

# Hyperkyphosis and the Cobb angle: is the Cobb angle affected by posture in older adults?

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To investigate: (1) the difference in degrees between a Cobb angle measured in supine position and standing position with standard instructions of the radiographer (main objective)(2) the correlation between the Cobb angle in both supine position...

<b>Ethical review</b>	Approved WMO
<b>Status</b>	Recruitment stopped
<b>Health condition type</b>	Other condition
<b>Study type</b>	Observational invasive

## Summary

### ID

NL-OMON46029

### Source

ToetsingOnline

### Brief title

SKYFALL II

### Condition

- Other condition
- Musculoskeletal and connective tissue deformities (incl intervertebral disc disorders)

### Synonym

hyperkyphosis, increased curvature of the thoracic spine

### Health condition

skeletspierstelsel- en bindweefselaandoeningen, subcategorie breuken

### Research involving

Human

## Sponsors and support

**Primary sponsor:** Academisch Medisch Centrum

**Source(s) of monetary or material Support:** Ministerie van OC&W

## Intervention

**Keyword:** Kyphosis, Measurement method, Older adults

## Outcome measures

### Primary outcome

The mean/standard deviation or median/interquartile range (IQR) of the difference in degrees of the Cobb angle, measured in supine and standing position.

### Secondary outcome

- The correlation between three kyphosis measurement methods: the Cobb angle, the blocks method and the OWD, presented as Intra Class Correlation Coefficients and Bland Altman Plots.
- Interrater and intrarater variability of the Cobb angle

## Study description

### Background summary

Hyperkyphosis, an excessive curvature of the thoracic spine in the sagittal plane, is present in 20 to 40% in community-dwelling older adults and up to 55% in geriatric outpatients. Since multiple studies show an association between hyperkyphosis and negative health effects, like a decreased physical performance and a doubled fall risk, measuring hyperkyphosis is clinically relevant and should be done adequately.

The current gold standard, the Cobb angle, is the angle between the fourth and twelfth thoracic vertebra on a lateral radiograph. Some studies report a Cobb angle measured in supine position and some in standing position. As the kyphosis angle is influenced by many factors, such as the anatomy of the vertebra and back extensor muscle strength, we hypothesize that the posture of

the patient influences the Cobb angle. Furthermore, to be able to compare previous studies using different kyphosis measurement methods, we aim to investigate the correlation between the Cobb angle and two clinimetric kyphosis measurement methods: the blocks method and the occiput-to-wall distance.

## **Study objective**

To investigate:

- (1) the difference in degrees between a Cobb angle measured in supine position and standing position with standard instructions of the radiographer (main objective)
- (2) the correlation between the Cobb angle in both supine position and standing position, the blocks method and the occiput-to-wall distance (OWD)
- (3) the interrater and intrarater variability of the Cobb angle

## **Study design**

Cross-sectional, single-center, observational cohort

## **Study burden and risks**

The risks and burden of this study is considered to be low for participants. A lateral radiograph is standard care. Immediately after this radiograph, the additional radiograph will be made, and the two clinimetric kyphosis measurements will be performed. Altogether, this will take less than 10 minutes. No additional visits or questionnaires are needed. The radiation exposure of the additional radiograph of the chest is low: 0.02 mSV [1]. In comparison the radiation exposure in the Netherlands is 2.6 mSv per person yearly in the Netherlands. The lifetime attributable risk of cancer incidence for radiation exposure up to 10 mSV per year varies from 0.0002 to 0.0310, depending of age and gender of the patient.

## **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

- \*- geriatric outpatient referred to the geriatric outpatient clinic of the AMC Amsterdam
- aged 60 years or older
- \*- being able to stand and to lay down on a research table
- \*- enough language proficiency to understand the informed consent procedure and instructions during the kyphosis measurements

### Exclusion criteria

- Parkinson\*s disease or diseases associated with deformation of the spine in medical history
- Informed consent not provided

## Study design

### Design

**Study type:** Observational invasive

Masking: Open (masking not used)

Control: Uncontrolled

Primary purpose: Diagnostic

## Recruitment

NL  
Recruitment status: Recruitment stopped  
Start date (anticipated): 14-09-2018  
Enrollment: 62  
Type: Actual

## Ethics review

Approved WMO  
Date: 04-09-2018  
Application type: First submission  
Review commission: METC Amsterdam UMC

## 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	NL66757.018.18