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## **Race Done... The importance of Off-season Rehabilitation for a Common Sports Injury**

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It is reported in the literature that the greatest number of injuries in runners occurs to the knee. The most common knee injury reported in the research is “Runners Knee” otherwise known as patella-femoral pain syndrome (PFPS).

PFPS results in pain that originates on the front of the knee, with a gradual onset which progressively increases over a period of time. In general, PFPS occurs when the patella does not move or “track” in a correct fashion when the knee is being bent and straightened. This movement can lead to damage of the surrounding tissues, such as the cartilage on the underside of the patella itself, which can lead to pain in the region.

When bending and straightening the knee, several structures surrounding the joint act together to cause the patella to run in a straight line within a groove formed by the Femur and Tibia. If any of the structures are particularly tight or weak, this causes an imbalance which can result in the patella mal-tracking. The most common example of this is when the outer structures of the knee including the vastus lateralis and iliotibial band are tight and the vastus medialis oblique (VMO) muscle on the inside of the knee is weak. This results in the patella moving too far laterally (to the outside) as the tight lateral structures pull it across and the medial (inner) muscles are not strong enough to control this force.

### Off-Season Management/ Prevention Strategies

Firstly, the athlete should consult with a sports medicine professional to assess the knee joint for proper biomechanics, and make recommendations for rehabilitation.

### **Which muscles need strengthening?**

It is usually the Vastus medialis obliques, and the gluteus medius muscle that require strengthening. The aim of strengthening should be to encourage the patella to track in the proper position and to spread the forces throughout the joint.

### **Strengthening Exercises:**

Exercise 1 – Isometric Quads

- It is essential that the athlete learns to isolate the vastus medialis (VMO) muscle and feels it being used for strengthening to be effective.
- A muscle stimulator or tens machine can help in the early stages.
- The athlete sits on the floor with the legs out straight. They should practice contracting the quad muscles, with particular emphasis on the VMO muscle
- The athlete should feel the muscle with their fingers so they know its contracting
- To progress, place a rolled-up towel or a foam roller underneath the knee so that it is slightly bent
- The athlete straightens the knee so that the foot rises off the floor
- Perform 10-20 reps, gradually increasing the number. Hold each contraction for 3-5 seconds.
- This exercise should be performed 3 to 5 times a day if pain allows.

#### Exercise 2 - Standing Lunge

- Stand one foot in front of the other, the injured knee forwards. Bend the front knee enough to feel the vastus medialis is working. Aim to keep the knee pointing forwards
- Return to starting position and repeat. Aim for 2 sets of 10 repetitions initially and gradually increase.

#### Exercise 3- Step Down

- The athlete drops down off a small step, and returns to the starting position.
- Progression: Increase the size of the step
- Repeat 10 times and aim to perform a number of sets throughout the day.

#### Exercise 4- Side Lying Clam

- The athlete lies on their side with the knees bent and feet in line with their spine.
- Make sure the back is straight and that the hips are stacked one directly on top of the other (don't lean back!)
- Keep the ankles together and back still, as you raise the top knee away from the bottom one
- Start off with 2 sets of 10 reps and gradually increase to 3 sets of 15.