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# *Analysis and Strategy Research Based on the Physical Health Test Data of College Students in 2023*

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***Keywords:*** University, physical health, strategy

***Abstract:*** This study employs literature review, interviews, and statistical analysis to examine the 2023 physical fitness assessment data of Chongqing University of Technology. The findings reveal that students' physical fitness generally declines with advancing academic years, particularly in strength and endurance, where substandard performance rates show a clear upward trend. Based on these insights, the paper proposes targeted improvement measures to enhance the overall physical health of university students, providing evidence-based recommendations for institutional policy development.

## 1. Introduction

The college years represent a pivotal phase for young students 'physical development. A robust health foundation not only enhances academic performance and daily life but also serves as a crucial foundation for future career growth and social adaptability[1]. However, with evolving modern lifestyles, concerns about college students' physical health have gained increasing attention. Therefore, conducting a comprehensive analysis of their health data, identifying existing issues, and implementing effective solutions holds significant importance.

## 2. Subjects and Methods

### 2.1 Study Subjects

This paper takes the physical health status of students in Chongqing University of Technology in 2023 as the research object.

### 2.2 Research Methods

#### 2.2.1 Literature Review Method

By reading domestic literature on physical health and conducting classification and summarization, the current research status, influencing factors, and intervention strategies for physical health were comprehensively analyzed.

### 2.2.2 Interview Method

With the theme of "physical health" and "school sports", some school sports workers and students were interviewed to further understand the current situation of college students' physical health and school sports.

### 2.2.3 Mathematical Statistics Method

Excel software was used to organize the physical health test data of Chongqing University of Technology in 2023 and generate a table.

## 3. Research Findings and Analysis

### 3.1 Research Findings

### 3.1.1 General Analysis of the Current Status of Student Physical Health at Chongqing University of Technology

Table 1 Statistical Overview of Student Physical Health at Chongqing University of Technology

| grade | number of people | percentage |
|---|---|---|
| fail | 1982 | 7.9 |
| pass a test | 16731 | 67.1 |
| good | 5718 | 22.9 |
| outstanding | 530 | 2.1 |

A systematic analysis of college students 'physical health data mining is highly beneficial for improving and developing their physical fitness [2]. Table 1 presents the 2023 Physical Fitness Assessment data from Chongqing University of Technology. Among the 24,961 participants, the pass/fail distribution was 7.9% (fail), 67.1% (pass), 22.9% (good), and 2.1% (excellent). The results indicate that while most students meet the fitness standards, the proportions of those rated as 'good' or 'excellent' remain relatively low, with a small percentage still failing to meet the requirements. This highlights the need for a comprehensive analysis of students' weaknesses in specific fitness components, enabling the implementation of targeted strategies to holistically enhance their physical fitness.

### 3.1.2 Analysis of Physical Health Status among Students of Different Grade Levels

As shown in Table 2, the failure rate decreases progressively from 11.7% in the fourth year to 5.4% in the first year, indicating an upward trend with advancing academic years. The excellence rate shows a slight increase, while the pass rate remains relatively stable and the good rate fluctuates minimally. Interviews reveal that the school's physical education curriculum is designed for freshmen and sophomores, assessing students' classroom performance, athletic skills, physical fitness, and extracurricular exercise participation. This comprehensive approach enhances students' overall physical fitness through in-class skill training and active outdoor activities. The absence of physical education courses in juniors and seniors has, to some extent, impacted their physical health levels.

Table 2 Statistical Table of Physical Health Status among Students of Different Grade Levels

| grade | fail (%) | pass a test (%) | good (%) | outstanding (%) |
|---|---|---|---|---|
| Freshmen of the class of 2023 | 5.4 | 68.0 | 24.5 | 2.1 |
| Sophomore of the class of 2022 | 6.1 | 66.3 | 25.8 | 1.8 |
| Junior year of 2021 | 7.8 | 63.6 | 25.7 | 2.9 |
| Senior year of 2020 | 11.7 | 70.3 | 16.6 | 1.4 |

