

# Research Protocol

## Project Summary

**Background:** University students face increasing employment anxiety due to intense labor market competition. Outdoor sports education may improve psychological well-being, but its mechanisms remain unclear.

**Objectives:** This study examines the effect of a 16-week outdoor sports education program on university students' employment anxiety, and investigates the mediating roles of self-management and fear of failure.

**Methods:** A cluster randomized controlled trial with 310 undergraduate students from Tangshan Normal University. Eight classes were randomly allocated to an intervention group (n=157) receiving a 16-week outdoor sports education program (trust exercises, rock climbing, orienteering, expedition tasks) or a control group (n=153) receiving conventional physical education (basketball or aerobics). Outcomes include employment anxiety, self-management, and fear of failure, measured at baseline and post-intervention.

**Time Frame:** September to December 2025 (16 weeks).

**Expected Outcomes:** The intervention is expected to reduce employment anxiety and fear of failure, and enhance self-management, with self-management and fear of failure serving as mediators.

## General Information

### Item Details

Protocol Title The Effect of Outdoor Sports Education on University Students' Employment Anxiety: The Mediating Role of Fear of Failure and Self-Management  
Protocol ID TSTC20258P10

Sponsor Hebei Province Higher Education Teaching Reform Project (2023GJJG563)

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Co-Investigators Chao Chen (intervention), Danyang Wang (data), Shaolong Liu (statistics), Chuang Yan (outdoor), Lei Wang (outdoor), Bao Feng (control), Haijiang Shen (control)

Research Site Tangshan Normal University, Tangshan, Hebei, China

## Rationale & Background

Higher education expansion has led to record numbers of graduates—12.22 million in China in 2025—intensifying job market competition. Employment anxiety, defined as emotional tension when students perceive themselves unlikely to achieve desired employment outcomes, has emerged as a significant mental health concern among university students. Such anxiety undermines psychological well-being and career decision-making.

Fear of failure—a negative affective response when individuals anticipate inability to

attain goals—exacerbates employment-related distress. Self-management—the ability to regulate cognitive, emotional, and behavioral resources—enhances coping capacity. Outdoor sports education, an experiential approach using physical activities in natural settings, has shown potential to mitigate anxiety. However, its mechanisms of action remain underexplored.

This study investigates whether self-management and fear of failure mediate the relationship between outdoor sports education and employment anxiety.

### **Study Objectives**

Primary Objectives:

1. Examine the effect of a 16-week outdoor sports education program on university students' employment anxiety, self-management, and fear of failure
2. Investigate whether self-management mediates the relationship between outdoor sports education and employment anxiety
3. Investigate whether fear of failure mediates this relationship

Secondary Objective:

4. Explore the chain mediation effect of self-management and fear of failure

### **Study Design**

Element Description

Type Interventional, cluster randomized controlled trial

Population Undergraduate students enrolled in compulsory physical education at Tangshan Normal University

Inclusion Enrolled students, willing to provide informed consent

Exclusion Physical injuries, mental health conditions preventing safe participation

Duration 16 weeks

Randomization: Eight intact classes randomly allocated to intervention (4 classes, n=157) or control (4 classes, n=153) using computer-generated random numbers. Allocation concealed in sealed, opaque envelopes opened after baseline.

Blinding: Participants and instructors cannot be blinded due to intervention nature.

Outcome assessors and statisticians are blinded.

### **Methodology**

Intervention Group: Outdoor Sports Education (16 weeks, 90 min/week)

Weeks Theme Activities

1–3 Foundation Trust exercises, navigation basics, low ropes

4–8 Individual Challenge Indoor rock climbing, goal-setting

9–12 Group Cooperation Orienteering, team decision-making

13–16 Application Multi-stage tasks, expedition, problem-solving

Control Group: Conventional Physical Education (16 weeks, 90 min/week)

Basketball: skill drills, small-sided games

Aerobics: choreographed routines

Outcome Measures (administered at baseline and week 16):

Outcome Instrument Dimensions Reliability ( $\alpha$ )

Employment Anxiety Future Employment Anxiety Scale Personal Ability, Knowledge Application, Career Replaceability, Social Relations 0.955–0.971.

Self-Management Self-Management Questionnaire Behavior, Emotion, Time, Cognition Management 0.941.

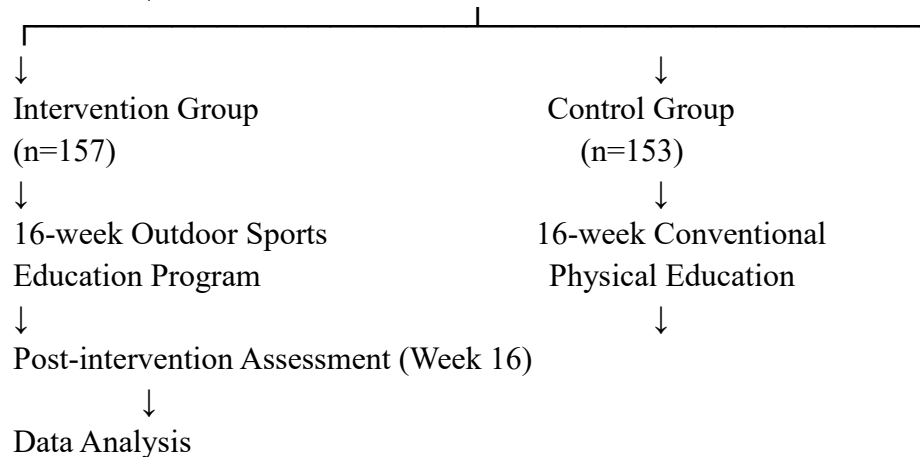
Fear of Failure Performance Failure Appraisal Inventory Embarrassment, Devaluation, Loss of Interest, Disappointing Others 0.79.

