

Nocturnal muscle protein synthesis after neuromuscular electrical stimulation in elderly men.

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Is overnight incorporation of [1-13C]-phenylalanine amino acids higher in muscle tissue in combination with NMES than in unstimulated skeletal muscle?

Ethische beoordeling	Positief advies
Status	Werving nog niet gestart
Type aandoening	-
Onderzoekstype	Interventie onderzoek

Samenvatting

ID

NL-OMON21940

Bron

NTR

Verkorte titel

ES-PROvernight

Aandoening

Sarcopenia, muscle mass, protein, Neuromuscular electrostimulation

Ondersteuning

Primaire sponsor: Prof. LJC van Loon

Maastricht University

Department of Human Movement Sciences

Overige ondersteuning: fund = initiator = sponsor

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

Primary parameter of this study will be overnight incorporation of stable isotope amino acids from the intrinsically labeled drink.

Toelichting onderzoek

Achtergrond van het onderzoek

Rationale:

With human aging there is a gradual but progressive decline in skeletal muscle mass, termed sarcopenia. While the underlying cause of sarcopenia is likely to be multifaceted, a primary factor is that elderly individuals frequently experience short periods of muscle disuse following limb immobilization or bed-rest (due to injury or illness) causing rapid muscle loss. Feasible strategies for maintaining muscle protein synthesis rates in elderly individuals, and thus having the potential to attenuate the loss of muscle mass during disuse need to be pursued. Local neuromuscular electrical stimulation (NMES) in combination with additional intake of protein offer such a potential strategy but, as yet, remains relatively unexplored.

Objective:

To test the hypothesis that ingesting a nocturnal bolus of protein in combination with NMES stimulates muscle protein synthesis in elderly more than ingesting protein without NMES.

Study design:

Prospective, single blind, intervention study.

Intervention:

Consumption of a 40 g bolus of intrinsically L[1-13C]-phenylalanine labeled casein protein and 70 min of one-legged NMES.

Endpoints:

Enrichments of muscle tissue after ingestion of an [1-13C]-phenylalanine intrinsically labeled casein drink.

Doel van het onderzoek

Is overnight incorporation of [1-13C]-phenylalanine amino acids higher in muscle tissue in combination with NMES than in unstimulated skeletal muscle?

Onderzoeksopzet

Overnight (i.e. the morning after ingestion of the stable isotope drink and NMES). Method of measurement is massaspectrometry.

Onderzoeksproduct en/of interventie

Consumption of a 40 g bolus of intrinsically L[1-13C]-phenylalanine labeled casein protein and 70 min of one-legged NMES.

Contactpersonen

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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

1. Written informed consent;
2. Age $\geq$ 65 years;

3. Male.

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

1. Type II diabetes;
2. All co morbidities interacting with mobility and muscle metabolism of the lower limbs (e.g. arthrosis, arthritis, spasticity/rigidity, all neurological disorders, paralysis, hip/knee surgery);
3. Use of anticoagulants, blood diseases, allergy for lidocain;
4. Use of NSAIDs and acetylsalicylic acid;
5. Patients suffering from PKU (Phenylketonuria);
6. Presence of implantable cardioverter defibrillator and/or pacemaker;
7. Performed regular resistance type exercise in the past 6 months;
8. Use of any tools to assist during walking (cane/ crutches/ walker);
9. (Partial) foot/ leg amputation.

Onderzoeksopzet

Opzet

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

Deelname

Nederland	
Status:	Werving nog niet gestart
(Verwachte) startdatum:	01-05-2013

Aantal proefpersonen: 12
Type: Verwachte startdatum

Ethische beoordeling

Positief advies
Datum: 15-04-2013
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	NL3786
NTR-old	NTR3952
Ander register	ABR / METC MUMC : 44582 / 13-3-024;
ISRCTN	ISRCTN wordt niet meer aangevraagd.

Resultaten

Samenvatting resultaten

N/A