

ACL RECONSTRUCTION REHABILITATION PROTOCOL

Postoperative Days 1 - 7

***IT IS EXTREMELY IMPORTANT THAT YOU WORK ON EXTENSION IMMEDIATELY**

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| <p>Goals:</p> <ul style="list-style-type: none">* Control pain and swelling* Care for the knee and dressing* Early range of motion exercises* Achieve and maintain full passive extension* Prevent shutdown of the quadriceps muscles* Gait training |
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Control Pain and Swelling

1) Control Swelling. Following discharge from the hospital you should go home elevate your leg and keep the knee iced using the Cold pack. You may get up to use the bathroom and eat, but otherwise you should rest with your leg elevated.

2) As your pain and swelling decrease you can start to move around more.

***DO NOT SIT FOR LONG PERIODS OF TIME WITH YOUR FOOT IN A DEPENDENT POSITION (LOWER THAN THE REST OF YOUR BODY), AS THIS WILL CAUSE INCREASED SWELLING IN YOUR KNEE AND LEG. WHEN SITTING FOR ANY SIGNIFICANT PERIOD OF TIME, ELEVATE YOUR LEG AND FOOT.**

Early Range of Motion and Extension

1) Passive extension of the knee by using a rolled towel. Note the towel must be high enough to raise the calf and thigh off the table.

- Position the heel on a pillow or rolled blanket with the knee unsupported.
- Passively let the knee sag into full extension for 10 - 15 minutes. Relax your muscles, and gravity will cause the knee to sag into full extension.
- This exercise can also be done by sitting in a chair and supporting the heel on the edge of a stool, table or another chair and letting the unsupported knee sag into full extension.

2) Active-assisted extension is performed by using the opposite leg and your quadriceps muscles to straighten the knee from the 90 degree position to 0 degrees. Hyperextension should be avoided during this exercise.

3) Passive flexion (bending) of the knee to 90 degrees.

- Sit on the edge of a bed or table and letting gravity gently bend the knee.
- The opposite leg is used to support and control the amount of bending.
- This exercise should be performed 3 times a day for 10 minutes. It is important to achieve at least 90 degrees of passive flexion by 5 - 7 days after surgery.

Exercising Quadriceps

1) You should start quadriceps isometric contractions with the knee in the fully extended position as soon as possible.

- Do 3 sets of 10 repetitions 3 times a day.
- Each contraction should be held for a count of 5 sec. This exercise helps to prevent shut down of the quadriceps muscle and decreases swelling by squeezing fluid out of the knee joint.

2) Begin straight leg raises (SLR) 3 sets of 10 repetitions 3 times a day. Start by doing these exercises while lying down.

- This exercise is performed by first performing a quadriceps contraction with the leg in full extension. The quadriceps contraction "locks" the knee and prevents excessive stress from being applied to the healing ACL graft.
- The leg is then kept straight and lifted to about 45-60 degrees and held for a count of five.
- The leg is then slowly lowered back on the bed. Relax the muscles.

*** REMEMBER TO RELAX THE MUSCLES EACH TIME THE LEG TOUCHES DOWN**

Exercising Hamstrings

1) For patients who have had ACL reconstruction using the hamstring tendons it is important to avoid excessive stretching of the hamstring muscles during the first 6 weeks after surgery.

- The hamstring muscles need about 6 weeks to heal, and excessive hamstring stretching during this period can result in a "pulled" hamstring muscle and increased pain.
- Unintentional hamstring stretching commonly occurs when attempting to lean forward and put on your socks and shoes, or when leaning forward to pick an object off the floor.
- To avoid re-injuring the hamstring muscles, bend your knee during the activities below, thus relaxing the hamstring muscles.

2) The hamstring muscles are exercised by pulling your heel back producing a hamstring contraction.

- This exercise should be performed only if your own patellar tendon graft was used to reconstruct the ACL.
- If a hamstring tendon graft from your knee was used to reconstruct the ACL, this exercise should be avoided for the first 4 - 6 weeks, as previously mentioned.

Postoperative Days 8 – 10

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| <p>Goals:</p> <ul style="list-style-type: none">* Physical therapy* Maintain full extension* Returning to work |
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Physical Therapy and Full Extension

- 1) Outpatient physical therapy will be modified during the first postoperative office visit.
- 2) Continue doing the quadriceps isometrics, SLR, active flexion, and active-assisted extension exercises.

Returning to Work

- 1) As far as returning to work, if you have a desk type job you can return to work when your pain medication requirements decrease, and you can safely walk with your crutches. Typically this is between 5 - 10 days after surgery.
- 2) Patients who have jobs where light duty is not permitted; policemen, firemen, construction workers, laborers, will be out of work for a minimum of 6 - 12 weeks.

Postoperative Week 3

***MAINTAINING FULL EXTENSION AND DEVELOPING MUSCULAR CONTROL ARE IMPORTANT**

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| <p>Goals:</p> <ul style="list-style-type: none">* Maintain full extension* Achieve 100 – 120 degrees of flexion* Develop muscular control* Control swelling in the knee |
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Maintain Full Extension

1) Continue with full passive extension (straightening), gravity assisted and active flexion, active-assisted extension, quadriceps isometrics, and straight leg raises.

2) Work toward 100-120 degrees of flexion (bending)

Develop Muscular Control

1) Start Partial Squats.

