Their Mental Health Levels—A Case Study of the School of Foreign Languages at Panzhihua University

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Abstract: *In the context of the widespread expansion of higher education and the escalating intensity of competition, college students are encountering a range of psychological challenges. This study targets non-physical education majors and, through standardized scale measurements, seeks to explore the potential relationships between the degree of participation in physical exercise (in terms of frequency, intensity, and duration) and the key dimensions of mental health, utilizing comparative and integrative analytical methods.*
Keywords: *college students, participation in physical exercise, mental health levels, correlation*

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I Research Background:

Amid the widespread expansion of higher education and the intensifying competitive landscape, the college student population is confronted with a range of psychological challenges. According to the 2025 *Blue Book on the Mental Health of Chinese College Students*, 28.7% of undergraduates exhibit symptoms of anxiety, while the prevalence rate of depression stands at 19.3%. Medical students, engineering students, and graduating cohorts are identified as high-risk groups. Concurrently, physical activity levels among college students have declined markedly: data from the Ministry of Education's physical fitness assessments indicate that in 2024, only 76.2% of students met the physical fitness standard—an 8.5 percentage point decrease compared with five years earlier—while their average daily sedentary time reached a concerning 9.4 hours. This paradoxical combination of an "increased psychological burden" alongside a "decline in physical activity" highlights the urgent need to investigate the mechanisms linking the two.

As a mental health intervention, physical exercise research has progressed beyond the traditional behavioral perspective in exploring mechanisms of action. Neuroscientific evidence indicates that moderate-intensity exercise can enhance hippocampal neuroplasticity via the brain-derived neurotrophic factor (BDNF) pathway, while the oxytocin release induced by team-based sports can effectively reduce social anxiety. At the policy level, the *Healthy China 2030* blueprint explicitly calls for universities to establish integrated "sports-and-education" intervention frameworks, and the Ministry of Education's *Opinions on Comprehensively Strengthening and Improving School Physical Education in the New Era* even designates "cultivating the mind through sports" as a core objective.

1.1 Current Status of Domestic Research

The research achievements in psychology by 20th-century scholar Freud were introduced into China, and Chinese scholars gradually began to study and explore psychological issues. Psychological health has always been a focal point of research in schools across different age groups[1]. Studies have shown that the mental health of college students is worse than that of the general population, with about one-third of college students experiencing varying degrees of psychological disorders[2]. Cao Zhenkang's research indicated the causes of psychological disorders among college students include: heavy academic load and high mental stress, poor adaptability to life, intense competition and difficulty in interpersonal relationships, misfortunes and setbacks in life, negative aspects of personal character, and family economic conditions, and further pointed out that physical exercise promotes psychological quality[3]. Yuan Yutao, Zhai Jun, and Lai Qijun concluded that the main factors affecting college students' mental health are employment pressure, academic pressure, and family circumstances. Therefore, it is essential to strengthen sports facility construction, provide students with a good environment for physical exercise, guide them to develop exercise habits, and promote both physical and mental health[4]. Wang Shuming, Zhang Jing, and Zuo Congxian's research results show that long-term, continuous physical exercise relieves anxiety and depression in patients with mental illness, effectively reduces state anxiety, brings positive

psychological benefits, and highlights the important interactive relationship between exercise and college students' mental health[5]. Bi Xiushu and Peng Yanchun found that physical exercise is an effective way to improve the mental health level of ordinary college students[6]. Ji Jianqiu, Chen Yingchuan, and Guo Ping, through random sampling, concluded that physical exercise can help college students build a correct understanding of mental health[7]. Liu Kai and Yang Jianhua's research showed that volleyball, badminton, jogging, and aerobic rhythm exercises significantly help regulate depression, anxiety, and low physical self-esteem[8]. Wu Xunye found that only 15.42% of college students had a correct understanding of the connotation of health. Most students lacked an objective perception of their own health status, had poor self-care awareness, and engaged in unhealthy behaviors such as unreasonable diets, smoking, excessive drinking, irregular lifestyles, misuse of health products, and lack of exercise. In addition, college students had varying degrees of problems in their understanding of health, lifestyle habits, mental health status, and self-care awareness[9]. Yu Fangqing and Hao Huixiong suggested enhancing college students' mental health through reforms in physical education[10]. Wu Yonghui and Zhang Baorong, in their analysis of exercise factors promoting college students' psychological health, pointed out that exercise duration, frequency, motivation, and attitude mainly affect mental health in symptoms such as interpersonal sensitivity, depression, anxiety, compulsion, and hostility. They emphasized that physical exercise has a significant impact on promoting mental health among college students, and targeted intervention measures should be adopted[11].

