

# LENGTH CHANGE OF THE ILIOFEMORAL LIGAMENT DURING TESTS FOR ANTERIOR MICROINSTABILITY OF THE HIP JOINT: A CADAVERIC VALIDITY STUDY.

Benjamin R. Kivlan, PT, PhD<sup>1</sup>

Lindsay Carroll, DPT<sup>1</sup>

Allison Burfield, DPT<sup>2</sup>

Keelan R. Enseki, PT, OCS, SCS, ATC<sup>2</sup>

RobRoy L. Martin, PT, PhD<sup>1,2</sup>

## ABSTRACT

**Purpose/Background:** There is little information to support the use of clinical tests to assess for microinstability of the hip joint. The purpose of this study was to use a string model to describe and compare length changes of the iliofemoral ligament in the test positions commonly used to assess hip ligament laxity.

**Methods:** Twelve hip joints from nine cadavers (4 male; 5 female) with lifespans of 57-84 years of age were studied. A string model representing the medial and lateral arms of the iliofemoral ligament was secured to the proximal and distal attachment points. The amount of length change of the string model was compared in four test positions: 1) external rotation, 2) hyperextension-external rotation 3) abduction-extension-external rotation, and 4) adduction-extension-external rotation.

**Results:** For the medial arm, the greatest change occurred in the adduction-extension-external rotation position (12.7mm). This was significantly greater than the external rotation (5.1mm;  $p=0.002$ ) and abduction-extension-external rotation position (1.9mm;  $p<0.001$ ). The lateral arm also had the greatest excursion in the adduction-extension-external rotation position (16.6mm). This length change was significantly greater than the external rotation position (8.6mm;  $p=0.002$ ), the hyperextension-external rotation (11.1mm;  $p=0.047$ ), and the abduction-extension-external rotation position (5.6mm;  $p<0.001$ ).

**Conclusions:** Tests used for hip instability cause various levels of tension through the iliofemoral ligament. The combination of hip extension and external rotation increased the length change of string model and was maximized with hip adduction. The least amount of change occurred with the addition of hip abduction to extension and external rotation.

**Clinical Relevance:** Clinicians may use the information to help interpret tests for instability of the hip and may consider the combined position of hip extension, external rotation, and adduction to elucidate involvement of the iliofemoral femoral ligament.

**Level of Evidence:** 2b; Exploratory cohort study with good reference standards

**Key words:** hip, instability, ligament, special tests, validity

## CORRESPONDING AUTHOR

Benjamin R. Kivlan

Rangos School of Health Sciences

Duquesne University

Pittsburgh, PA 15282

412-396-4776

E-mail: [kivlanb@duq.edu](mailto:kivlanb@duq.edu)

<sup>1</sup> John G. Rangos Sr. School of Health Sciences, Duquesne University, Pittsburgh, PA, USA

<sup>2</sup> UPMC Center for Sports Medicine, Pittsburgh, PA, USA

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