Nitrate supplementation and elite sport performance

Gepubliceerd: 09-02-2015 Laatst bijgewerkt: 13-12-2022

Dietary nitrate supplementation enhances exercise performance of elite athletes competing in intermittent and high-intensity sport disciplines.

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

Samenvatting

ID

NL-OMON21945

Bron
NTR

Verkorte titel
NO-who

Aandoening

- performance / prestatie
- elite athlete / topsporter
- nitrate / nitraat
- supplementation / suppletie

Ondersteuning

Primaire sponsor: Maastricht University, Human Movement Sciences / HAN University op Applied Sciences, Institute of Sport and Movement
Overige ondersteuning: Supported by a grant from the Dutch Technology Foundation STW

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

Performance based on sport specific testing (depending on sport discipline and performance test; measured as time to completion, total distance covered or power output).
The target sample size of 122 is an estimation based on the total number of athletes needed to be screened for all five sub studies to be able to detect significant performance improvement.

Toelichting onderzoek

Achtergrond van het onderzoek

The main objective of the current study is to assess the impact of nitrate supplementation on sports performance in elite athletes. The study will be conducted in a randomized crossover manner, consisting of two intervention periods of 6 days (either nitrate-rich beetroot juice or nitrate-depleted placebo beetroot juice). This will be investigated in five different sub studies:

Sub study A: The effect of dietary nitrate supplementation on elite team sport performance

Sub study B: The effect of dietary nitrate supplementation on elite high-intensity cycling performance

Sub study C: The effect of dietary nitrate supplementation on elite rowing performance

Sub study D: The effect of dietary nitrate supplementation on elite swimming performance

Sub study E: The effect of dietary nitrate supplementation on elite badminton performance

The difference in performance between the nitrate and placebo intervention will be investigated.

Doel van het onderzoek

Dietary nitrate supplementation enhances exercise performance of elite athletes competing in intermittent and high-intensity sport disciplines.

Onderzoeksopzet

Subjects participate in a screening session, a familiarization test (to practice the performance test), and two test days. During the test days blood samples will be taken twice (at baseline and 2.5 h following ingestion of the last nitrate supplement) and the performance test is conducted approximately 3 h following the last supplementation bolus.

Onderzoeksproduct en/of interventie

The study consists of five sub studies, all applying the same intervention. The intervention comprises two 6-day supplementation periods either with 140 ml concentrated beetroot juice (containing 800 mg NO3) or 140 ml placebo beetroot juice (nitrate-depleted), supplemented in a randomized crossover manner. The interventions will be separated by a wash-out period of at least 1 week. Sport specific exercise performance tests will be conducted after each 6-day supplementation period. The performance test will be different for the five different sub studies;

A. YoYo IRT for team sports (or other team sport specific performance test); the subjects perform an time to exhaustion test consisting of 2x 20 m shuttles at increasing speed, interfered by a 10 s recovery period between each shuttle. The subject runs until he/she cannot perform the shuttle within the given time, and the total distance covered is the performance outcome.

B: Wingate cycling test; a 30 s all out cycling sprint for short high-intensity sport disciplines (i.e. track cycling, short track ice skating). The performance outcome is the peak and average power output.

C: Rowing ergometer performance test; a 2000 m time trial on a slide II rowing ergometer. The performance outcomes are time to completion and power output.

D: Swimming performance test; a swimming step test consisting of 5x 200 m swimming at increasing intensity. The performance outcomes are time to complete each 200 m and each 100 m split time.

E: Badminton specific performance test; a change-of-direction speed test performed four times. The performance outcome is the average time to completion of the two best runs.

Amendment 12-okt-2016: Concentrated beetrootjuice (both nitrate-rich and placebo) will be used as supplement (not natriumnitrate)

Contactpersonen

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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

- Healthy and free from injury/sickness

- Athletes of a Dutch national or elite selection of intermittent (team sport) and high-intensity sport disciplines (different disciplines will be investigated in sub studies)

- Males and females

- 18-40 years

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

- Use of medication which can influence test performance or blood analysis (e.g. vasodilatators, blood thinners, bronchoconstrictors)

- Injury inhibiting the athlete from performing the exercise protocol efficiently

- Smoking

- Chronic use of nitrate supplements

Onderzoeksopzet

Opzet

Type:	Interventie onderzoek
Onderzoeksmodel:	Cross-over
Toewijzing:	Gerandomiseerd
Blindering:	Dubbelblind
Controle:	Placebo

Deelname

Nederland

Status:	Werving gestart
(Verwachte) startdatum:	10-02-2015
Aantal proefpersonen:	122
Type:	Verwachte startdatum

Voornemen beschikbaar stellen Individuele Patiënten Data (IPD)

Wordt de data na het onderzoek gedeeld: Nog niet bepaald

Ethische beoordeling

Positief advies

Datum:	09-02-2015
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	NL4854
NTR-old	NTR4970
Ander register	NL50660.091.14 : 2014-1284

Resultaten

Samenvatting resultaten
N/A