

DR RISHABH HEGDE'S CLINICAL REHABILITATION PROTOCOL

Acute Ankle Sprain & Lateral Ligament Injury (ATFL/CFL) Continuum & Return-To-Play (RTP) Protocol

Protocol Guidelines & Philosophy

This protocol is structured sequentially into objective-based phases. Progression through phases should be guided by functional criteria and clinical markers (pain, swelling, range of motion, and neuromuscular control) rather than strict timelines alone. Adjust individual loads based on clinical feedback.

PHASE 1: Acute Protection & Optimal Loading (Weeks 0 – 2)

1. Immobilization & Protection Strategy

- **Grade I/II Sprains:** Functional support using a binder or brace based on what Dr Rishabh deems best with or without elastic kinesiology taping. Early weight-bearing as tolerated.
- **Grade III Sprains:** Short period (3–7 days) of immobilization in a controlled ankle motion (CAM) walker boot or brace deemed fit by Dr Rishabh, transitioning rapidly to partial/full weight-bearing.

2. Management Framework (POLICE Protocol)

- **Protect:** Avoid forced inversion/eversion stresses. Use supportive footwear or braces.
- **Optimal Loading:** Progressive weight-bearing with support/crutches to tolerance in a normal heel-to-toe gait pattern.
- **Ice & Compression:** Intermittent icing/cryotherapy (15-20 min, 3-4x/day) coupled with the brace
- **Elevation:** Elevate the extremity above the level of the heart whenever non-active.

3. Early Therapeutic Exercises

- Open-chain active range of motion (AROM) in pain-free zones: Ankle pumps, gentle ankle circles, and alphabet tracing.
- Submaximal multi-angle isometric strengthening (Dorsiflexion, Plantarflexion, Inversion, Eversion) in a neutral joint position.
- Proximal chain preservation: Straight leg raises (SLR) in all planes, side-lying hip abduction, and core stabilization.

Criteria for Progression to Phase 2

- Minimal localized edema and resting pain $\leq 2/10$ on the Visual Analog Scale (VAS).
- Full weight-bearing tolerated without assistive devices and a non-antalgic gait.

PHASE 2: Proliferation & Early Progressive Loading (Weeks 2 – 6)

1. Range of Motion (ROM) Restoration

- Passive and active-assisted stretching focused on stretching the gastrocnemius-soleus complex (e.g., towel stretch, runner's wall stretch).
- Emphasis on regaining closed-chain ankle dorsiflexion (Knee-to-Wall test). Target symmetry within $\pm 1-2$ cm of the contralateral side.

2. Progressive Strengthening

- Resisted open-chain exercises utilizing progressive resistance bands (concentric and eccentric control across all four vectors).
- Peroneal Strengthening: Focused eversion loading to reinforce dynamic lateral stabilizers and prevent inversion micro-instability.
- Closed-chain loading: Double-leg heel raises (progressing to single-leg on flat ground), mini-squats, and static lunges.

3. Early Proprioceptive Re-education

- Static proprioceptive drills: Single-leg balance on stable surfaces, progressing from open eyes to closed eyes (Target: 30 seconds).
- Introduction of unstable surfaces: Single-leg balance on a balance pad (Airex) or wobble board, maintaining pelvic alignment.

Criteria for Progression to Phase 3

- Symmetrical active and passive ROM in dorsiflexion and plantarflexion compared to the uninjured side.
- Negative anterior drawer and talar tilt clinical manual tests for mechanical laxity.
- Ability to stand on a single leg on a stable surface for 30 seconds with minimal postural sway.

PHASE 3: Remodeling & Functional Maturation (Weeks 6 – 9)

1. Advanced Dynamic Strengthening

- Eccentric Calf Loading: Single-leg heel drops performed off the edge of a step (controlled 3-second descent).
- Closed-chain functional chain loading: Weighted step-ups, walking lunges, lateral lunges, and Bulgarian split squats.

2. Advanced Neuromuscular & Proprioceptive Drills

- Dynamic perturbation training: Single-leg stance while performing upper-extremity medicine ball catches or resisting manual bands.
- Y-Balance Test / Star Excursion Drills: Reaching in anterior, posteromedial, and posterolateral directions while maintaining structural stability on the injured limb.

3. Introduction to Impact & Linear Plyometrics

- Low-amplitude plyometrics: Double-leg jumping in place, progressing to single-leg hopping on flat ground.
- Straight-line impact progression: Guided treadmill jogging to outdoor straight-line running (intervals: 1 min jog, 1 min walk) provided pain remains zero.

PHASE 4: Return-To-Play (RTP) & High-Velocity Agility (Weeks 9 – 12+)

Primary Objectives: Re-establish maximum acceleration/deceleration thresholds, implement sports-specific reactive agility, and safely transition to unrestricted participation.

1. Multi-Directional Agility & Plyometrics

- Lateral plyometrics: Speed-skater hops, lateral bounding, box jumps with controlled landing mechanics.
- Agility drills: Figure-8 running, Z-cuts, shuttle runs, and T-drills, gradually increasing velocity from 50% to 100%.
- Sport-specific reactive drills: Cutting and pivoting on verbal or visual cues to mimic unpredictable game situations.

2. Return-To-Play (RTP) Clearance Criteria

ASSESSMENT CATEGORY	CLEARANCE THRESHOLD / TARGET BENCHMARK
PAIN STATUS	0/10 on VAS during and 24 hours following maximum functional loading.
ANKLE DORSIFLEXION	Symmetrical closed-chain weight-bearing lunge test measure (Knee-to-Wall within 1 cm of uninjured limb).
ISOKINETIC STRENGTH	Eversion and inversion peak torque within $\geq 90\%$ of the contralateral limb.
FUNCTIONAL HOP BATTERY	$\geq 90\%$ Limb Symmetry Index (LSI) on the following tests: 1. Single Hop for Distance 2. Triple Hop for Distance 3. 6-Meter Timed Side Hop
PROPRIOCEPTIVE INDEX	Symmetrical performance on the Y-Balance Test ($\leq 4\text{cm}$ composite reach discrepancy).
PSYCHOLOGICAL READINESS	High confidence score on the Injury Psychological Readiness to Return to Sport (PRRS) scale.

3. Maintenance & Long-Term Injury Prevention

- Utilize functional ankle bracing or custom athletic taping during high-risk cutting/pivoting sports for the first 6–12 months post-injury.
- Continue a 10-minute proprioceptive and peroneal tune-up program 2-3x per week as part of standard dynamic warm-ups.



Dr Rishabh Hegde