

Patellofemoral Syndrome (PF) Rehabilitation Protocol

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 a 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 reconstruction and the rehabilitation are to:

- Establish normal lower extremity strength and control
- Establish appropriate stretching and strengthening exercises
- Restore normal proprioception, balance, and coordination for daily activities
- Achieve the highest 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

Phase 1 Patellofemoral Syndrome

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

Sportscord 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 – Patellofemoral syndrome

EXERCISE

ROM

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

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 1

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 – Patellofemoral syndrome

EXERCISE

ROM

Continue with all stretching exercises 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 mini-ramp, progressing to treadmill as tolerated

Initiate jump rope for impact/endurance activity

Backward running

AGILITY PROGRAM

Initiate agility drills-carioca, high knee drills, short sprints, figure 8's

FUNCTIONAL PROGRAM

Initiate sports specific drills

Initiate functional drills

MODALITIES

Ice 15-20 minutes

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.