### 3.1.3 Performance Analysis of Students across Different Grade Levels in Various Events

(1) Analysis of students' vital capacity

Table 3 Statistical Analysis of Student Vital Capacity Test Results

| | fail (%) | pass a test (%) | good (%) | outstanding (%) |
|---|---|---|---|---|
| Freshmen of the class of 2023 | 2.2 | 51.8 | 23.5 | 22.5 |
| Sophomore of the class of 2022 | 1.7 | 42.6 | 24.8 | 30.9 |
| Junior year of 2021 | 2.1 | 44.6 | 23.7 | 29.6 |
| Senior year of 2020 | 2.2 | 45.2 | 25.5 | 27.1 |

Vital capacity, defined as the maximum volume of air a person can exhale after a single maximal inhalation, serves as a key indicator in college students' physical fitness assessments [3].As shown in Table 3, the failure rates of lung capacity among students across different grades show similar patterns, fluctuating around 2% without significant trends of increasing or decreasing with grade level. The pass rate for sophomore students is relatively low at 42.6%, while freshmen, juniors, and seniors maintain pass rates between 44.6% and 51.8%, with freshmen achieving the highest rate of 51.8%. Sophomores demonstrate the highest good rate at 24.8%, followed by juniors (23.7%) and seniors (25.5%), fluctuating between 23.5% and 25.5% without significant grade-related trends. The highest excellent rate (30.9%) is observed in sophomores, while freshmen show the lowest (22.5%). Juniors and seniors exhibit excellent rates of 29.6% and 27.1% respectively, demonstrating a pattern of initial increase followed by decline, though with moderate fluctuations. Overall, lung capacity scores across different grade levels show some variation but lack distinct grade-specific patterns.

(2) Analysis of the students' 50-meter performance

The 50-meter sprint serves as a benchmark for lower limb explosive power and is a fundamental requirement for participating in sports and mastering athletic skills [4]. As shown in Table 4, the pass rates for students from freshman to senior year remain consistently high, at 64.3%,69.3%,71.4%, and 75.1% respectively. This indicates that most students meet the passing standards, with overall pass rates in the 50-meter event showing steady improvement as they progress through the academic years. The excellence rate, however, shows a gradual decline: 19.7% for freshmen, followed by 16.2%,13.3%, and 11.5% for sophomores, juniors, and seniors respectively, demonstrating a clear downward trend with advancing grade levels.

Table 4 Statistics of Students' 50-Meter Sprint Results

| | fail (%) | pass a test (%) | good (%) | outstanding (%) |
|---|---|---|---|---|
| Freshmen of the class of 2023 | 1.1 | 64.3 | 14.7 | 19.7 |
| Sophomore of the class of 2022 | 1.3 | 69.3 | 13.0 | 16.2 |
| Junior year of 2021 | 1.6 | 71.4 | 13.5 | 13.3 |
| Senior year of 2020 | 1.2 | 75.1 | 12.1 | 11.5 |

(3) Analysis of Students' Standing Long Jump Performance

Table 5 Statistics of Students' Standing Long Jump Performance

| | fail (%) | pass a test (%) | good (%) | outstanding (%) |
|---|---|---|---|---|
| Freshmen of the class of 2023 | 9.6 | 68.7 | 16.6 | 4.9 |
| Sophomore of the class of 2022 | 9.2 | 70.0 | 17.1 | 3.5 |
| Junior year of 2021 | 9.0 | 65.3 | 19.7 | 5.8 |
| Senior year of 2020 | 10.2 | 74.3 | 12.1 | 3.2 |

The standing long jump assesses students' lower limb explosive power and physical coordination development [5].As shown in Table 5, all grade levels maintain a passing rate above 60%, with seniors achieving the highest at 74.3% and juniors at 65.3%. The overall passing rate shows moderate fluctuations without a clear upward or downward trend with advancing grades. The good rate decreases progressively as grades increase. The excellent rate ranges between 3.2% and 5.8%, with freshmen and juniors showing relatively higher rates of 4.9% and 5.8% respectively. These rates exhibit significant volatility without a distinct grade-related pattern.

