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Anterior Cruciate Ligament Reconstruction **Patient Information Packet**

The anterior cruciate ligament, or ACL, is one of the major stabilizing ligaments in the knee joint. Damage to this ligament commonly results in “giving way” or buckling of the knee and a progressive loss of function. Surgical reconstruction of the ACL is usually required in order to restore normal function.

Below is a list of goals upon which to focus before and after surgery. Strict adherence to these goals will dramatically reduce the chances of experiencing post-operative complications that commonly delay the rehabilitation process.

Pre- and Post-Operative Goals

1. Achieve Full Extension

After injury or surgery, the knee will instinctively rest in a flexed (bent) position for reason of comfort. Over time, however, this position will result in tightening of the tissues (e.g. muscles, ligaments, etc.) in the back of the knee. The end result will be the inability to fully extend (straighten) the knee which may ultimately lead to other injuries and further loss of function. Therefore, your goal is to achieve full extension of the injured knee equal to that of the uninjured knee unless the uninjured knee excessively hyperextends (bends backward). Your physical therapist will inform you about the degree of extension that you will need to achieve. Two common techniques used for obtaining knee extension include heel propping and prone hanging.

- 1) Heel Propping - While sitting, prop the heel of your leg on a stack of books or towels, a stool, etc. such that the calf and the back of the thigh are **NOT** supported (a light weight of 10 lbs. or less may be applied over the knee to assist with stretching). This position should be maintained **continuously** (i.e. no brief rest periods!!!) for 20-30 minutes, 2-3 times per day until you can obtain full knee extension within 20-30 seconds of initially propping the heel. This stretch may

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become painful with time, so begin by propping for 10-15 minutes, and each day increase the time in small increments. Ice may be applied to the knee for the first 15-20 minutes of stretching to help reduce swelling and pain.

2) Prone Hanging - Lay prone (on your stomach) on a bed or table with your knees overhanging the bed or table edge (a light weight of 10 lbs. or less may be applied to the ankle to assist with stretching). A towel roll or pillow may be placed along the table edge for comfort. If you have low back

problems, place 1-2 pillows under your pelvis to decrease the stress on the low back. As with heel propping, prone hanging should be performed **continuously** (i.e. no brief rest periods!!!) for 20-30 minutes, 2-3 times per day until you can obtain full knee extension within 20-30 seconds of initially assuming the stretch position.

2. Control/Minimize Swelling

Swelling after injury or surgery can be quite detrimental to the rehabilitation process as well as to your overall function. More specifically, as the knee joint is distended (stretched) with swelling, it triggers a reflexive inhibition (shut-down) of the quadriceps (front thigh muscles) resulting in losses of muscle size, muscle strength and overall function. Additionally, this quadriceps weakness contributes to the bent knee problem as previously described, because the quadriceps are too weak to actively extend your knee. Therefore, early recognition and treatment of swelling is critical to the rehabilitation process. Three common techniques for controlling swelling include icing, elevating and active resting

1) Icing - The application of cooling agents immediately after injury or surgery significantly reduces the degree of swelling and its associated side effects. Common types of cooling agents include bags of ice, bags of frozen vegetables (e.g. peas, corn, etc.) and commercial or homemade (see attached recipe) gel packs. The idea is to use a cooling agent that is flexible so that it will conform to the shape of the knee. Always place something (e.g. thin towel, pillow case, etc.) between the skin and cooling agent. The cooling agent should be applied for 15-20 minutes (longer is not better) 2-3 times per day (more frequently for more severe inflammation and less frequently for less severe inflammation). During the first 10 minutes, you will experience a sequence of sensations beginning with cold followed by burning, aching and eventual numbness. If you experience numbness or tingling in your foot or toes, remove the cooling agent until these symptoms disappear and then reapply. The ideal times to ice are immediately after exercise or physical therapy, after extended periods of standing or walking, and after a day at work or school. If you are experiencing severe swelling and inflammation, you can safely ice for 15 minutes every hour.

