A biomechanical comparison of three hamstring exercises

No registrations found.

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

Summary

ID

NL-OMON23832

Source
NTR

Brief title
A biomechanical comparison of three hamstring exercises

Health condition

n.a.

Sponsors and support

Primary sponsor: Maastricht University
Source(s) of monetary or material Support: Kootstra Talent Fellowship

Intervention

Outcome measures

Primary outcome

fascicle lengths as determined by B-mode ultrasound

Secondary outcome

Muscle activity as determined by surface electrodes and muscle forces as determined by

static inverse dynamics from external force measurements and 3D motion analysis.

Study description

Background summary

Objective: The aim of this study is to determine muscle fascicle behavior during three hamstring exercises. These exercises will also be compared on their required hamstring muscle force and muscle activity.
Study design: Cross-sectional study
Study population: Male athletes between 18-30 years old that participate in running-based sports.
Main study parameters/endpoints: 1) Muscle force of the biceps femoris long head, short head, semitendinosus and semimembranosus, 2) surface electromyographic activity of the biceps femoris long head and medial hamstrings, 3) fascicle length changes of the biceps femoris long head.

Study objective

Fascicle length changes will be larger in the Nordic curl and single-leg deadlift compared to the Roman chair

Study design

One time point (cross-sectional study) during which muscle activity is determined by surface electrodes, muscle forces are determined by static optimization and inverse dynamics from external force measurements and 3D motion analysis and fascicle lengths are determined from b-mode ultrasound.

Intervention

n.a.

Contacts

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Scientific

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Eligibility criteria

Inclusion criteria

- Between 18-30 years old
- Participating in a sport that involves a considerable amount of high-speed running (i.e., > ~18 km/h) for at least three times a week. Sports that meet this criterion are football (soccer) rugby, hockey, running (when performing high-intensity interval training for at least three times a week);
- Male
- >1.65 m of height because long individuals are needed for a simultaneous measurement of ultrasound and surface electromyographic activity.

Exclusion criteria

Severe visual or hearing impairment since this makes explanation of the correct exercise technique more difficult;
- History of a previous injury to the leg or back within the previous 24 months;

Study design

Design

Study type:	Observational non invasive
Intervention model:	Other
Allocation:	Non controlled trial
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-09-2017
Enrollment:	10
Type:	Actual

IPD sharing statement

Plan to share IPD: Yes

Plan description
not yet determind

Ethics review

Positive opinion

Date:	05-03-2020
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

ID: 48674
Bron: ToetsingOnline
Titel:

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

No registrations found.

In other registers

Register	ID
NTR-new	NL8438
CCMO	NL63290.068.17
OMON	NL-OMON48674

Study results

Summary results
none yet