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# Students' Engagement in Extra-Curricular Physical Activities, Physical Fitness, and Mental Health

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**Abstract:** With the development of society and economic progress, there is an increasing concern about the physical and mental health of university students. Guangxi, as an important province in southwestern China, has attracted widespread attention to its sports development. However, with the rapid development of the social economy, the physical and mental health issues of university students have become increasingly prominent. Therefore, this study aims to investigate the physical fitness, types of sports participation, and mental health status of sports major students in Guangxi, exploring the relationships among them, and providing theoretical and practical basis for promoting the physical and mental health of university students in Guangxi.

**Keywords:** Extra-curricular Physical Activities; Physical Fitness; Mental Health.

## 1. Introduction

In recent years, the physical health of adolescents in China had been declining annually, and students' physical activity was severely insufficient (Jiang Yuting, 2022). Adolescents were an important component of the population structure, and their physical fitness and mental health directly affected the quality of the population (Zhang Qingyi, 2021). Scholars from different regions had studied the physical exercise behaviors and physical fitness of adolescents, providing new solutions for improving university students' physical fitness. Chen Ting (2022) conducted a survey on the exercise intentions, exercise behaviors, and various aspects of the status of adolescents in Jiangsu Province, deeply exploring the relationship between extracurricular sports activities and these factors, examining their positive effects, and revealing the internal connections between them. This study provided rational suggestions for promoting adolescent sports activities.

Scholars such as Song Zhijuan (2022), Fu Hongsong (2020), Zhai Qiuyi (2022), Jiang Yuting (2022), Pan Yuqing (2022), Ji Ying (2022), and Yan Xiaomeng (2020) had studied different regions including Northern Anhui, Hainan, Suzhou, Xi'an, Beijing, and Harbin to support and verify the importance and internal relationship between sports activities and physical fitness. They had enriched and deepened the theoretical research on the relationship between the two, all believing that long-term participation in sports activities could shape students' physical fitness, with a positive correlation between the two. They also proposed that the level of physical activity could predict physical fitness; an increase in physical activity level could positively drive the development of physical fitness. That was, a low level of physical fitness led to negative attitudes towards physical exercise, lacking motivation and confidence to participate in sports activities. Conversely, higher levels of physical fitness increased the likelihood of participating in sports activities (Huang Yan et al., 2019).

Therefore, physical activity often played a regulatory or mediating role in individuals (Xu Shiqing et al., 2021). Researchers had reached a basic consensus on the structure of the sports activity system (Huang Songping et al., 2023). As the main research group, university students were widely studied in relation to extracurricular sports activities.

This study focused on college students as research subjects, analyzing the relationship between extracurricular physical activities, physical fitness, and mental health. Its theoretical research findings provided a basis for university sports programs and mental health education, guiding students to actively participate in exercise, enhance their ability to cope with setbacks and adapt to their environment, and cultivate well-rounded personalities and good psychological qualities. The study aimed to improve physical and mental health levels, offer references for maintaining and promoting students' well-being, provide theoretical and practical guidance, offer valuable insights for relevant departments in planning, and supply empirical data for sports psychology and health psychology.

## 2. Method

### 2.1. Purpose of the Study

The purpose of this study was to investigate the data of college students majoring in physical education in Guangxi who participated in extracurricular physical activities, physical fitness, and mental health. The study aimed to pay attention to the individual differences in college students' mental health, explore the relationship between physical activities, physical fitness, and mental health, and provide a theoretical and practical basis for college students' scientific physical exercise and college students' physical education managers' decision-making. The goal was to effectively solve the problem of college students' mental health.

### 2.2. Research Model

This paper used a correlation study to explore the overall correlation between college students' participation in extracurricular physical activities in terms of frequency, duration, intensity, amount of exercise, and stage of exercise as a unit of measurement type, and their overall correlation with physical fitness and mental health.

