



MENISCAL REPAIR: REHABILITATION

This handout describes details of the post-operative care of your knee. You must carefully follow your rehabilitation instructions to maximise the chances of successful healing of your meniscus.

GENERAL PRINCIPLES OF MENISCAL REHABILITATION

1. *Minimise swelling*
 - Use regular icing.
 - Rest and elevate the knee when not doing your rehabilitation exercises.
 - Use the compression tubigrip bandage while swelling persists
2. *Gain and maintain range of motion (ROM) goals*
 - Extension in particular is easy to lose and hard to get back. Work on ROM began day one post-op. ROM goals are gradually increased as recovery progresses.
 - Meet, but don't exceed the ROM goals set.
 - Work on muscle flexibility and patellar mobilisation exercises
3. *Regain muscle control*
 - Good muscle activation and control will help protect the healing meniscus and help return normal knee function
 - In complex tears, hamstring strengthening will be avoided for the first 6 weeks after surgery
4. *Avoid meniscus-damaging activities and movements*
 - Certain actions put a huge stress on the meniscus and must be avoided during the healing process. These include:
 - Deep squatting or knee flexion
 - Pivoting movements
 - Running or other high-impact loading activities
5. *Graduated return to activity as healing progresses*

Return to work or sport-specific training is highly individualized. It is determined by the requirements of the activity, the pattern of the meniscus tear, stability of the repair, patient age and so on. This will be individualized for each patient.

PHASE 1: INITIAL REHABILITATION PHASE

Please read and follow the instructions in the Meniscus repair: Early post-operative rehabilitation handout. This describes what to do prior to your first clinic follow-up.

**PHASE 2: PROTECTED MOBILIZATION (WEEKS 3 - 4)**

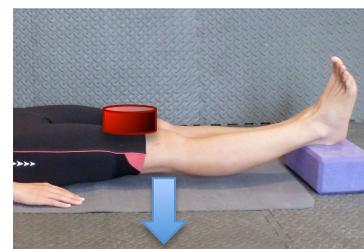
Continue wearing the brace, unlocked 0-90°. Remove for exercises and showering. Weight-bearing can be increased to partial (50% of body weight, up to 100% by the end of week 4) Once fully weight-bearing, wean off the crutches as tolerated, concentrating on maintaining a normal walking pattern.

RANGE OF MOTION (0-135° FLEXION)

Continue with the ROM exercises from phase 1. If you are not reaching your ROM goals, start the overpressure exercises shown below

1. Overpressure extension

Lying down, with the foot propped up on towels or a yoga block to keep the leg clear of the floor. A 5kg weight is placed on the front of the thigh. Allow the leg to relax and stretch out straight. Do this for 10 minutes. Repeat 6 times per day.

**2. Overpressure flexion**

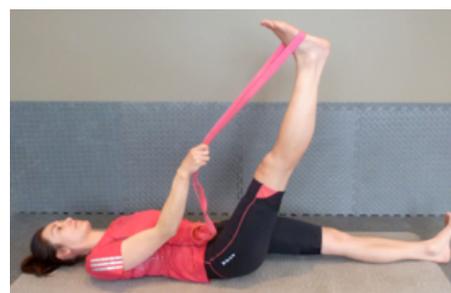
The first technique is to continue the seated flexion, using the other leg to provide the pressure. Another technique is lying on your front, place a strap or towel around your ankle. Use your arms to pull the knee into flexion as far as you can tolerate. Hold for 30 seconds, then release. Repeat 3-5 times.

**STRETCHING EXERCISES (2X/DAY)****Calf stretches**

While seated, use a strap to pull ankle up as far as possible. Start with the knee straight, hold 30 sec. Repeat with the knee bent. Once fully weight-bearing, this exercise can be performed standing by pushing the heel into the ground and leaning body forward to provide stretch to calf.

**Hamstring stretches**

Lying on back with leg straight, using the strap to assist gently lift the operated leg up in the air, pulling will be felt in the back of the thigh. Hold 30 sec, then slowly lower, repeat 3-5 times.





STRENGTHENING EXERCISES (2X/DAY)

1. Calf raises

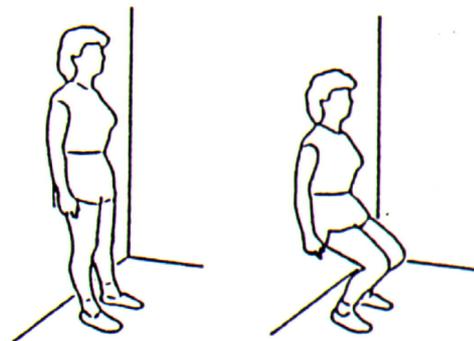
Start with your legs in full extension (straight knees). Rise up onto tip-toes and then return back to the ground. Slow controlled movement up and down. Once fully weight-bearing and performing them comfortably, progress to single leg.

