

The Impact of Normobaric Hypoxia-inducing High-Intensity Interval Training Program on the Expression Levels of Selected miRNAs and Running Economy in Endurance-trained Athletes

ACTRN12624000126516

Status	RECRUITING
Sponsor	University School of Physical Education in Kraków
Enrollment	32 participants

Plain Language Summary

Elite endurance athletes — such as middle and long-distance runners — are always looking for training methods that can improve their performance. Training at altitude (or simulating altitude) has long been used to boost endurance, but the biological mechanisms are not fully understood. This study is exploring whether performing high-intensity interval training (HIIT) in a low-oxygen environment (simulated altitude) produces different changes in specific gene regulators called microRNAs — which influence how the body adapts to exercise — compared to the same training at normal oxygen levels.

Male track and field athletes will be randomly divided into four groups: a control group, a group exposed to simulated altitude without training, and two training groups (one in normal air, one in simulated altitude). Blood samples will be collected before, during, and after the 6-week programme to measure microRNA levels, muscle damage markers, and running economy (how efficiently energy is used while running).

You may be eligible if you are a male endurance athlete aged 18 to 38, specialising in middle or long-distance events, with no contraindications to exercise, no metabolic disorders, and no recent high-altitude exposure. Smokers, those with bleeding disorders, or anyone with active infections are not eligible.

Key Eligibility Criteria

Inclusion (5)

- Athletes specializing in middle and long-distance events
- Aged 18 years or older
- No contraindications to physical exercise
- Absence of diagnosed metabolic disorders
- Not currently undergoing pharmacotherapy

Exclusion (6)

- Tobacco smoking
- Alcohol and substance abuse
- Staying at altitudes above 2000m for more than 48 hours within the 6 months prior to the study
- History of high-altitude sickness in family medical history
- Active infections or inflammatory conditions in the body
- ... and 1 more (see full listing online)

Locations (1 total)

Malopolska, Poland

<https://www.anzctr.org.au/Trial/Registration/TrialReview.aspx?ACTRN=ACTRN12624000126516>

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