Li Ruiheng, Yin Junjie, and Wu Yonghui conducted a study on gender differences in the relationship between college students' physical activity lifestyle and mental health. The results showed that female students' factor scores in different groups were significantly higher than those of male students ($P < 0.05$–0.01). The mental health status of college students with good physical activity lifestyles was significantly better than that of other students. A good physical activity lifestyle has an important impact on college students' mental health, and establishing such a lifestyle is an effective way to promote their mental well-being[12]. The study by Zhang Yukun, Wu Xiaoyan, Tao Shuman, Zhang Shichen, Su Puyu, Zhang Man, Hao Jiahu, and Tao Fangbiao showed that the detection rate of psychopathological symptoms among students with sleep disorders (42.5%) was higher than that of students without sleep disorders (14.6%) ($\chi^2 = 226.425$, $P < 0.01$). There was a correlation between the interaction of physical activity level and sleep quality with psychopathological symptoms. Among college students without sleep disorders, the higher the amount of physical activity, the lower the detection rate of psychopathological symptoms (all $P < 0.01$). The results suggest that among college students with sleep disorders, the lower the amount of physical activity, the higher the detection rate of psychopathological symptoms, and that physical exercise interventions may help reduce the incidence of such symptoms[13]. Cai Yunyan, Ning Lijuan, Wang Gongbiao, Lei Yu, and Long Li conducted a random sampling study involving exercise prescription training and mobile APP-based health education for female college students. The results showed that exercise prescription training and mobile APP-based health education could improve female college students' physical self-esteem and mental health levels, as well as increase exercise frequency and duration[14].

In summary, some scholars have emphasized the importance of providing mental health education for college students from the very beginning. Due to factors such as employment pressure, academic pressure, and family circumstances, college students may experience varying degrees of anxiety, making it increasingly important to address their psychological issues.

However, existing research has three limitations:

Neglect of group heterogeneity: Most conclusions are drawn from samples of sports major students, failing to reveal the differentiated needs of non-sports major students (who account for 92% of the total).

Dynamic mechanism black box: Cross-sectional studies dominate (81% of literature in 2025), lacking longitudinal tracking of the process from 'formation of exercise habits → accumulation of psychological benefits'.

Insufficient cultural adaptation: Factors such as face pressure and body image anxiety in collectivist cultures may weaken the willingness to participate in physical activities, but a localized intervention plan has not yet been systematically developed.

This study focuses on non-physical-education-major university students, using scale-based measurement methods. It aims, through comparison and summary analysis, to reveal the potential relationship between physical exercise participation (frequency, intensity, duration) and key dimensions of mental health, providing a basis for improving students' health levels.

1.2 Current Status of Foreign Research

Seyyed Saeid Mazloomy Mahmoudabad, Nahid Ardian, Ibrahim Salmani, and Nadjme Hajian conducted a study involving 200 female students from Shahid Sadoughi University of Medical Sciences, which revealed that a higher paternal education level was associated with a lower general health score. The study also found that students majoring in physical education exhibited better mental health than those in other majors[15]. Lee Hak-Gweon investigated variations in self-esteem and quality of life, in both physical and mental health dimensions, across different stages of change in physical activity among college students. The results indicated that self-esteem

and quality of life differed significantly at each stage of change (self-esteem: F = 5.76; quality of life related to physical health: F = 5.24; quality of life related to mental health: F = 11.93)[16]. Research by other scholars suggests that negative emotions are common among college students, that physical exercise can mitigate such emotions to a certain extent, and that the effects of competitive and non-competitive physical activities vary for different psychological issues. These findings contribute to the theoretical framework of college students' mental health and offer practical guidance for alleviating negative emotions in this population[17].

II Research Tools, Subjects, and Methods

2.1 Research Tools:

Participation in Physical Exercise: Using Liang Deqing. (1994). Introduction and Application of the Physical Activity Rating Scale (PARS-3). Chinese Journal of Sports Medicine, 13(1), which includes three items across three dimensions: exercise intensity, average duration, and frequency. Example: "What is your usual exercise intensity when you work out?" The exercise volume score is calculated as: Intensity × Duration × Frequency. A higher score indicates a higher level of participation.

2.1.1 Positive Mental Health Indicators

Using Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D. W., Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. Social Indicators Research, 97(2), 143-156 to assess psychological well-being. The 8 items are scored on a scale of 1–7 (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = agree, 7 = strongly agree), with a total score ranging from 8 to 56. Higher scores indicate greater psychological well-being.

2.1.2 Negative Mental Health Indicators

Using Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9: Validity of a brief depression severity measure. Journal of General Internal Medicine, 16(9), to assess the severity of depression. The 9 items are scored from 0 to 3 (0 = Not at all, 1 = Several days, 2 = More than half the days, 3 = Nearly every day), with a total score ranging from 0 to 27. Higher scores indicate more severe depressive symptoms.

2.2 Research Subjects

This study surveyed 200 on-campus students from the School of Foreign Languages, Class of 2023 and Class of 2024, at Panzhihua University, using a questionnaire method, with 200 valid responses collected. Among them, males accounted for 22.00% (44 people) and females accounted for 78% (156 people). Freshmen accounted for 40% and sophomores for 60%. English majors made up 50%, Business English majors 26%, and Translation majors 24%.

