Objectives:

- Prior studies have found that femoral version may outweigh the effect of cam impingement on hip internal rotation, however the effect of acetabular morphology has not been fully evaluated.
- The purpose of this study was to:
  - Investigate the influence of acetabular and femoral morphology on hip range of motion (ROM) in patients with Femoroacetabular Impingement Syndrome (FAIS).

Methods

- A retrospective chart review and radiographic analysis were performed on patients presenting with hip pain at a single surgeon's hip preservation clinic.
- Femoral head/neck angle, femoral version, size and clock-face location of the maximum femoral alpha angle, midecoronal center edge angle (CEA), midsagittal CEA, acetabular version (Figure 1), and McKibbin Index were measured on CT scans.
- Univariable and multivariable logistic regression analyses were performed to determine which measurements correlated with hip ROM.

Results

- 200 hips were included in the final analysis.
  - Mean age: 31.9 ± 10 years
  - 145 (72%) were female 55 (28%) were male
  - Mean BMI: 25.2 ± 5
- Univariable Logistic Regression results (all q’s < 0.05):
  - Flexion correlated with femoral head/neck angle, midsagittal CEA, acetabular version at 1 and 2 o’clock, and McKibbin Index.
  - External rotation correlated with femoral head/neck angle, femoral version, and McKibbin Index.
  - Internal rotation correlated with femoral neck version, midsagittal CEA, acetabular version at all three clock positions, McKibbin Index, max femoral alpha angle, and alpha position.
- Results of multivariable logistic regression in Table 1.

Conclusion

- Our multivariate analysis including acetabular version demonstrated that combined acetabular and femoral version significantly correlates with internal and external rotation while femoral version in isolation does not.
- In contrast to prior studies, increased cam deformity remained a significant contributor to reduced internal rotation but did not affect hip flexion.
- Midsagittal CEA remained the sole significant contributor to reduced hip flexion.
- These data suggest that hip ROM is affected in a bipolar fashion by both acetabular and femoral morphology.