3 sets of 10 repetitions



2. Wall sits and mini-squats

Standing straight as shown below for mini squats. Stand with your back against the wall and heels about 30cm in front of it and shoulder width apart for wall squats. Slowly flex your knees. Initially bend to 30° (shown). As the exercise becomes easier, gradually increase flexion to a maximum of 60°, no further. Hold in the bent position until you fatigue and then straighten up again. Do up to 10 repetitions.



3. Straight leg raises

Continue with the 4-way straight-leg raise exercises described for weeks 1-2.

BALANCE AND COORDINATION

Weight shifting

Stand with weight on non-operated leg gradually transfer weight onto operated leg. Increase to full weight as tolerated. Use some support, eg a table edge, then progress to performing unsupported.





PHASE 3: MOBILIZATION (WEEKS 5 - 6)

Brace: This can be removed now

Weight-bearing: Progress to full weight-bearing as tolerated

Range of motion: Continue with phase 2 exercises. Target is 0-135° flexion.

Stretching: Continue with the phase 2 stretching exercises.

STRENGTHENING EXERCISES (2 X/DAY)

1. Active knee extensions

Sitting in a chair, slowly straighten your knee from 90° to 30°, hold at 30° for several seconds, then bend back down to 90°. 3 sets of 10 repetitions.

2. Wall squats

These are to be done at 3 angles of knee flexion. 30°, 60° and 90°.

Lower your body to the desired knee flexion angle. Hold in that position until fatigued and then straighten up again. Once at 30°, then at 60°, then at 90° equals one rep. Perform 10 reps.

3. Mini-squats

Repeat these bending to a maximum of 60°. Use a rubber ball squeezed between the thighs to increase the muscle activation. Don't hold the flexed position, but smoothly rise back to a straight leg position straight away.

3 sets of 10 reps.

4. Straight leg raises

Continue with the 4-way straight leg raising exercises from weeks 1-2.

3 sets of 10 reps in each direction. If performing these easily, add ankle weights to increase resistance, up to a maximum of 5kg.

5. Hamstring curls

Lying on your front. Bend your knee up to 90° using your hamstring muscles. Slowly lower the foot to the floor again. 3 sets of 10 repetitions.

BALANCE AND COORDINATION (2 X/DAY)

1. Single leg balance

Standing on both feet, with feet pointing straight ahead, flexing the knee to 20-30°, extending the arms outward to horizontal, and positioning yourself upright with your shoulders above your hips and hips above your ankles. Stand in this position until you lose balance. Repeat 3-5 times.

2. Cup walking exercise

This exercise is designed to help you redevelop symmetry between your operated and normal sides during walking. Working in front of a mirror, place cups (or other 10cm high obstacle) in zig-zag fashion as shown. Slowly step over each cup, concentrating on keeping your pelvis level and remaining in balance throughout your progress.



**PHASE 4: ADVANCED STRENGTHENING (WEEKS 7 - 8)**

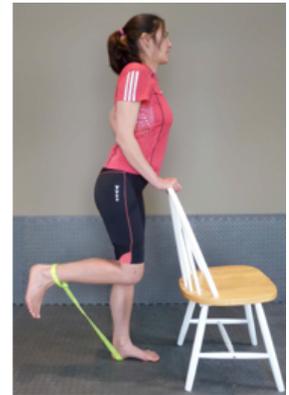
Range of motion: Continue with phase 2 exercises. Target is 0-135° flexion.
Stretching: Continue with the phase 2 stretching exercises.

STRENGTHENING EXERCISES (DAILY)

Continue the phase 3 exercises.

Hamstring Curls

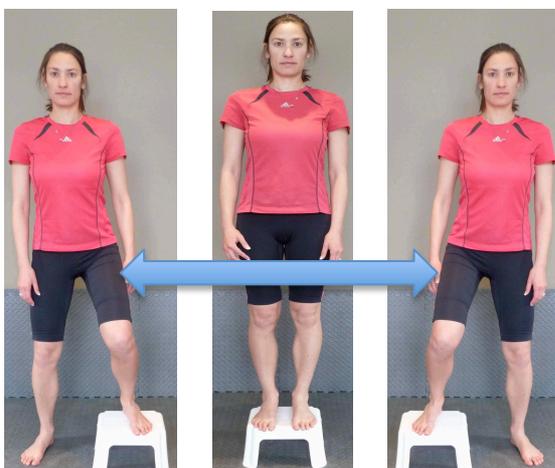
Secure a Theraband resistance band secured at ground level and attach other end to ankle. Slowly flex knee up to a maximum of 90°. Hold for several seconds, then lower back down slowly in a controlled manner. Do 3 sets of 10 repetitions.

*Bridging I*

Lie on your back on the floor. Bend knees to 45° with your arms at the side. Lift pelvis off the floor, hold for 10 seconds, then slowly lower to the floor. Repeat 5 times.

