

# Imaging requirements for the DIZG matching process

## REQUIRED IMAGES

To measure the patient dimensions, the DIZG requires sagittal and coronal X-ray or MRI images of the involved knee (Figure 1 A;B). With MRI data, please also forward images in the axial plane. All slice images of MRI scans must be sent. All individual images must be scaled.



Figure 1: (A) X-Ray: example of a sagittal image without distortion (left), a sagittal image with distortion (centre) and a coronal (right) image with positioning of the calibration ball (left and right). (B) MRI: examples of a sagittal (left), coronal (centre) and axial (right) MRI image. (C) Ideal positioning (K) of the calibration ball for the AP radiograph, as well as schematic demonstration of the change in the projected diameter with incorrect positioning. \* Illustration taken from: Doll L. "Die Wertigkeit der Ganzbeinstandaufnahme zur präoperativen Planung von Korrekturosteotomien", 2014. \*\* Zentralstrahl der Röntgenquelle = Central beam of the X-ray source, Kalibrierungskugel = Calibration ball

## SCALING

Radiographs can only be evaluated if a calibration ball with a defined diameter is used as shown in Figure 1A. Incorrect positioning of the calibration ball results in projection errors (Figure 1C). A calibration ball with a flexible arm may assist correct positioning.

The calibration ball must always be positioned at the level of the joint space.

- > For sagittal images, the calibration ball must be positioned over the centre of the knee in relation to the coronal plane.
- > For coronal images, the calibration ball must be positioned over the centre of the knee in relation to the sagittal plane, as depicted in Figure 1C.

The calibration ball diameter must be communicated to the DIZG in writing.

## POSITIONING OF THE KNEE

With sagittal radiographs, care should be taken to ensure that the femoral condyles are as congruent as possible (Figure 1A; left green arrow vs. centre red arrow). With incongruent condyles (Figure 1A; centre red arrow), distortion may cause a change in imaging scale and thus errors in determining patient dimensions.

## FILE TYPES

DICOM, JPG and PDF files can be uploaded. The resolution of the images must be at least 2pxl/mm.