



# Syndesmosis Fixation and/or Deltoid Repair with Tightrope Rehabilitation Protocol

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**Rehab protocol created with help by: Braidy Solie, DPT, CSCS, EMR**

The intent of this protocol is to provide a general framework for an **isolated syndesmotic repair utilizing a Tightrope device**. Secondary surgical procedures (Ankle Fracture Treatment, Deltoid Repair) and the ongoing tissue status must be considered during rehabilitation with appropriate protocol modification. The physician will make any specific changes to the protocol as appropriate for the individual patient. Within this protocol, there are specific guidelines for activity progression, which directly relate to tissue tolerance and directional preference of movement.

## GENERAL REHABILITATION PRINCIPALS

- 6 Week Period of Protected and Progressive Weight-bearing
- Focus on swelling reduction with elevation and ice
- Progressive Loading into Dorsiflexion and Multi-Directional Movements
- Gradual Return of Functional Strength & Conditioning
- Criteria-Based Return to Cutting/Pivoting Activity after 8-10 weeks

## WEEK 0-6

### Precautions

- Limited weight bearing with use of crutches in cast weeks 0-2
- Transition to AirCast Boot at 2-week post op visit through 6-week post op visit
- AirCast Boot removed for showering or when at rest
- Continue to monitor and reduce swelling
- Okay to use stationary bike/elliptical with boot on (little to no resistance)
- No formal physical therapy until after 6-week post op with weightbearing x-ray to review with Dr. Coetzee

## WEEK 6

### Precautions

- Continue use of AirCast Boot for Standing Exercise/Ambulation
- Avoid Biking with Ankle Positioned in Dorsiflexion
- Avoid Isotonic Strengthening into Dorsiflexion

### Interventions (Follow Pain Monitoring Model\*)

- (PRICE): Protect, Rest, Ice, Compression and Elevation as needed
- Plantar Grade Stationary Biking without AirCast Boot (NO RESISTANCE)

- Progress sitting Heel/Forefoot Raises 20-30RM Load (No Strengthening into Dorsiflexion)
- Other Isotonic Strengthening from Plantar Grade through Plantarflexion (Sagittal Plane Only)
- Standing Proprioceptive Exercises
- 4-Way SLR/ Non-Weight Bearing Exercises for larger lower limb muscles (Glute, Quad, Ham)

## WEEK 7

### Precautions

- Wean from AirCast Boot per Pain Monitoring Model\*
- Gradually Progress Dorsiflexion AROM (No Aggressive Stretching)
- Progression of Exercise per Tissue Tolerance/Effusion Control

### Interventions (Follow Pain Monitoring Model\*)

- (PRICE): Protect, Rest, Ice, Compression and Elevation as needed
- Stationary Bike without AirCast Boot (Gradual Progression of Resistance Intervals)
- **Begin** Alter-G Return to Running Program\*\* (50% Weight Bearing ONLY)
- Progress Seated Heel/Forefoot Raises 15-20RM Load (Avoid Aggressive Loading in Dorsiflexion )
- Other Isotonic Strengthening from **Limited Dorsiflexion** through Plantarflexion (No Stretching)
- Shallow DL Squatting Progression (Limit End-Range Dorsiflexion)
- Static, Double and Single Leg, Standing Proprioceptive Exercises (No CKC Single Leg Dorsiflexion)
- Continue 4-Way SLR/ Non-Weight Bearing Exercises

## WEEK 8

### Precautions

- Avoid Combine Dorsiflexion+Eversion AROM/Strengthening
- Gradually Progress Multi-Planar AROM (No Aggressive Stretching)
- Progression of Exercise per Tissue Tolerance/Effusion Control
- NO **DISTAL** Tibiofibular Mobilizations

### Interventions (Follow Pain Monitoring Model\*)

- (PRICE): Protect, Rest, Ice, Compression and Elevation every 2 hours as needed
- Increasing Intensity of Stationary Bike Resistance Intervals per Pain Monitoring Model\*
- Introduce Multi-Planar AROM/ Open Chain Strengthening (**No Dorsiflexion+Eversion**)
- **Continue** Alter-G Return to Running Program\*\* (50-75% Weight Bearing ONLY)
- Mobilizations to the Superior Tibiofibular, Talocrural, Subtalar, Mid/Forefoot Joints
- Other Isotonic Strengthening from Limited Dorsiflexion through Plantarflexion
- Begin Standing Double/Single Leg Heel Raise Program per Tissue Tolerance
- Progressive Standing Proprioceptive Exercises

## WEEK 9

### Precautions

- Initiate Light Dorsiflexion Stretching (NO AGGRESSIVE STRETCHING)
- Gradually Progress Weight Bearing Strengthening into Dorsiflexion (No Dorsiflexion+Eversion)
- Avoid Tissue Irritability/Increasing Effusion with Return to Running Program\*\*
- Avoid Tissue Irritability/Increasing Effusion with Multi-Planar Weight Bearing Exercise
- NO **DISTAL** Tibiofibular Mobilizations
- No Multi-Planar Plyometric Exercise

### Interventions (Follow Pain Monitoring Model\*)

- Increasing Intensity of Stationary Bike Resistance Intervals per Pain Monitoring Model\*
- Progress Return-to-Running Program\*\* to Full Weight Bearing per Pain Monitoring Model\*
- Mobilizations to the Superior Tibiofibular, Talocrural, Subtalar, Mid/Forefoot Joints
- Progress Multi-Planar AROM/Open Chain Strengthening
- Progressive CKC, Multi-Planar, Resistance Exercise (**No Dorsiflexion+Eversion**)
- Progressive Multi-Planar Standing Proprioceptive Exercises (**No Dorsiflexion+Eversion**)
- **Begin** Sport-Specific Return to Activity Progression per Tolerance

