

Experimental Study on the Psychological Benefits of Orienteering Exercise

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Abstract:Against the backdrop of the rise of modern sports ideology, orienteering, as one of the favorite sports among college students, has been introduced into university campuses. After one semester of experimentation, orienteering exercise was found to effectively improve college students' mental health levels. Significant improvements were observed in key indicators of physical health, including pulse, vital capacity, endurance quality, and body mass index. The mechanisms behind the psychological benefits of orienteering exercise are rooted in the "Law of Happy Tempering" and the "Law of Spiritual Regression." This innovative sport serves as a powerful means to promote the physical and mental health of college students.

Keywords: Orienteering; Psychological Benefits; College Students

1. Introduction

1.1 Research Background

Orienteering is an intriguing sport that involves using maps to reach each destination in the shortest possible time [1]. By combining mental and physical activities, it attracts students to participate actively, embodying a competitive sport that integrates the outdoors, leisure, entertainment, and physical exercise. In recent years, college students in China have faced serious issues regarding physical fitness and mental health. Meanwhile, traditional sports have failed to keep pace with the times, reducing students' enthusiasm for physical exercise and affecting the development of their psychological and physical qualities [2]. Therefore, there is a need to introduce a new sport to motivate college students to engage in physical exercise consciously by aligning with their interests and personality traits. Influenced by modern sports concepts, orienteering has been introduced into universities as a new sport. This paper uses literature research to analyze the research status

of orienteering at home and abroad and the current situation of orienteering courses in colleges, aiming to understand the impact of orienteering on students' physical and mental health and provide theoretical support and scientific basis for promoting orienteering in universities.

2. Research Subjects and Methods

2.1 Research Subjects

Twenty-nine students from the 2023 orienteering elective class at Guangzhou Institute of Technology.

2.2 Research Methods

2.2.1 Data Collection

Questionnaire surveys, interviews, literature research, and mathematical statistics were used. Before and after the experiment, subjects were tested on indicators including height, weight, vital capacity, pulse, endurance running, and mental health level (SCL-90), with comparative analyses conducted.

2.2.2 Experimental Tools and Measures

2.2.2.1 Mental health levels were evaluated using the Symptom Checklist 90 (SCL-90); physical fitness tests were conducted according to the implementation methods and evaluation standards specified in the Student Physical Fitness Standards (Trial Program).

2.2.2.2 The experiment lasted one semester, consisting of 28 classes (90 minutes per class).

2.2.2.3 Each class used at least one map, with distances ranging from 2 to 8 kilometers.

2.3 Data Management

Survey data and measurement results were entered into a computer and analyzed using SPSS software for statistical management.

2.4 Research Objectives

2.4.1 To explore whether one semester of orienteering exercise can produce positive psychological benefits for students.

2.4.2. To investigate the mechanisms underlying the psychological benefits of orienteering exercise.

3. Results and Analysis

3.1 Theoretical Hypotheses on the Psychological Benefits of Orienteering Exercise

3.1.1 The Law of Happy Tempering and Its Positive Impact on College Students' Physical and Mental Health

The "Law of Happy Tempering" refers to a principle where artificial physical hardship training allows individuals to develop "potential abilities," improve physical functions, and thus foster a sense of satisfaction and promote the full development of physical and mental health. Orienteering exercise serves as an integrated carrier that highlights the dual significance of happiness and tempering in life growth. Through orienteering and its inherent Law of Happy Tempering, it effectively enhances physical strength and mental endurance [3], while fully awakening one's vitality. The process of orienteering involves communicating with nature and engaging in a dialogue with one's physical and mental stamina. Driven by humanity's subconscious yearning for nature, the map-reading process induces strong emotional exclusivity and focus on physical, mental, and intellectual tasks. By gradually increasing physical and mental endurance through energy exchange with nature, individuals undergo dual tempering of physical exertion and willpower, stimulating the generation of greater physical strength, tolerance, and willpower [4]. At the

peak of this dual tempering, upon completing the route, the mind and body instantaneously activate a psychological "happiness valve," promoting comprehensive physical and mental health. Evidently, orienteering exercise serves as a natural scenario for the Law of Happy Tempering [5].

3.1.2 The Law of Spiritual Regression and Its Positive Impact on College Students' Mental Health

The "Law of Spiritual Regression" refers to a principle where the mind, through the dual dynamic processes of returning to nature and society, gains space for self-psychological regulation, spontaneously stimulating mental resilience and spiritual comfort to safeguard mental health. Orienteering exercise uniquely serves as a carrier to satisfy humanity's dual need for spiritual regression, exerting a positive effect on mental health by fulfilling this need. As natural beings, humans return to nature and communicate fully with it during orienteering, absorbing strength from nature to nourish their mind and body and dispel worries [6]. Post-route analysis triggers feelings of resolution and tolerance, keeping the mind and spirit in a highly active state. As explained, orienteering meets the need for dual spiritual regression, drawing strength to nourish the mind and body and promote mental health [7]. Undoubtedly, the Law of Spiritual Regression is a natural derivative of orienteering exercise.