2.3 Research Methods

This questionnaire first collects basic information to understand the respondents' background, which will facilitate analysis and discussion in subsequent data processing. It also gathers information on the exercise intensity, frequency, and duration of the university students at the school, as well as positive and negative psychological indicators. The questionnaire was distributed from July 15 to 16, 2025. The administrator uniformly stated: "The questionnaire is to be completed anonymously, there are no right or wrong answers, and it takes about 15 minutes to complete."

III Chapter Three - Data Analysis

3.1 The intensity of exercise

As depicted in the chart, 31.43% of the students' exercise intensity falls under the mild category, such as walking; 20% belong to the low category, such as cycling slowly; 22.86% fall under the moderate category, like brisk walking; 17.14% belong to the high category, equivalent to sprinting; while 8.57% are classified under the extremely intense category, akin to a dash.

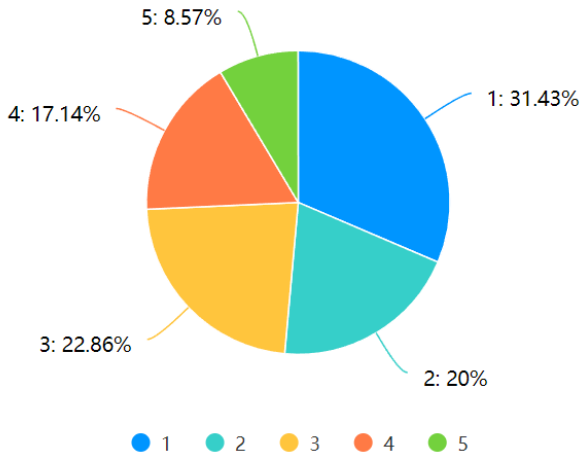

Figure 1

3.1.1 The average duration of each physical exercise session

According to data, 5.71% of students average their sports exercise duration to 10 minutes or less per session; 14.29% of students average their sports exercise duration between 11 to 20 minutes; 54.29% of students average their sports exercise duration between 21 to 30 minutes; 11.43% of students average their sports exercise duration between 31 to 59 minutes; and 14.29% of students average their sports exercise duration to 60 minutes or more. See Figure 2 for a detailed breakdown.

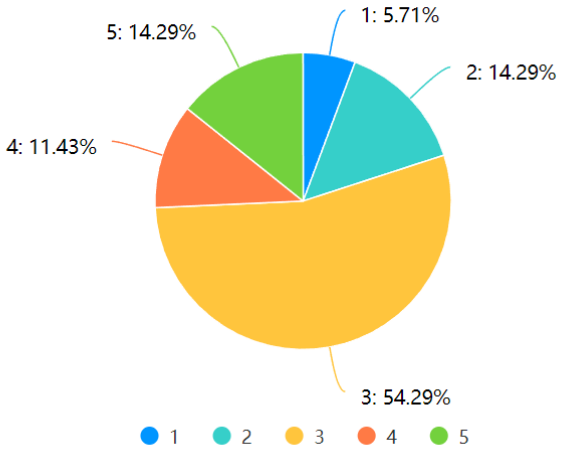

Figure 2

3.1.2 Average monthly frequency of physical exercise

The data indicate that no students exercise an average of once or less per month; 17.14% of students exercise an average of 2–3 times per month; 40% exercise an average of 4–5 times per month; 8.57% exercise an average of 6–7 times per month; and 34.29% engage in physical activity an average of 8 times or more per month. See Figure 3.

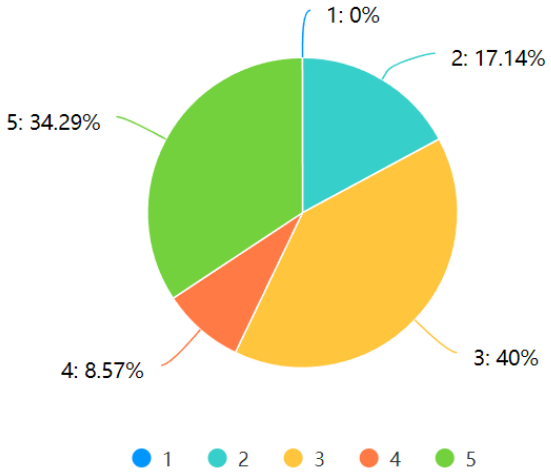

Figure 3

3.1.3 Participation in Physical Activity

This section comprises three questions, each worth 1-5 points, with a total score ranging from 1-125. The higher the value, the greater the participation level. The study revealed an average score of 56.43.

3.1.4 Positive Mental Health

This section consists of eight questions, each carrying 1-7 marks, with an overall score ranging from 8-56 points. The higher the score, the greater the level of psychological well-being.

Positive mental well-being.

Analysis revealed that the majority of respondents perceived a strong support system in interpersonal relationships, with a significantly higher proportion selecting the higher satisfaction option.