## WEEK 10

### Precautions

- Stretching ALLOWED with respect to Pain Monitoring Model\*
- No Aggressive Dorsiflexion + Eversion Strengthening/Plyometric
- Avoid Aggressive **DISTAL** Tibiofibular Mobilizations

### Interventions (Follow Pain Monitoring Model\*)

- Progress Multi-Planar AROM/Progressive Resistance Exercise (**Protected Dorsiflexion+Eversion**)
- Continue Return-to-Running Program\*\*
- Mobilizations to the Superior/Distal Tibiofibular, Talocrural, Subtalar, Mid/Forefoot Joints
- Initiate Light, Multi-Planar Plyometric Exercise/Drills (No Aggressive Multi-Planar Plyometrics)
- Continue Multi-Planar Standing Proprioceptive Exercises

## WEEK 11+

### Precautions

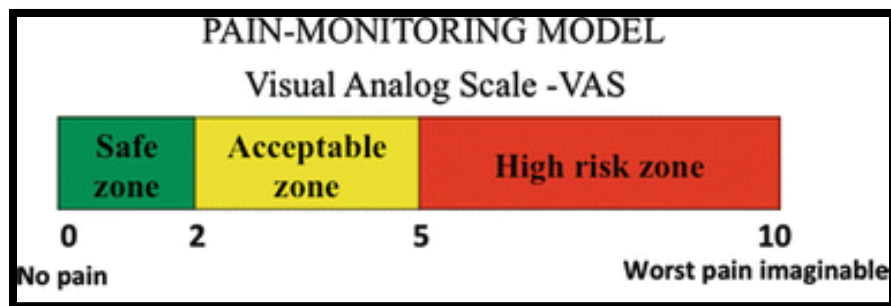
- Protected Return to Play Progression per Tissue Irritability, Effusion, and Functional Status
- Progressive Increase in Plyometric Exercise per Pain Monitoring Model\*

### Interventions (Follow Pain Monitoring Model\*)

- Continue Multi-Planar AROM/Progressive Resistance Exercise (**Protected Dorsiflexion+Eversion**)
- Continue Return-to-Running Program\*\*
- Mobilizations to the Superior/Distal Tibiofibular, Talocrural, Subtalar, Mid/Forefoot Joints
- Increase Intensity of Multi-Planar Plyometric Exercise/Drills
- Continue Multi-Planar Standing Proprioceptive Exercises

### RETURN TO ACTIVITY CRITERIA

- **Minimum** of 8-12 Weeks of Tissue Healing Time Since Surgery
- Managed Tissue Irritability per Pain Monitoring Model\*
- Resolving Joint Effusion (Non-Reactive Effusion to Activity)
- Functional/Closed-Chain Dorsiflexion Range-of-Motion (Activity Dependent)
- Adequate Functional Strength for Joint Protection and Task Performance
  - 90% LSI on Hop Testing for Level 1 Sports
  - Y-Balance Anterior Reach within 4-6cm



#### Pain Monitoring Model Guidelines

- 1) Pain Should be Managed at a **3-5/10 or Less** with Exercise
- 2) Pain Should NOT Increase after Exercise **Above a 3-5/10**
- 3) Pain Should NOT be **INCREASED** the Next Morning After Exercise
- 4) Pain and Stiffness **Should Improve** Week to Week

<b>Alter-G/Treadmill Return to Running Progression**</b>		
<b>Week</b>	<b>Weight Bearing (WB)</b>	<b>Walk-Run Protocol*</b>
6	Alter-G 50% WB	2-Minute Walk, 1-Minute jog at 5-6/10 Effort   10-15 Minute Workout
7	Alter-G 50-75% WB	1-Minute Walk, 2-Minute jog at 5-6/10 Effort   15-20 Minute Workout
8	Alter-G 75%-FULL WB	1-Minute Walk, 3-Minute jog at 6-7/10 Effort   15-20 Minute Workout
9	FULL/Treadmill	1-Minute Walk, 3-Minute jog at 6-7/10 Effort   20-30 Minute Workout
10	FULL/Treadmill	1-Minute Walk, 4-Minute jog at 6-8/10 Effort   20-30 Minute Workout
11+	FULL/Treadmill	Progress toward 20-30 minute jog at 8-10/10 Effort
*Allow 1-2 Days of Rest Between Running Progression Workouts, <b>Reduce Volume/Intensity</b> if Pain/Effusion Present		

### Reference(s)

- **Latham, Alex James, et al.** "Ankle syndesmosis repair and rehabilitation in professional rugby league players: a case series report." *BMJ open sport & exercise medicine* 3.1 (2017)
- **Naqvi, Gohar A., Aseer Shafqat, and Nasir Awan.** "Tightrope fixation of ankle syndesmosis injuries: clinical outcome, complications and technique modification." *Injury* 43.6 (2012): 838-842.
- **Silbernagel, Karin Grävare, et al.** "Continued sports activity, using a pain-monitoring model, during rehabilitation in patients with Achilles tendinopathy: a randomized controlled study." *The American journal of sports medicine* 35.6 (2007)
- **Willmott, H. J. S., B. Singh, and L. A. David.** "Outcome and complications of treatment of ankle diastasis with tightrope fixation." *Injury* 40.11 (2009): 1204-1206.