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Placebo effect during sprint training in simulated altitude

Submission date	Recruitment status	[_] Prospectively registered
18/02/2025	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
25/03/2025	Completed	[_] Results
Last Edited	**Condition category**	[_] Individual participant data
25/03/2025	Other	[X] Record updated in last year

Plain English summary of protocol

Background and study aims
Repeated sprint training in hypoxia (low oxygen levels) has been proposed to further enhance performance compared to the same training in normoxia (normal oxygen levels). Given the positive belief about hypoxic training, it is possible that performance may be artificially increased by a placebo effect. However, this has never been tested yet. This study proposes to compare the response to repeated sprint training between three groups of participants: a control group that trains in normoxia, an experimental group that trains in hypoxia and a placebo group that trains in normoxia but that was told that training was in hypoxia.

Who can participate?
Recreationally or well-trained participants aged over 18 years and below 30 years who are accustomed to repeated sprints during their personal practice

What does the study involve?
There are 13 visits of 45 minutes each on 7 consecutive weeks. Participants are allocated to control (normoxia), placebo (normoxia but told that they were in hypoxia) or hypoxia based on their personal performance on the pre-test session.

What are the possible benefits and risks of participating?
Potential benefits are an increase in physical fitness. Potential risks are fatigue due to the training session.

Where is the study run from?
Euromov Digital Health in Motion (France)

When is the study starting and how long is it expected to run for?
October 2021 to December 2022

Who is funding the study?
University of Montpellier (France)

Who is the main contact?
Dr François Favier, francois.favier@umontpellier.fr

Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
IRB-EM 2201C

Study information

Scientific Title
Examining placebo effects after a three-week repeated-sprint training program under hypoxic conditions in recreationally trained subjects

Acronym
OPTIPOXIE

Study objectives
1. The belief of exercising in hypoxia leads to performance improvement because of the placebo effect
2. Training in hypoxia leads to further improvement compared to the placebo group

Ethics approval required

Ethics approval required

Ethics approval(s)
approved 02/03/2022, IRB EuroMov-Montpellier (700 avenue du Pic ST Loup, Montpellier, 34090, France; +33 (0)434432630; irb@euromov.eu), ref: IRB-EM 2201C

Study design
Monocenter interventional double-blinded randomized controlled trial

Primary study design
Interventional

Study type(s)
Other

Health condition(s) or problem(s) studied
Effectiveness of repeated-sprint training in moderately trained subjects

Interventions
Participants were familiarized with the Wingate test in week 1. They were tested on Wingate and repeated sprint tests on week 2 (both tests being separated by 48 h). They were randomly balanced in a control (normoxia), placebo (normoxia but told that they were in hypoxia) or hypoxia group based on their personal performance (mean power output) on the pre-test session. They were subjected to two training sessions of repeated sprints per week for 3 weeks (weeks 3 to 5). They were tested twice on Wingate and repeated sprint tests (weeks 6 and 7), with 1 week between the same tests.

Intervention Type
Other

Primary outcome(s)
Mean power output measured on an ergocycle during testing sessions, i.e. at baseline, 1 and 2 weeks after training completion

Key secondary outcome(s))
1. Heart rate measured by Polar H10 chest sensor during all training and testing sessions
2. Rate of perceived exertion measured with the Borg's scale (6 to 20) after each training and testing session
3. Oxygen pulse saturation measured via an infrared sensor during all training sessions
4. Participants' wellness measured by a questionnaire (Hooper and Mackinnon, 1995) before each testing session
5. Peak power output measured on an ergocycle at baseline, 1 and 2 weeks after training completion
6. Mean power output measured on an ergocycle during all training sessions

Completion date
16/12/2022

Eligibility

Key inclusion criteria
1. Regular sport training + being accustomed to intense exercise such as repeated sprints
2. No intolerance to moderate hypoxia
3. No stay at altitudes above 1500 m in the previous 2 months
4. Aged over 18 years and below 30 years

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Upper age limit
30 years

Sex
All

Total final enrolment
33

Key exclusion criteria
Does not meet the inclusion criteria

Date of first enrolment
01/04/2022

Date of final enrolment
01/09/2022

Locations

Countries of recruitment
France

Study participating centre
Euromov Digital Health in Motion lab
700 avenue du Pic St Loup
Montpellier
France
34090

Sponsor information

Organisation
EuroMov Digital Health in Motion

ROR
https://ror.org/054b22910

Funder(s)

Funder type
University/education

Funder Name
Université de Montpellier

Alternative Name(s)
University of Montpellier, UM

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
France

Results and Publications

Individual participant data (IPD) sharing plan
The anonymized datasets generated during the current study will be available on reasonable request from Dr François Favier (francois.favier@umontpellier.fr)

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes