

Foot Fusions: Talonavicular, Subtalar, Double (TN and STJ), Triple (TN, STJ, CC)

Phase 1- Early Protective Phase (0-10 weeks)

Goals for phase 1

- Minimize effusion
- ROM at home starting at weeks 6-8, instructed by MD
- Follow weight bearing schedule to ensure healing and minimize inflammation

Brace and Weight bearing

- 0-2 weeks: NWB in a splint
- 2-6 weeks: NWB in a cast
- 6-10 weeks: Wean into WBAT in a CAM boot
- 10-14 weeks: Wean into WBAT in an articulating Axiom brace

AROM

- ROM exercises at weeks 6-8 instructed by MD office (plantar flexion and dorsiflexion)

Modalities

- Cryotherapy at home, 3 x per day for 20 minutes each with ankle elevated above heart

Criteria for progression to Phase 2

- MD clearance to begin
Outpatient Physical Therapy

Foot Fusions: Talonavicular, Subtalar, Double (TN and STJ), Triple (TN, STJ, CC)

Phase 2 – Intermediate Phase (10-14 weeks)

Goals for phase 2

- Start Outpatient PT at 10-12 weeks post-op (PT to last 6-8 weeks total)
- WBAT out of boot and into shoe with Axiom brace
- Minimize effusion
- Increase core, hip and knee strength
- Safe gait with/without walking aid
- Scar tissue mobility

Criteria for progression to

Phase 3

- Full weight bearing in brace pain-free
- Tolerate ankle isotonic pain-free

Brace and Weight bearing

- Axiom brace on during all weight bearing activities per MD recommendation, including PT
- Work on WBAT weaning from boot and into Axiom brace to gradually increase time and distance without compensation

AROM

- Plantar flexion to equal uninvolved if possible
- Dorsiflexion may be increased due to Achilles lengthening
- Midfoot ABD and ADD 10-15 degrees

Manual Therapy

- Scar massage
- Grade 1, 2 joint mobilizations to **unfused joints**

Strengthening

- Stationary bike
- Progressive hip, ankle and core strengthening
- Ankle strengthening: start isometric and work up to gentle isotonic
- Foot intrinsic strengthening

Proprioception

- Low level balance and proprioceptive exercises starting with double leg on a stable surface using UE support as needed

Gait Training

- Resume normal gait mechanics

Aquatics

- Initiate aquatic therapy program when incisions are closed and patient is safe to get in and out of the pool.

Modalities

- Heat for stiffness as needed
- Cryotherapy after activity
- Other modalities as needed for pain and swelling

Foot Fusions: Talonavicular, Subtalar, Double (TN and STJ), Triple (TN, STJ, CC)

Phase 3 – Intermediate Phase(14-16 weeks)

Goals for phase 3

- Full weight bearing without compensation
- Wean from Axiom articulated brace at 14-16 weeks
- Wear brace for "high risk" activity

Criteria for progression to Phase 4

- Normal ankle PROM
- Normal Gait

Brace and Weight bearing

- Wean from Axiom articulated brace at 14-16 weeks under PT guidance
- Axiom brace used for patient comfort only after weaning period is complete. Patient may choose to wear for "high risk" activity
- May require a rocker bottom shoe (optional)

AROM

- LE flexibility restored

Strengthening

- Bilateral heel raises progressing to unilateral heel raises
- Continue with PRE LE and core strength and to tolerance

Proprioception

- Stable surface decreasing UE support and progression to single leg balance
- Progression to unstable surfaces, perturbations and or dual tasking

Gait Training Advanced

- Ambulation without a walking aid, without compensation

Modalities

- Heat for stiffness as needed
- Cryotherapy after activity
- Other modalities as needed for pain and swelling

Foot Fusions: Talonavicular, Subtalar, Double (TN and STJ), Triple (TN, STJ, CC)

Phase 4 – Return to Function (16+ weeks)

Goals for phase 4

- Progress single leg muscle strength, endurance and balance
- Return to Sport or work specific tasks
- Full strength

Criteria for return to work, function, sport

- **Criteria:**
- pain-free
- full ROM
- minimal joint effusion
- 5/5 MMT strength
- jump/hop testing at 75% compared to uninvolved
- display adequate ankle control with sport and/or work specific tasks

Brace and Weight bearing

- Axiom brace used for patient comfort only after weaning period is complete. Patient may choose to wear for "high risk" activity

Strengthening

- Stationary bike or elliptical
- Unilateral gym strengthening program
 - single leg
 - calf raises
 - single leg squats
 - eccentric leg press
 - step-up progression
 - multi-directional lunges

Proprioception

- Advanced proprioception on un-stable surfaces with perturbations and/or dual tasking,

Modalities

- Cryotherapy after activity

Work related activities

- Week 20-24: **Return to function testing** if required by MD

Sport related activities

- add sport specific balance tasks as able
- 20 weeks start impact activities (running, cutting and jumping)
- 20 + weeks Return to Functional Testing (optional)

Foot Fusions: Talonavicular, Subtalar, Double (TN and STJ), Triple (TN, STJ, CC)

References

1. Martin, R.L. Stewart, G.W. Conti, S.F. (2007), 'Post-traumatic ankle arthritis: an update on conservative and surgical management. Journal of orthopaedic & sports physical therapy', (v.35 (5) pp 253-259)
2. Smith, C.L. (1980), 'Physical therapy management of patients with total ankle replacement. Physical therapy', (v.60 (3) pp 303-306)
3. Knupp, M. Schuh, R. Stufkens, S.A.S. Bolliger, L. Hintermann, B. (2009), 'Subtalar and talonavicular arthrodesis through a single medial approach for the correction of severe planovalgus deformity'. Journal of bone & joint surgery, (v.91 (5) pp 612-615)
4. Deorio, J.K. Leaseburg, J.T. Shapiro, S.A. (2008), 'Subtalar distraction arthrodesis through a posterior approach'. Foot & ankle international. (v.29 (12) pp 1189-1194)
5. Lee, KB. Saltzman, C.L. Suh, JS. Wasserman, L. Amendola, A. (2008), 'A posterior 3-portal arthroscopic approach for isolated subtalar arthrodesis'. Arthroscopy. (v.24(11) pp 1306-1310)
6. Knupp, M. Skoog, A. Tornkvist, H. Ponzer, S. (2008), 'Triple arthrodesis in rheumatoid arthritis'. Foot & ankle international. (v.29 (3) pp 293-297)
7. Jackson, W.F.M. Tryfonidis, M. Cooke, P.H. Sharp, R.P. (2007), 'Arthrodesis of the hindfoot for valgus deformity'. An entirely medial approach. Journal of bone & joint surgery. (v.89 (7) pp 925-927)