(4) Analysis of Students' Sit-and-Flex Forward Performance

Table 6 Statistical Analysis of Student Sit-and-Reach Test Scores

| | fail (%) | pass a test (%) | good (%) | outstanding (%) |
|---|---|---|---|---|
| Freshmen of the class of 2023 | 6.7 | 68.3 | 14.9 | 9.9 |
| Sophomore of the class of 2022 | 9.2 | 72.1 | 13.0 | 5.6 |
| Junior year of 2021 | 9.3 | 70.6 | 11.2 | 8.7 |
| Senior year of 2020 | 13.4 | 74.7 | 6.6 | 5.1 |

The sit-and-reach test measures the range of motion achievable by the body's joints in a static position, reflecting physical flexibility[6].Table 6 reveals that the failure rate increases progressively with higher grade levels, reaching 6.7%,9.2%,9.3%, and 13.4% for freshmen through seniors respectively. All grades maintain a passing rate above 65%, with seniors achieving the highest at

74.7% and freshmen at 68.3%. The overall passing rate shows no clear upward or downward trend with grade progression. The good rate decreases from 14.9% in freshmen to 6.6% in seniors. The excellent rate fluctuates between 5.1% and 9.9%, with freshmen and juniors maintaining relatively high rates of 9.9% and 8.7% respectively, though the overall excellent rate remains low.

(5) Analysis of the 800m and 1000m performance of students

The 800m and 1000m tests primarily assess comprehensive cardiopulmonary function and muscular endurance, serving as crucial indicators in health evaluations .

1) Analysis of the 800m performance of students

Table 7 Statistical Table of Girls' 800m Performance

| | fail (%) | pass a test (%) | good (%) | outstanding (%) |
|---|---|---|---|---|
| Freshmen of the class of 2023 | 7.0 | 74.8 | 12.7 | 5.4 |
| Sophomore of the class of 2022 | 9.7 | 72.6 | 12.4 | 5.1 |
| Junior year of 2021 | 21.1 | 65.1 | 9.1 | 4.6 |
| Senior year of 2020 | 36.0 | 56.3 | 5.1 | 2.4 |

As shown in Table 7, the failure rate in the 800-meter race among female students progressively increases from freshman to senior year, rising from 7.0% in the first year to 36.0% in the fourth year. The failure rates for junior and senior years are 21.1% and 36.0%, respectively. Meanwhile, the percentages of good and excellent performances show a declining trend with advancing grade levels. These findings indicate that the overall performance of female students in the 800-meter race remains suboptimal, highlighting the need for further measures to improve results in this event.

2) Analysis of the 1000m performance of students

Table 8 Statistics of 1000-Meter Race Results for Male Students

| | fail (%) | pass a test (%) | good (%) | outstanding (%) |
|---|---|---|---|---|
| Freshmen of the class of 2023 | 13.5 | 67.7 | 13.8 | 4.8 |
| Sophomore of the class of 2022 | 19.7 | 65.5 | 10.4 | 4.2 |
| Junior year of 2021 | 33.3 | 52.7 | 9.0 | 4.8 |
| Senior year of 2020 | 47.6 | 44.6 | 5.1 | 2.5 |

As shown in Table 8, the failure rate for male students in the 1000-meter race progressively increases with advancing grade levels, rising from 13.5% in their freshman year to 47.6% by their senior year. Meanwhile, both the passing rate and good rate show a consistent decline with higher grades. The excellent rate remains consistently below 5.0%, indicating generally poor performance in the 1000-meter test among male students.

(6) Analysis of Students' Sit-up and Pull-up Performance

The primary function of sit-ups is to utilize the strength of abdominal muscles, whereas pull-ups require a certain level of grip strength and upper limb strength. These two indicators respectively reflect the strength of the waist and abdomen, as well as the strength of the upper limbs [7].

1) Analysis of Students' Sit-ups Performance

As shown in Table 9, the failure rate across all four grades remained consistently low, with none exceeding 5.0%. This indicates that female students generally performed well in sit-ups, with most achieving passing or higher scores. The passing rate stayed stable at over 60.0% across all grades, reflecting strong core strength among female students. However, the excellence rate was less than ideal, with only the third-year senior class exceeding 10%.

