

# Patellofemoral Pain Syndrome (PFPS)

**Patellofemoral Pain Syndrome (PFPS)**, or "runner's knee," causes pain around the kneecap, often worsened by activities like running, jumping, or sitting with the knee bent. It results from factors like overuse, muscle weakness, or structural issues.

## Rehabilitation Key Points:

- Avoid activities that trigger symptoms until rehabilitation allows them to become tolerable.
- Reduce muscle tension to improve knee alignment.
- Strengthen the quadriceps and other leg muscles to support proper knee movement.

## Exercise Principles:

1. **Stretch tight muscles** to improve knee mechanics.
2. **Strengthen muscles** (especially quads and hip rotators) through gradual, progressive exercises.
3. **Gradually return to activity**, increasing intensity by 10% per week as long as symptoms don't worsen.

**Exercises are most effective when guided by a qualified professional, such as a physiotherapist, athletic therapist, or strength and conditioning coach. If you have any concerns, it's always a good idea to consult with an expert.**

Level 1 Function

Potential Inclusion Criteria:

- Diffuse pain through the front of the knee
- Weak musculature surrounding the knee, specifically the quads
- Pain that gets worse with activities (Running or Jumping)

Goals:

- Reduce pain, inflammation and load on the affected structures
- Protect the injury by using patellar taping or stabilizing brace during painful activities

Requirements For Progression:

- 10-14 days of adherence
- Significant decrease in pain/ discomfort

Aerobic Exercise:

Avoid Running, Jumping or any exercise that provokes symptoms. You Can continue exercise with non-weight bearing activities such as swimming or cycling if tolerated.

1. Straight Leg Raise - VMO Bias

Sets: 3 | Reps: 8-15 | Frequency: Daily

Preparation:

- Lay on your back
- Rotate foot to outside

Execution:

- Keeping your knee straight, lift your leg
- Keep the other leg flat against the floor
- Return to start position



Lie on back



Rotate foot to outside



Raise leg

2. VMO Activation (Ball)

Sets: 3 | Reps: 8-12 | Hold: 5 Seconds | Frequency: Daily

Preparation:

- Sit on a chair with a small ball between your legs. Feet flat on the floor.

Execution:

- Feel your inner quad muscle just inside and above your knee cap
- Contract these muscles by squeezing your knees into the ball



### 3. Clamshell

Sets: 3 | Reps: 8-15 | Frequency: Daily

#### Preparation:

- Lie on your side with your hips at 45 degrees and your knees bent to 90 degrees.
- Your heels are in line with your buttocks.
- Tilt your hips forward towards the ground slightly.

#### Execution:

- Lift your knees apart (like a clam opening)



Start position



Lift knees apart

### 4. Hip Abduction + Extension Sidelying - Straight Leg

Sets: 3 | Reps: 8-15 | Frequency: Daily

#### Preparation:

- Lie on your side with legs straight
- Position your top hand on the top of your hip
- Rotate your hips forwards towards the bed

#### Execution:

- Extend your straight leg behind you and point your toe towards the floor
- Lift the leg up and slightly behind you using your buttock muscle



Start position



Lifting leg up and back using the buttock muscles, moving only at the hip, avoid moving at the pelvis

Level 2 Function

When Can I Move To Level 2?

- Completed level 1 goals
- Able to tolerate 3 sets x 8 reps without significant increase in knee pain

Goals:









- Increased tolerance to light load and strengthening
- Improve patellar tracking and control











Requirement For Progression:

- Tolerating max reps and sets without pain or symptoms

Aerobic Exercise:

- Avoid Running, Jumping or any exercise that provokes symptoms. You Can continue exercise with non-weight bearing activities such as swimming or cycling if tolerated.

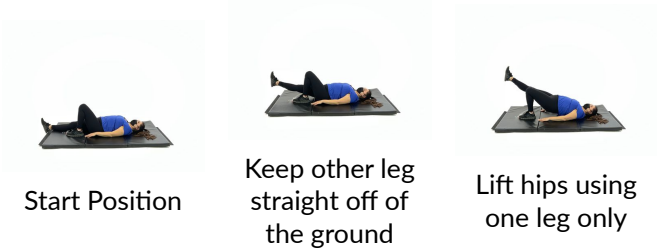
<p><b>1. Thigh Release (Foam Roller)</b></p> <p><b>Execution:</b></p> <ul style="list-style-type: none"> <li>• Position foam roll beneath hip, as shown.</li> <li>• Roll along the foam, towards your knee.</li> <li>• Whenever you find a sore spot, pause for as long as you can, to stretch this area out.</li> </ul> <p><b>Note:</b>This exercise is normally quite uncomfortable. If it gets to be too much, give yourself a break.</p>	<p><b>Sets:</b> 1   <b>Reps:</b> 1-5 minutes   <b>Frequency:</b> daily</p> <div>   </div> <p>Start Position      Roll out along foam</p>
<p><b>2. Step Up   Knee Control Focus (Band)</b></p> <p><b>Preparation:</b></p> <ul style="list-style-type: none"> <li>• Stand infront of a box or step</li> <li>• Put a band around your knee pulling it inwards</li> </ul> <p><b>Execution:</b></p> <ul style="list-style-type: none"> <li>• Step up onto the box</li> <li>• Lower down in a controlled manner</li> </ul>	<p><b>Sets:</b> 3   <b>Reps:</b> 8-15   <b>Frequency:</b> Alternate Days</p> <div>     </div> <p>Stand in front of step      Step up onto box      Rise with control      Front view - band pulls knee inward</p> <div>   </div> <p>Step up onto box      Rise with control</p>