## 2.3. Research Sample

This paper took the relationship between extracurricular sports activities, physical fitness, and mental health of college students as the research object. The overall randomly selected five general colleges and universities in the Guangxi Zhuang Autonomous Region were used as the survey object, with a total of 476 people, of which the selected universities and the number of people were 97 people from Guangxi Science and Technology Teachers' College, 96 people from Beibu Gulf University, 94 people from Guilin College, 95 people from Baise College, 94 people from Wuzhou College, and other five schools respectively.

## 2.4. Data Collection Tool

A comprehensive questionnaire was used as the main data collection tool in this study. The content of the questionnaire was designed considering the suggestions and opinions of consultants and experts to improve the questionnaire prepared by the researcher.

There were three (3) questionnaires used: the first questionnaire was for the impact of extracurricular physical activity, the second questionnaire was for the assessment of physical fitness, and the third questionnaire was for the assessment of mental health.

The questionnaire on the impact of participants' extracurricular physical activity consisted of 39 items in the areas of individual sports, dual sports, and team sports. Each question of the questionnaire was scored using a 4-point Likert rating system, then it indicated that the higher the score, the higher the level of participation. Otherwise, it indicated a lower level of participation.

The questionnaire on the assessment of participants' physical fitness consisted of 49 subjective items and 6 objective measures in six areas: lung capacity, speed, strength, endurance, agility, and explosive power. Each question of the questionnaire was scored using a 4-point Likert rating system, with higher scores indicating better physical fitness. Otherwise, it indicated lower physical fitness.

The questionnaire on the assessment of participants' mental health consisted of 20 items in four areas: self-care, interpersonal skills, stress management, and Resilience and Coping skill. Each question of the questionnaire was rated on a 4-point Likert rating system, with higher scores indicating greater mental health. Otherwise, it indicated poorer mental health.

The research instrument has been tested for validity and reliability to ensure the quality of the data collected.

## 2.5. Data Analysis

The data were entered into the computer, and the descriptive statistics, correlation analysis were displayed using software.

Descriptive statistical analysis using weighted mean was employed to describe and measure the basic characteristics and distribution for extracurricular physical activities, physical fitness, and mental health. Description statistics were used to demonstrate basic statistical information about these variables, such as the distribution of average weekly exercise time, physical fitness scores, and mental health levels.

Correlation analysis was used to explore the relationships between variables. In this study, correlation analysis was used to understand the relationship between extracurricular physical activity time and physical fitness and mental health.

# 3. Findings

## 3.1. The Level of Engagement in Extra-curricular Physical Activities

The participants' level of engagement scores at the overall level and across the three dimensions. Comparing the means of the three different formats (individual sport, dual sport, and team sport), team sport scored the highest (2.46), individual sport scored the lowest (2.28), and dual sport scored in the middle (2.45). This suggested that overall, participants were relatively more engaged in team sports, relatively less engaged in individual sports, and relatively intermediate in dual sports. Taking into account the overall means and scores for each format, participants were overall involved in all three areas to some degree of stress, with slightly higher involvement in team sports, lower involvement in individual sports, and moderate involvement in dual sports. This emphasized that in extracurricular physical activity, the diversity of exercise forms, the variability of physical fitness, and the intrinsic motivation of the individual were identified as key determinants of the effectiveness of participation. To improve the effectiveness of exercise, differentiated exercise instruction and technical support needed to be provided to meet the physical condition and needs of individuals. At the same time, facilitating positive experiences through the creation of positive sport environments was a key means of stimulating intrinsic motivation and enhancing participation. Improving personal expectations could build positive beliefs at the psychological level and motivate individuals to engage in physical activity for a longer and more active period of time. With this comprehensive strategy, we were able to more fully promote the positive impact of extracurricular physical activity on individuals' physical and mental health.

