Mitochondrial Capacity in Young and Elderly Males

No registrations found.

Ethical review	Positive opinion
Status	Recruitment stopped
Health condition type	-
Study type	Observational non invasive

Summary

ID

NL-OMON22045

Source
NTR

Brief title
MCAGE

Health condition

Sarcopenia

Sponsors and support

Primary sponsor: NWO, TIFN
Source(s) of monetary or material Support: NWO,, TIFN

Intervention

Outcome measures

Primary outcome

The main study parameter is mitochondrial capacity, measured as the rate of recovery of muscle oxygen consumption after exercise measured using NIRS in the vastus lateralis, gastrocnemius and tibialis anterior.

Secondary outcome

Physical activity is monitored using a wearable accelerometer over a period of seven days and a 24 hour urine is collected in order to analyse markers of mitochondrial function in urine. Blood is collected to analyse markers of mitochondrial function in plasma.

Study description

Background summary

Ageing is associated with a decline in muscle mitochondrial function. Measuring muscle mitochondrial function is challenging and to routinely assess mitochondrial function in response to exercise and dietary interventions, practical, non-invasive and robust measurements are needed. Near-infrared spectroscopy (NIRS) is a novel technique that allows to non-invasively measure mitochondrial capacity in the human muscle. Although the technique is promising in measuring mitochondrial function during ageing, it is yet be established how age-related changes in mitochondrial function differ between different muscle types. The primary objective of this study is to measure mitochondrial capacity using NIRS in young and older healthy males in three different muscles (vastus lateralis, gastrocnemius and the tibialis anterior) to give insights on how age-related changes in mitochondrial function differ between different muscle types.

Study objective

Ageing decreases mitochondrial capacity

Study design

-

Contacts

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Eligibility criteria

Inclusion criteria

Young
• Male, 19-25 years
• BMI 18.5-27 kg/m2
• Normal activity levels: 1-2 hour per week engaged in a structured exercise session

Elderly
• Male, 65-71 years
• BMI 18.5-27 kg/m2
• Normal activity levels: 1-2 hour per week engaged in a structured exercise session
• Short physical performance battery score >6

Exclusion criteria

• (known symptoms of) Metabolic diseases, e.g. type I or II diabetes,
• Health concerns regarding respiratory and pulmonary diseases, e.g. COPD, (exercise induced) asthma and cardiovascular disease.
• Impaired physical performance (defined as short physical performance battery score < 6) (Only for elderly group)
• Contraindications for electrical stimulation, e.g. cardiac pacemaker
• Contraindications for muscle biopsy, e.g. usage of anticoagulants (low dose aspirin allowed)
• Regular smoker (defined as smoking >5 cigarettes per week)
• Vastus lateralis skinfold >30mm
• Haemoglobin concentrations below 8.0 mmol/L
• Usage of recreational drugs, e.g. marihuana, amphetamines and cocaine during the study (starting after first screening day)
• Recent usage (within four months) of supplements with suggestive training effects, e.g. creatine phosphate, EPO or anabolic steroids.
• Current or recent (<2 weeks) participation in other clinical trials

Study design

Design

Study type:	Observational non invasive
Intervention model:	Parallel

Allocation:	Non controlled trial
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-09-2018
Enrollment:	40
Type:	Actual

IPD sharing statement

Plan to share IPD: Undecided

Ethics review

Positive opinion

Date:	24-04-2019
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

ID: 45934
Bron: ToetsingOnline
Titel:

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

No registrations found.

In other registers

Register	ID
NTR-new	NL7695
CCMO	NL65872.081.18

Register	ID
OMON	NL-OMON45934

Study results