Introduction:
The use of computer-assisted surgery (CAS) offers the experienced surgeon the ability to improve limb and implant alignment and reduce outliers. A previous case-controlled study by this author demonstrated no significant difference in clinical, functional, or radiographic outcomes between CAS and manual TKA at short term follow-up. We attributed these results to the improvements in the performance of manual TKA that had been realized through the learning effects afforded by working extensively with an intraoperative navigation system. The purpose of the present study was to determine whether any differences in clinical, functional, or radiographic outcomes could be elicited between patients who underwent either CAS or manual TKA at 5 year follow-up.

Methods:
40 manual and 38 CAS TKA were performed by a single surgeon. The groups were identical with regard to age, sex, body mass index, diagnosis, surgical technique, implants, and peri-operative management. 61 patients were available for 5-year follow-up. Pre and post-operative radiographic measurements of the mechanical axis was assessed. The Knee Society scoring system and UCLA activity score was used to assess clinical and functional outcomes.

Results:
Clinical and functional results were similar between manual and CAS TKA at 5-years postoperative (Figure 1). There was no statistically significant difference between 5-year postoperative pain scores, ROM, or UCLA activity scores (Figure 1). Mechanical axis as measured on plain radiographs did not reveal a significant difference between manual and CAS at 1 month or 5-year postoperative.

Discussion:
This study found similar clinical, functional and radiographic outcomes at 5-year follow-up between manual and CAS TKA. These results were consistent with the short-term results found previously in the same patient cohort. We continue to believe that the learning effects afforded by working with a navigation system can lead to improvements in manual TKA technique, contributing to improved manual accuracy with regard to femoral component rotation and positioning, tibial slope, component size selection, and mechanical axis.
FIGURE 1