- Place feet at shoulder width in a slightly externally rotated position.
- Use a table for stability, and gently lower the buttocks backward and downward.
- Hold for 5 seconds and repeat.
- Do 3 sets of 10 repetitions each day.

2) Start Toe Raises.

- Using a table for stabilization, gently raise the heel off the floor and balance on the ball of the feet.
- Hold for 5 seconds and ease slowly back down.
- Do 3 sets of 10 repetitions each day.

3) Wean from crutches when you can put full weight on the leg and walk with a normal heel-toe gait and no limp.

4) You can continue using a stationary bike. Cycling is an excellent conditioning and building exercise for the quadriceps.

- The seat position is set so when the pedal is at the bottom, the ball of the foot is in contact with the pedal and there is a slight bend at the knee.
- No or low resistance used. Maintain good posture throughout the exercise.
- As your ability to pedal the bike with the operative leg improves, you may start to increase the resistance (around 5-6 weeks).
- Your objective is to slowly increase the time spent on the bike starting first at 5 minutes and eventually working up to 20 minutes a session.
- The resistance of the bike should be increased such that by the time you complete your work-out your muscles should "burn".

***THE BIKE IS ONE OF THE SAFEST MACHINES YOU CAN USE TO REHABILITATE YOUR KNEE, AND THERE IS NO LIMITATION ON HOW MUCH YOU USE IT.**

Control Pain and Swelling

1) Continue with pain and swelling management, such as cold therapy, elevation, if symptoms persist.

WHEN CAN YOU DRIVE A CAR?

Patients who have had surgery on the left knee, and who have an automatic transmission may drive when they can comfortably get the leg in and out of the car.

Patients who have had surgery on the left knee and have standard transmissions, should not drive until they have good muscular control of the leg. This usually takes 3-4 weeks.

Patients who had surgery on the right knee should not drive until they have good muscular control of the leg. This usually takes 4-6 weeks.

Postoperative Weeks 3 – 4

Goals: * Full range of motion
* Strength through exercise

- 1) Expected range of motion is from full extension to 100 – 120 degrees of flexion. Add wall slides and hand assisted heel drags to increase your range of motion.
- 2) Continue quadriceps isometrics and straight leg raises.
- 3) Continue partial squats and toe raises.
- 4) If you belong to a health club or gym you may start to work on the following machines:
 - Stationary bike. Seat position regular height to high to avoid too much bending or straightening of the knee. Increase resistance as tolerated. Try to work up to 15-20 minutes a day.
 - Elliptical cross-trainer 15 - 20 minutes a day.
 - Inclined leg-press machine for the quadriceps muscles. 70 - 0 degree range.
 - Seated leg curls machine for the hamstring muscles. **Note** this exercise should be delayed until the postoperative week 8-10 if your ACL was reconstructed with a hamstring tendon graft.
 - Upper body exercise machines.
 - Swimming: pool walking, flutter kick (from the hip), water bicycle, water jogging. No diving, or whip kicks.

Postoperative Weeks 4 – 6

Goals: * 125 degrees of flexion pushing toward full flexion
* Continued strength building

- 1) Your expected range of motion should be full extension to 125 degrees. Start to push for full flexion. Walls slides added if your flexion range of motion is less than desired.
- 2) Continue quad sets, straight leg raises, partial squats, toe raises, stationary bike, elliptical machine, leg presses, and leg curls.
- 3) Tilt board or balance board exercises. This helps with your balance and proprioception (ability to sense your joint in space)

Postoperative Weeks 6 – 12

***BY WEEK 6, YOUR RANGE OF MOTION SHOULD BE FULL EXTENSION TO AT LEAST 135 DEGREES OF FLEXION.**

Goals:

- * **135 degree of flexion**
- * **Continued strength**
- * **Introduce treadmill**

1) Continue quad sets, straight leg raises, partial squats, toe raises, stationary bike, elliptical machine, leg presses, and leg curls.

2) Hamstring reconstruction patients can start leg curls in a sitting position. If you develop hamstring pain then decrease the amount of weight that you are lifting, otherwise you can increase the weight as tolerated.

***IT IS IMPORTANT TO AVOID USE OF A LEG CURL MACHINE THAT REQUIRES YOU TO LIE ON YOUR STOMACH. THIS MACHINE PUTS TOO MUCH STRAIN ON THE HEALING HAMSTRING MUSCLES, AND CAN RESULT IN YOU "PULLING" THE HAMSTRING MUSCLE.**

3) Continue tilt board and balance board for balance training.

4) Continue swimming program.

5) Start treadmill (flat only).

6) You may begin outdoor bike riding on flat roads.

***NO MOUNTAIN BIKING OR HILL CLIMBING!**

Postoperative Weeks 12 – 20

- Goals:**
- * Continued strength
 - * Introduce jogging and light running
 - * Introduce agility drills
 - * Determine need for ACL functional brace

- 1) Continue all of week 6 -12 strengthening exercises.
- 2) Start straight, forward and straight, backward jogging and light running program.
- 3) Start functional running program after jogging program is completed.
- 4) Start agility drills, zig-zags and cross over drills.

24 Weeks Postoperative (6 months)

***THIS IS THE EARLIEST YOU SHOULD PLAN ON RETURNING TO FULL SPORTS.**

Goals: * Return to sports

To return to sports you should have:

- Quadriceps strength at least 80% of the normal leg
- Hamstring strength at least 80% of the normal leg
- Full motion
- No swelling
- Good stability
- Ability to complete a running program