**BACKGROUND**
- ECU tendon has a distinct subsheath
- Separate from the extensor retinaculum
- Subsheath tears and tendon subluxation commonly found in ball-stick and racquet athletes

**Current Theories:**
- A shallow ulnar groove predisposes certain patients to ECU tendon subluxation
- Deepening the groove has been advocated as an augment to treatment

**PURPOSE**
- Anatomic dissection to further characterize the anatomy of the ECU subsheath
- Explore the influence of bony morphology of the distal ulna on ECU tendon subluxation

**HYPOTHESIS**
A deeper ECU groove will have less tendon subluxation and greater tendon stability with and without an intact subsheath

**LIMITATIONS**
- An analysis of extensor carpi ulnaris (ECU) groove morphology and tendon stability

**ECU Subsheath Dimensions**
- 12 fresh frozen cadaveric upper extremities
  - 7 Male
  - 5 Female
  - Average Age: 71 (56-81)
  - ECU subsheath exposed.
  - Probe passed inside sheath proximal and distal to identify the isthmus of the subsheath

**Bony Morphology**
- Renderings of the ECU groove created with a Microscribe 3-D Digitizer
  - Solution Technologies, Inc., Oella, MD
  - Depth of groove calculated

**Dynamic Subluxation**
- 9 specimens
  - Elbows fixed at 90°
  - 400 gm weight attached in line with pull of the tendon
  - 2mm marker on apex of ulna on radial side
  - Imaged with subsheath intact and then sectioned in: Neutral, Full pronation, Full supination, and Supination/flexion/ulnar deviation
  - Radial/ulnar translation of the tendon measured

**Dimensions (Standard Deviation)**
- Radial Length: 11.1 mm (2.2)
- Ulnar Length: 10.8 mm (3.0)
- Distal Width: 9.0 mm (0.9)
- Proximal Width: 8.9 mm (1.2)
- Tip of Styloid: 0.5 mm (0.8)
- Distal Ulna Surface: 0.1 mm (2.5)
- Proximal DRUJ: 2.1 mm (1.0)

**Effect of groove depth on subluxation using a Spearman’s Correlate:**
<table>
<thead>
<tr>
<th>Condition</th>
<th>Max Depth</th>
<th>Median Depth</th>
<th>Mean Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intact</td>
<td>0.283 p=0.5</td>
<td>0.183 p=0.6</td>
<td>0.133 p=0.7</td>
</tr>
<tr>
<td>Sectioned</td>
<td>0.283 p=0.5</td>
<td>0.183 p=0.6</td>
<td>0.183 p=0.6</td>
</tr>
<tr>
<td>Δ Travel</td>
<td>0.217 p=0.6</td>
<td>0.2 p=0.6</td>
<td>0.2 p=0.6</td>
</tr>
</tbody>
</table>

**CONCLUSIONS**
The depth of the ECU groove does not independently significantly contribute to ECU tendon stability

**Funding for this project was supplied by a grant from the Orthopaedic Science Research Foundation.**

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*ECU tendon has a distinct subsheath.
Subsheath tears and tendon subluxation commonly found in ball-stick and racquet athletes.*

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