

# Flexor tendon repair zones 1-3

## Early Active Motion (EAM)

This protocol is intended to provide the clinician with a guideline for the postoperative rehabilitation course of a patient who has undergone primary 4- or 6-strand flexor digitorum superficialis and/or flexor digitorum profundus repairs in Zones 1-3. General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, comorbidities, pre-surgical range of motion, strength, health/functional status, rehabilitation compliance, learning barriers and complications. Specific time frames, restrictions and precautions are given to protect healing tissues and surgical reconstruction.

Use Strickland's Percentage to track progress.  
(.stricklands smartphrase)

$((\text{Active PIP} + \text{DIP}) - \text{PIP extension lag}) \div 175 \times 100 = \% \text{ of normal active PIP and DIP motion}$

- Excellent = 85-100%
- Good = 70-84%
- Fair = 50-69%
- Poor = <50%

\*Measurements were taken actively, not after place and hold

AROM	Date
PIP	***/**
DIP	***/**
TAM	***
STRICKLAND'S %	***%
STRICKLAND'S RATING	***

### Postoperative Guidelines

Early Active Motion (EAM) should begin at 3 – 5 days post operatively.

If patient is diabetic, a smoker or has other underlying medical conditions to have slow healing, they may need extended orthotic time to achieve a satisfactory outcome.

For Zone 1 repairs, in addition to Wrist Hand Finger Orthosis (WHFO), consider dorsal blocking splint positioning DIP of affected digit in 45 degrees flexion

### Return to Work

Patients who work as manual laborers are normally able to return to work approximately 3-6 months after surgery. Those who have sedentary professions are normally able to return to work 6-8 weeks after surgery. The following should be taken into consideration:

- Extent of Injuries
- Type of work
- Surgeon's approval
- Postoperative complications

Phase I (surgery to 3-5 days after surgery)

Rehabilitation appointments	<ul style="list-style-type: none"> <li>Twice per week</li> </ul>
Rehabilitation goals and priorities	<ul style="list-style-type: none"> <li>Promote early tendon gliding to optimize intrinsic tendon healing and minimize extrinsic scarring</li> <li>Manage edema</li> <li>Wound healing</li> <li>One-handed activities of daily living (ADLs)</li> </ul>
Orthosis	<ul style="list-style-type: none"> <li>Custom thermoplastic dorsal blocking WHFO</li> <li>Wrist 30 degrees extension, MCPs 30 degrees flexion, IPs full extension</li> <li>If needed, apply light compression (example: coban or compressogrip) for edematous finger(s), remove prior to exercise.</li> <li>For Dr. Salyapongse patients: no strap blocking IP flexion</li> </ul>
Suggested therapeutic exercises	<p>Performed within splint at home, 10 reps each 1-2 hours (no less than 5x/day)</p> <ul style="list-style-type: none"> <li>Passive flexion and extension warm-up FIRST.</li> <li><i>Gentle</i> active flexion of 1/3 to 1/2 hook fist. Week 1 using scratch technique to contralateral index finger</li> <li>Initiate movement at the DIPs.</li> <li>Block MCPs in full flexion and actively perform full active IP extension</li> <li>Synergistic Wrist motion: gravity-assisted wrist flexion (pronated), followed by active wrist extension to splint, fingers relaxed</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>Very important: ELEVATE and IMMOBILIZE for 3-5 days before starting motion to decrease work of flexion.</li> <li>Repeatedly explain: “You can move it, but you can’t use it” throughout treatment sessions.</li> <li>Orthosis on 24/7 (including bathing), remove ONLY for careful hygiene at sink</li> </ul>
Progression criteria	<ul style="list-style-type: none"> <li>Full PROM of finger(s): passive flexion pulp to palm</li> </ul>

