#### Supplementary file 4: CT scan and visualization of bone displacements during limb-press experiments

In addition to microscribe analysis, we performed CT scans (Somatom Emotion 16 (2007) Siemens Healthcare Diagnostics GmbH,Wien) to create 3D models of the bones in order to demonstrate how the predefined locations change pre- and postoperatively with 10% or 30% body weight. CT scans of one left and one right leg including ten 0.6 mm Kirschner wire markers were performed.

Dicom slices from CT scans were imported into Amira 6.4. (FEI SAS, Mérignac, FR (part of Thermo Scientific™)). In addition, Microscribe data from the same specimen were imported as 3D-point sets. On the basis of CT data, polygon models of bones were generated using threshold segmentation. In the next step, microscribe data was used for the visualization of displacements between bones during limb-press experiments. For this, a transformation matrix was calculated for each bone and each experimental step based on the microscribe data, and subsequently this transformation matrix was applied to the respective bone model. Displacements of bones were depicted on the basis of 3D snapshots and animation movies (Figure).