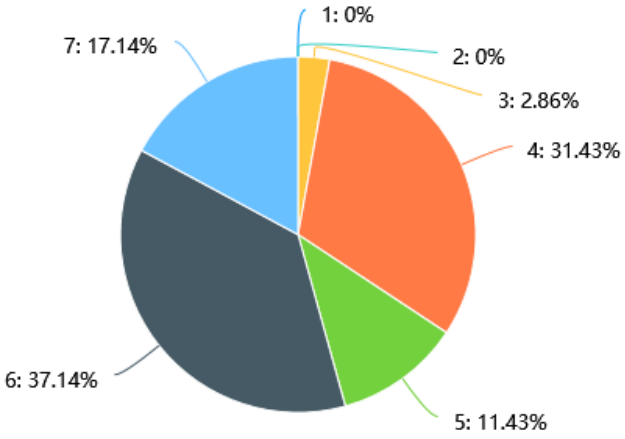

Figure 4

A majority of the respondents expressed their active contribution towards others' happiness, with over 90% selecting the options of agreement or strong agreement in the overall attitude analysis. Among these, the highest proportion chose the option of 5 points (agreement), amounting to 34.29%.

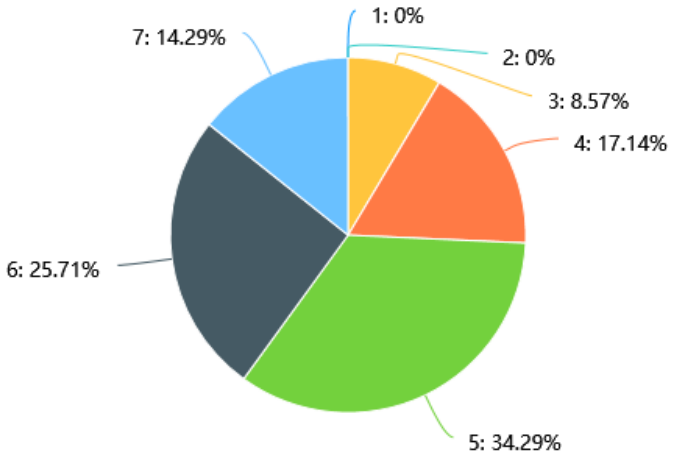

Figure 5

Overall, a majority of respondents maintained an optimistic outlook on life, with a significant increase in the proportion choosing higher options, with option 6 and 7 combined exceeding 50%.

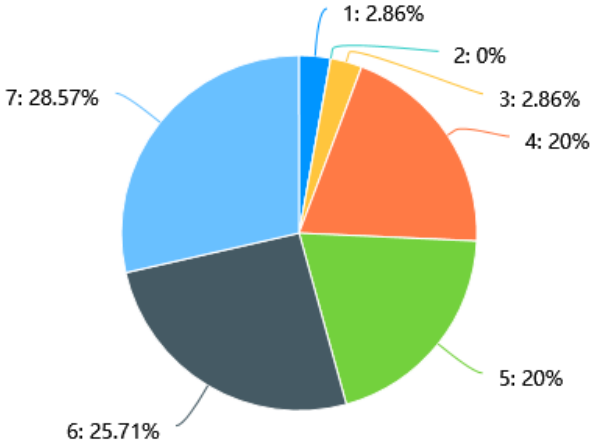

Figure 6

Overall, the survey findings indicated that respondents with high levels of self-respect chose scores of 6 or 7 points (summing up to 57.14%), but there were still a minority who scored lower (such as 2 points accounting for 5.71%).

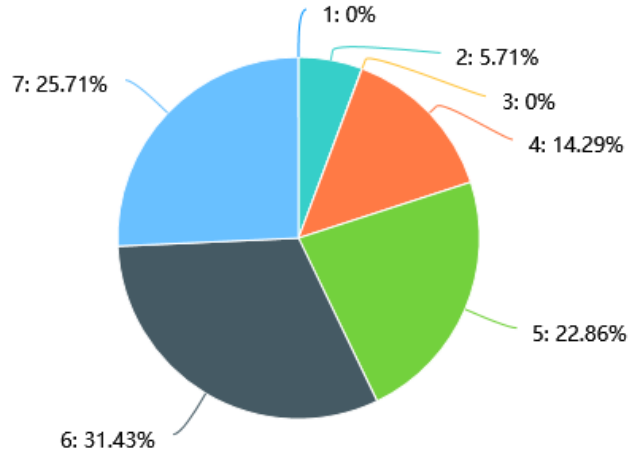

Figure 7

A majority of respondents maintain an optimistic outlook on life with purpose and meaning. According to survey data, the combined proportion of those selecting the highest scores (5-7) totals 74.28%, with options 5 and 6 accounting for 25.71% each, and option 7 accounting for 22.86%. In contrast, the low-score options (1-3) constitute only 8.57%.

