

**Bruce N. Jones, M.D.**  
**Robert A. Sciortino, M.D.**

*St. Luke's Office*  
224 South Woods Mill Road  
Suite 255 South  
Chesterfields, Missouri 63017  
314.434.3240  
Exchange 314.388.6533

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## **Rehabilitation Protocol for Anterior Cruciate Ligament Reconstruction Using Double-Looped Semitendinosus and Gracilis Tendon Graft (DLSTG)**

### **GOAL:**

To restore range-of motion (ROM), strength, and confidence to the knee while protecting the anterior cruciate ligament (ACL) graft from stretching or rupturing.

### **FACTS:**

1. It requires 4 months for the graft to be transformed into a strong and durable ligament.
2. If the graft should rupture or stretch during this time period it is not repairable.
3. This protocol must be followed throughout the first four months to prevent graft injury.
4. Any deviation from this regimen may unnecessarily compromise your final result.

### **REMINDER:**

When you and I agreed to reconstruct your torn ACL you willingly committed yourself to a four month, vigorous, structured, rehabilitation program. You must understand that the end-result depends to a great extent on your discipline, motivation, and perseverance in performing the exercise program. Without your commitment and energy, the surgery is assured to fail to meet your expectations. With your cooperation and dedication you have an excellent chance to regain the strength, stability, and confidence in your knee that you had before your injury.

Participation in a formal physical therapy program is extremely important in achieving your goals, however the majority of rehabilitation must be done at home or while traveling using a stationary bicycle, pool, or exercise equipment at a health club. The following exercise program should be followed **daily on your own** to achieve the goals expected at the end of each time interval. This detailed protocol has been designed as a reference specifically for you, and your trainer or physical therapist. Bring this protocol to your therapist on your first visit.

### **TIMING OF POST-SURGICAL VISITS:**

1. WEEK 1 (7-12 days)
2. WEEK 4
3. WEEK 8
4. WEEK 16 (X-RAYS: single-leg hop test)
5. SIX MONTHS
6. ONE YEAR

We are going to carefully monitor your progress at each of these visits. Rarely, it may be necessary to perform a manipulation of your knee or an additional arthroscopy to assist you in regaining motion or to remove adhesions.

# YOUR REHABILITATION PROGRAM

## ***WEEK 0-2***

1. **WEIGHT BEARING:** Partial weight bearing on the operated leg and use your crutches for two weeks. Gradually advance to weight bearing as tolerated from 2 – 4 weeks. Crutches may be discarded when the knee is comfortable enough to walk on. Use knee range of motion splint if supplied for 4 – 6 weeks. Usually only used on combined ligamentous injuries (MCL + ACL, e.g.)
2. **RANGE OF MOTION:** Increase active motion using heel slides, prone stretching, and terminal extension exercises within the tolerance of comfort so the knee moves from 0 to 90 degrees by 7-10 days after surgery. Elevating the heel on pillows and placing a 2.5-pound weight across the leg just below the knee will help achieve terminal extension.
3. **STRENGTHENING:** Strengthen the knee using straight-leg-raises and isometric quadriceps and hamstring exercises. Rehabilitate the hip by doing abduction, adduction, flexion, and extension exercises.
4. **WOUND CARE:** You may shower 48 hours after surgery if there is no drainage from the wounds. If drainage does occur keep the wound dry and covered. If it doesn't stop within 5 days of surgery call the office. Do not soak the knee in a bathtub, hot tub, or swimming pool until 2 weeks after surgery. Don't be surprised if bruising develops 3-7 days after the operation in the back of the thigh, calf, and ankle. Use Ice or Polar-Care cold therapy unit as much as possible to control pain and swelling.
5. **GOAL:** By two weeks the knee should move from 0 to 90 degrees and will still be sore, stiff, and swollen. Attaining full extension is most important.

