



## **Non-Operative Patellar Dislocation Rehabilitation Guideline**

This rehabilitation program is designed to return the individual to their activities as quickly and safely as possible. It is designed for rehabilitation following Non-Operative Patellar Dislocation. Modifications to this guideline may be necessary dependent on physician specific instruction, specific tissue healing timeline, chronicity of injury and other contributing impairments that need to be addressed. This evidence-based Non-Operative Patellar Dislocation Rehabilitation Guideline is criterion-based; time frames and visits in each phase will vary depending on many factors including patient demographics, goals, and individual progress. This guideline is designed to progress the individual through rehabilitation to full sport/ activity participation. The therapist may modify the program appropriately depending on the individual's goals for activity following Non-Operative Patellar Dislocation.

This guideline is intended to provide the treating clinician a frame of reference for rehabilitation. It is not intended to substitute clinical judgment regarding the patient's post injury care, based on exam/treatment findings, individual progress, and/or the presence of concomitant injuries or complications. If the clinician should have questions regarding progressions, they should contact the referring physician.

### **General Guidelines/Precautions:**

- General healing timeline expected: 10 - 16 weeks
- Immobilization versus mobilization following a patellar dislocation is a controversial topic at the moment. In a study by Maenpaa and Lehto compared immediate mobilization to that of immobilization for 6 weeks. Immediate mobilization has 3 fold higher risk of re-dislocation compared to that of immobilization. Immobilization for 6 weeks did result in greater risk in knee ROM restriction. This guideline will be dependent on whether immobilization is done for 3 or 6 weeks.

# Non-Operative Patellar Dislocation Rehabilitation Guideline

PHASE	SUGGESTED INTERVENTIONS	GOALS/MILESTONES FOR PROGRESSION
<p><b>Phase I</b> Acute Phase</p> <p>1-6 Weeks (depending on immobilization period)</p> <p>2-12 Expected Visits</p>	<p><i>Discuss: Anatomy, existing pathology, rehab schedule and expected progressions.</i></p> <p><b>Specific Instructions:</b> Immobilize knee in knee brace at 0 degrees with use of crutches with WBAT for 2 weeks. Begin to unlock brace at 3 weeks according to available pain free ROM.</p> <p><b>Suggested Treatments:</b> <i>Modalities as indicated: Neuromuscular electrical stimulation of VMO, interferential current, cryotherapy and ultrasound</i> <i>ROM: Passive and AAROM within ROM tolerance of pain</i> <i>Manual Therapy: Soft tissue massage and manual lymphatic drainage (swelling management), McConnell Taping Technique</i></p> <p><b>Exercise Examples:</b></p> <ul style="list-style-type: none"> <li>• Quad Set</li> <li>• SLR with quad set</li> <li>• Isometric side lying hip abduction</li> <li>• Adduction ball squeeze</li> <li>• Isometric hamstring sets</li> <li>• Ankle pumps</li> </ul> <p><b>Exercise Examples to Add after Immobilizer Removed:</b></p> <ul style="list-style-type: none"> <li>• Knee extension open kinetic chain 10 degrees - 0 degrees and 90 degrees to 50 degrees</li> <li>• Isometric clamshells</li> <li>• Bridging with ball squeeze</li> </ul> <p><b>Other Activities:</b> May bike as appropriate for ROM purposes after immobilizer has been removed and ROM is available to do so</p>	<p><b>Goals of Phase:</b></p> <ol style="list-style-type: none"> <li>1. Diminished pain and inflammation</li> <li>2. Improve ROM to tolerance</li> </ol> <p><b>Criteria to Advance to Next Phase:</b></p> <ol style="list-style-type: none"> <li>1. Proper quad control, no extensor lag</li> <li>2. FWB status and normal gait pattern</li> <li>3. No buckling of the knee when walking</li> </ol>
<p><b>Phase II</b> Intermediate Phase</p> <p>4-9 Weeks (depending on immobilization period)</p> <p>8-18 Expected Visits</p>	<p><i>(continued from previous page)</i></p> <p><b>Specific Instructions:</b> Achieve ROM greater than 120 degrees knee flexion</p> <p><b>Suggested Treatments:</b> ROM: Passive range of motion progressions to end range</p> <p><b>Exercise Examples:</b></p> <ul style="list-style-type: none"> <li>• Leg press: bilateral, single leg, leg press with ball</li> <li>• Squats: wall squat, wall squat with ball squeeze, back squat, squat with ball squeeze, single leg squat</li> <li>• Forward and backward lunges</li> <li>• Forward and lateral step ups</li> <li>• Standing hip exercises: flexion, abduction, extension</li> <li>• Heel raises</li> </ul> <p><b>Static Proprioception:</b> 3-12 weeks</p> <ul style="list-style-type: none"> <li>• Static wobble board, dyna disc, Bosu ball, cone touch</li> </ul> <p><b>Dynamic Proprioception:</b> 4-12 weeks</p> <ul style="list-style-type: none"> <li>• Agility drills, hopping, forward and backward lunges</li> </ul> <p><i>(continued on next page)</i></p>	<p><b>Goals of Phase:</b></p> <ol style="list-style-type: none"> <li>1. Improve muscular strength and endurance</li> <li>2. Progress to full active and passive ROM</li> <li>3. Improve total body proprioception and control</li> </ol> <p><b>Criteria to Advance to Next Phase:</b></p> <ol style="list-style-type: none"> <li>1. Return of full active and passive ROM</li> <li>2. No pain with activities</li> <li>3. <b>Proper body mechanics</b> with exercises demonstrating control of hip, knees and ankles</li> </ol>

