

## **Patello-Femoral Syndrome/Jumpers Knee Rehabilitation Protocol** **Dr. Robert Klitzman**

This rehabilitation protocol has been developed for the patient with general tenderness around the knee cap which may increase in intensity with daily and sporting activities. The symptoms will often decrease with rest and are frequently bilateral. Sporting activities, especially running, stairs, sitting with knees flexed for long periods of time, and deep squatting activities may intensify the pain. Early intervention of strengthening and stretching is recommended to decrease pain and assist in returning to activity. The protocol is divided into phases. Each phase is adaptable based on the individual patient and special circumstances. Progress through the phases as pain, range of motion, swelling and strength allow.

The **overall goals** of the rehabilitation protocol are to:

- Control pain and swelling
- Regain normal knee range of motion
- Establish appropriate stretching and strengthening exercises
- Regain normal proprioception, balance, and coordination for daily activities
- Achieve the level of function based on the orthopedic and patient goals

Physical therapy is an important intervention to assist the patient in early rehabilitation in attaining a level of fitness to return to functional activity without pain. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program where the patient performs the given exercises at home or at a gym facility. Physical therapy for PF syndrome/jumper's knee varies in length on factors such as:

- Structure(s) involved: infrapatellar tendon, patellar cartilage plica, or patellar tracking
- Acute versus chronic condition
- Lower extremity flexibility
- Lower extremity biomechanics: pronated foot, leg lengths
- Performance or activity demands
- Muscular strength and endurance

**Return to activity** requires both time and clinical evaluation. To safely and most efficiently return to normal or high level functional activity, the patient requires adequate strength, flexibility, and endurance. Return to intense activities may increase the possibility of repeat injury or the potential of compounding the original injury. Symptoms such as pain, swelling, or instability should be closely monitored by the patient.

**Phase 1**  
**Patello-Femoral Syndrome**  
**Dr. Robert Klitzman**

**EXERCISE**

**ROM**

Full range of motion  
Hamstring/ITB/Gastroc/Soleus/Quad/Hip flexor stretches  
Patella mobs

**STRENGTH**

Quad sets with biofeedback  
SLR in 4 planes  
Heel raise/Toe raise  
SAQ (30-0°)  
Leg press (0-45°)  
Hamstring curls  
TKE with theraband  
Bicycle with resistance with seat high

**BALANCE TRAINING**

Single leg balance with plyotoss  
Sports cord balance/agility work  
Wobble board balance work  
½ Foam roller balance work  
Minitramp balance work

**MODALITIES**

E-stim/biofeedback as needed  
Ice 15-20 minutes

**GOALS OF PHASE:**

- Control pain and inflammation
- Independent in HEP
- Initiate muscular strength and endurance training without pain
- Educate patient on diagnosis
- Adequate quad/VMO contraction

**Phase 2**  
**Patello-Femoral Syndrome**  
**Dr. Robert Klitzman**

**EXERCISE**

**ROM**

Continue with all stretching exercises from phase one, concentrating on muscle group with greatest deficient

**STRENGTH**

SLR with ankle wt/tubing  
SAQ with ankle wt  
Knee extension (90-45°, 90-30°)-range of motion depending on pain  
Leg press-single leg eccentric  
Hamstring curl  
Reverse lunge-not to migrate knee over toe  
Mini-squat (0-30°)  
Stool crawl  
Straight leg dead lift  
Multi-hip in 4 directions  
Bicycle for endurance  
EFX for strength and endurance

**BALANCE TRAINING**

Continue with all balance activities from phase one  
Advance balance/neuromuscular by variance of surface

**MODALITIES**

Ice 15-20 minutes

**GOALS OF PHASE:**

- Minimize pain with all exercise
- Enhance lower extremity strength and endurance
- Normalize dynamic balance, proprioception, and coordination
- Preparation for return to functional activities

**Phase 3**  
**Patello-Femoral Syndrome**  
**Dr. Robert Klitzman**

**EXERCISE**

**ROM**

Continue with all stretching activity from previous phases

**STRENGTH**

Continue with all strengthening activity from previous phases, increasing weight and repetition  
Progressively increase resisted knee range of motion within a pain free arc  
Continue with all eccentric quad/hamstring work  
Bicycle for strength and endurance  
EFX for strength and endurance  
Advance all single leg activity within pain free range

**BALANCE TRAINING**

Continue with advanced balance, proprioception, and coordination training

**RUNNING PROGRAM**

Initiate running on a minitramp, progressing to treadmill as tolerated  
Initiate jump rope for impact/endurance activity  
Backward running

**AGILITY PROGRAM**

Initiate sports specific drills  
Initiate functional drills

**MODALITIES**

Ice 15-20 minutes as needed for pain and/or swelling

**GOALS OF PHASE:**

- Maximize lower extremity strength and endurance
- Maximize balance, proprioception, and coordination
- Minimize pain and swelling
- Return to functional activities
- Return to sports specific activities

Patello-femoral pain/syndrome is a common problem. With recognition of the problem and early intervention, this problem can be treated and allow for return to maximum performance and participation in sporting activities for a lifetime.