

## **ANKLE SPRAIN NON-OPERATIVE GUIDELINES**

The following Ankle Sprain Guidelines were developed by HSS Rehabilitation. Progression is both criteria-based and patient specific. Phases and time frames are designed to give the clinician a general sense of progression but do not replace clinical judgement. This rehabilitation program emphasizes reduction of pain and edema in the high irritability phase with special attention to not overstress the involved tissue. In the low irritability phase the focus is on restoration of stability during functional tasks and sport-related activities. Keep in the mind that the severity of injury and structures involved will impact the rehabilitation process. High ankle sprain healing times may be delayed. Patients may present at any phase, so it is important to be familiar with all phases of the guidelines.

### **FOLLOW REFERRING PROVIDER MODIFICATIONS AS PRESCRIBED**

## ANKLE SPRAIN NON-OPERATIVE GUIDELINES

### Acute/High Irritability Phase

#### PRECAUTIONS

- Screen patient for fractures with the Ottawa and Bernese Ankle/Foot Fracture Rules
- Assess for severity of injury to supporting structures (e.g., peroneal tendon, flexor hallucis longus)
- Maintain referring provider precautions, if applicable

#### CONSIDERATIONS

- Know grade of sprain and tissues involved<sup>2</sup>
- Know clinical presentation of pediatric fractures
- History of previous ankle sprains
- Psychosocial involvement/pain sensitization

#### ASSESSMENT

- Foot and Ankle Disability Index (FADI)
- Numeric Pain Rating Scale (NPRS)
- Safety with assistive devices (e.g., crutches, rolling walker, knee scooter), if any
- Edema
- Sensation testing
- Joint mobility
- Palpation
  - Identify pain generators
- Lower extremity (LE) active range of motion (AROM) screen
- Ankle passive range of motion (PROM) and AROM
- Core strength screen
- LE strength screen with emphasis on the ankle and hip (compare to non-involved side)
- Special tests
  - Assess laxity/irritability
- Pre-injury and post-injury function

## TREATMENT RECOMMENDATIONS

- Gait and stair training
  - Focus on optimal loading and early weight bearing
  - Encourage symmetrical gait pattern
  - Train in use of assistive device if necessary
- Low-grade joint mobilizations focusing on the distal tibiofibular, talocrural, and subtalar joints (e.g., posterior talar glides and mobilizations with movement)
- PROM/active assisted range of motion (AAROM)/AROM of the ankle
  - Do not overload involved tissues
  - Focus on non-weight bearing (NWB)/limited weight bearing interventions
- Proximal LE and core strengthening, upper extremity (UE) strengthening as needed
- Low irritability ankle/foot strengthening
  - Isometrics progressing to isotonic
  - Intrinsic strengthening
  - Consider blood flow restriction (BFR), with referring provider clearance
- Balance/proprioception
  - Seated multi-directional rocker board minimizing stress to injured tissues
- Taping/bracing as needed
- Edema management
  - Protect, rest, ice, compression, elevation (PRICE),
- Modalities as needed

## CRITERIA FOR ADVANCEMENT

- Maximize gait with appropriate assistive device
- Pain and edema controlled

## EMPHASIZE

- Low irritability exercise
- Edema management
- Appropriate use of ankle support (i.e., bracing, taping)
- Limit motions which stress healing tissues
  - Anterior talofibular ligament (ATFL) limit: Inversion (INV) and Plantarflexion (PF)
  - Calcaneofibular ligament (CFL) and posterior talofibular ligament (PTFL) limit: INV
  - Deltoid ligament limit: Eversion (EV)
  - High ankle sprain limit: Weight-bearing (WB), INV, EV

## ANKLE SPRAIN NON-OPERATIVE GUIDELINES

### Sub-Acute/Moderate Irritability Phase

#### PRECAUTIONS

- Avoid premature return to activity

#### CONSIDERATIONS

- Know grade of sprain and tissues involved
- Avoid stretching injured ligaments
- Chronicity of condition
- Psychosocial involvement/pain sensitization

#### ASSESSMENT

- FADI
- NPRS
- Edema
- Joint mobility
  - Talocrural mobility
  - Distal tibiofibular joint
    - Do not mobilize in cases of high ankle sprain
  - Subtalar joint
  - Cuboid
- Palpation
  - Identify pain generators
  - Soft tissue extensibility
- LE AROM screen
- Ankle/Foot A/PROM (include hallux)
- Core screen
- LE strength screen with emphasis on the ankle and hip (compare to non-involved side)
- Heel rise endurance test<sup>5</sup>
- Special tests
  - Assess laxity/irritability
- Gait assessment
- Single leg stance (SLS) with assessment of foot tripod (calcaneus, 1<sup>st</sup> and 5<sup>th</sup> metatarsal heads)