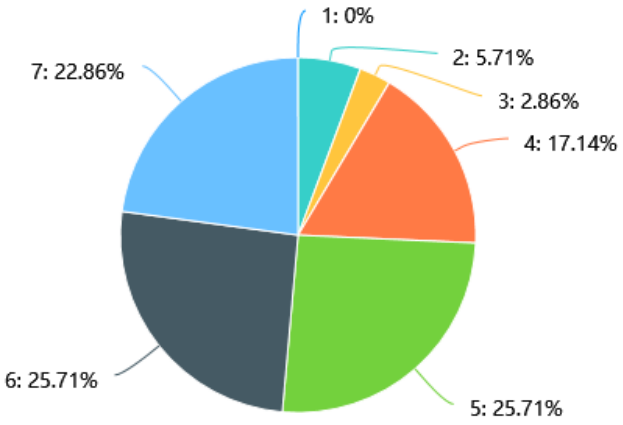

Figure 8

3.1.5 Negative Psychological Health

Overall, the prevailing negative emotions were mild or minimal, with most respondents reporting mild disinterest issues. A survey revealed that 65.71% of the respondents expressed mild disinterest, 22.86% did not have this issue, and only 11.43% reported moderate or severe problems,

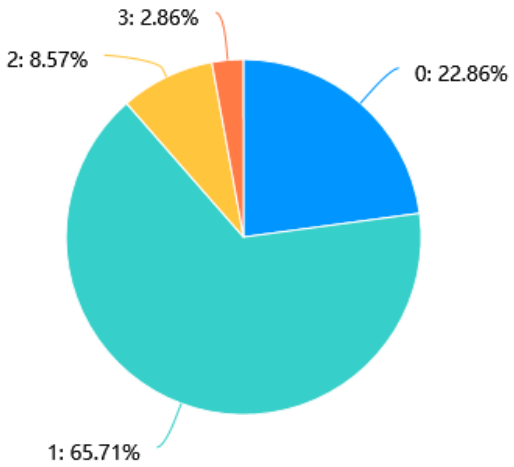

Figure 9

A majority of respondents occasionally or frequently experience a sense of gloom. In the overall analysis, more than half of the respondents stated that they sometimes feel down, while nearly forty percent reported feeling neither down nor up.

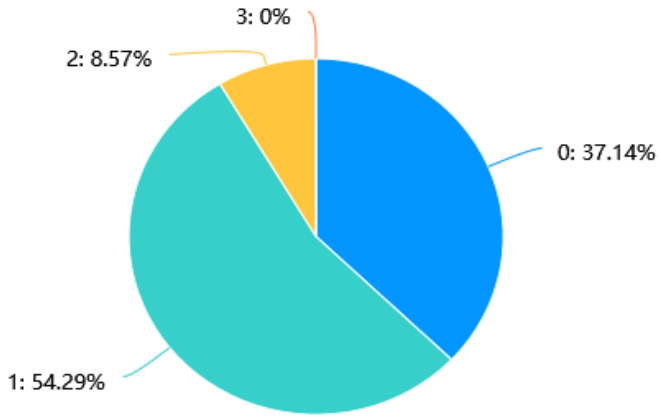

Figure 10

Sleep problems predominantly occur in a mild form, with a ratio exceeding half the total. Analysis reveals that the highest proportion, 57.14%, pertains to mild sleep issues (Option 1), whereas the proportion without any problems stands at merely 22.86%. Moderate or severe issues account for a lower percentage. This suggests that sleep problems are widespread but primarily mild, potentially associated with daily stressors or lifestyle habits.

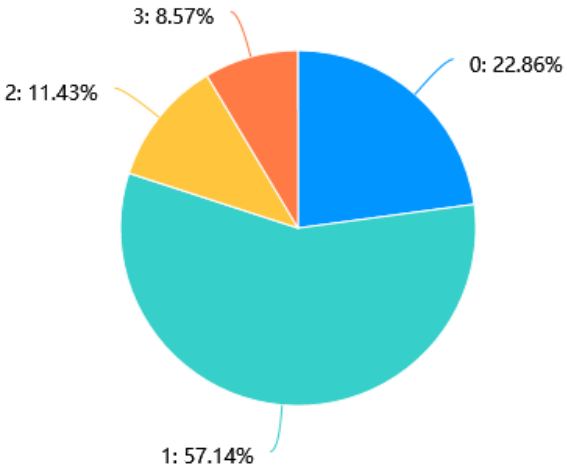

Figure 11

Overall, negative emotions were mild or non-existent. Most respondents experienced no or only mild negative emotions, with very few experiencing moderate or severe ones, indicating a relatively good overall mental health state.

