

# Prevention of overtraining syndrome in young (elite) athletes: Development of a monitor and advanced techniques for clinical diagnosis.

Published: 10-05-2006

Last updated: 14-05-2024

The main objective of this research proposal is to 1). develop an on-line monitor for young athletes to prevent them from a systematic overload and to avoid overtraining 2) develop clinical tools to improve diagnostics of overtraining.

<b>Ethical review</b>	Not approved
<b>Status</b>	Will not start
<b>Health condition type</b>	Other condition
<b>Study type</b>	Interventional

## Summary

### ID

NL-OMON29839

### Source

ToetsingOnline

### Brief title

Prevention of overtraining syndrome

### Condition

- Other condition

### Synonym

overreaching, Staleness

### Health condition

overtraindheid bij sporters

### Research involving

Human

## Sponsors and support

**Primary sponsor:** Universitair Medisch Centrum Groningen

**Source(s) of monetary or material Support:** ZonMw

## Intervention

**Keyword:** diagnosis, monitor, overtraining, prevention

## Outcome measures

### Primary outcome

Performance: Interval Shuttle Run Test (ISRT) for ball team players (22), Zoladz

Test for runners and Cycle ergometer test for cyclists.

Monitor: Recovery Stress Questionnaire for athletes (RESTQ-sport)

### Secondary outcome

Changes in hormone profiles as a result of two graded max. exercise tests:

ACTH, Prolactin, GH, and Cortisol.

Finger Precuing Task (FPT) psychomotor speed.

EEG: Power and coherence spectra (F3-P4, F4-P3, eyes-open and eyes-closed

conditions 2 minutes each) for left/right balance and overall slowing (power),

and for left-frontal/ right parietal coherence, measured before, during and

after a stress test. Saliva cortisol is measured before and after the stress

test.

## Study description

### Background summary

Prevention of overtraining syndrome in young (elite) athletes: Development of a

monitor and advanced techniques for clinical diagnosis.

The high workload of top athletes is frequently linked to overtraining (life time prevalence 20% to 60%). Especially between 15 and 20 years of age the top athlete is not only confronted with an increased training load, but also with an increased social and psychological load. To protect the athlete and to improve efficiency of the training and development phase of an athlete, prevention of overload and overtraining is demanded.

A multi causal model of overtraining hypothesizes that an online monitor of load, and capacities to cope with these loads, serves as an appropriate tool to signal the development of overtraining in young top athletes.

New knowledge about endocrinological responses to acute and high physical overload and brain activity in psychiatric diseases offer new opportunities to improve clinical diagnostic tools of overtraining.

## **Study objective**

The main objective of this research proposal is to 1). develop an on-line monitor for young athletes to prevent them from a systematic overload and to avoid overtraining 2) develop clinical tools to improve diagnostics of overtraining.

## **Study design**

1. A prospective study using an online monitor (logbook method).
2. A patient-control design to test differences in endocrinological adaptation after heavy physical exercise tests and brain activity after a stress test.

Patients are included if performance decrements are measured in the monitor  
Controls are included if performance decrements are lacking.

## **Intervention**

none.

## **Study burden and risks**

There are no risks associated to the participation of the online monitor. Also, many athletes are used to fill in log books and questionnaires. Stress and recovery are registered only once a month posing only a minor workload on the athlete. Two other questionnaires are only used twice or three times during the entire season. Performance testing in the monitor, as a replacement of normal a training session, will not lead to any physical burden higher than any training does.

There are no known risks for athletes to participate in tasks of psychomotor slowness and in EEG measurements. The risk of participating in the double

maximal exercise test is the same as the risk related to sport participation, since a maximal exercise is part of their regular training program or match/game. An insurance covers the risks involved in the maximum exercise tests with collection of blood samples (four times 20 ml), which involves less than half the number of participants.

The specific sensitivity to overload and overtraining, their age dependant causes and age dependant physiological changes defines this study as dependant to the population under study.

The frequent occurrence of overload and overtraining and the impact that performance decrements and failure can have on young athletes, justifies the minor burdens of this study if increased knowledge about prevention and diagnosis of overtraining is obtained.

## Contacts

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### Scientific

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## Trial sites

### Listed location countries

Netherlands

## Eligibility criteria

### Age

Adolescents (12-15 years)  
Adolescents (16-17 years)  
Adults (18-64 years)

Elderly (65 years and older)

## Inclusion criteria

Young elite athletes between 15 and 20 years, males.

## Exclusion criteria

Athletes suffering from any medical problem that is supposed to be a risk factor for maximal exercise testing or limits their exercise capacity (eg viral infections, anemia, allergy, medication, diabetes, hypothyreoida, cardiac diseases) will not be included in the study sample.

## Study design

### Design

**Study type:** Interventional

Masking: Open (masking not used)

Control: Uncontrolled

Primary purpose: Basic science

### Recruitment

NL

Recruitment status: Will not start

Enrollment: 150

Type: Anticipated

## Ethics review

Not approved

Date: 10-05-2006

Application type: First submission

Review commission: CCMO: Centrale Commissie Mensgebonden Onderzoek (Den Haag)

## Study registrations

### Followed up by the following (possibly more current) registration

No registrations found.

### Other (possibly less up-to-date) registrations in this register

No registrations found.

### In other registers

Register	ID
CCMO	NL11650.000.06