

Effect of preventive exercises on hamstring and calf muscle characteristics

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Evaluate the efficacy of exercise prevention programs on hamstring and calf injuries by assessing muscle characteristics using DT-MRI.

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

Samenvatting

ID

NL-OMON23246

Bron

Nationaal Trial Register

Verkorte titel

BAMI

Aandoening

Hamstring muscle injuries
Calf muscle injuries

Ondersteuning

Primaire sponsor: Amsterdam University Medical Centers (Amsterdam UMC)

Overige ondersteuning: National Basketball Association (NBA) and General Electronics Healthcare (GE Healthcare)

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

The two DT-MRI derived parameters to evaluate muscle characteristics include the pennation

angle (PA: the angle of the fascicles relative to the tendon; degrees); fascicle length (FL: the length of the muscle fascicles running between the aponeuroses/tendons; mm) of the Biceps Femoris, Semitendinosus and Semimembranosus or Gastrocnemius and soleus muscle.

Toelichting onderzoek

Achtergrond van het onderzoek

The current literature on prevention of muscle injuries in basketball is limited and there are no clinical outcome studies in elite female basketball. Previous studies among football players have shown that preventive exercises can be successful in the prevention of muscle injuries. These exercises seem to induce changes in muscle characteristics e.g. lengthening of fascicle length (FL) and alteration of pennation angle (PA), which are measured by ultrasound. There are some concerns about the reliability of ultrasound measurements as it is an investigator-dependent procedure and only allows indirect calculation of FL and PA. With diffusion tensor magnetic resonance imaging (DT-MRI) it is possible to directly assess these muscle characteristics with a high reliability. For this reason two randomized controlled trials will be performed among dutch male and female basketball players. The basketball players will be asked to perform a preventive exercise for 3 months (or no exercise for the control group) whereafter alterations within their hamstring (male) and calf (female) muscle architecture will be assessed through DT-MRI measures. Volunteers will be recruited in the Netherlands.

Doel van het onderzoek

Evaluate the efficacy of exercise prevention programs on hamstring and calf injuries by assessing muscle characteristics using DT-MRI.

Onderzoeksopzet

All outcomes will be measured at two timepoints, namely baseline and 3 months follow-up. The outcomes will be measured as described above in primary and secondary outcomes.

Onderzoeksproduct en/of interventie

Participants will be randomized to either i) Nordic exercises (NHE) ii) Diver exercises or iii) no-training specific hamstrings intervention. Duration, sessions per week and sets/repetitions for the hamstring prevention exercises are based on previous reports with a total duration of 3 months. Instruction of the exercises will be given through the caregiver with written and video documentation. These hamstring exercises are well described in the current literature and examples are presented on YouTube (NHE:

https://www.youtube.com/watch?v=qPRZcNx_C0A; Diver:

<https://www.youtube.com/watch?v=3JwxQy2OSus>)

For the calf prevention study (CIP) female basketball players will be randomized to i) modified eccentric Alfredson's heel drop exercises; ii) concentric heel drop exercises or iii) no-training specific calf intervention. Basketball players are instructed to perform each repetition in 2 seconds.² Duration, sessions per week and sets/repetitions for calf prevention exercises are based on previous reports with a total duration of 3 months. These calf exercises are well described in the current literature and examples are presented on YouTube (Alfredson's heel drop exercise: <https://www.youtube.com/watch?v=ge3XDjjKofk>)

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Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

- Capable of doing an active exercise program
- Male basketball player (only for the hamstring injury prevention study)
- Both male, and female basketball players (for the calf injury prevention study)
- Age > 16 years old

The hamstring injury prevention study has completed the target size of $n = 72$ (May 2020)

Belangrijkste redenen om niet deel te kunnen nemen (Exclusiecriteria)

- There are contraindications for the MR: claustrophobia, pregnancy, pacemaker etc.
- Hamstring/calf muscle injuries within the past year

Onderzoeksopzet

Opzet

Type:	Interventie onderzoek
Onderzoeksmodel:	Parallel
Toewijzing:	Gerandomiseerd
Blinding:	Enkelblind
Controle:	Placebo

Deelname

Nederland	
Status:	Werving gestart
(Verwachte) startdatum:	27-08-2018
Aantal proefpersonen:	144
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:	13-07-2018
Soort:	Eerste indiening

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

ID: 55614

Bron: ToetsingOnline

Titel:

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL7248
NTR-old	NTR7455
CCMO	NL63496.018.17
OMON	NL-OMON55614

Resultaten