# Assessment of a novel strategy to attenuate muscle mass loss during 2 weeks of bed rest

Gepubliceerd: 14-04-2017 Laatst bijgewerkt: 18-08-2022

We hypothesize that applying BFR will decrease the loss in leg muscle mass during 2 weeks of bed rest.

| | |
|---|---|
| **Ethische beoordeling** | Positief advies |
| **Status** | Werving gestopt |
| **Type aandoening** | - |
| **Onderzoekstype** | Interventie onderzoek |

## Samenvatting

### ID

NL-OMON22281

**Bron**
NTR

**Verkorte titel**
Bed Rest & Muscle Mass

**Aandoening**

Disuse, Immobilization, Injury

### Ondersteuning

**Primaire sponsor:** Maastricht University
**Overige ondersteuning:** Maastricht University

### Onderzoeksproduct en/of interventie

### Uitkomstmaten

**Primaire uitkomstmaten**

To assess the amount of muscle mass that is lost following 2 weeks of bed rest and whether

BFR can be applied to effectively preserve muscle mass and strength during bed rest.

# Toelichting onderzoek

### Achtergrond van het onderzoek

Several situations, such as spaceflight, injury and illness, necessitate prolonged periods of muscle disuse or unloading in otherwise healthy humans. Under such conditions, there is a progressive loss of skeletal muscle mass and strength, a reduction in insulin sensitivity, a decline in basal metabolic rate, and a concomitant increase in body fat mass. As a consequence, performance and metabolic health detriments ensue rapidly, providing an immediate need for effective countermeasures in order to minimize the subsequent rehabilitation efforts that are required.

It has previously been observed that applying blood flow restriction (BFR) during 2-weeks of immobilization of the lower extremity attenuated the decrease in muscle strength and effectively diminished the disuse atrophy of thigh muscles. These findings suggest that applying BFR may be an effective strategy to attenuate skeletal muscle mass loss during a period of bed rest.

### Doel van het onderzoek

We hypothesize that applying BFR will decrease the loss in leg muscle mass during 2 weeks of bed rest.

### Onderzoeksopzet

Pre and post 2-wk bed rest.

### Onderzoeksproduct en/of interventie

The main intervention: the amount of muscle mass that is lost following 2 weeks of bed rest will be assessed and whether BFR can be applied to effectively preserve muscle mass and strength during bed rest. In addition, we would like to assess the effects of 2 weeks of bed rest on changes in body composition and adipose tissue function and gain insights into the (potential) cellular mechanisms that occur during a period of bed rest.

# Contactpersonen

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## Deelname eisen

### Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

• Healthy males

• Age between 18 and 35 y

• BMI between 18.5 and 30 kg/m2

### Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

• Smoking

• Type 2 Diabetes Mellitus

• Any back/leg/knee/neck/postural complaints

• Any history and/or family history of thrombosis

• All co-morbidities interacting with mobility and muscle metabolism of the lower limbs (e.g. arthritis, spasticity/rigidity, all neurological disorders and paralysis)

• Myocardial infarction within the last 3 years

• Use of certain anti-coagulants (use of thrombocyte aggregation inhibitors such as Ascal, acetylsalicylic acid, aspirin and carbasalaatcalcium is permitted. Use of other thrombocyte aggregation inhibitors will be discussed with the responsible physician)

• Performing regular resistance training (3+ times per week, carrying out progressive training) in the previous 6 months

• Hypertension (according to WHO criteria) and/or cardiovascular disease

• A history of deep vein thrombosis (DVT) in the leg

• Having donated blood in the 3 months prior to the study

# Onderzoeksopzet

## Opzet

| | |
|---|---|
| Type: | Interventie onderzoek |
| Onderzoeksmodel: | Parallel |
| Toewijzing: | N.v.t. / één studie arm |
| Blindering: | Enkelblind |
| Controle: | N.v.t. / onbekend |

## Deelname

Nederland

| | |
|---|---|
| Status: | Werving gestopt |
| (Verwachte) startdatum: | 01-07-2017 |
| Aantal proefpersonen: | 12 |
| Type: | Werkelijke startdatum |

## Voornemen beschikbaar stellen Individuele Patiënten Data (IPD)

**Wordt de data na het onderzoek gedeeld:** Nog niet bepaald

# Ethische beoordeling

Positief advies

| | |
|---|---|
| Datum: | 14-04-2017 |
| Soort: | Eerste indiening |

# Registraties

## Opgevolgd door onderstaande (mogelijk meer actuele) registratie

Geen registraties gevonden.

## Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

## In overige registers

| Register | ID |
|---|---|
| NTR-new | NL6222 |
| NTR-old | NTR6378 |
| Ander register | METC azM/UM : METC173014 |

# Resultaten

**Samenvatting resultaten**
n/a