<div>3. Bridge + LE Stabilization (Band)</div> <div> <div>Sets: 3   Reps: 8-15</div> </div> <div> <div>Preparation:</div> <ul style="list-style-type: none"> <li>• Lie flat on your back</li> <li>• Bend knees with your feet flat on the floor</li> <li>• Put a resistive band around your knees</li> </ul> <div>Execution:</div> <ul style="list-style-type: none"> <li>• Push your knees out against the belt around your legs</li> <li>• Lift your hips up in the air to make a bridge</li> <li>• Lower down in a controlled manner</li> </ul> </div>	<div>  <div>Start Position, band above knees</div> </div> <div>  <div>Lift hips off the floor keeping your knees apart</div> </div>
<div>4. Thigh Release (Foam Roller)</div> <div> <div>Sets: 1   Reps: 1-5 minutes   Intensity: daily</div> </div> <div> <div>Execution:</div> <ul style="list-style-type: none"> <li>• Position foam roll beneath hip, as shown.</li> <li>• Roll along the foam, towards your knee.</li> <li>• Whenever you find a sore spot, pause for as long as you can, to stretch this area out.</li> </ul> <div>Note:</div> <p>This exercise is normally quite uncomfortable. If it gets to be too much, give yourself a break.</p> </div>	<div>  <div>Start Position</div> </div> <div>  <div>Roll out along foam</div> </div>
<div>5. Clamshell (Band)</div> <div> <div>Sets: 3   Reps: 8-15   Frequency: alternate days</div> </div> <div> <div>Preparation:</div> <ul style="list-style-type: none"> <li>• Lie on your side with your hips at 45° and your knees at 90°</li> <li>• Band around you knees</li> </ul> <div>Execution:</div> <ul style="list-style-type: none"> <li>• Open your top knee up against the resistance of the band keeping your feet together</li> <li>• Lower knee back down with control</li> </ul> </div>	<div>  <div>Hips slightly bent, knees bent to 90 degrees</div> </div> <div>  <div>Open top knee up like a clamshell</div> </div>
<div>6. Wall Squat</div> <div> <div>Sets: 2-3   Reps: 20-45sec   Frequency: alternate days</div> </div> <div> <div>Preparation:</div> <ul style="list-style-type: none"> <li>• Stand with back against wall</li> <li>• Position feet away from the wall</li> </ul> <div>Execution:</div> <ul style="list-style-type: none"> <li>• Perform a squatting motion, sliding down the wall</li> <li>• Squat as far as you can under control</li> <li>• Rise up, straightening at the hip</li> </ul> </div>	<div>  <div>Back against wall, feet forward</div> </div> <div>  <div>Squat, knees in line with toes, sliding down the wall</div> </div> <div>  <div>Slide back up the wall</div> </div> <div>  <div>Repeat</div> </div>

7. Bridge | Single Leg

Sets: 3 | Reps: 8-15 | Frequency: alternate days

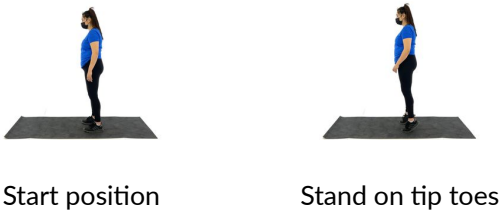
- Preparation:
- Lie flat on your back with your arms laying flat next to you
  - Bend one knee with your foot flat
  - Keep the other leg straight off of the ground
- Execution:
- Lift your hips up to make a bridge using one leg only
  - Lower down in a controlled manner



8. Calf Raise Concentric | Bilateral

Sets: 3 | Reps: 8-15 | Frequency: alternate days

- Preparation:
- Stand next to a chair, counter or wall
- Execution:
- Stand on your tip toes, lifting your heels as high as you can
  - Relax your heels back down to the ground



9. Cycling Stationary Bike

Reps: 5-30 min | Frequency: alternate days

Cycling Stationary Bike



Cycling Stationary Bike

Level 3 Function

When Can I Move To Level 3?

- Completed level 2 goals

Goals:










- Increased tolerance to max load and strengthening without increase in symptoms

Requirement For Progression:

- Tolerating max reps and sets without pain or symptoms

Aerobic Exercise:

- Gradual return to running, jumping and activity without increase in symptoms. You can continue swimming and cycling.