3.2 Experimental Results on the Psychological Benefits of Orienteering Exercise

3.2.1 Significant Improvement in College Students' Mental Health Indicators

Table 1. Changes in Mental Health Levels (SCL-90) of College Students Before and After the Experiment (M±SD)

| Object | Item | Pre-test | Post-test | Difference | T-test |
|--------|-------------------------------|-----------|-----------|------------|--------|
| N=29 | Somatization | 1.47±0.47 | 1.39±0.36 | 0.08 | 2.48* |
| | Obsessive-Compulsive Symptoms | 1.89±0.57 | 1.91±0.58 | -0.02 | -0.36 |
| | Interpersonal Sensitivity | 2.00±0.65 | 1.77±0.51 | 0.23 | 4.92** |
| | Depression | 1.69±0.54 | 1.53±0.47 | 0.15 | 3.76** |
| | Anxiety | 1.60±0.54 | 1.44±0.31 | 0.15 | 4.38** |
| | Hostility | 1.60±0.54 | 1.50±0.48 | 0.10 | 2.51* |
| | Phobia | 1.69±0.56 | 1.59±0.56 | 0.10 | 2.06* |
| | Paranoia | 1.70±0.56 | 1.65±0.50 | 0.05 | 1.11 |
| | Psychoticism | 1.55±0.47 | 1.47±0.44 | 0.08 | 2.21 |
| | Total Average Score | 1.67±0.37 | 1.58±0.31 | 0.09 | 3.31** |

Data from Table 1 show that most mental health indicators improved significantly after the experiment. T-tests indicated significant differences in somatization, hostility, phobia, and

psychoticism ($p < 0.05$), with very significant differences in interpersonal sensitivity, depression, anxiety, and the total average score ($p < 0.01$). Obsessive-compulsive symptoms and paranoia

showed no significant changes. These results suggest that orienteering exercise effectively improves college students' mental health.

Field observations revealed that orienteering shortened social distances, enhanced emotional expression, and promoted rational behavior, indicating its positive impact on both immediate and social emotional behaviors.

Mental health is a dynamic state of psychological well-being that integrates physiological, psychological, and social functions. Orienteering, as a "super stimulant," combines the mechanisms of "happy tempering" and "spiritual regression," triggering rapid and profound psychological changes through interactions between physical fitness, mental quality, and mood. This generates sustained positive mindsets and mitigates stress, thereby improving mental health.

Table 2. Changes in Physical Fitness of College Students Before and After the Experiment (M±SD)

| Object | Item | Pre-test | Post-test | Difference | T-test |
|--------------|---------------------|----------------|----------------|------------|----------|
| Male (N=24) | Pulse (times/min) | 77.90±6.35 | 75.17±5.87 | 2.73 | 2.64** |
| | Vital Capacity (ml) | 3524.62±601.05 | 3997.69±457.76 | -473.08 | -6.95** |
| | 1000m Run (s) | 238.37±19.43 | 231.48±13.67 | 6.89 | 3.82** |
| | BMI | 20.14±1.89 | 21.10±2.03 | -0.96 | -7.28** |
| Female (N=5) | Pulse (times/min) | 80.30±5.90 | 77.19±5.62 | 3.11 | 9.92** |
| | Vital Capacity (ml) | 2405.65±379.50 | 2694.76±370.24 | -317.74 | -10.60** |
| | 1000m Run (s) | 237.08±19.04 | 230.00±22.18 | 7.08 | 5.12** |
| | BMI | 19.58±1.99 | 19.81±1.75 | -0.23 | -4.14** |

4. Conclusion

This study concludes that orienteering exercise fully awakens and enhances both psychological and physical functions. Promoting orienteering courses can effectively improve college students' mental health levels.

Key findings include:

Orienteering consumes more energy than conventional fitness activities and integrates elements of joy, promoting muscle development, endurance, and cardiopulmonary function.

It involves active psychological engagement, linking with humanity's innate tendency to return to nature, thereby enhancing mental endurance, mitigating stress, and fostering positive mindsets through communication with nature.

The mechanisms underlying these benefits are primarily the "Law of Happy Tempering" and the "Law of Spiritual Regression."

References

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3.2.2 Substantial Improvement in College Students' Physical Fitness

There is a correlation between mental and physical health. As shown in Table 2, after one semester of orienteering, key physical fitness indicators (pulse, vital capacity, endurance, and BMI) showed significant improvements ($p < 0.01$). Male students experienced decreases in pulse and BMI, with increased vital capacity and improved 1000m running performance. Female students showed similar trends, indicating overall physical fitness enhancement.

Interviews revealed that students felt more physically energetic and satisfied after orienteering, with effects lasting 1–2 days, reflecting the exercise's immediate and profound health benefits (including psychological effects).

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