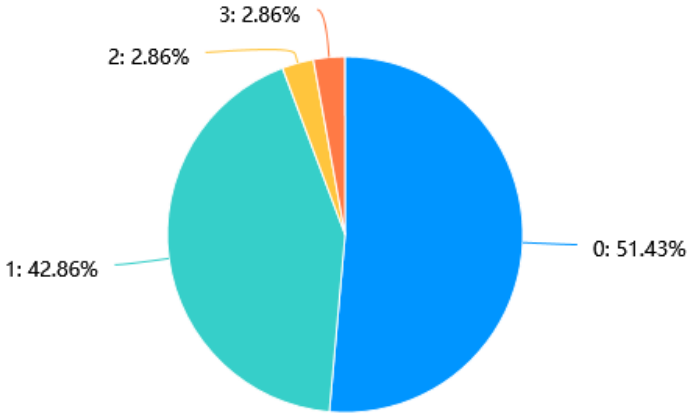

Figure 12

In general, the majority of the symptoms reported revolved around mild manifestations, with relatively low severity. Analysis revealed that the vast majority of respondents reported experiencing symptoms such as slowness in movement or restlessness, but the proportion selecting severe options was negligible.

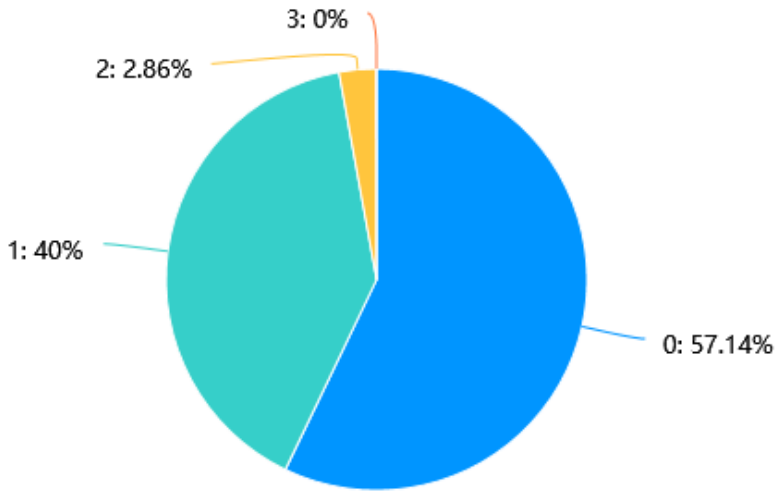

Figure 13

Approximately 20% of respondents reported having suicidal thoughts. A fifth of those surveyed reported having suicidal or self-harm tendencies, indicating that mental health issues are prevalent.

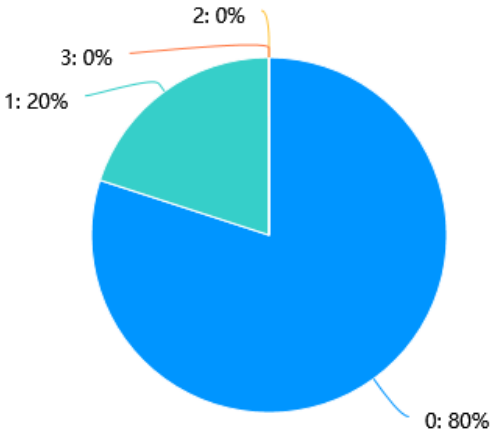

Figure 14

IV Results and Discussion

From the results, the intensity, frequency, and duration of physical exercise among college students show diversity, reflecting individual differences and personal interests, indicating that physical exercise within the college student population exhibits variety. This diversity affects both the physical and mental health of college students. Students who actively participate in physical exercise may reduce risks related to mental health and have a healthier psychological state. The results of this study indicate that there is a strong correlation between physical exercise and mental health, and physical exercise can improve psychological well-being.

At the same time, three dimensions—attitude toward physical exercise, duration of each exercise session, and level of persistence in exercising—play a major influencing role and are important contributing factors to college students' mental health[18].

Light intensity is the most common level of exercise, indicating that most people prefer low-intensity activities. The majority of respondents reported exercising for 21-30 minutes, suggesting that medium-duration workouts are the mainstream choice.

Interpersonal relationships are generally perceived positively, reflecting a predominantly positive attitude

among respondents. Most respondents indicated that they actively contribute to the happiness of others, suggesting a generally high level of altruism within the surveyed group. Overall, the majority of respondents hold a positive outlook on life, indicating that positive self-assessment predominates. Respondents generally exhibit a high level of self-respect, showing that most people view themselves positively. Most respondents have a positive attitude toward life's purpose and meaning, indicating a high overall level of life satisfaction.

Most respondents reported mild disinterest issues, indicating that the problem is common but generally mild. Most respondents sometimes or often felt low mood, suggesting that feelings of low mood are relatively common. Sleep problems are mainly mild, accounting for more than half, which suggests that sleep issues are prevalent but mostly mild, possibly related to daily stress or lifestyle habits. Overall, negative emotions are mostly absent or mild, reflecting generally good mental health status. However, it should be noted that a small group may be at higher risk. Overall, movement-related issues are mostly mild symptoms with low severity, indicating that while the issue is common, it is generally manageable, and mental health problems may be underestimated. About 20% of respondents reported self-harm thoughts, indicating that mental health problems are relatively common.