*Stepups*

These should be done forwards, backwards and from side to side. Alternate leading with the operated and non-operated leg. Start with a 10cm step and gradually increase it to 30cm.





BALANCE AND COORDINATION (DAILY)

Continue with cup walking exercise until performing with complete symmetry on both sides

1. *Single leg stance exercise*

If comfortable with early standing exercise, progress by flexing the knee to 30° balanced on single leg and then extending again. 3 sets of 10 reps.

2. *Functional stance*

In single leg stance, perform the following actions. Do sets of 30-60 seconds per action

1. Perform arm circles in both directions
2. Raise other knee and swing it back and forward
3. Lean body forward, backward and to each side while maintaining balance



3. *Wobble board*

Start with double leg wobble board or Bosu ball with feet wide apart. Initially, aim to keep balanced with the edges of board off the ground for 30 sec. Once successful, progress to placing feet closer together, then move to single leg stance. Once comfortable in single stance, begin performing functional stance exercises as shown above.

CONDITIONING EXERCISES

1. *Walking*

- Continue to wean off crutches, walk outside up to 20-30 min per day
- Commence backwards walking and sideways stepping exercises

2. *Exercycle*

- Once able to bend knee to 90°, raise the seat if necessary, resistance on the lowest setting, so you are not pushing hard on the pedals.
- Pedal forwards and backwards, start at 5 min and build up to at least 20 min /day

3. *Swimming pool*

- Chest deep walking
- Swimming (arm-dominant – ie no kicking and no breaststroke)

**PHASE 5: CONDITIONING (WEEKS 9 - 16)**

This phase involves continuing to strengthen and condition the muscles around the knee, while protecting the meniscus from impact loading, deep flexion or other stresses that might rupture the repair. Walking can be gradually increased as outlined below, but still no jogging or high resistance cycling (big gears or climbing)

STRENGTHENING EXERCISES (DAILY)

Continue all the exercises from phase 4.

1. Bridging series II

Set up as for Bridging I,
Raise your pelvis off the ground, then while maintaining this position, straighten one knee, so that the foot comes off floor. Once your leg is fully straight, hold for 5-10 sec, slowly lower foot, then repeat for the other side.

3 sets of 5 repetitions

**2. Calf Raises series II**

As for double leg calf raises, but perform on a single leg. Slow, controlled movement up and down.

A hand can be placed on a wall for stability if required.

3 sets of 20-30 repetitions

BALANCE AND COORDINATION (DAILY)

Continue all the exercises from phase 4

Crouch and extended leg crouch exercise
Crouch on a large wobble board or Bosu ball. Without letting the edges touch the ground, tilt the surface in different directions. Once comfortable doing this, lift and extend the non-operated leg and repeat the tilting movements.

Initially continue for 30 seconds. Gradually extend the time to 1 minute or more.

**CONDITIONING EXERCISES****1. Walking**

- Walking outside up to 45 min per day
- Can commence walking figure 8s and swerves (see phase 5 exercises)

2. Exercycle

- Low to moderate intensity and speed, increasing the time to 30 min or more
- Lower seat to aid knee flexion as tolerated

3. Swimming pool

- Easy aquajogging and chest deep walking, include sideways and backwards walking
- Swimming with easy flutter kick (no breaststroke)

**PHASE 6: RETURN TO SPORT - SPECIFIC TRAINING (MONTHS 4 - 6)**

By four months, your meniscus tear should have healed enough to tolerate a graduated return to more strenuous activity. This can include running – initially easy straight line jogging - gradually building up to full speed, with cutting and pivoting movements. The aim is to be able to return to full sports and work by about 5 months after your meniscus repair.

CONDITIONING EXERCISES (3 X PER WEEK)

A maintenance program of stretching and strengthening and coordination exercises should be continued until your knee range of motion and strength is equal to your non-operated leg. If using a gym-based training program, you can now begin deeper squats and loaded squats, but avoid fully flexed squats until 5 months post-op.

Full return to road cycling after 4 months, technical mountain-biking after 5 months
Full return to swimming after 4 months, any stroke, with kicking

WALKING AND JOGGING EXERCISES (3 X PER WEEK)

1. Concentrate on walking normally in a straight line with no limp, then progress to backwards and sidestep walking (not crossovers).
2. Once comfortable with this, progress to figure 8s, squares and swerves
3. When able to complete all walking exercises well, straight line jogging can be initiated, once comfortable and confident, progress through agility drills as above
4. Knee pain or swelling should not occur with these exercises (some post-exercise aching is acceptable).

Figure 8s

Start with 20 meter long "8s".
Once confident, increase speed and decrease the length gradually to 5 meters.

Squares

Start with 20 meter squares. Walk 5 circuits in one direction, then reverse direction.
Decrease side length and increase speed once confident

Swerves

Place 10 objects, each about 3 meters apart and weave between them while walking
Gradually increase the speed of walking once comfortable

