



ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: REHABILITATION PROGRAM

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This packet contains information about the anterior cruciate ligament (ACL) surgery and the rehabilitation program you will be following after surgery. Give your physical therapist or trainer a copy of this program. This protocol is a guideline- your therapist or physician may modify this protocol based on how your knee is progressing. The success of this surgery depends in large part on your commitment to the rehabilitation program so that you can return to the activities and sports you enjoy. If you have any questions, please give me a call at (316) 219-8299.

BRING TO YOUR SURGERY

Crutches

Knee brace (if given in the office prior to surgery)

Shorts & comfortable shoes

FOLLOWING SURGERY

Crutches/Brace: Physical therapy will help instruct you on how to walk with crutches (which you will use for approximately 2-3 weeks) and to review your exercises. Unless otherwise stated, you should put as much weight on your leg as you can while walking. The brace should stay locked (for 2-3 weeks) in full extension, except when working on range of motion exercises or in the CPM unit.

WEEK 1

Exercises: You will be doing the **Phase I** exercises 3 times/day. Perform 3 sets of 10 repetitions on each exercise. You should be able to:

- 1) Bend your knee **at least 90 degrees** by the end of this week. You will not harm your new ligament by bending your knee beyond 90 degrees.
- 2) **Fully straighten** your knee when sitting on the floor.
- 3) Perform a good **quad set**.

Crutches/Brace: Keep your brace locked in extension when walking, sitting, and sleeping. You may remove the brace when working on range of motion exercises. Use your crutches at all times, unless the therapist instructs you otherwise.

Cryotherapy: Use the cryotherapy at least 3x/day and after exercising. Use CPM machine 2-3 times a day for 1-2 hours at a time, increasing range of motion by 5-10 degrees each session. The CPM machine may be discontinued after 1st or 2nd week. Your first postoperative PT appointment should be 2-3 days after surgery. How often you have appointments in PT is dependent on how your knee is progressing, usually 2-3x/week.

WEEK 2

Exercises: Your therapist will begin adding **Phase II** exercises to your rehabilitation program. You will be working on range of motion exercises, patellar mobilizations, massaging around your scar and several standing exercises to strengthen your leg muscles. These exercises should be done 2x/day, 3 sets of 10 repetitions on each exercise, unless otherwise specified. At the end of the second week you may begin using a stationary bike to help you bend your knee (if you have 90 degrees of flexion).

Your goals at this time are:

- 1) Decrease swelling in your knee, use your cryotherapy 2-3x/day
- 2) Achieve strong contraction in your quadriceps muscle
- 3) Fully straighten your knee and bend it to approximately 100 degrees. If you are unable to fully straighten your knee, you should be working on this several times per day.

Crutches/Brace: Your doctor or therapist will have you discontinue the crutches at the end of second week if: 1) knee swelling is not excessive; 2) you are able to perform a strong quad set; 3) you can walk without a limp. You may need to continue using the brace for 2 more weeks. If you are able to fully straighten your knee, you may begin unlocking the hinges on your brace when you are sitting. You may start sleeping without the brace ~2 weeks after surgery.

You will have an appointment with your physician approximately 10-12 days after surgery. After this visit, you may start taking showers. Do not take a bath or get into a pool until the incisions are completely healed, unless you are able to keep it completely covered (i.e. trash bag).

WEEK 3

Exercises: You may begin using a pool at this time (NO whip kicks or flip turns). Continue working on range of motion exercises and patellar mobilization. Your therapist will gradually introduce additional Phase II strength and balance exercises to your program. Access to a fitness center is very helpful at this time. Equipment you may use includes: leg press, stair master, stationary bike, pulleys, calf machine, and treadmill. Your therapist will advise you on how much and how often you can perform these exercises. Use your cryotherapy or ice pack the knee for 20 minutes 2x/day and after you exercise.

Your goals at this time are:

- 1) Continue to work on decreasing any swelling in the knee (ACE bandage, cryotherapy)
- 2) Be able to fully control your leg with your quadriceps muscle
- 3) Be able to fully straighten your knee and bend it to approximately 120 degrees

Crutches/Brace: If you can perform a strong quadriceps contraction and you do not have excessive knee swelling, you may unlock the hinges on your brace while walking and sitting. However, the brace should be locked if you are walking on slippery or uneven surfaces.