In summary, there is a significant difference in the mental health status between college students who occasionally participate in physical exercise and those who engage in it regularly. College students who only exercise occasionally have far more psychological issues in areas such as somatic symptoms, emotional problems, interpersonal communication, and neurosis than those who exercise regularly. Given the high effectiveness of physical exercise in promoting the mental health of college students, it is necessary to actively organize students to engage in physical activities to improve their psychological quality[19]. Continuous extracurricular physical training is conducive to enhancing college students' psychological capital, mental health, and social adaptability[20]. Since college students spend most of their time on campus, school sports can effectively regulate their physical and mental conflicts, promote mental health, and improve psychological quality[21]. Intervening in the mental health level of college students through physical education is an effective method[22].

V Cause Analysis

Cross-analysis reveals that as exercise frequency increases, the proportion of individuals choosing a duration of 60 minutes or more rises significantly, reaching 33.33% in the highest-frequency group. This indicates that habitual exercisers are more likely to sustain long-duration workouts.

Comparative analysis reveals that respondents with a higher sense of life purpose are more inclined to report strong interpersonal support, highlighting the interconnection between different dimensions of psychological well-being. However, the small sample size in some groups may affect the robustness of the conclusions. When comparing groups with different life purpose scores, it was found that among respondents scoring 6 or above, the proportion choosing high-contribution options (5–7 points) was significantly higher than that of the low-score group. For example, in the group with a purpose score of 6, 55.56% chose a contribution score of 5, and 44.44% chose 6. This suggests that enhancing one's sense of life meaning may promote altruistic behavior, indicating a positive correlation between a strong sense of life purpose and active contribution behavior. People with a high frequency of physical exercise reported higher life satisfaction: cross-tabulation analysis showed that as exercise frequency increased, the proportion choosing high satisfaction options also rose — in the highest-frequency group, all chose options 5–7. This suggests a positive association between healthy habits and happiness. People with a stronger sense of life purpose were more likely to report a good life: comparison revealed that when life purpose was high, the proportion choosing the highest satisfaction option increased significantly — in the strongest purpose group, all chose option 7. This underscores the importance of life meaning. Increased physical exercise frequency is associated with higher self-esteem: comparing different exercise frequency groups, high-frequency participants (e.g., 8 times or more per week) scored higher in self-esteem (33.33% chose 6 or 7), while low-frequency groups scored lower; this indicates that physical activity may enhance self-worth. The extent to which life is seen as purposeful and meaningful is positively correlated with self-esteem: respondents with a strong life purpose (e.g., scores of 6 and 7) were more inclined toward high self-esteem (77.78% chose 6, 87.5% chose 7), whereas the low-purpose group scored lower; this highlights the importance of cultivating a sense of life meaning.

Among groups with a higher frequency of exercise, the proportion reporting no disinterest issues was lower, while such problems were more common in groups with lower exercise frequency. This suggests that physical exercise may help alleviate feelings of disinterest. Respondents with a stronger sense of purpose in life had a lower proportion of disinterest issues, and vice versa, indicating a negative correlation between sense of purpose and disinterest. In the analysis of exercise frequency, as frequency increased, the proportion of respondents reporting no feelings of low mood showed an upward trend. For example, in the highest frequency group, half of the respondents reported not feeling low, suggesting that regular exercise may help reduce depressive feelings. In the analysis of sense of purpose, the higher the purpose score, the greater the proportion of respondents who reported not feeling low. For example, in the highest-scoring group, more than 60% reported not feeling low, indicating that enhancing one's sense of purpose in life may effectively reduce low mood. Cross-

analysis found that in groups with higher purpose scores (such as score 6), the proportion of mild sleep problems reached as high as 77.78%, far higher than in other groups, while lower-scoring groups (such as scores 2-3) were more likely to have moderate or severe problems. This suggests that life activity or goal-driven behavior may increase mild sleep disturbances. Analysis showed that as exercise frequency increased, the proportion of problems such as loss of appetite or overeating significantly decreased, with the highest frequency group having the highest proportion without such problems. This indicates that physical exercise may have a positive effect on alleviating eating problems. When sense of purpose in life was low, the proportion of negative emotions was significantly higher; conversely, when sense of purpose was high, the proportion of negative emotions was lower, suggesting that enhancing a sense of life meaning may effectively reduce negative emotions. When exercise frequency was 4-5 times, the proportion of slow movement peaked; when the frequency was 6-7 times, the proportion of movement problems increased again. This suggests that both overtraining and insufficient exercise may exacerbate symptoms. Higher life meaning scores were associated with a significantly higher proportion of slow movements, while lower scores correlated with a higher proportion of restlessness, indicating that a lack of meaning may trigger anxious behaviors. As sense of purpose increased, the proportion of people with no self-harm thoughts significantly rose; in the highest purpose group, the proportion with no such thoughts reached 100%.

