RESULTS SECTION: Measurements (mean ± standard deviation) of system error for each cut show that RATKA had greater accuracy and precision to plan for femoral anterior I/E (0.8±0.5° vs. 2.7±1.9°), anterior F/E* (0.5±0.4° vs. 4.3±2.3°), anterior chamfer V/V* (0.5±0.1° vs. 4.1±2.2°), anterior chamfer F/E respectively) as shown in Figure 1, below.

DISCUSSION: Final cut and component alignment can be critical for achieving a desired overall limb alignment and well-balanced knee. Following a single cadaveric training with no previous RATKA experience, the surgeon’s first six RATKA showed increased accuracy and precision to plan on all femoral bone cuts and implant positions, as well as the tibial V/V bone cut and implant position. Errors in tibial slope for the first two RATKA cases are attributed to the learning curve for tibial bone registration due to the surgeon’s inexperience in RATKA and the process of bone registration, since the greatest deviation from plan for tibial slope occurred in the first two RATKA cases. Following the review of the tibial registration procedure, the accuracy for tibial slope improved, which is shown by comparing the mean and standard deviation of the last three RATKA to 1) all six RATKA cases, and 2) the matched MTKA pairs. In general, RATKA demonstrated greater accuracy and precision of bone cuts and implant placement to plan, compared to MTKA in this cadaveric study. In addition, the study demonstrated that RATKA has the potential to increase both the accuracy and precision of bone cuts and implant positioning to plan for an experienced manual surgeon who is new to RATKA. For further confirmation, RATKA accuracy of component placement should be investigated in a clinical setting.

SIGNIFICANCE: RATKA has the potential to increase the accuracy of TKA bone cuts and component placement to plan, even for an experienced user of manual instrumentation who is new to robotic technology.