WEEK 4

Exercises: You should continue to work on range of motion exercises, scar tissue, patellar mobilization, and your strength training exercises (5days/week). If your knee is still swollen, continue to use cryotherapy 1-2x/day and always after exercise.

Your goals at this time are:

- 1) Be able to fully straighten your knee and bend it to 120-130 degrees
- 2) Walk without a limp

Brace: If you have a good quadriceps muscle tone and minimal swelling in your knee, you may **discontinue the brace**. You may start driving after the brace is discontinued and you have good quad control. Do not drive until you are 100% safe and comfortable with controlling your car.

WEEKS 5-7

Exercises: You will continue to focus on balance activities, strength exercises for all the muscles in your leg, and cardiovascular conditioning exercises. You should be exercising at least 5x/week. Avoid activities that require sudden stops or pivoting movements.

WEEK 8

Exercises: If you do not have soreness behind or below your kneecap, you may begin jumping rope.

WEEKS 9-12

Your exercise program will be progressed to include more difficult strength exercises, drills and begin to prepare you to return to your sport and jumping activities. You may start running at 12 weeks if you have minimal knee swelling, full knee extension, and good quadriceps control.

RETURN TO SPORTS

When you return to sports is dependent on several factors:

Time: A minimum of 4-6 months is needed for adequate healing of the ligament.

Strength: Your quadriceps and hamstring strength should be at least 90% of normal before returning to sports.

ROM: You should have full extension and flexion.

Function: You must be able to complete several functional drill tests (run, jump, move laterally and backwards) before returning to sport.

These criteria are for your protection. Do not return to sports until your physician or therapist has cleared you.

ACL RECONSTRUCTION WITH MENISCAL REPAIR

If you had a torn meniscus and it was repaired during your ACL reconstruction surgery, your rehabilitation program will be modified slightly. Extra steps will be taken during the first four weeks after surgery to protect the repaired cartilage. The standard rehabilitation program will be used, but with the following modifications:

Brace: You should use your brace for four weeks. It may be removed only when you are performing exercises. The brace should be locked in extension whenever you are bearing weight on the leg (i.e. keep the brace locked while walking). You will be non-weight bearing for 2 weeks unless otherwise instructed.

Exercises: You may work on range of motion exercises immediately after surgery. For the first 4 weeks after surgery, you should avoid any exercises in which you are simultaneously bending your knee and bearing weight on that leg. You may not use a stationary bike, stair master, shuttle, slide board or perform squat exercises until 4-6 weeks after surgery. You will not go beyond 90 degrees of flexion for the first two weeks.

RANGE OF MOTION EXERCISES

1. **Heel slide- on back**
 - a. Lie on back, slide heel up toward hips, bending the knee. Hold 30 seconds. Slowly lower.
2. **Wall heel slide**
 - a. Lie on back with heel up on the wall. Slowly slide heel down the wall. Hold 30 seconds.
3. **Leg Hang**
 - a. Lie on stomach with lower leg off the end (or side) of bed. Relax leg muscles and let gravity straighten your knee. Hold 10-20 minutes.
4. **Leg extension- on back**
 - a. Lie on back with a towel roll under the ankle. Relax and let gravity straighten your knee. You may put a 3-5 pound weight over lower end of thigh to increase the stretch. Hold 10-20 minutes.