# Non-Operative Patellar Dislocation Rehabilitation Guideline

<p><b>Phase III</b> Advanced Phase</p> <p>7-12 Weeks (depending on immobilization period)</p> <p>14-24 Expected Visits</p>	<p>(continued from previous page)</p> <p><b>Specific Instructions:</b></p> <ul style="list-style-type: none"> <li>Continue with previous exercise program</li> </ul> <p><b>Exercise Examples:</b></p> <p>Running:</p> <ol style="list-style-type: none"> <li>See return to jog program</li> </ol> <p>Plyometric (progressively increase loads of plyometrics from this phase until return to sport:</p> <ol style="list-style-type: none"> <li>POGOS: double and single leg</li> <li>Box jump up:</li> <li>Box hop up</li> <li>Even ground jumps</li> <li>Even ground hops</li> <li>Drop jumps</li> <li>Drop hops</li> <li>Depth jumps</li> <li>Depth hops</li> </ol> <p>Power movements:</p> <ol style="list-style-type: none"> <li>Power clean</li> <li>Power snatch</li> <li>Med ball slam variations</li> <li>Push press</li> <li>Banded jumps</li> </ol>	<p><b>Goals of Phase:</b></p> <ol style="list-style-type: none"> <li>Return to strength training with appropriate modifications</li> <li>Improve muscular power, strength, and endurance</li> </ol> <p><b>3. Ensure proper impact mechanics with jumping and hopping drills to reduce risk for re-injury</b></p> <p><b>Criteria to Advance to Next Phase:</b></p> <ol style="list-style-type: none"> <li>All above still met</li> </ol>
<p><b>Phase IV</b> Return to Performance Phase</p> <p>10-16 Weeks (depending on immobilization period)</p> <p>16-32 Expected Visits</p>	<p>(continued from previous page)</p> <p><b>Specific Instructions:</b></p> <ul style="list-style-type: none"> <li>Continue with previous exercise program</li> </ul> <p><b>Exercise Examples:</b></p> <ul style="list-style-type: none"> <li>Progression of lower body strength and power training program</li> <li>Progression of Impact training with plyometric activities</li> </ul> <p><b>Change of Direction Sport Specific Drills:</b> (progressively increase COD loads)</p> <ul style="list-style-type: none"> <li>Cutting</li> <li>Pivoting</li> <li>Lateral shuffle drills</li> <li>Cone drills: M, X, and box pattern</li> <li>Hurdles</li> <li>Shuttle Drills</li> </ul> <p style="text-align: right;">(continued on next page)</p>	<p><b>Goals of Phase:</b></p> <ol style="list-style-type: none"> <li>Progression of change of direction sport specific drills to prepare for return to competition with proper lower body mechanics</li> <li>Development of individualized maintenance program in preparation for discontinuation of formal rehabilitation.</li> </ol> <p><b>Criteria for Return to Sport:</b></p> <ol style="list-style-type: none"> <li>Isokinetic Testing at 60, 180 and 300 degrees per second (80% of contralateral side)</li> <li>No fear avoidance during running cutting jumping</li> <li>Single leg hop test (&lt;10% deficit to contralateral limb)</li> <li>Triple leg hop test (&lt;10% deficit to contralateral limb)</li> <li>40cm hop test (&lt;10% deficit to contralateral limb)</li> <li>40/50 on biomechanical evaluation</li> <li>&gt;90% on outcome measures</li> </ol>

# Non-Operative Patellar Dislocation Rehabilitation Guideline

<p><b>Phase V</b> Return to Full Activity Phase</p> <p>10-16 Weeks</p> <p>16-32 Expected Visits</p>	<p>(continued from previous page)</p> <p><b>Specific Instructions:</b></p> <ul style="list-style-type: none"> <li>• Development of individualized maintenance program/Return to performance based on timing of season and needs of the patient</li> <li>• Recommendations on return to sport</li> <li>• Communication with ATC, coaches, and/or parents as needed</li> </ul>	<p><b>Suggested Criteria for Discharge:</b></p> <ol style="list-style-type: none"> <li>1. Meet criteria for Return to Sport</li> </ol>
---------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------

## REFERENCES:

- Brotzman SB, Wilk KE. (2007). Handbook of Orthopaedic Rehabilitation. Philadelphia: Mosby, Elsevier. 509-511.
- Jain, N. P., Khan, N., & Fithian, D. C. (2011). A treatment algorithm for primary patellar dislocations. Sports health, 3(2), 170-174.
- McConnell, Jenny. (2007). Rehabilitation and Nonoperative Treatment of Patellar Instability. Sports medicine and arthroscopy review. 15. 95-104.
- Palmu, Sauli & Kallio, Pentti & Donell, Simon & Helenius, Ilkka & Nietosvaara, Yrjänä. (2008). Acute patellar dislocation in children and adolescents: A Randomized clinical trial. The Journal of bone and joint surgery. American volume. 90. 463-70.
- Respizzi S, Cavallin R. (2014). First patellar dislocation: from conservative treatment to return to sport. Joints. 2(3):141-5.
- Vitale TE, Mooney B, Vitale A, Apergis D, Wirth S, Grossman MG. (2018). Retrospective Case Review Following Physical Therapy Treatment for Patients with Lateral Patellar Subluxation/Dislocation. Orthopaedic Physical Therapy Practice. 30(1):30-38.