### Flow Diagram:

Enrollment (N=310) → Baseline Assessment



Randomization (8 classes)



### Safety Considerations

All activities supervised by trained instructors with first aid certification. Safety equipment (helmets, harnesses, ropes) provided. Emergency response plan established. Participants may withdraw at any time.

### Data Management and Statistical Analysis

Data Management: Double data entry, password-protected storage, anonymized analysis.

Statistical Methods:

Baseline comparability: t-tests, chi-square

Intervention effects: ANCOVA (controlling for baseline and gender)

Mediation: Baron & Kenny approach; bootstrap with 5,000 resamples, bias-corrected 95% CIs

Missing data: multiple imputation

Sample Size: A priori power analysis ( $\alpha=0.05$ , power=0.80,  $d=0.5$ ) required 64/group; final N=310 exceeds requirement.

Software: SPSS 26.0

## Expected Outcomes

The study will: (1) demonstrate intervention effects on employment anxiety, self-management, and fear of failure; (2) establish independent mediating roles; (3) reveal chain mediation pathway. Findings will inform evidence-based interventions for university student mental health.

## Dissemination

Results will be published in peer-reviewed journals, presented at conferences, and shared with participating students and university administration.

## Duration

### Phase Timeline

Phase 1: Preparation and Baseline Measurement (August 1 – August 31)

| Date                    | Main Task   | Responsible Person     | Objective                                    |
|-------------------------|---|------------------------|--|
| August 1 – August 6     | Research team training: standardizing intervention procedures and measurement protocols | Hailong Chang          | Training records, personnel assignment table |
| August 20 – August 30   | Randomization   | Independent researcher | Group allocation list                        |
| August 31 – September 1 | Baseline assessment (T1): questionnaire administration                                  | Chao Chen              | Complete baseline data                       |

Phase 2: Intervention Implementation (September 1 – December 19)

| Period           | Week        | Theme                | Activities   | Intensity     | Responsible Person |
|------------------|-------------|----------------------|--|---------------|--------------------|
| Sept 1 – Sept 21 | Weeks 1–3   | Foundation           | Trust exercises, navigation basics, ropes                        | Low           | Chao Chen          |
| Sept 22 – Oct 19 | Weeks 4–8   | Individual Challenge | Indoor rock climbing (techniques, belaying, goal-setting)        | Moderate-high | Chuang Yan         |
| Oct 20 – Nov 16  | Weeks 9–12  | Group Cooperation    | Orienteering (small-group navigation, time-pressured challenges) | Moderate      | Danyang Wang       |
| Nov 17 – Dec 19  | Weeks 13–16 | Application          | Multi-stage tasks, group problem-solving, mini-expedition        | Variable      | Bao Feng           |

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### Phase 3: Post-Assessment and Data Organization (December 20 – December 28)

| Date                         | Main Task   | Responsible Person         | Objective                          |
|------------------------------|---|----------------------------|------------------------------------|
| December 20 –<br>December 22 | Post-assessment (T2):<br>questionnaire administration             | Chao Chen,<br>Danyang Wang | Complete<br>post-intervention data |
| December 23 –<br>December 25 | Data entry and cleaning   | Haijiang Shen              | Clean dataset                      |
| December 26 –<br>December 28 | Preliminary data analysis<br>(descriptive statistics,<br>t-tests) | Shaolong Liu               | Preliminary results                |

### Project Management

#### Role Name Responsibility

Principal Investigator Hailong Chang Overall coordination, manuscript

Intervention Lead Chao Chen Program delivery

Data Manager Danyang Wang Data collection, entry

Statistician Shaolong Liu Statistical analysis

Facilitators Chuang Yan, Lei Wang Outdoor activity delivery

Control Coordinators Bao Feng, Haijiang Shen Control group

### Ethics

Ethical Approval: Tangshan Normal University Institutional Review Board (TSTC2025-8-10).

Informed Consent: Written consent obtained from all participants prior to baseline. The consent form explains purpose, procedures, duration, risks, benefits, confidentiality, and right to withdraw.

Confidentiality: All data anonymized; personal identifiers removed before analysis.

#### Budget Summary

Funding: Hebei Province Higher Education Teaching Reform Project (2023GJJG563, 50,000 CNY awarded); Tangshan Normal University (20,000 CNY pending).

### References

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