

# An eight-week study comparing recreational basketball games and interval running to improve fitness and body composition in inactive young adults

<b>Submission date</b> 10/02/2026	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 12/02/2026	<b>Overall study status</b> Completed	<input checked="" type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 12/02/2026	<b>Condition category</b> Other	<input type="checkbox"/> Individual participant data <input checked="" type="checkbox"/> Record updated in last year

**Plain English summary of protocol**  
Not provided at time of registration

## Contact information

**Type(s)**  
Public, Scientific, Principal investigator

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## Additional identifiers

## Study information

**Scientific Title**  
Effect of basketball small-sided games and running-based high-intensity interval training on physical adaptability in untrained young individual: a randomized controlled study

## Study objectives

### Ethics approval required

Ethics approval required

### Ethics approval(s)

approved 16/07/2025, Ethics Committee of Hunan Mechanical & Electrical Polytechnic (-, Hunan, 410000, China; -; 1187033139@qq.com), ref: 20250710

### Primary study design

Interventional

### Allocation

Randomized controlled trial

### Masking

Open (masking not used)

### Control

Active

### Assignment

Parallel

### Purpose

Prevention

### Study type(s)

### Health condition(s) or problem(s) studied

Fitness and body composition in inactive young adults

### Interventions

This study was an 8-week, three-arm, parallel-group randomized controlled trial. Ninety untrained young adults were randomly allocated (1:1:1; gender-stratified, concealed envelopes) to: (1) basketball small-sided games (SSG), (2) running-based high-intensity interval training (HIIT), or (3) a non-training control group. The intervention groups trained 3 times per week for 8 weeks. Each session began with a standardized 15-min warm-up, followed by 16 min of main training. SSG used 3v3 (4×4 min, 3-min rests) or 5v5 (2×8 min, 5-min rest) formats. HIIT used 30–30 or 40–20 running intervals at ~80–85% HR<sub>max</sub> in 4 sets × 4 repetitions with 3-min rest between sets (16 min total work). Heart rate and perceived exertion were monitored during training. Outcomes were assessed pre- and post-intervention by blinded assessors, including body composition/anthropometrics and physical fitness tests (strength, jumps, sprint speed, change of direction, and aerobic endurance).

### Intervention Type

Behavioural

### Primary outcome(s)

1. Body mass measured using portable scale (SECA 760; accuracy 0.1 kg) at Baseline (Week 0) and Post-intervention (Week 8)
2. Body mass index (kg/m<sup>2</sup>) measured using body mass and height obtained from a portable stadiometer (SECA 213; accuracy 0.1 cm) at Baseline (Week 0) and Post-intervention (Week 8)
3. Handgrip strength (left hand) measured using measured using a calibrated electronic hand dynamometer (TKK 5101 GripD) at Baseline (Week 0) and Post-intervention (Week 8)
4. Handgrip strength (right hand) measured using measured using a calibrated electronic hand dynamometer (TKK 5101 GripD) at Baseline (Week 0) and Post-intervention (Week 8)
5. Standing long jump distance measured using an infrared long-jump measuring device (FairPlay FPTYD) at Baseline (Week 0) and Post-intervention (Week 8)
6. Vertical jump height measured using iPhone 15 slowmotion video (240 fps) analysed with the My Jump 2 app at Baseline (Week 0) and Post-intervention (Week 8)
7. Tenmetre sprint time measured using an infrared timing system (FairPlay FP2000C) at Baseline (Week 0) and Post-intervention (Week 8)

### **Key secondary outcome(s)**

1. Thirtymetre sprint time measured using an infrared timing system (FairPlay FP2000C) at Baseline (Week 0) and Post-intervention (Week 8)
2. 5–0–5 changeofdirection test time measured using an infrared timing gate (FairPlay FP2000C) at Baseline (Week 0) and Post-intervention (Week 8)
3. Twentymetre multistage fitness test total distance measured using Léger 20m shuttle run protocol at Baseline (Week 0) and Post-intervention (Week 8)

### **Completion date**

25/11/2025

## **Eligibility**

### **Key inclusion criteria**

1. Age between 18 and 22 years.
2. Sedentary or untrained young adults, defined as not participating in regular structured exercise or sports training during the previous 6 months.
3. Male and female participants.
4. Apparently healthy, with no self-reported cardiovascular, metabolic, neurological, or musculoskeletal disorders that would contraindicate high-intensity exercise.
5. Able to safely perform high-intensity physical exercise, as confirmed by a pre-participation health screening.
6. Willing and able to participate in an 8-week supervised exercise intervention and attend all testing sessions.
7. Provided written informed consent prior to participation.

### **Healthy volunteers allowed**

Yes

**Age group**

Adult

**Lower age limit**

18 years

**Upper age limit**

22 years

**Sex**

All

**Total final enrolment**

90

**Key exclusion criteria**

1. Any acute or chronic disease (medical condition) that would make participation unsafe.
2. Any current sports injury or musculoskeletal problem.
3. Being on any ongoing treatment regimen (e.g., current medical treatment during the recruitment period).
4. Being physically active  $\geq 90$  minutes per week (i.e., not meeting the “untrained/sedentary” criterion used in this study).
5. Inability or unwillingness (for intervention arms) to follow the study protocol with a training compliance rate of at least 85%.
6. Inability to complete all assessment tests throughout the study period.
7. Not providing written informed consent.

**Date of first enrolment**

10/07/2025

**Date of final enrolment**

16/07/2025

**Locations****Countries of recruitment**

China

**Sponsor information****Organisation**

Huzhou University

**ROR**

<https://ror.org/04mvpxy20>

# Funder(s)

## Funder type

### Funder Name

Huzhou University

### Alternative Name(s)

### Funding Body Type

Private sector organisation

### Funding Body Subtype

Universities (academic only)

### Location

China

# Results and Publications

## Individual participant data (IPD) sharing plan

### IPD sharing plan summary

Not expected to be made available

### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Other files</a>	Informed consent form version 1	10/07/2025	12/02/2026	No	No
<a href="#">Participant information sheet</a>	version 1	10/07/2025	12/02/2026	No	Yes
<a href="#">Protocol file</a>	version 1	10/07/2025	12/02/2026	No	No
<a href="#">Statistical Analysis Plan</a>	version 1	10/07/2025	12/02/2026	No	No