

PATELLO-FEMORAL JOINT DYSFUNCTION KNEE REHABILITATION PROGRAM

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The physical rehabilitation for patello-femoral joint dysfunction varies in length depending on the following factors:

1. Structure(s) involved: infrapatellar tendon, patellar cartilage, plica, patellar tracking
2. Acute versus chronic condition.
3. Muscle strength and endurance.
4. Lower extremity.
5. Lower extremity biomechanics: pronated foot, leg length discrepancy, etc.
6. Performance or activity demands.

The rehabilitation program is outlined in three phases. It is possible to overlap phases (Phase I-II, Phase II-III), depending on the progress of each individual.

PHASE I – Is to: a.) Identify the problem such as infrapatellar tendonitis, chondromalacia, plica formation, patellar subluxation, patellar dislocation, patellar tracking, or other extensor mechanism disorders. b.) Decrease and localize the area of pain. c.) Establish appropriate stretching and strengthening exercises. d.) Modify activity level.

- Apply modalities as needed (ice, heat, phonophoresis, etc.).
- Perform range of motion exercises for knee flexion and extension(as needed).
- Add isometric strengthening exercises: hip adduction, quadriceps set, hamstring set. (Note: Sets only, no open chain full ROM isotonic exercises yet)
- Electrical stimulation to vastus medialis oblique (VMO)/quadriceps (as needed).
- **Flexibility exercises: calf, achilles, groin, hamstring, ilio-tibial band, quadriceps, hip flexor, hip rotators (as needed). Very Important.**
- Add calf strengthening (i.e., toe raises).
- Add straight leg raises as tolerated.
- Mobilization (patellar mobilization techniques as needed).
- Assess lower extremity biomechanics during standing and walking (as needed).
- Modify activity level (as needed).
- Apply ice after exercise session.
- Bike: low resistance, seat high
- OK to begin closed chain strengthening (ie leg press, total gym, shuttle, etc.) at light resistance when pain free.
- Active hip adduction (P.R.E.).
- Hamstrings curls (P.R.E.)

PHASE II - A Progressive strengthening and stretching exercises are continued as needed along with isokinetic training and endurance activities (e.g. biking) as tolerated.

- Continue modalities, mobilization, and flexibility exercises as needed.
- Continue electrical stimulation to VMO/quad (as needed).
- OK to progress closed chain strengthening to eccentric loading as pain allows
- Start with: Knee extensions in pain free ROM, progress to weights only through the same pain free ROM – gradually try and increase range as pain allows
- Isokinetic training. Isokinetic strengthening and endurance exercises (starting at high speeds) for knee flexion/extension may be added. The knee joint should be pain-free and have no significant amount of swelling
- Continue to use ice after each workout session.
- Multi angle isometrics with knee extension.
- For the athletic population, OK to begin walk/jog program and slowly progress to running or mini-tramp as pain and swelling allow. **DO NOT** run to the point of persistent swelling. Progress gradually to treadmill and then track.

NOTE: The knee flexion angle and/or foot position (e.g. pronation/supination) may be adjusted to allow a pain-free muscle contraction to occur. If there is pain with active movements, active-assistive exercises may be substituted (electrical stimulation, use of uninvolved extremity, etc.).

PHASE III - A running program and agility drills are integrated in preparation for return to the prior activity level(work, recreational activity, sports, etc.)

- Continue stretching and strengthening exercises.
- Running program. Proceed with running program as tolerated.
- Add eccentric training for quadriceps strengthening.
- Progress with strengthening open and closed chain through pain free range of motion.
- Biking - increase intensity/duration level.
- Add total body conditioning program with emphasis on strength and endurance.
- Agility drills may be added. Running distance should be approximately one and a half to two miles without knee pain or discomfort. Drills may include - backward running, carioca step, high knees drills, sprinting, figure eight drill.
- Practice drills specific to the activity or sport.

NOTE: *The initial weight is determined by the amount the patient is able to lift in the last 30° of extension. Movement is performed slowly through the full range of extension.

NOTE: Continue ice after each workout session. Continue flexibility exercises as needed.