## 3.2. Assessment of Students' Physical Fitness

This result, taken together, reflects the low spirometry scores of the respondents and indicates that the respiratory capacity of the respondents is relatively stable. Since spirometry interacts smoothly with other qualities, it is less demanding of other qualities. In this context, combined with engagement in extracurricular physical activity, it may reflect that the respondents may be less involved in respiratory exercise. Medium scores for physical strength and endurance indicate that respondents have relatively balanced needs for overall physical fitness and may not have overly high expectations. Such an overall assessment underscores the need to pay attention to respiratory exercise enhancement when designing an individualized physical activity program to more fully enhance physical fitness.

## 3.3. The Assessment of Physical Fitness

The participants' level of assessment scores at the overall level and across the six dimensions. Comparing the means of the six different dimensions (lung capacity, speed, strength, endurance, flexibility, and explosive power), explosive power scored the highest (3.06), lung capacity and speed scored lower (2.65 and 2.67), and strength, endurance, and flexibility scored in the middle (2.77, 2.84, and 2.94). This suggested that overall, participants were relatively better at explosive qualities, relatively weaker at lung capacity and speed qualities, and relatively intermediate at strength, endurance, and flexibility qualities. It was emphasized the low spirometry scores of the respondents and indicated that the respiratory capacity of the respondents was relatively stable.

Since spirometry interacted smoothly with other qualities, it was less demanding of other qualities. In this context, combined with engagement in extracurricular physical activity, it may reflect that the respondents may be less involved in respiratory exercise. Medium scores for physical strength and endurance indicated that respondents had relatively balanced needs for overall physical fitness and may not have overly high expectations. Such an overall assessment underscored the need to pay attention to respiratory exercise enhancement when designing an individualized physical activity program to more fully enhance physical fitness.

### 3.4. The Assessment of Mental Health

The participants' level of assessment scores on the overall level of mental health and on the four dimensions. Comparing the means of the four different dimensions (self-care, interpersonal skills, stress management, and resilience and coping skill), interpersonal scores were the highest (3.39), resilience and coping skill scores were lower (3.36), and self-care and stress management scores were in the middle of the scale (3.37). This suggested that overall, participants had relatively good interpersonal skills, relatively weak resilience and coping skill, and relatively intermediate self-care and stress management. This emphasized the need to enhance an individual's mental health and coping skills (Buwen, 2023). Specifically, strengthening resilience and coping skill may help individuals better cope with stress, adapt to life changes, and increase psychological resilience. Similarly, the relative centrality of the emphasis on self-care and stress management served as a reminder that more attention and development of skills in this area may be needed to promote the overall mental health of individuals.

### 3.5. Relationship between the Extent of Engagement in Extra-Curricular Physical Activities and the Physical Fitness of the Students

The relationship between students' participation in extracurricular physical activities in the form of team sports and physical fitness yielded an overall T value ranging from -0.37 to -0.39 and a calculated p-value of 0.000. Students participating in team sports rejected the null hypothesis regarding physical fitness, indicating a significant difference. Overall, there was a moderate positive correlation between participating in team sports and lung capacity, speed, physical strength, endurance, flexibility, and explosive power. This suggested that participants in team sports demonstrated more significant improvement in these physical fitness indicators, with a stronger correlation than individual and dual sports.

### 3.6. Relationship between the Extent of Engagement in Extra-Curricular Physical Activities and the Mental Health Status of the Students

The relationship between participation in extracurricular sports activities in a team form and psychological health yielded an overall T-value ranging from -0.36 to -0.39 with a computed p-value of 0.000. Overall, participation in team forms of extracurricular sports activities exhibited a moderate positive correlation with self-care, interpersonal skills, stress management, resilience, and coping skills. Specifically, there was a certain degree of negative correlation between team sports activities and psychological health. Although this correlation was not very strong, rejecting the null hypothesis indicated the existence of this association. Furthermore, team sports activities showed a moderate positive correlation with self-care, interpersonal skills, stress management, resilience, and coping skills. This suggests that while participants in team sports activities may exhibit weaker characteristics in certain aspects of psychological health, there may be a certain degree of improvement in self-care, interpersonal skills, stress management, resilience, and coping skills, which is noteworthy.

