

Non-Operative Patellofemoral Pain Syndrome Treatment Protocol

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Purpose & Philosophy

Patellofemoral pain syndrome (PFPS) is a multifactorial condition related to altered lower-extremity biomechanics, quadriceps and hip weakness, hamstring tightness or imbalance, and load intolerance rather than isolated cartilage damage. Non-operative treatment focuses on load management, kinetic chain strengthening, flexibility restoration, and gradual return to activity.

Appropriate Candidates

Athletes and active individuals with anterior knee pain exacerbated by running, squatting, stairs, or prolonged sitting, no mechanical instability, and no structural pathology requiring surgical intervention.

Phase 1: Pain Control, Mobility & Load Modification (Weeks 0–3)

Goals include pain reduction, restoration of baseline mobility, and correction of excessive patellofemoral joint loading. Activity modification is emphasized, avoiding deep knee flexion, running, and jumping as needed. Isometric quadriceps activation, hip abductor and core strengthening are initiated. Hamstring flexibility is addressed with gentle stretching and neural mobility as indicated. Patellar taping or bracing may be used selectively. Pain control includes acetaminophen and ice; NSAIDs may be used selectively if appropriate.

Phase 2: Strength Restoration & Movement Quality (Weeks 3–6)

Focus shifts to restoring quadriceps strength and endurance, along with hip abductors, external rotators, core, and progressive hamstring strengthening. Closed-chain exercises are emphasized with attention to alignment, valgus control, and movement quality. Hamstring strength balance is addressed to reduce anterior knee load during functional tasks.

Phase 3: Advanced Strengthening & Load Progression (Weeks 6–10)

Goals include improving load tolerance and dynamic control through the entire kinetic chain. Progressive resistance training, eccentric quadriceps and hamstring work, neuromuscular training, and functional movement patterns are introduced. Running or impact activities are reintroduced

gradually based on symptom response.

Phase 4: Return to Sport or Full Activity (Weeks 10–14+)

Gradual return to sport-specific activities is initiated. Jumping, cutting, and deceleration tasks are progressed in a controlled manner with attention to quadriceps–hamstring coordination and lower-extremity alignment. Progression is symptom-guided rather than time-based.

Return-to-Activity Criteria

Minimal or no anterior knee pain with squatting, stair negotiation, and sport-specific drills; symmetric quadriceps and hamstring strength; adequate hip and core control; ability to tolerate training loads without symptom flare.

Failure of Non-Operative Treatment

Persistent pain or functional limitation despite appropriate rehabilitation should prompt reassessment for alternative diagnoses or contributing factors, including training errors or biomechanical contributors.

Key Principles

PFPS is a load-management and mechanics problem involving the entire lower extremity. Addressing quadriceps strength, hip control, and hamstring flexibility and strength is essential for durable symptom relief.

Key References

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