VI Countermeasure Research

Enhance college students' awareness of the role of physical exercise in promoting mental health, increase their interest in physical activities, and help them develop good habits of consciously and regularly participating in sports[23]. It is recommended to promote participation through education and activities, encouraging participants to try moderate or high-intensity exercises to improve health levels. By increasing frequency, promote moderate-intensity exercise to achieve optimal health benefits.

Encourage participants to try moderate or high-intensity exercise: Generally speaking, moderate-intensity exercise is most beneficial for students' mental health and physical fitness improvement, while avoiding excessive exercise that could lead to fatigue and injury. Schools should strive to create a good physical exercise environment for college students, ensuring they can engage in diverse sports activities; formulate personalized exercise plans based on the actual situations of college students; actively foster their interest in physical activities; organize sports events and guide them to discover the joy of exercise[24]. This will help achieve the goal of encouraging college students to try more moderate and high-intensity exercises. The exercise duration for most respondents is concentrated in 21–30 minutes: it is recommended to highlight 21–30 minute exercise plans in health promotion to increase participation, cultivate endurance through encouraging regular exercise, and design longer-duration plans for high-frequency participants.

Most respondents expressed a willingness to actively contribute to the happiness of others: it is recommended to further strengthen this positive behavior through community activities or recognition mechanisms, while incorporating purpose cultivation into mental health education.

Overall, most respondents hold a positive attitude toward life: it is recommended to improve overall quality of life through health interventions and to incorporate purpose education into community services to enhance well-being.

Overall, the respondents show a relatively high level of self-esteem: it is recommended to provide psychological support or self-confidence training for the low-scoring group to improve overall mental health, and to promote regular physical exercise programs, especially for those with low participation frequency, in order to strengthen the mind-body connection. At the same time, integrate purpose-driven education into educational and community activities to help individuals develop a positive self-perception.

Most respondents hold a positive attitude toward having purpose and meaning in life: it is recommended to provide mental health counseling or life planning guidance for minority groups to enhance the overall sense of meaning in life.

Most respondents sometimes or often feel down: it is recommended to strengthen mental health promotion and intervention measures, encourage an increase in the frequency of physical exercise, and promote activities that cultivate a positive attitude towards life.

Sleep problems are mostly mild, with the proportion exceeding half: It is recommended to strengthen sleep health education, such as promoting relaxation techniques and regular routines to prevent worsening of problems, balance life rhythm, and introduce stress management interventions such as mindfulness training to alleviate potential impacts.

Overall negative emotions are mostly none or mild: It is recommended to strengthen mental health screening and provide support resources, such as counseling services, to prevent potential issues, and to promote activities that enhance life purpose, such as goal-setting workshops or community engagement programs, to improve mental well-being.

Overall, movement-related issues are mainly characterized by mild symptoms with low severity: it is

recommended to strengthen mental health screening and early intervention to reduce potential risks, promote moderate and regular exercise programs, provide stress management guidance for high-frequency groups, and enhance a sense of meaning through psychological counseling and life goal setting to alleviate related symptoms.

About 20% of respondents have self-harming thoughts: It is recommended to strengthen psychological intervention and support services to reduce risks, while promoting education on the meaning of life to improve mental health.

Encourage more yoga practice: Physical exercise can help reduce the stress level of college students to some extent, especially aerobic exercises such as yoga can significantly promote their psychological and physiological functions, alleviate emotional stress and burden, and improve self-esteem, self-confidence, and sense of happiness[25]. As a form of exercise that cultivates both body and mind, yoga is particularly suitable for modern college students. The breathing exercises and meditation in yoga play a significant role in enhancing their emotional regulation ability, helping to lower anxiety levels and relieve psychological stress in a short period of time, enabling students to maintain a calm and optimistic attitude amid a busy academic life[26]. Practicing yoga helps regulate psychological balance and achieve mental relaxation.

VII Limitations and Prospects

Research limitations and improvements: The sample did not cover the zero-exercise group; subsequent studies should expand sampling to include students with low health awareness. The contradictory relationship between sleep problems and sense of purpose requires further qualitative research. It is recommended to add exercise physiological indicators (such as heart rate monitoring) to enhance data objectivity.

Conclusions and Implications: This study focuses on non-physical-education major university students, revealing the potential link between physical exercise participation (frequency, intensity, duration) and the core dimensions of mental health, providing a basis for improving students' health levels. It was found that there is a strong correlation between students' mental health and physical exercise. Intervening in university students' mental health through physical education is an effective approach. Physical exercise acts as a "physiological lever" for mental health, with the sense of life purpose as its core fulcrum. When students exercise more than six times a month with optimized intensity gradients, the effect on improving psychological resilience is significant; at the same time, strengthening education on life purpose can make psychological interventions more effective with less effort. This provides an evidence-based path for universities to build a "sports-psychology" collaborative education system.

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