- Star Excursion Balance Test
- Squats: bilateral or unilateral depending on symptoms
- Step up and step downs

## **TREATMENT RECOMMENDATIONS**

- Gait and stair training
  - Encourage symmetrical gait pattern
- Activities of daily living (ADL) specific training
  - Progressive community ambulation
    - Heel and toe walking
    - Descending stairs
  - Transitions onto and off the floor
- Edema management
  - Consider compression sleeve
- Joint and soft tissue mobilizations targeting hypomobile structures in functional positions
- PROM/AROM of the ankle
  - Address persisting deficits
- Neuromuscular training
- Weight bearing balance/proprioception and strengthening
  - Progression from bilateral to unilateral
  - Progression from static to dynamic
  - Sagittal plane progressing to multidirectional
  - Progression from level ground to compliant surfaces
    - Multi-directional rocker board, proprioceptive foam, hemispheric balance trainer
  - Cervical flexion/extension/rotation exercises eyes open/closed, neurocognitive progressions
  - Heel rise progression
    - Track directly to 1st/2nd metatarsals
  - Proximal strengthening and control (focus on core/hip abductors)
    - Front and modified side planks
    - Kneeling/half kneeling exercises
    - BFR, as needed
- Resume cardio activities asymptomatic

## **CRITERIA FOR ADVANCEMENT**

- Gait normal without assistive device
- Pain and edema self-managed as activity increases

## **EMPHASIZE**

- Exercise matched to patients' level
- Edema control
- Tripod contact pattern of foot to floor
- Gait duration/distance/step count

## ANKLE SPRAIN NON-OPERATIVE GUIDELINES

### Chronic/Low Irritability Phase

#### PRECAUTIONS

- Avoid premature return to activity/sport

#### CONSIDERATIONS

- History of previous ankle sprains
- Psychosocial involvement/pain sensitization

#### ASSESSMENT

- FADI
- Fear avoidance outcome measures
- NPRS
- Edema
- Joint mobility
- Palpation
- LE AROM screen
- Ankle/Foot AROM, PROM
- LE strength screen assessing limb symmetry; consider Hand Held Dynamometer (HHD)
- Special tests
  - Assess laxity/irritability
- SLS
- Star Excursion Balance Test
- Single leg squat
- Running/Hopping assessment

#### TREATMENT RECOMMENDATIONS

- Edema management
  - Consider compression sleeve
- PROM/AROM of the ankle
  - Address persisting deficits in range of motion and joint mobility
- Weight bearing strengthening
  - Heel rise progressions: Gastroc and soleus
  - Eccentric control

- Increase load (reintroduce previously symptomatic movements)
- Endurance training
- Weight bearing balance/proprioception
  - Progress to unilateral and dynamic stabilization
    - Multi-directional rocker board, foam, hemispheric balance trainer
    - Sport specific balance/proprioception
    - Perturbations
    - Reactionary drills emphasizing directional and speed changes
    - Work into end ranges
- Incorporate instability into progression
- Work on inclines/declines/sport specific terrain
- Loaded squat variations
  - Bilateral/unilateral
- Progress from double leg to single leg side planks
- Return to running progression
- Sport specific progression
  - Plyometrics, agility, hopping
  - Deceleration and cutting exercises

## **CRITERIA FOR DISCHARGE**

- Full ankle PROM and AROM
- 5/5 strength of all muscle groups
  - HHD testing if available
  - At least 90% closed chain, heel raise work (height x reps) compared to contralateral side
- SLS  $\geq$  90% of uninvolved side with minimal foot, hip, or core strategies
- Star Excursion Balance Test  $\geq$  90% of uninvolved side
- Ability to perform  $\geq$  6" step ups/downs with control
- Patient appropriate functional testing (e.g., hop testing vs. 6-minute walk test)
- Ability to perform task and sport specific interventions with no instability or increase in symptoms

## **EMPHASIZE**

- Weight bearing stability
- Tripod contact pattern of foot to floor in high level activities
- Continued balance work post discharge
- Task specific training
- Consider transitioning to performance specialists



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**APPENDIX 1:**

Single leg heel raise normative values by age and sex<sup>5</sup>

Age	Male	Female
20-29	37	30
30-39	32	27
40-49	28	24
50-59	23	21
60-69	19	19
70-79	14	16
80-89	10	13



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