PHASE I EXERCISES

1. **Quad sets- knee straight**
 - a. Tighten the quadriceps muscle on the top of your thigh. Keep the back of your knee on the floor and try to lift your heel slightly off the floor. Hold 5 seconds. Relax.
2. **Quad sets- knee bent**
 - a. Cross ankles (non-surgery side on the top). Tighten quad muscle by pushing up against non-surgery side ankle. Do not allow knee to straighten. Hold 5 seconds. Relax.
3. **Hamstring sets**
 - a. Tighten the hamstring muscles on the back of your thigh by pulling your heel down into the floor or table. Hold 5 seconds. Relax.
4. **Straight leg raises**
 - a. Rest on forearms (or lie on back). Tighten quadriceps muscle (i.e., quad set) then lift leg 12 inches off the floor. Hold 5 seconds. Slowly lower. Keep knee straight.
5. **Hip abduction**
 - a. Lie on the non-surgery side. Quad set your surgery knee, then lift your leg 12 inches off the floor.
6. **Knee flexion**
 - a. Lie on stomach. Bend your surgery knee towards buttocks until you feel a moderate stretch in your knee.
7. **Knee extension**
 - a. Sit in a chair. Slowly straighten your knee as far as you can comfortably. (No fast kicks).
8. **Patellar (kneecap) mobilizations**
 - a. Sit with knees straight and quadriceps muscle relaxed. Grasp kneecap with thumbs and index fingers. Glide the kneecaps up and down, and left to right.
9. **Scar Massage**
 - a. Massage along the side of your incisions pressing down as deeply as you can without discomfort.

PHASE II EXERCISES

Phase II exercises are usually started the second week after your surgery. These exercises should be performed 1-2x/day. Unless otherwise indicated, these exercises can be performed with the brace on and hinge unlocked, or with the brace off.

1. Wall sits

- a. With your back against a wall, slowly slide down the wall until your thighs are parallel with the floor.

2. Mini squats

- a. Slowly bend approximately 60-90 degrees at the knees and then slowly stand up. Keep weight equally distributed over both feet.

3. One foot toe rise

- a. Stand on surgery leg. Slowly go up and down on tip toes. May use hand support for balance.

4. Step ups

- a. Stand on a step with surgery knee. Slowly bend surgery knee until opposite foot touches the floor. Slowly straighten your knee.

5. Tubing pulls

- a. Secure 1 end of tubing in a doorjamb and the other end around the non-surgery ankle. Stand on surgery leg. Pull the tubing forward *backward across the midline of body *away from your side

6. Weight shifting

- a. Stand with brace locked, and shift weight left to right over feet. Hold onto a counter/table if needed. 20 reps.

7. Double calf raises

- a. Stand with brace locked and equal weight over both feet. Slowly go up and down on tiptoes.

RUNNING PROGRAM

“When can I compete again?” This question is often asked by athletes after they have suffered a leg injury. In sports medicine, we use a running program designed to test the strength and endurance of an athlete who has suffered an injury to the lower extremity. When athletes complete the entire program, they are ready to return to competition. An athlete is ready to begin this running program when he or she can hop five times on the toes of the injured leg.

If an athlete cannot complete the entire program, he or she should start at the beginning the following day.

OUTDOOR INSTRUCTIONS

1. Jog 1 mile. Stop immediately if you begin limping or feel moderate pain. When you can jog one mile pain free,
2. Run six 80 yard sprints at half speed. If you feel no pain and don't limp,
3. Run six 80 yard sprints at three-quarter speed. If no pain,
4. Run six 80 yard sprints at full speed, if no pain,
5. Run six 80 yard sprints cutting at three-quarter speed. If no pain,
6. Run six 80 yard sprints cutting at full speed. Always plant on outside foot to cut. If no pain,
7. Do 10 minutes of running and/or jumping drills related to your sport.

When you've completed the entire program, you're ready to return to competition. *Follow each running workout with a 15 minute application of ice.

INDOOR INSTRUCTIONS

1. Jog 18 laps around the basketball court, stop immediately if you begin limping or feel mild pain. If you're pain free,
2. Run 15 lengths of the gym at half speed. If no pain,
3. Run 15 lengths of the gym at three-quarter speed. If no pain,
4. Run 15 lengths of the gym at full speed. If no pain,
5. Run 15 lengths cutting at three-quarter speed. Plant outside foot with each cut. If no pain,
6. Run 15 lengths cutting at full speed. If no pain,
7. Do 10 minutes of running or jumping drills to your sport.

When you've completed the entire program, you're ready to return to competition. *Follow each running workout with a 15 minute application of ice.