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High intensity exercise may be an efficient startegy for obesity management

Submission date	Recruitment status	[_] Prospectively registered
26/02/2016	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
01/03/2016	Completed	[X] Results
Last Edited	**Condition category**	[_] Individual participant data
30/11/2020	Nutritional, Metabolic, Endocrine	

Plain English summary of protocol

Background and study aims
Sedentary behaviour (taking part in less than an hour a week of physical activity) is associated with an increased risk of heart disease, type 2 diabetes and some forms of cancer, as well as poorer mental wellbeing. It is a growing problem, and is thought to contribute significantly to the high levels of obesity worldwide. For many people, not having enough time to exercise is often used as an excuse for sedentary behaviour. There is therefore a growing amount of research looking into exercise strategies that involve a shorter time commitment but still provide health benefits. A recent study showed that very brief high-intensity exercise in the form of sprinting, made up of sprints lasting for 6-10 seconds, was found to be motivating and tolerable for participants and can even help to burn fat. The aim of this study is to find out whether taking part in high intensity exercise for six weeks can help improve blood sugar control, BMI and physical fitness in young obese adults.

Who can participate?
Obese adults aged between 18 and 30 who have a sedentary lifestyle.

What does the study involve?
Participants are randomly allocated to one of two groups. Those in the first group take part in the training program, which consists of three training sessions per week for six weeks (a total of 18). Those in the second group do not take part in any training during the 6 weeks and are also asked to consume their normal diet and to maintain their typically sedentary behavior during the training period. At the start of the study, after the program ends and then 24, 72 hours and two weeks after the final session, participants in both groups complete a number of tests in order to assess how well their bodies are able to process sugar, physical characteristics (such as weight) and how physically fit they are.

What are the possible benefits and risks of participating?
Participants will benefit from being informed about their health and fitness levels and could also take advantage of training program to improve their physical fitness and health. There are no direct risks to participants taking part in this study.

Where is the study run from?
University of Moncton (Canada)

When is the study starting and how long is it expected to run for?
January 2014 to June 2014

Who is funding the study?
University of Moncton (Canada)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
N/A

Study information

Scientific Title
Effect of supramaximal exercise training on performance variables and metabolic changes in obese adults

Study objectives

The aim of this study is to evaluate the effects of six weeks of supramaximal exercise training (SET) and determine its effects on blood glucose control and insulin resistance, BMI and fitness.

Ethics approval required
Old ethics approval format

Ethics approval(s)
University's Human Research Ethics Committee (UHRC) of the University of Moncton, 03/12 /2013, ref: 1314-020

Study design
Single-center randomised controlled trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Other

Study type(s)
Treatment

Participant information sheet
Not available in web format, please use the contact details below to request a patient information sheet.

Health condition(s) or problem(s) studied
Obesity

Interventions
At the start of the study, participants undergo two sessions of preliminary testing after an overnight fast to determine athropometric measurements, phsyiological measures (lung capacity and blood pressure) and metabolic testing.

Once the participants completed preliminary testing, they complete a total of 18 training sessions (three sessions per week for six weeks). Each of the prescribed sessions begins with a 5-minute warm-up of continuous cycling at moderate intensity (40% of their individual VO2peak power) followed by 6 repetitions of SET intervals with 2 minutes of passive recovery between each repetition. Each SET repetition lasts for six seconds, and the participants are asked to pedal at maximal velocity against the resistance determined during day three. The total duration of each session is approximately 15 minutes. The training sessions are conducted under the supervision of a member of the research team, and velocities (in RPM) were recorded for each second of the bout to ensure that fixed velocities remained constant.

Post-intervention metabolic and blood pressure measurements are conducted 24-hours, 72-hours and two-weeks after the final training session to obtain information on the potential lasting effects of SET. The post-intervention anthropometric assessment is performed 24 hours

after the final SET session, and the post-intervention exercise tests are performed 72 hours after the final SET session.

Intervention Type
Other

Primary outcome measure
Insulin resistance (HOMA-IR) is determined by measuring blood glucose and insulin concentrations at baseline, 24 hours, 72 hours and 2 weeks post-intervention.

Secondary outcome measures
1. BMI is calculated as the ratio of mass (kg) to height squared (m2) at baseline and 24 hours post-intervention
2. Maximal oxygen consumption (VO2max) is measured using an incremental maximal test at baseline and 72 hours post-intervention
3. Maximal power is measured using a force-velocity test on a cycle ergometer at baseline and 72 hours post-intervention
4. Blood pressure is measured using an automated blood pressure monitor at baseline, 72 hours and 2 weeks post-intervention

Overall study start date
10/01/2014

Completion date
01/06/2014

Eligibility

Key inclusion criteria
1. Aged between 18 an 30 years
2. Obesity (BMI >30 kg/m2)
3. Sedentary (<1 h/week of structured exercise)

Participant type(s)
Healthy volunteer

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
24

Total final enrolment
24

Key exclusion criteria
History of cardiovascular or chronic health problems, drug consumption, or smoking.

Date of first enrolment
01/02/2014

Date of final enrolment
25/02/2014

Locations

Countries of recruitment
Canada

Study participating centre
University of Moncton
School of Kinesiology and Leisure
Faculty of Health Sciences and Community Services
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Sponsor information

Organisation
University of Moncton (Université de Moncton)

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Sponsor type
University/education

ROR
https://ror.org/029tnqt29

Funder(s)

Funder type
University/education

Funder Name
University of Moncton (Université de Moncton)

Results and Publications

Publication and dissemination plan
Planned publication of a study protocol and results paper in an international peer-reviewed scientific journal.

Intention to publish date
31/12/2016

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	28/09/2017	30/11/2020	Yes	No