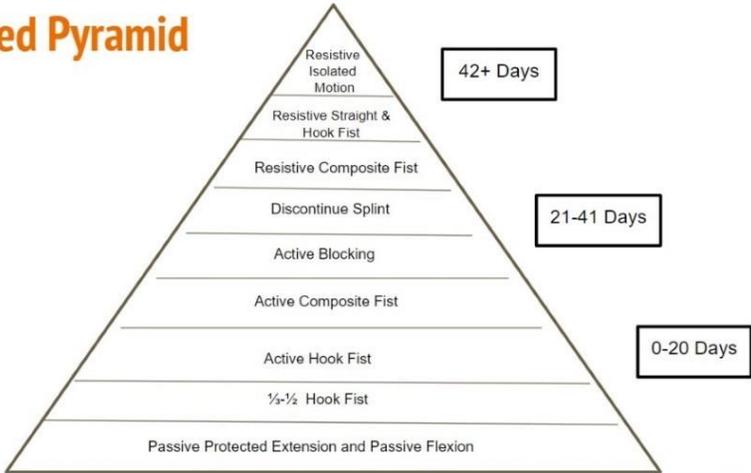
## Flexor Tendon Repairs Zone 1-3

### Phase II (2-4 weeks post-op)

Rehabilitation appointments	<ul style="list-style-type: none"> <li>○ Twice per week</li> </ul>
Rehabilitation goals and priorities	<ul style="list-style-type: none"> <li>● Promote early tendon gliding to optimize intrinsic tendon healing and minimize extrinsic scarring</li> <li>● Manage edema</li> <li>● Wound healing</li> <li>● One-handed Activities of daily living (ADLs)</li> </ul>
Orthosis	<ul style="list-style-type: none"> <li>● At 3 weeks, allow removal of orthosis to shower, emphasizing not to use affected hand while bathing</li> <li>● Orthosis on 24/7, remove ONLY for careful hygiene</li> </ul>
Suggested therapeutic exercises	<p>Continue elevation and edema management as needed</p> <p>Continue previously recommended exercises.</p> <p>Gentle active flexion, progressing using scratch technique:</p> <ul style="list-style-type: none"> <li>● Week 2 contralateral middle</li> <li>● Week 3 contralateral ring</li> <li>● Week 4 contralateral small</li> </ul> <p>Measure using Strickland’s to determine progression of exercises according to flexor tendon pyramid</p>
Precautions	<ul style="list-style-type: none"> <li>○ No functional use of hand.</li> <li>○ No composite finger/wrist extension</li> </ul>
Progression criteria	<p>Progress to full active tendon gliding (out of splint) when able to flex to contralateral small using scratch technique</p>

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### Phase III (4-6 weeks post-op)

<p>Rehabilitation appointments</p>	<ul style="list-style-type: none"> <li>Twice per week</li> </ul>
<p>Rehabilitation goals and priorities</p>	<ul style="list-style-type: none"> <li>Progress to full active tendon gliding to optimize intrinsic tendon healing and minimize extrinsic scarring</li> <li>Being using hand for specific light ADL tasks while seated</li> </ul>
<p>Orthosis</p> 	<p>4 weeks</p> <ul style="list-style-type: none"> <li>Dorsal blocking splint is changed to Manchester short splint</li> <li>Wrist extension limited to 45 degrees using the proximal edge of splint to block motion</li> </ul> <p>5 ½ - 6 weeks</p> <ul style="list-style-type: none"> <li>Discontinue splint</li> </ul>
<p>Suggested therapeutic exercises</p>	<p>Continue progression through modified pyramid using Strickland’s measurement and clinical reasoning, based on individual patient response</p> <div style="text-align: center;"> <p><b>Modified Pyramid</b></p>  </div>

	<p>Blocking: stabilize finger on lateral surfaces (to minimize work of flexion)</p> <ul style="list-style-type: none"> <li>• Begin with blocking MPJ in slight flexion</li> <li>• Progress to blocking MPJ in full extension</li> <li>• Progress to blocking PIPJ in slight flexion</li> <li>• Progress to blocking PIPJ in full extension</li> </ul>
<p>Precautions</p>	<p>Orthosis at all times, removing only for hygiene, hand therapy exercises and light ADL tasks while seated</p>
<p>Progression criteria</p>	<p>Strickland's Percentage= ((Active PIP + DIP flexion) - (PIP + DIP extension lag)) divided by 175) x 100 = % of normal active PIP and DIP motion</p> <ul style="list-style-type: none"> <li>• Excellent = 85-100%</li> <li>• Good = 70-84%</li> <li>• Fair = 50-69%</li> <li>• Poor = &lt;50%</li> </ul> <p>*Measurements taken actively, not after place and hold</p>

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### Phase IV (6-12 weeks post-op)

<p>Rehabilitation appointments</p>	<ul style="list-style-type: none"> <li>• 6-8 weeks post-op: 1-2 times per week</li> <li>• 8-12 weeks post-op: therapist discretion</li> </ul>
<p>Rehabilitation goals and priorities</p>	<ul style="list-style-type: none"> <li>• Progress to using hand for light ADL/IADL tasks</li> <li>• Full AROM</li> <li>• Minimize scarring</li> <li>• Gradually increase strength</li> </ul>
<p>Suggested therapeutic exercises</p>	<ul style="list-style-type: none"> <li>• Passive composite finger/wrist extension                         <ul style="list-style-type: none"> <li>○ Consider spring extension splint or thermoplastic night splint as needed</li> </ul> </li> <li>• Consider otoform mold or silicone gel sheeting for scar</li> <li>• Isolated IP flexion activities                         <ul style="list-style-type: none"> <li>○ Scrunching washcloth on table with palm flat</li> <li>○ Picking up progressively smaller objects between pulp of affected finger(s) and palm</li> <li>○ Rotating cylindrical objects on tabletop between thumb and affected finger(s)</li> <li>○ Actively moving between hook fist and composite fist while holding a pen or highlighter</li> </ul> </li> <li>• At 8 weeks, initiate strengthening if needed (light therapeutty)</li> </ul>
<p>Precautions</p>	<ul style="list-style-type: none"> <li>• No dynamometer testing</li> <li>• No torque/resistance activity allowed</li> </ul>

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