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The benefits of combining Pilates and HIIT for competitive athletes

Submission date 29/07/2026	**Recruitment status** No longer recruiting	[_] Prospectively registered [X] Protocol [_] Statistical analysis plan [X] Results [_] Individual participant data
Registration date 31/07/2026	**Overall study status** Completed	
Last Edited 29/10/2026	**Condition category** Other	

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Scientific, Public, Principal investigator

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EC Registration Number
ECR/431/Inst/TN/2013/RR-24

Study information

Scientific Title
Effect of Pilates and HIIT on selected physiological, biochemical and psychological variables among sports players

Study objectives

To determine the effectiveness of a 16-week combined Pilates and high-intensity interval training (HIIT) program in improving physiological, biochemical, neuroendocrine, psychological, and physical performance outcomes in healthy recreational sports players aged 18–25 years.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 24/11/2022, Institutional Ethics Committee of SRM Medical college Hospital & Research Centre (SRM Nagar, Kattankulathur, Chengalpattu District, Tamil Nadu, Kattankulathur, 603203, India; +91; srmhospital.ktr@srmist.edu.in), ref: 8481

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Open (masking not used)

Control
Active

Assignment
Parallel

Purpose
Treatment

Study type(s)

Health condition(s) or problem(s) studied
A Pilates and high-intensity interval training (HIIT) program for healthy recreational sports players.

Interventions
Participants were recruited from recreational sports players and the investigator's health studio clients after eligibility screening and obtaining written informed consent. The two intervention groups (Pilates and HIIT) were formed based on the predefined recruitment source rather than through a formal random allocation procedure.

Participants in the intervention group received a supervised 16-week combined Pilates and high-intensity interval training (HIIT) program. The intervention consisted of five sessions per week, including three HIIT sessions and two Pilates sessions. HIIT was performed on a treadmill at 85–90% of maximum heart rate using interval training, while Pilates consisted of mat-based exercises focusing on core strength, flexibility, posture, balance, and muscular endurance. Each session lasted approximately 45–60 minutes.

Participants in the active control group continued their structured conventional exercise program of similar frequency and duration without receiving the combined Pilates and HIIT intervention.

Both interventions were conducted over 16 weeks according to the study protocol, with baseline and post-intervention assessments of the predefined physiological, biochemical, and psychological outcome measures.

Intervention Type
Behavioural

Primary outcome(s)
1. Aerobic capacity (VO_2max) measured using a graded exercise test (mL/kg/min) at baseline (Week 0) and after completion of the 16-week intervention (Week 16)

2. Serum cortisol levels measured using a laboratory biochemical analysis at baseline and Week 16

Key secondary outcome(s)

Completion date
27/06/2023

Eligibility

Key inclusion criteria
1. Healthy recreational sports players
2. Age 18–25 years
3. Both males and females (if applicable to your study; otherwise specify only males or only females)
4. Willing to provide written informed consent
5. Able to participate in a 16-week combined Pilates and high-intensity interval training (HIIT) program
6. Free from cardiovascular, neurological, musculoskeletal, or metabolic disorders that would limit exercise participation

Healthy volunteers allowed
Yes

Age group
Adult

Lower age limit
18 Years

Upper age limit
25 Years

Sex
All

Total final enrolment
80

Key exclusion criteria
1. Individuals younger than 18 years or older than 25 years
2. History of cardiovascular, respiratory, neurological, musculoskeletal, or metabolic disorders that could affect exercise participation
3. Current injury or illness preventing participation in the exercise program
4. Participation in another structured exercise training or clinical research program during the study period
5. Use of medications known to significantly affect metabolic, hormonal, or cardiovascular responses
6. Pregnancy (if female participants were included)
7. Failure to provide written informed consent or inability to comply with the study protocol

Date of first enrolment
15/12/2022

Date of final enrolment
28/02/2023

Locations

Countries of recruitment
India

Sponsor information

Organisation
SRM University

ROR
https://ror.org/037skf023

Funder(s)

Funder type

Funder Name
Investigator initiated and funded.

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?
Participant information sheet			29/07/2026	No	Yes
Preprint results		06/10/2026	29/10/2026	No	No
Protocol file			29/07/2026	No	No