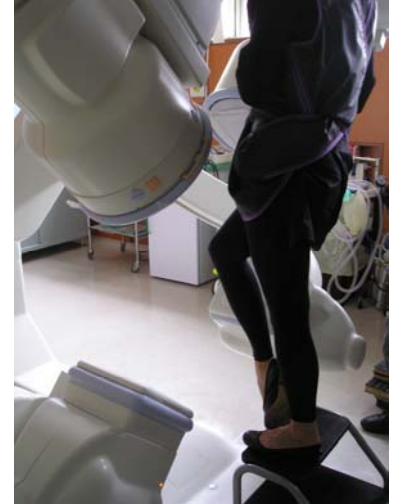


# Review and new recommendations for computation of knee kinematics from fluoroscopic images

## Rationale

Fluoroscopy is a very interesting technique for analysing the motion of the knee joint, as it can be used in-vivo with low invasiveness and high accuracy, and nowadays it is considered the gold standard for in-vivo kinematic studies of the knee in patients that received surgical treatment. This methodology consists in the acquisition and elaboration of sequences of Xrays while a subject is performing dynamic motion tasks, such as knee flexion, stair climbing, squatting or walking. As its recent technical developments are making this technique more and more reliable and available, several groups are using this technique for clinical studies using different conventions on the choice of algorithms to decompose the motion, report results and assess their clinical accuracy.



## Goal of the study

The goal of this study is to review the computational methods used for clinical studies on knee kinematics and propose standardized approaches to compute, report and interpret data.

## Description

The study mainly concern a careful review of technical papers (in English) about accuracy studies of this technique, description of kinematic decomposition of the knee motion and algorithms for the computation of the joint degrees of freedom.

The work requires a background in basic kinematic definitions and motion of rigid bodies and statistics.

The work is part of a project carried out by Lab Biomechanics at IOR (Bologna, Italy) and Dept. of Orthopaedics at LUMC (Leiden, NL) and will be included in a scientific publication in an international journal. A successful work in this field is a preferential title to apply for stages in the RSA team of the two mentioned partners.

