

Patellofemoral Pain Syndrome

Acute Phase (1-2 weeks)

Goals: 1) Decrease Pain and Inflammation

2) Stretch tight structures

3) Educate the patient in activity modification, posture, and core control

4) Learn how to isolate muscle activity of the quads, Gluteus Medius and Gluteus Maximus

Avoid: Exercises and activities that increase patellar compression forces and increase pain.

Patient Education: Educate patient in core control and spinal stabilization. In addition, discuss proper posture and neutral spine position.

Taping: Patellar taping with McConnell tape or Kinesiotape **as indicated**.

Stretches: to be performed twice daily, with a 30 second hold for 3-5 repetitions, based upon evaluation findings. Structures to be stretched include: the IT Band, hamstrings, quadriceps, hip adductors, hip abductors, hip flexors, hip internal rotators, hip external rotators and Gastrocnemius/Soleus complex.

Non-Weight Bearing Exercise: 10-15 repetitions for 2 to 3 sets

Gluteus Medius strengthening:

1) sidelying clams while maintaining a neutral spine position by coactivating the Transverse Abdominis.

2) sidelying hip abduction knee extended, and slight hip extension with external rotation.

3) abduction/ER in the quadruped position.

Gluteus Maximus strengthening:

1) prone with a pillow under the hips, knee flexed 90°, slightly ER and extend hip.

2) Swiss Ball hip extension. Weights can be used to increase resistance for this exercise.

Core Strengthening exercises (Swiss ball, Pilates, yoga...). Transverse abdominis muscle contraction in the quadruped position.

Electrical Stimulation: NMES can be used to facilitate quad activity and to reduce inhibition of the quads due to pain and swelling.

Recovery Phase (Weeks 3-6)

Goals:

1) Isolate muscles of interest while performing dynamic and isometric exercises in the weight-bearing position.

2) Maintain Transverse Abdominis muscle contraction and alignment of the pelvis during all of the exercises.

In this phase, it is recommended to perform both open and closed chain exercises depending upon the patient's pain tolerance to the exercises.

Exercises: Stand next to a wall, bend knee closest to the wall 90° and place against the wall, simultaneously perform an isometric external rotation of the stance leg. Once achieved, add upper extremity exercises simultaneously to further challenge the patient.

Single limb stance on an unstable surface such as Dynadisc, BOSU, foam, trampoline can then be added (at home patient can use folded towel or a pillow). Use upper extremity motion and exercises to further challenge the patient such as Body Blade, free weights, ball toss, bicep curls, diagonals, etc. Vary the speed of the activities to make it more challenging. Also, be sure to keep the lower extremities and pelvis alignment neutral.

Double hip abduction activities utilizing a reformer or a slide board, or fitter can be performed in the standing position.

Single limb stance with theraband around the waist and rotating the body medially will produce external rotation at the hip.

Hip hike/pelvic drop exercise on a step.

Closed chain exercises: Shallow squat activities-reformer, total gym, leg press machine (at home wall squats). Initially keep knee flexion ranges less than 45° to reduce the joint reaction forces. Progress to using Theraband around the thighs to increase activation of the abductors/external rotators of the hip. When neutral lower extremity alignment is maintained during this activity,

progress to a single limb squat on the equipment. The goal is to eventually perform these activities maintaining a neutral alignment of the lower extremity while standing, first with a double and then with a single leg squat.

Functional Training (Weeks 7-12)

Goals: Return the patient back to their desired activities.

Step-down exercises utilizing Theraband around the affected leg to encourage ER and abduction of the hip throughout the exercise.

Lunges with or without Theraband around the thigh of the affected leg.

Progressive walking or running program on level surfaces and inclines.

Plyometric box jumps with knee/hip control before returning to sport.

Note: As with all protocols, the designated time frames and exercises are for guidance only and should not limit the patient's progress or make them worse. Due to the fact that PFPS encompasses a large number of conditions, the initial evaluation is key in deciding how to utilize this protocol. We hope that you will find the information helpful in treating your patients.