Editor and Reviewer comments:      
  
  
  
AE1.0:  
  
**also consider the applicability of this method in open low-field MRI systems which offer an extended motion range.**   
  
RE1.1:  
**Keywords: The first used keywords are already part of the title. To improve SEO, I suggest replacing them with further information about the sequence (i.e. trajectory?) or algorithms used in segmentation**

Materials and Methods  
RE1.2: **I would prefer a photograph of a subject in the motion device. I don't find the pictures in [25] to be very helpful. I suggest an image where the patient table is in its home position, to better show the deflection of the lower leg.**

RE1.3:  
**To estimate the flexion-speed better, I suggest to report the cycle time, rather than the cycles per minute. This way it is easier to relate motion speed and sequence temporal resolution.**

RE1.4:  
**TGV was used as a regularizer. Along which dimensions? time, space, or both? Please clarify.**

RE1.5:  
**Is there a python image-processing package that was mainly used for the analysis (i.e. openCV)? If so, please mention the used package.**

RE1.6:  
**In (I) you write: "…including the interior cortical bone boundaries." I suggest: "including the boundary between cortical and trabecular bone"**

RE1.7:  
**In (III) you write that the most distal points were used as initial points. Would it not be the most proximal point for the tibia?**

RE1.8:  
**What exactly justifies the 'semi' in the presented technique? I assume it is the selection of the connected component, that represents the bone (Step II)? Please clarify.**  
  
  
Results  
RE1.9:  
**You mention the duration of both, manual and semi-automatic segmentation approaches. On what kind of machine was this measured?**

RE1.10:  
**Figure 3 and 4 use the same colors for different things (femur/tibia and semi-auto/manual) please use different colors to avoid confusion.**

RE1.11:  
**I am unsure how the data points in Fig4 are generated. From Fig3 I assume there is about 30 frames for a full flexion cycle. Fig4 only shows 10 for a half-cycle. How exactly are data from different frames (and subjects) combined?**

RE1.12:  
**Fig4: In the Horizontal displacement plots, one vertical tick/gridline represents a step of 1,25. This seems unusual and can be easily mistaken. I suggest using 1mm or 2.5mm as a ticksize.**

RE1.13:  
**I would like to see the following as a supplementary material: A video of the CINE images of a full flexion at similar speed to the actual knee motion. Followed by a second full flexion, now with the segmentation overlays as in fig 3 and indication of estimated centroid positions. One subject is sufficient.**  
  
RE2.0  
**Some methodological aspects remain unclear. In addition, the range of motion in closed MRI units is relatively small (depending on the length of the lower leg). Therefore, the transferability to open MRI systems, in which the effects of bone displacement during the application of force  could also be better investigated (including orthopaedic examination techniques), should be discussed more extensively.**

RE2.1  
**The knee joint also includes the patella (or kneecap), the movement of which can be abnormal in some diseases or after injuries. Why was the patella, which is well delineated in the sagittal images, not included? Would there be more problems here?**

RE2.2  
**The range of motion during flexion in the knee joint in the closed MRI unit with relatively small bore (3T Siemens Prisma) is limited depending on the length of the lower leg. It should be pointed out in the paper that full-range examinations are only possible on open MRI systems, on which the proposed methods should also work.**

RE2.3  
**In some orthopaedic examinations (e.g. following cruciate ligament ruptures), movements in the knee joint are measured when force is applied (e.g. anterior and posterior drawer test). Could the method also be used for quantitative assessment of such experiments?**

RE2.4  
**How can an 'alignment error' be determined that is significantly smaller than the spatial resolution of the measurement sequences?**

RE2.5  
**The recording method with 2D radial GRE sequences has not become completely clear. It is described that the slice thickness is 1 mm, but the FoV is 3 mm thick. How many (sagittal) slices are acquired?**

RE2.6  
**The shape of the bones on the images changes if the lower leg has motion components perpendicular to the slice or rotational components. In this case there are no longer matching reference points on a fixed sagittal slice. How is this handled? Should layers be reconstructed from 3D data sets that depict the same sagittal plane through the lower leg at different knee flexion angles?**

RE2.7  
**A "semi-automated pipeline" is reported. It should be indicated at which points interventions by the examiner are necessary.**