

**Dr. Pathik Shah**  
***Sports, Revision Sports and Regenerative Sports Orthopaedic Surgeon***  
DNB Ortho (Mumbai), MNAMS (New Delhi), MBBS  
AOSSM Sports Surgery Fellowship (California, USA),  
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Diploma in Football medicine (FIFA)

### **CARTILAGE REPAIR PHYSICAL THERAPY PRESCRIPTION**

#### **POST-OPERATIVE PHASE I (WEEKS 0-6)**

##### **Goals:**

Control post-operative pain / swelling  
Range of Motion 0 ° to 130°  
Prevent Quadriceps inhibition  
Restore normal gait  
Normalize proximal musculature muscle strength  
Independence in home therapeutic exercise program

##### **Precautions:**

Progressive weight bearing with crutches after week 1  
Avoid neglect of range of motion exercises

##### **Treatment Strategies:**

Continuous Passive Motion (CPM) (1-3 hours / day)  
Active – Assistive Range of Motion Exercises (Pain-free ROM)  
Towel extensions  
Patella mobilization all planes  
TTWB postoperative week 1 with two crutches  
Progressive Weight Bearing as Tolerated with crutches (D/C crutches when gait is non-antalgic)  
Postoperative bracing for 2 weeks postoperatively then can D/C  
Underwater treadmill system (gait training) if incision benign  
Quadriceps re-education (Quad Sets with EMS or EMG)  
Multiple Angle Quadriceps Isometrics (Bilaterally – Submaximal, Avoid lesion)  
Short Crank ergometry to Standard ergometry FORMCHECKBOX SLR's (all planes)  
Hip progressive resisted exercises  
Leg Press (60° to 0° arc) Bilaterally  
Bracing / Patella sleeve  
Pool exercises  
Cryotherapy  
Plantar Flexion Theraband  
Lower Extremity Flexibility exercises  
Upper extremity cardiovascular exercises as tolerated  
Home therapeutic exercise program: evaluation based  
Emphasize patient compliance to home therapeutic exercise program and weight bearing progression

##### **Criteria for Advancement:**

Normalized gait pattern  
ROM 0° to 130°  
Proximal Muscle strength 5/5  
SLR (supine) without extension lag

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**POST-OPERATIVE PHASE II (WEEKS 6-12)**

**Goals:**

ROM 0° ◊ WNL  
Normal patella mobility  
Ascend 8" stairs with good control without pain (may need to modify for patella & trochlear lesions)

**Precautions:**

Avoid descending stairs reciprocally until adequate quadriceps control & lower extremity alignment is demonstrated  
Avoid pain with therapeutic exercise & functional activities

**Treatment Strategies:**

Continue Progressive Weight Bearing as Tolerated / Gait Training with crutches (if needed)  
Brace / Patella sleeve per therapist and patient preference  
Underwater treadmill system (gait training)  
Gait unloader device  
AAROM exercises Patella mobilizations  
Leg Press (90° ◊ 0° arc) Bilaterally ◊ Eccentric  
Mini Squats  
Retrograde treadmill ambulation Proprioception / Balance training:  
Proprioception board / Contralateral Theraband Exercises / Balance systems  
Initiate Forward Step Up program Stairmaster  
SLR's (progressive resistance)  
Lower extremity flexibility exercises  
OKC knee extension to 40° – (pain / crepitus free arc)  
Home therapeutic exercise program: Evaluation based

**Criteria for Advancement:**

ROM 0° ◊ WNL  
Demonstrate ability to ascend 8" step  
Normal patella mobility

**POST-OPERATIVE PHASE III (WEEKS 12-18)**

**Goals:**

Demonstrate ability to descend 8" stairs with good leg control without pain  
85% limb symmetry on Isokinetic testing & Forward Step Down Step Test  
Return to normal ADL  
Improve lower extremity flexibility

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**Precautions:**

Avoid pain with therapeutic exercise & functional activities  
Avoid running until adequate strength development and MD clearance

**Treatment Strategies:**

Progress Squat program  
Initiate Step Down program  
Leg Press (90° @ 0° emphasizing eccentrics)  
OKC knee extensions 90° @ 0° (pain / crepitus free arc) Advanced proprioception training (perturbations)  
Agility exercises (sport cord)  
Elliptical Trainer  
Retrograde treadmill ambulation / running Hamstring curls /  
Proximal strengthening Lower extremity stretching  
Forward Step Down Test (NeuroCom) Isokinetic Test  
Home therapeutic exercise program: Evaluation based

**Criteria for Advancement:**

Ability to descend 8" stairs with good leg control without pain  
85% limb symmetry on Isokinetic testing & Forward Step Down Test

**POST-OPERATIVE PHASE IV – Return to Sport (WEEKS 18+)**

**Goals:**

Lack of apprehension with sport specific movements  
Maximize strength and flexibility as to meet demands of individual's sport activity  
Isokinetic & Hop Testing ≥ 85% limb symmetry

**Precautions:**

Avoid pain with therapeutic exercise & functional activities  
Avoid sport activity until adequate strength development and MD clearance  
Be conscious of Patellofemoral overload with increased activity level

**Treatment Strategies:**

Continue to advance LE strengthening, flexibility & agility programs FORMCHECKBOX  
Forward running  
Plyometric program  
Brace for sport activity  
Monitor patient's activity level throughout course of rehabilitation  
Reassess patient's complaint's (i.e. pain / swelling daily – adjust program accordingly)  
Encourage compliance to home therapeutic exercise program  
Home therapeutic exercise program: Evaluation based

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**Criteria for Discharge:**

Isokinetic & Hop Testing  $\geq$  85% limb symmetry

Lack of apprehension with sport specific movements

Flexibility to accepted levels of sport performance

Independence with gym program for maintenance and progression of therapeutic exercise program at discharge