

Patellofemoral Dysfunction Protocol

Weeks one to three	Weeks three to six
<p>Initial Evaluation</p> <ul style="list-style-type: none"> ➤ Range of motion/flexibility (may see limitations due to pain, effusion, or muscle shortening) ➤ Strength (may have weakness in glut med, glut max, hip LR, and quad/VMO) ➤ Posture/patella alignment (inspect for femoral MR, tibial LR, STJ pronation, genu recurvatum, patella baja, alta, tilt, and rotation) ➤ Pain/Joint effusion (painful structures may include retinaculum, quad tendon, patella tendon, fat pad, ITB insertion) ➤ Address work and sport goals 	<p>Evaluate</p> <ul style="list-style-type: none"> ➤ Range of Motion ➤ Pain reduction and tolerance for initial treatment ➤ Standing balance (look for MR, adduction, and contralateral hip drop) ➤ Continue to correct faulty mechanics throughout treatment activities especially squatting, step-ups, and single leg stance.
<p>Patient Education</p> <ul style="list-style-type: none"> ➤ Support Physician prescribed meds ➤ Teach the patient about contributing faulty movement patterns, and which muscle groups should be strengthened and stretched to improve mechanics ➤ Discuss frequency and duration of treatment 2-3 times per week for 6 weeks 	<p>Patient Education</p> <ul style="list-style-type: none"> ➤ Discuss proper posture and avoidance of hyperextension, medial femoral rotation and excessive closed chain dorsiflexion ➤ Should consider the use of an orthotic if the patient has appropriate biomechanical need, minimal symptom reduction, and difficulty with exercise progression after first four to six weeks of therapy.
<p>Therapeutic Exercise</p> <ul style="list-style-type: none"> ➤ Complete strengthening based on finding and progress depending on patient tolerance ➤ The initial phase will typically include partial wall slide, assisted or mini squats SLR, Abdominal stability, glut and LR exercises ➤ Quad, ITB and gastroc stretching as needed 	<p>Therapeutic Exercise</p> <ul style="list-style-type: none"> ➤ Progress to chair squats, side squats, step ups, lateral step ups, chops and lunges if patient is able to use proper mechanics and has no increase in symptoms ➤ Single leg isotonic exercises ➤ Quad, ITB and gastroc stretching as needed
<p>Aquatics</p> <ul style="list-style-type: none"> ➤ Shallow Water: ➤ Walking forward/backward/sideways with a focus on proper gait mechanics and good quad control ➤ Closed chain LE exercises: Focus on hip adduction (avoid abduction unless MMT is -4/5 or less) and mid-range knee flexion(-20° to 80°) exercises, partial squats, heel raises, step-ups, modified lunges ➤ Deep Water: ➤ Open chain with barbells: Cross country skiing, jumping jacks (slow ab/ fast ad) bicycling, flutter kick ➤ Closed chain: squats on barbell/kickboard 	<p>Aquatics</p> <ul style="list-style-type: none"> ➤ Shallow water: ➤ Walking with increased speed/resistance (cuffs/fins) ➤ Closed chain LE: Increased squat depth, increase step up height (up to 8”), diagonal lunges ➤ Balance: Eyes open/closed, tandem to SLS, braided walking ➤ Plyometrics: On/off step may be added if tolerated ➤ Sport/work specific simulated activities if tolerated ➤ Deep Water: ➤ Open chain: Continue previous exercises with addition of cuffs/fins/speed as tolerated ➤ Closed chain: Continue with previous exercises with the addition of multidirectional movement
<p>Manual Techniques</p> <ul style="list-style-type: none"> ➤ Patella mobilizations, taping, and bracing may be used to improve patella alignment ➤ Manual stretching may be completed where needed 	<p>Manual Techniques</p> <ul style="list-style-type: none"> ➤ Patella mobilizations, taping, and bracing may be used to improve patella alignment ➤ Manual stretching may be completed where needed
<p>Modalities</p> <ul style="list-style-type: none"> ➤ NMES is recommended for quad activity if deficit present ➤ Any modalities may be used to address pain/effusion 	<p>Modalities</p> <ul style="list-style-type: none"> ➤ Modalities may be used as needed
<p>Goals</p> <ul style="list-style-type: none"> ➤ Control pain ➤ No effusion ➤ 0-120 degrees ROM ➤ Independence with HEP 	<p>Goals</p> <ul style="list-style-type: none"> ➤ No pain with ADL's ➤ Normal ROM ➤ Minimal limitations in patellar mobility

Weeks six to discharge
Evaluate
<ul style="list-style-type: none"> ➤ HEP compliance ➤ Address any deficits that may limit return to work or sport goals ➤ Patella mobility / crepitus
Therapeutic Exercise
<ul style="list-style-type: none"> ➤ Progress to closed chain and single leg balance exercises on unstable surfaces ➤ Return to any previous cardiovascular training that was halted due to pain ➤ Begin agility and sport specific activity if applicable ➤ Progress to plyometrics, running, and cutting activity if applicable ➤ Encourage participation in the CFA
Aquatics
<ul style="list-style-type: none"> ➤ Continue and progress exercises as indicated and necessary
Manual Techniques
<ul style="list-style-type: none"> ➤ Any techniques as needed
Modalities
<ul style="list-style-type: none"> ➤ Any as Indicated
Goals
<ul style="list-style-type: none"> ➤ Normal strength ➤ Discharge with full return to work or sport activity if applicable ➤ Independence with proper mechanics and HEP ➤ No limitations in patellar mobility ➤ Central tracking of the patella in the trochlear groove

References:

- Alba-Martín P, Gallego-Izquierdo T, Plaza-Manzano G, Romero-Franco N, Núñez-Nagy S, Pecos-Martín D.(2015) Effectiveness of therapeutic physical exercise in the treatment of patellofemoral pain syndrome: a systematic review. *J Phys Ther Sci*, 27(7):2387-90.
- Anna Lucia Barker, Jason Talevski, Renata Teresa Morello, Caroline Anne Brand, Ann Elizabeth Rahmann, Donna Michelle Urquhart. (2014) Effectiveness of Aquatic Exercise for Musculoskeletal Conditions: A Meta-Analysis. *Archives of Physical Medicine and Rehabilitation*, Vol 95(7) 9.:1776-1786,