## 4. Conclusion

1.Participants showed varying levels of engagement in different types of extracurricular sports. Team sports had the highest engagement, individual sports the lowest, and dual sports were in between. This suggested a preference for team-based activities. Effective participation in physical activities depended on providing diverse exercise forms, personalized instruction, and positive sport environments to boost intrinsic motivation. Enhancing personal expectations and creating supportive environments could foster long-term, active involvement in physical activities, benefiting individuals' physical and mental health.

2.Participants' physical fitness varied across six dimensions, with the highest scores in explosive power and lower scores in lung capacity and speed. Strength, endurance, and flexibility were moderate. The relatively low lung capacity scores indicated a need for improved respiratory exercises. Overall, the balanced scores suggested a moderate level of physical fitness, pointing to the importance of incorporating respiratory and balanced fitness exercises in individualized programs to enhance overall physical health.

3.Participants' mental health assessment revealed the highest scores in interpersonal skills, slightly lower in resilience and coping skills, and moderate in self-care and stress management. This highlighted strong social skills but a need for improved resilience and stress management capabilities. Enhancing these areas could help individuals better handle stress and life changes, promoting overall mental health. Focused development in self-care and stress management skills was crucial for improving overall psychological well-being.

4.The relationship between students' participation in team sports and physical fitness yielded a significant difference. This demonstrated a moderate positive correlation between team sports and improvements in lung capacity, speed, physical strength, endurance, flexibility, and explosive power. Participants in team sports showed more significant improvements in these fitness indicators compared to those involved in individual or dual sports.

5.The relationship between participation in team sports and psychological health indicated a significant difference. This showed a moderate positive correlation between team sports and aspects of mental health, including self-care, interpersonal skills, stress management, resilience, and coping skills. Although there was a slight negative correlation with overall psychological health, the moderate positive correlation in specific mental health aspects suggested that team sports participation led to notable improvements in self-care, interpersonal skills, stress management, resilience, and coping skills.

# 5. Recommendations

1.Physical Fitness Programme:

Regular Health Assessment: Implement regular physical fitness assessments, including indicators of lung capacity, speed, physical strength, endurance, flexibility and explosive power. Objective measurements and assessments are carried out using specialised equipment and tools to ensure accurate and reliable data.

Personalised fitness programme: Based on the results of students' physical fitness assessment, a personalised fitness programme is formulated to differentiate between different levels and needs. Diversified exercise programmes and training methods are provided, including aerobic exercise, strength training, flexibility training, etc., to meet the fitness needs of different students.

Construction of campus fitness facilities: add or improve campus fitness facilities to provide equipment and venues for students to exercise. Regular inspection and maintenance of fitness facilities to ensure their safety and comfort.

Promotion of sports activities: To organise various sports events and activities to stimulate students' enthusiasm and interest in participating in sports. To set up an award mechanism to encourage students to actively participate in sports activities and to recognise outstanding athletes and teams.

2.Mental Health Programme:

Mental health education: Mental health education activities are carried out to raise students' awareness of and attention to mental health. Provide mental health information and resources for students to access and learn from to enhance their mental health literacy.

Psychological counselling services: Training professional psychological counsellors and volunteers to provide specialised and personalised psychological support.

Mental health activities: organise mental health promotion activities and create a mental health communication platform for students to share their psychological experiences and emotions with each other, reduce their psychological burdens and enhance mutual understanding.

Mental health monitoring and intervention: Establish a mental health monitoring system to regularly assess and track students' mental health status, and provide timely intervention and support when problems are identified. Mental health intervention programmes are carried out to provide personalised psychological counselling and treatment programmes for different psychological problems and distress, and to help students rebuild a healthy mental state.

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