

3D joint space evaluation in knee osteoarthritis: The importance of weight-bearing and flexion

Published: 28-04-2023

Last updated: 30-11-2024

To evaluate how the 3D knee joint space distribution in knee OA patients changes under the influence of weight-bearing (upright) and flexion MRI scanning.

Ethical review	Approved WMO
Status	Completed
Health condition type	Joint disorders
Study type	Observational non invasive

Summary

ID

NL-OMON54070

Source

ToetsingOnline

Brief title

Weight-bearing and flexed MRI in knee OA

Condition

- Joint disorders

Synonym

osteoarthritis

Research involving

Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Utrecht

Source(s) of monetary or material Support: Vrienden van het UMC Utrecht

Intervention

Keyword: joint space width, knee, osteoarthritis, weight-bearing

Outcome measures

Primary outcome

The primary study parameter is the change in median medial joint space width between the different positions (weight-bearing/non-weight-bearing and flexion/extension).

Secondary outcome

Secondary study parameters are:

1. Median lateral joint space width
2. Joint space shift size and direction
3. Change in distance distribution

Study description

Background summary

Osteoarthritis (OA) is mainly characterized by cartilage degeneration. In knee OA, measuring the distance between the tibia and femur, known as the joint space width (JSW), is an often-used method to quantify the progression of the disease or the effectiveness of treatments, because it is an indirect measure of cartilage degeneration. However, JSW is often measured while the patient is standing (weight-bearing) with slightly flexed knees, with a flexion angle of around 7-10 degrees, while direct cartilage thickness measurements are usually performed while the patient is lying down (non-weight-bearing) with an extended leg. Because of this difference in positioning, it is difficult to compare different JSW and cartilage thickness measures, as it is not clear what happens with the JSW distribution in the joint when a patient changes position between weight-bearing/non-weight-bearing and flexion/extension. In this study, we aim to identify the changes that occur in the knee of OA patients under the influence of weight-bearing and/or flexion, to enable comparing joint space measures from different positions. In this research we want to use MRI as a

three-dimensional imaging technique because there is no radiation involved.

Study objective

To evaluate how the 3D knee joint space distribution in knee OA patients changes under the influence of weight-bearing (upright) and flexion MRI scanning.

Study design

Explorative cross-sectional study.

Study burden and risks

Patients need to visit the University of Twente once. The total duration of the visit is 1 hour. To perform the upright scan, the participant needs to stand still for at most 15 minutes. During this position, some people may experience dizziness. If this is noticed, the scan will be aborted immediately and the participant is turned back to the horizontal position. The risks associated with this MRI examination are negligible.

Contacts

Public

Universitair Medisch Centrum Utrecht

Heidelberglaan 100
Utrecht 3584CX
NL

Scientific

Universitair Medisch Centrum Utrecht

Heidelberglaan 100
Utrecht 3584CX
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age

Adults (18-64 years)

Inclusion criteria

- Patients with symptomatic knee osteoarthritis in at least one knee
- > 18 years old
- Kellgren-Lawrence grade (severity) 2 or 3
- Good knowledge of the Dutch language
- Signed informed consent

Exclusion criteria

- Previous surgery in (both) symptomatic knee(s)
- Inability to stand for 15 minutes, without assistance
- Unable to fit knee in the MRI coil (knee width > ~15 cm)
- Not eligible for MRI, in response to the MRI safety checklist

Study design

Design

Study type: Observational non invasive

Masking: Open (masking not used)

Control: Uncontrolled

Primary purpose: Diagnostic

Recruitment

NL

Recruitment status: Completed

Start date (anticipated): 22-11-2023

Enrollment: 21

Type: Actual

Ethics review

Approved WMO

Date: 28-04-2023

Application type: First submission

Review commission: METC NedMec

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	ID
CCMO	NL73375.041.20