# Joint loading in amputee sprinting

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the aim of the proposed study is to assess the load of anatomical hip, knee and ankle joints in people that use one leg prosthesis for sprinting. The loading of both ipsi- (if present) and contralateral joints will be assessed.

Ethical review	Approved WMO	
Status	Recruiting	
Health condition type	Bone and joint injuries	
Study type	Observational non invasive	

# **Summary**

#### ID

NL-OMON33328

**Source** ToetsingOnline

**Brief title** Joint loading in amputee sprinting

### Condition

- Bone and joint injuries
- Joint disorders

Synonym leg amputation

**Research involving** Human

### **Sponsors and support**

Primary sponsor: Maastricht Universitair Medisch Centrum+ Source(s) of monetary or material Support: Ministerie van OC&W

### Intervention

Keyword: gait analysis, inverse dynamics, muscle activation patterns, prosthesis

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#### **Outcome measures**

#### **Primary outcome**

Participants in the study will walk, run and sprint at maximal velocity over an instrumented walk way. Net joint moments in available ipsilateral and contralateral joint will be calculated. In addition muscle activation pattern of available muscles in lower leg, thigh and gluteal region will be registered. Moreover, joint angles and spatiotemporal gaitcharacteristics like step length and frequency will be determined.

#### Secondary outcome

# **Study description**

#### **Background summary**

Athletes that due to a (lower) leg amputation use a prosthesis for sprinting seem to have an increased risk of hip joint arthrosis. It is feasible that changes in the loading of joints during sprinting underly this increased risk.

#### **Study objective**

the aim of the proposed study is to assess the load of anatomical hip, knee and ankle joints in people that use one leg prosthesis for sprinting. The loading of both ipsi- (if present) and contralateral joints will be assessed.

#### **Study design**

observational, experimental, cross-sectional pilot study

#### Study burden and risks

For an individual participant the tests will last maximally 3 hours, this includes preparation time. During the test the participants will be asked to walk three times at a speed of 1.2m/s, to run three times (3.5 m/s) and to

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perform three maximal sprints. In athletes with an amputation both limbs will be measured. In addition they will perform the run and sprint tests with two types of protheses, a stiffer and a less-stiffer prosthesis. For the walk tests subjects will use their ADL-prosthesis, for running and sprinting they will use a sports prothesis. Consequently they will walk or run 30 times over the 20m measurement track. Able-bodied athletes will be measured on their dominant leg only, they will run shod and bare foot. Consequently they will walk or run 18 times over the track. This will not exceed the level of activities that these participants reach during daily life. So it can be concluded that the intensity is not extreme and the study does not provide any additional risk.

# Contacts

#### Public

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# **Trial sites**

### Listed location countries

Netherlands

# **Eligibility criteria**

#### Age

Adults (18-64 years) Elderly (65 years and older)

### **Inclusion criteria**

Participants using a leg prosthesis have to be able to sprint 100m sprint within 14sec

### **Exclusion criteria**

amputation of two legs or in addition of a leg amputation, amputation of an arm

# Study design

### Design

Study type:	Observational non invasive	
Intervention model:	Other	
Allocation:	Non-randomized controlled trial	
Masking:	Open (masking not used)	
Control:	Active	
Primary purpose:	Basic science	

#### Recruitment

NL	
Recruitment status:	Recruiting
Start date (anticipated):	11-05-2009
Enrollment:	40
Туре:	Actual

#### Medical products/devices used

Registration:

No

# **Ethics review**

Approved WMO Date: Application type:

27-04-2009

First submission

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Review commission:

# **Study registrations**

### Followed up by the following (possibly more current) registration

No registrations found.

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

No registrations found.

### In other registers

Register CCMO ID NL26975.068.09