**TissueMend – What’s so important about Type III Collagen?**

Review of the Relevant Literature

**Type III Collagen Has Been Found to Aid In Type I Collagen Formation during Embryonic Development and in Adult Healing**

Tendons are 95% Type I collagen. However, there are two situations in which there is only 70-75% Type I collagen in tendons with up to 25% Type III collagen.

1. **During embryonic development** Type III collagen regulates the development of Type I collagen. Without Type III collagen, tendons will not form normally.  
2. **During the inflammation phase of tendon healing,** Type III collagen increases. It attracts stem cells that aid in the reparative phase during which Type I collagen is produced.

**Type III Collagen Has Been Found to Aid in Tendon to Bone Attachment – The “Holy Grail” of Rotator Cuff Repair**

The attachment of tendons to bones occurs in four zones across which there is a gradual transition in composition, structure, and mechanical properties. As shown in the chart below, Type III collagen is an important part of fibrocartilage formation.

Additionally, Type III collagen has been found to be a component of Sharpey’s Fibers (SF), which aid in anchoring the Tendon (T) to Bone (B).

**KEY TAKE-AWAYS**

- Type I collagen gives tendons their strength. The body doesn’t see Type I collagen as something to rebuild and remodel because it’s prevalence signifies a fully developed tissue. On the other hand, the body sees large amounts of Type III collagen in a tissue as a sign of developing and healing tissue which is to be used as a building block.
- Type III collagen is increased during embryonic tendon development and during adult tendon healing.
- Type III collagen is found in the fibrocartilage zone of tendon to bone attachment and in Sharpey’s fibers.
- TissueMend contains two to three times as much Type III collagen as GraftJacket.

**COLLAGEN CONTENT COMPARISON:**

<table>
<thead>
<tr>
<th>Source</th>
<th>TissueMend</th>
<th>GraftJacket</th>
<th>OrthoAdapt</th>
<th>Inforce</th>
<th>Allopatch HD</th>
<th>RC Allograft</th>
<th>ACell</th>
<th>CONEXA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>Fetal Dermis</td>
<td>Adult Dermis</td>
<td>Pericardium</td>
<td>Tendon</td>
<td>Fascia</td>
<td>Tendon</td>
<td>Bladder</td>
<td>Adult Dermis</td>
</tr>
<tr>
<td>Collagen Types</td>
<td>I (≥75%) III (≥25%)</td>
<td>I (≥90%) III (≥10%)</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I, IV, VII</td>
<td>I (≥90%) III (≥10%)</td>
</tr>
</tbody>
</table>

**LITERATURE MATTERS**

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References:

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