Rotator cuff tears are of increasing clinical impact in the physically active elderly patients. Recent research revealed, that a high percentage of these patients present with significant loss of bone mineral density at the insertion site of the rotator cuff, thereby compromising suture anchorage for operative repair. We therefore hypothesized that augmentation of suture anchors improves biomechanical properties in low bone quality. 28 osteoporotic humeral heads were included in this biomechanical study. Bone quality at the anchor insertion sites (group 1: posterior-medial; group 2: anterior-lateral) within the greater tuberosity was analyzed using HR-pQCT (voxel size: 82\(\mu\)m). Anchor positions of identical quality were then randomized to either conventional screw anchorage or polymethylmethacrylat augmented screw anchorage. All anchors were cyclically ramp-loaded until pullout. Pullout strength accounted for 226N in group 1 for conventional anchorage and for 332N in augmented technique. In group 2 (anterior-lateral) the pullout strength was 209N (conventional) and 304N (augmented). Pull-out strength of augmented screw anchors was significantly higher in both groups (p<0.05). Compared to conventional insertion techniques, the cement augmentation technique increases the pullout strength of anchors in osteoporotic bone using augmentation--a cadaver study.
suture anchors in low bone quality significantly. Cement augmentation could therefore be a helpful tool for improved suture anchor stability, especially in locations of low bone quality.