INTRODUCTION
Osteoarthritis (OA) can lead to pain, disability, and loss of range of motion in the knee. The pre-operative condition of the knee has been shown to influence the functional outcome of treatments for OA [1]. A greater understanding of how motion of the knee is affected by OA may facilitate the assessment of the efficacy of potential treatments. We used a computer-assisted navigation system to study the passive kinematics of osteoarthritic knees intra-operatively and answer two questions: 1) Does the varus or valgus malalignment of the knee measured in full extension persist with flexion of the knee? and 2) Do “femoral rollback” (posterior translation of the femur on the tibia with flexion) and “screw-home” (external rotation of the femur with flexion) motions seen in a normal knee remain in an OA knee?

METHODS
Twelve patients undergoing a primary total knee arthroplasty for treatment of OA gave informed consent to participate in this study. Patients were grouped by limb alignment: mechanical axis varus alignment (six patients), neutral alignment (four patients), and valgus alignment (two patients).

After exposure of the knee joint at the beginning of the operation, the surgeon attached passive optical reference frames from the navigation system onto the medial side of the distal femur and proximal tibia. He circumducted the femur on the tibia with flexion) and “screw-home” motion of the knee is affected by OA may facilitate the assessment of the efficacy of potential treatments. We used a computer-assisted navigation system to study the passive kinematics of osteoarthritic knees intra-operatively and answer two questions: 1) Does the varus or valgus malalignment of the knee measured in full extension persist with flexion of the knee? and 2) Do “femoral rollback” (posterior translation of the femur on the tibia with flexion) and “screw-home” (external rotation of the femur with flexion) motions seen in a normal knee remain in an OA knee?

RESULTS AND DISCUSSION
The varus/valgus malalignment measured in full extension did not persist with flexion of the knee, but the neutrally aligned limbs generally maintained their neutral alignment (Figure 1). All groups trended towards a slightly varus alignment in deep flexion, resulting in overall significantly different patterns of varus/valgus rotation between groups (p < 0.001).