

# COMPARISON OF RANGE OF MOTION, STRENGTH, AND HOP TEST PERFORMANCE OF DANCERS WITH AND WITHOUT A CLINICAL DIAGNOSIS OF FEMOROACETABULAR IMPINGEMENT.

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## **Abstract**

### **BACKGROUND:**

Dancers commonly experience anterior hip pain caused by femoroacetabular impingement (FAI) that interrupts training and performance in dance. A paucity of literature exists to guide appropriate evaluation and management of FAI among dancers.

### **PURPOSE:**

The purpose of this study was to determine if dancers with clinical signs of FAI have differences in hip range of motion, strength, and hop test performance compared to healthy dancers.

### **STUDY DESIGN:**

Quasi-experimental, cohort comparison.

### **METHODS:**

Fifteen dancers aged between 18- 21 years with clinical signs of FAI that included anterior hip pain and provocative impingement tests were compared to 13 age-matched dancers for

passive hip joint range of motion, isometric hip strength, and performance of the medial triple hop, lateral triple hop, and cross-over hop tests.

## **RESULTS:**

No statistically significant differences in range of motion were noted for flexion (Healthy =  $145^{\circ} + 7^{\circ}$ ; FAI =  $147^{\circ} + 10^{\circ}$ ;  $p=0.59$ ), internal rotation (Healthy =  $63^{\circ} + 7^{\circ}$ ; FAI =  $61^{\circ} + 11^{\circ}$ ;  $p=0.50$ ), and external rotation (Healthy =  $37^{\circ} + 9^{\circ}$ ; FAI =  $34^{\circ} + 12^{\circ}$ ;  $p=0.68$ ) between the two groups. Hip extension strength was significantly less in the dancers with FAI ( $224 \pm 55$  Newtons) compared to the healthy group ( $293 \pm 58$  Newtons;  $F(1,26) = 10.2$ ;  $p=0.004$ ). No statistically significant differences were noted for flexion, internal rotation, external rotation, abduction, or adduction isometric strength. The medial triple hop test was significantly less in the FAI group ( $354 \pm 43$  cm) compared to the healthy group ( $410 \pm 50$  cm;  $F(1,26) = 10.3$ ;  $p = 0.004$ ). Similar results were observed for the lateral hop test, as the FAI group ( $294 \pm 38$  cm) performed worse than the healthy controls ( $344 \pm 54$  cm;  $F(1,26) = 7.8$ ;  $p = 0.01$ ). There was no statistically significant difference between the FAI group ( $2.7 \pm 0.92$  seconds) and the healthy group ( $2.5 \pm 0.75$  seconds) on the crossover hop test.

## **CONCLUSION:**

Dancers with FAI have less strength of the hip extensors and perform worse during medial and lateral hop triple tests compared to healthy dancers. Clinicians may use this information to assist in screening of dancers with complaints of hip pain and to measure their progress for return to dance.

## **LEVEL OF EVIDENCE:**

3B, non-consecutive cohort study.

## **KEYWORDS:**

Dancers; femoroacetabular impingement; functional performance; hop test.

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