

## 'Pre'habilitation for ACL Surgery

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In the past ACL reconstruction immediately after injury often led to severe inflammation and scarring that would compromise the overall outcome. Therefore, surgery is now often delayed one to two weeks to allow the initial inflammation of the injury to diminish.

Rehabilitation after ACL reconstruction is the topic of a tremendous amount of research and indeed tremendous advances have been made in the last 50 years that have allowed for early exercise and return to sport.

Unfortunately, the period between injury and surgery is an often overlooked but critical opportunity for preparing for successful postoperative recovery.

The following instructions are intended to provide basic information and a home exercise program to prepare you for surgery.

### **Goals**

The primary goals of the preoperative phase are:

1. Establishing a normal gait in the brace
2. Obtaining range of motion (ROM) of at least 0-90 degrees
3. Maintaining quadriceps strength and tone
4. Controlling pain and swelling

### **Weight Bearing, Crutches, and Brace**

In most cases, you will be provided a brace and crutches at the time of your injury or at your first clinic visit. It is safe to bear weight on the injured knee unless you are told otherwise. Occasionally other injuries such as a meniscal tear or an associated fracture may prevent this.

You should use the crutches for support and bear weight as is comfortable for you. Typically, you will prefer to wear the brace locked in a position of comfort (0-30 degrees) to provide some stability to the knee at least immediately after your injury. If you have minimal pain then you can consider unlocking the brace for walking, but if you have any sensation of instability you should relock the brace immediately. The brace can be removed when you are resting or for hygiene but you will want to reapply it when you move about. This prevents a reinjury that may cause further damage to your meniscus or cartilage while the knee is unstable.

### **Swelling**

Swelling is common after knee injury and can be the primary limitation in obtaining ROM goals.

One of the simplest and most effective ways to reduce swelling is keep the leg elevated. Raising the leg above the heart while lying down is best. If you need to be seated, keeping the leg up is still superior to having it down. Not consistently elevating will perpetuate pain and increase swelling which can lead to more stiffness and pain.

A specialized device for providing continual cooling therapy can be obtained through our office or through online vendors. While these can be convenient they are no more effective than a simple ice bag wrapped in a towel. You will want to maintain ice for periods of 20 minutes at a time several times a day until the initial swelling is receding. After this time you can continue to ice three times a day, also for 20 minutes. Icing for longer than 20 minutes or with ice that is not wrapped in a thin towel can cause skin burns that can cause problems in planning surgery.

Immediately after performing your exercises is an ideal time to apply ice to offset any increase in swelling that the gentle exercises may cause.

Compression sleeves such as Tubigrip or an ACE bandage can also be helpful but are secondary to elevation and icing.

Some increased swelling of your lower leg (below the knee) is normal and expected. However, unexpected increase in swelling of the entire leg (including the thigh and not just the knee and lower leg) is concerning and can be a sign of a blood clot. If you notice this developing, please call the clinic or if after hours contact the emergency department immediately.

### **Range of Motion (ROM)**

Knee ROM in flexion and extension are critical to the long term outcome of your knee surgery. The goal is to have the knee as straight as the other leg and bending to at least 90 degrees. This may not always be possible, but the below exercises will be useful in achieving these goals. You should aim to do these exercises at least three times a day, but you are welcome to increase the frequency as tolerated.

1. Prone Hangs

In this exercise you lie on your belly and the leg hangs off the end of a bed or table allowing gravity to gently pull the knee straight. Your knee cap should be free and completely off the bottom of the bed or table.

2. Prone Flexion Stretches

In the same position you slide forward so that the knee cap is now on the bed or table and work on bending your knee towards your bottom.

3. Heel Slides

In a heel slide, you are lying on your back and start to move your heel gradually towards your bottom while keeping the heel touching the bed, table, or floor.

### **Quadriceps Strengthening**

“ACL rehabilitation is quadriceps rehabilitation”

While it's not quite that simple a major emphasis after knee surgery is regaining quadriceps function. This is because atrophy of the muscle starts almost immediately and can be dramatic. Also, because the quadriceps is a dynamic stabilizer of the knee that protects it from reinjury and from increased stress across grafts and repairs.

The goal of preoperative quadriceps strengthening is to be able to raise your leg straight off of the bed or table without it bending. If you try this with your normal knee you will find it is quite easy. However, it takes work to obtain this before surgery on the injured knee. Two simple exercises provide a good start to maintaining your quadriceps muscle.

1. Quad sets- In the early stages after injury it is difficult to raise or move the leg comfortably. You can still exercise your quadriceps by tensing the muscle and attempting to straighten the knee. Hold each contraction for 2-3 seconds before releasing. Work up to 3 sets of 20 with a minute of rest between sets.
2. Straight Leg Raises- As you become more comfortable you will be able to practice raising the entire leg off of the bed or table. Aim for raising the leg 6 to 12 inches off the bed or table, holding for 2-3 seconds, and gently lowering. Work up to 3 sets of 20 with a minute of rest between sets.

### **Physical Therapy**

While not always necessary, 1-3 visits with a physical therapist can be beneficial. If you are not prescribed formal prehabilitation at the office visit but feel that you are struggling with your exercise program or not making progress, please let us know. Our Physical Therapy team is highly skilled and qualified at helping you with both the physical and psychological impacts of recovery. Therapists can ensure that you are performing your home program safely and effectively, assess your progress, and provide education and counseling to better prepare you for surgery and recovery. In some cases therapists can use additional modalities as an adjuvant to your home program.

If you feel that you would like a 'pre'habilitation visit please call the Orthopedic office.

### **Summary**

Committing to the process of educating yourself and conditioning yourself in preparation for ACL surgery in addition to caring for yourself with adequate rest and nutrition will improve your outcome and speed your recovery. While individual patients and problems vary, your personal recovery starts the moment you decide to overcome your injury and take the first step forward.