## ***WEEK 2-4***

1. **WEIGHT BEARING:** You should be able to discard the crutches at 4 weeks after surgery.
2. **RANGE OF MOTION:** Increase ROM using the Stationary bicycle. Begin with the seat elevated and initially do not apply any resistance to the wheel, Lower the seat as motion increases and add resistance as tolerated. Try to bicycle twice a day for 10 to 15 minutes.
3. **STRENGTHENING:** You may walk unlimited distances and swim as your comfort permits. Begin closed chain kinetic strengthening (i.e.: leg press, ¼ squats, calf raises, stair-master, or elliptical machine).
4. **GOAL:** By four weeks the knee should extend nearly equal to the opposite knee and flex to at least 120 degrees. It is not unusual to still have some fluid or swelling in the knee, which may limit motion. Do not be discouraged if some fluid persists.

## ***WEEK 4-8***

1. **STRENGTHENING:** You may use any exercise equipment available to you in your home, gym, and health club, Use lower weight and a higher number of repetitions (20 to 30) to build endurance. Try to exercise 1 hour a day at least 3 to 5 times per week.
2. **GOAL:** By eight weeks the range of motion of the knee should equal the normal side and feel well enough to begin light jogging, golf, basket shooting, and agility training (i.e. forward, backward running and side to side cross overs).

## ***WEEK 8-16***

1. **STRENGTHENING:** Continue to use any exercise equipment available in your home, gym, and health club. Increase the weight and resistance on the exercise machines. Long bike rides are encouraged. It's safe to run on a level surface increasing the distance first and then the speed.
2. **GOAL:** By 16 weeks the knee should feel well enough to resume full unrestricted activities and sports including tennis, racquetball, football, baseball, softball, basketball, soccer, wrestling, volleyball, skating, etc.

## ***WEEK 16 EVALUATION***

1. **ROENTGENOGRAMS:** An X-ray of your knee is obtained before your visit. The placement of the graft tunnels and fixation devices will be reviewed with you in the office,
2. **CLINICAL EXAM:** Activity level, hardware symptoms, level of pain, fluid, motion, thigh circumference, stability, and your ability to jump for distance on your reconstructed knee will be measured and assessed. If the knee is stable, pain and swelling are minimal and the leg is strong then full return to work and sports are permitted.
3. **COMMENT:** It may take between six months and a year to regain full confidence in the reconstructed knee. Confidence can only be regained by using the knee and subjecting it to the demands of the sport that you desire to return to.

## **ANSWERS TO COMMON QUESTIONS:**

### ***How long will I be in the hospital?***

Surgery is performed as an outpatient, or one day stay. Patients go home when they can eat and walk with crutches, and pain is controlled with oral pain medications. If you have your own crutches please bring them to the hospital with you.

### ***How long does the surgery take to perform?***

The surgery usually requires 2 to 3 hours to perform. Repairing or removing a torn meniscus can add 30-45 minutes to the operation.

### ***When can I drive a car?***

When you feel safe and confident behind the wheel so you can avoid getting into an accident. Generally, driving is often resumed within the first few weeks after surgery, but may take longer if you have to work a clutch. Do not drive when you are taking pain pills.

### ***When can I return to work or school?***

Motivated people who have a sitting or desk job can usually be back at work by 7-10 days after surgery. Construction workers take 3-4 months.

### ***What is the success rate of the surgery?***

Most patients will have stability nearly equal to the normal knee and will be able to return to full unrestricted activities without any brace.

### ***Can I reinjure the graft?***

Of course, remember that you tore your own natural ligament, so it is theoretically possible to rupture your graft. Fortunately, rupture of the graft is uncommon. You are more likely to tear the ACL in the other knee than to retear your reconstructed ligament.

*If you have any more questions, and you should, please write them down and ask me.*

**Evaluate and treat per Protocol**

**2 – 3X / week for 12 weeks    or    \_\_\_\_\_X / week for \_\_\_\_\_ weeks**

**Special Instructions:**

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