<p><b>1. Squat   Band at Knees (Band + Dumbbells)</b></p> <p><b>Sets:</b> 3   <b>Reps:</b> 8-15   <b>Frequency:</b> alternate days</p> <p><b>Preparation:</b></p> <ul style="list-style-type: none"> <li>Stand with good posture, feet shoulder width apart</li> <li>Free weight in either hand</li> </ul> <p><b>Execution:</b></p> <ul style="list-style-type: none"> <li>Initiate squat by bending at the hips</li> <li>Rise up at the hips</li> </ul>	 <p>Front view</p>  <p>Squat - Knees aligned over toes</p>  <p>Side view</p>  <p>Squat - Back straight, bend at hips</p>
<p><b>2. Single Leg Balance (Foam)</b></p> <p><b>Sets:</b> 3   <b>Reps:</b> 30-60sec   <b>Frequency:</b> alternate days</p> <p><b>Execution:</b></p> <ul style="list-style-type: none"> <li>Balance on foam</li> </ul>	 <p>Balance on foam</p>  <p>Hands on hips</p>
<p><b>3. Side Stepping (Band)</b></p> <p><b>Sets:</b> 3   <b>Reps:</b> 8-15   <b>Frequency:</b> alternate days</p> <p><b>Preparation:</b></p> <ul style="list-style-type: none"> <li>Stand with feet shoulder width apart, band at knees</li> </ul> <p><b>Execution:</b></p> <ul style="list-style-type: none"> <li>Squat with good form</li> <li>At the bottom of the squat, step to one side, leading with your heel</li> <li>Bring trailing leg back into good squat position with control</li> </ul>	 <p>Squat</p>  <p>Step to side, leading with heel</p>  <p>Bring trailing leg back into good squat position with control</p>

#### 4. Bridge | Single Leg + Hamstring Curl (Ball)

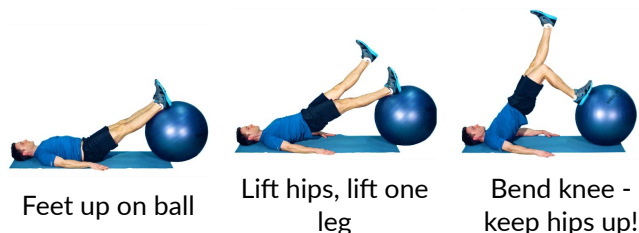
Sets: 3 | Reps: 8-15 | Frequency: alternate days

##### Preparation:

- Lie on back, feet up on ball as shown

##### Execution:

- Lift hips off floor - lift one leg
- Bend knee, rolling ball towards you - keep hips up!
- Hold, then slowly return to the start position



#### 5. Split Squat (Foam)

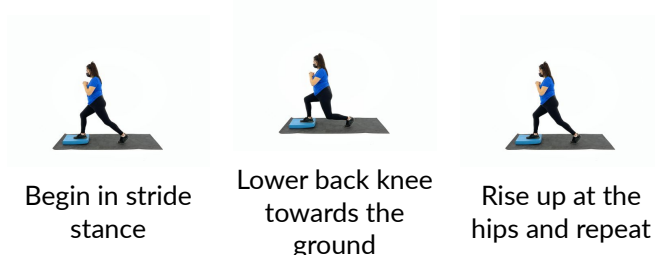
Sets: 3 | Reps: 8-15 | Frequency: alternate days

##### Preparation:

- Stand in a stride stance, front foot on foam block

##### Execution:

- Lower back knee towards the ground
- Keep your front knee in line with your toes
- Keep back knee in line with your hip and shoulder
- Rise back up and repeat



#### 6. Graduated Return to Jogging

##### Graduated return to running suggested program:

Week 1: (start and finish with 5 min walk)

- 4x (1' run / 1' walk)
- 5x (1' run / 1' walk)
- 6x (1' run / 1' walk)
- 8x (1' run / 1' walk)

Week 2: (start and finish with 5 min walk)

- 10x (1' run / 1' walk)
- 11x (1' run / 1' walk)
- 13x (1' run / 1' walk)
- 4x (2' run / 1' walk)

Week 3: (start and finish with 5 min walk)

- 4x (2' run / 1' walk)
- 5x (2' run / 1' walk)
- 6x (2' run / 1' walk)
- 7x (2' run / 1' walk)



Graduated Return to Jogging



## Return to Activity and Sport Specific Training

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The return to activity and sport-specific training should be tailored to each individual, as recovery and progression will vary based on factors like the severity of symptoms, fitness level, and the demands of the sport. It's crucial to consult with experts, including a physiotherapist, coach, athletic therapist, or strength and conditioning coach, who can provide personalized guidance and ensure a safe and effective recovery plan.

Their expertise will help you progress at a pace that's right for you while minimizing the risk of reinjury and ensuring proper technique as you return to activity.