2) Elevation - Much like icing, elevation of an extremity immediately after injury or surgery can significantly reduce the degree of swelling. Elevation refers to placing the injured extremity in a position that is higher than the heart so that gravity can assist with "draining" the swelling from the extremity. In order to save time, you may combine elevation with a few of the treatments previously discussed.

For example, laying on the floor, bed, couch, etc., prop the heel of your injured leg on something (e.g. pillows, the back of a chair, etc.) such that the knee is higher than the heart. This position combines the swelling-reducing effects of elevation and the extension-gaining effects of heel propping. In addition, apply ice for 15-20 minutes as previously described to help reduce swelling. Also, perform ankle pumps (pumping your foot and ankle up and down) and

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quad sets (tightening and relaxing of the quadriceps muscles) off and on while the leg is elevated to help “milk” or pump the swelling out of the lower parts of the leg with the muscles.

There are no time limits for elevation. In general, the longer, the better. The ideal times for elevating are the same as for icing.

3) Active Rest - The days of treating injuries with complete bed rest are, for the most part, extinct. Instead, movement and activities in small quantities are advantageous to healing and to the overall rehabilitation process. In general, short duration activities (e.g. walking to the kitchen, bathroom, etc.) are encouraged soon after injury or surgery. As pain and swelling decrease, you may begin longer duration activities (e.g. short trip to the store, a few hours at work, etc.). Remember, even prolonged upright sitting can significantly increase swelling, because the knee is positioned lower than the heart. Therefore, use your head. If you notice an increase in swelling after a particular activity, rest, ice and elevate your leg and plan to modify the activity in the future. Your physical therapist will advise you about activity modifications.

3. Establish Quadriceps Control

Muscle atrophy (loss of muscle size and strength) is, unfortunately, inevitable after injury or surgery. This atrophy is a result of the combination of decreased use of the muscles as well as muscle inhibition from pain and swelling as previously described. The muscle group that experiences the greatest degree of atrophy is the quadriceps. Because they play such an integral role in many functional activities, such as walking, squatting and climbing stairs, it is critical to establish control of your quadriceps in order to minimize the degree of atrophy and overall loss of function. Two common ways of establishing quadriceps control include achieving Goals #1 and 2 and performing quadriceps strengthening exercises.

- 1) Achieving Goals #1 and 2 - Restoring full extension and controlling/minimizing swelling will allow for proper quadriceps function and earlier progressions of your strengthening program.
- 2) Exercise Program - Your physical therapist will develop a comprehensive lower extremity strengthening program based on your specific needs. Special emphasis will be placed on quadriceps strengthening due to the integral role that these muscles play during activities of daily living as previously mentioned. It is essential that you perform your home exercise program both before and after surgery in order to minimize muscle atrophy. **REMEMBER:** the stronger your leg muscles are before surgery, the quicker those muscles will recover after surgery.

General Information and Reminders

- You will have your first physical therapy appointment approximately 2-4 days after surgery. **Schedule this appointment before you leave today.**
- You will have your first doctor’s appointment approximately 7-10 days after surgery. Your doctor’s office **should** make the appointment either at the time of surgery or a few days afterwards. If you have not heard from the doctor’s office by 4 days after surgery, you should call them.
- As determined by your doctor, you may be using a continuous passive motion (CPM) machine from the day of surgery until your first post-operative doctor’s appointment. The machine slowly bends and straightens your leg in order to minimize stiffness of your knee and surrounding tissues.
- You will be using crutches for approximately 2-4 weeks as determined by your therapist.
- You are advised to avoid driving for approximately 4-6 weeks as determined by your doctor and therapist.

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- You are advised to avoid running for approximately 3-4 months as determined by your doctor and therapist.
- You are advised to avoid aggressive cutting and twisting activities for approximately 4-6 months as determined by your doctor and therapist.
- You may be required to wear a functional brace upon return to occupational, recreational or athletic activities as determined by your doctor.
- If you have any questions, concerns or suggestions, please feel free to contact your physical therapist at [OrthoCarolina](#)
- **GOOD LUCK WITH YOUR SURGERY!!!**

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