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

Submission date
10/02/2026

Recruitment status
No longer recruiting

Registration date
12/02/2026

Overall study status
Completed

Last Edited
09/09/2026

Condition category
Other

[_] Prospectively registered
[X] Protocol
[X] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Public, Scientific, Principal investigator

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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% HRmax 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/m²) 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 ≥ 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?
Results article		22/08/2026	09/09/2026	Yes	No
Other files	Informed consent form version 1	10/07/2025	12/02/2026	No	No
Participant information sheet	version 1	10/07/2025	12/02/2026	No	Yes
Protocol file	version 1	10/07/2025	12/02/2026	No	No
Statistical Analysis Plan	version 1	10/07/2025	12/02/2026	No	No