Table 9 Statistical Analysis of Sit-Up Performance in Female Students

| | fail (%) | pass a test (%) | good (%) | outstanding (%) |
|---|---|---|---|---|
| Freshmen of the class of 2023 | 4.3 | 77.4 | 11.1 | 7.1 |
| Sophomore of the class of 2022 | 2.4 | 80.8 | 12.0 | 4.7 |
| Junior year of 2021 | 2.5 | 67.0 | 19.3 | 11.0 |
| Senior year of 2020 | 2.5 | 74.2 | 16.8 | 6.3 |

2) Analysis of Students' Pull-up Performance

Table 10 Statistics of Pull-Up Performance in Male Students

| | fail (%) | pass a test (%) | good (%) | outstanding (%) |
|---|---|---|---|---|
| Freshmen of the class of 2023 | 54.8 | 28.3 | 5.2 | 11.5 |
| Sophomore of the class of 2022 | 47.6 | 30.2 | 5.5 | 16.5 |
| Junior year of 2021 | 43.1 | 22.4 | 5.9 | 28.4 |
| Senior year of 2020 | 51.8 | 23.5 | 5.3 | 19.3 |

As shown in Table 10, male students 'pull-up failure rate consistently exceeds 40% across all grade levels, with significant inter-grade variations. Freshmen show a failure rate of 54.8%, while seniors exceed 50%, with all grades maintaining below 30% pass rates. This indicates that male students' overall performance in pull-ups remains concerning.

### 3.2 Factors Influencing Student Physical Health

College students' physical health is influenced by multiple factors, including their own awareness, the quality of school physical education, and their daily exercise habits [8]. Interviews reveal that students' physical health is influenced by multiple factors, including personal awareness, the quality of school physical education, and daily exercise habits. Some students fail to recognize that good physical fitness is essential for health and academic success. Additionally, they often lack sufficient exercise due to heavy academic workloads and internship pressures, while the quality of school physical education remains a concern.

### 3.3 Research Conclusions and Recommendations

#### 3.3.1 Research Conclusions

(1) The physical fitness of students generally shows an increasing trend in failure rate with the advancement of grade level, while the excellence rate slightly rises, the passing rate remains relatively stable, and the good rate fluctuates minimally.

(2) In specific events, the overall performance in lung capacity tests is less than ideal. While the 50-meter dash shows relatively strong results, the overall pass rate improves with advancing grade levels, yet the excellence rate declines. The standing long jump demonstrates generally positive results, though outstanding performances remain scarce. Female students underperform in the 800-meter run and male students in the 1000-meter run, particularly in higher grades where excellent results are rare. The sit-and-reach test shows overall good results, but outstanding performances are limited. Female students excel in sit-ups, though the excellence rate remains low. Male students underperform in pull-ups, especially freshmen and seniors.

#### 3.3.2 Recommendations

Enhance guidance to improve students' awareness. It is essential to actively guide college students to deeply recognize the importance of maintaining a healthy body, particularly for senior students. Extensive publicity and targeted assistance should be provided to help them coordinate the relationship between internship, academic studies, and exercise time, thereby fostering the habit of consistent physical activity.

Teachers should continuously enhance their teaching competencies and intensify research on pedagogical reforms. Given students' limited physical strength and endurance, personalized instruction should be implemented by integrating physical conditioning into specialized training to address physical deficiencies. Students should be guided to progressively improve their performance in specific sports. An integrated online-offline teaching model should be adopted, with online sessions focusing on methodological instruction and offline sessions emphasizing practical guidance.

Schools should prioritize physical education and vigorously advance curriculum reforms. Key measures include: developing integrated in-class and extracurricular teaching plans, incorporating physical activity into sports assessments; introducing a remedial policy for physical fitness tests that treats them as formal courses; and establishing a digital sports platform enabling students to track their health status in real time while motivating active participation in exercise.


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