

Physical Therapy after ACL Reconstruction - Wackwitz



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A successful outcome in ACL reconstruction is very dependent on the success of the rehabilitation. This is best accomplished with good communication between the surgeon and the physical therapist, and a knowledgeable, well informed patient. The progress through the challenges of the post-operative course is quite variable from patient to patient. The ease of progression depends on many factors including the patient's age, athleticism, and general health as well as the extent of the "collateral damage" in the knee. The use of rigid protocols tends to create either frustration or impatience. The rehabilitation is best guided by a knowledgeable physical therapist individualizing the treatment using guidelines and timelines of important goals to achieve while following precautionary measures to assure protection of the repaired knee.

Immediate Post-op

As soon as the incision is closed the leg is placed in a long leg compression stocking and a cryocuff is applied to the knee. The patient is transferred to the bed where a knee CPM machine is placed in motion before awakening. The main goals in the first few days after surgery are to control pain, control swelling, and to maintain ROM, especially full extension. We know that these goals are closely interrelated, so much that if you lose control of one, you will lose control of the other s as well. And if the patient arrives at his first PT appointment swollen and stiff, the challenges will be great for at least a few weeks. Cryotherapy is essential to aid in control of pain and swelling. Quadriceps exercises are started immediately. Muscle stim can be a useful adjunct at this point in time.

The First Four Weeks

Up until 28 days out from surgery I ask the patient to use crutches for all ambulation. They may weight bear as tolerated as long as the weight bearing is on the heel. I do not want them on a treadmill or elliptical but water walking can be beneficial. Again the reason for this is to promote return to full ROM and to control swelling. Raising the toe to bear weight on the heel encourages full extension and quad contraction at heel strike. If the patient elects to weight bear on the toe he will delay his progress by increasing the stress on the knee, calf and quad. Typically this patient will experience calf pain or cramping, knee swelling with patello-femoral pain, and will have a difficult time achieving zero degree extensor lag. It is best to make sure the patient understands this concept from the beginning. Optimally, the patient achieves full active extension within the first week after surgery.

I do not use any external bracing following the ACL reconstruction as long as the remaining ligaments are intact. There really is no brace made that can prevent translation better than the newly reconstructed ACL, so what is a hinged brace really protecting? It is most important to strongly secure

the new ACL graft in surgery. The use of crutches will effectively prevent any large force applications to the knee. If the knee achieves full extension with no extensor lag at four weeks post-op, the crutches are discontinued.

The physical therapy sessions should emphasize ROM, edema control and quad contraction, and also work on knee flexion and patellar mobility during this interval. The ACL should be protected by avoiding resisted open chain knee extension and twisting maneuvers. Neuromuscular electrical stimulation in conjunction with volitional weight bearing muscle contraction can be very beneficial for the quad and hamstring. The wound should be monitored for any signs of infection. I do allow the patient to shower and let water flow over the wound 5 days after surgery, but immersion in water is avoided until two weeks after surgery.

Four Weeks to Four Months

At four weeks out the patellar tendon graft is well on its way to incorporation and the crutches can be discontinued as long as the gait is normal. I prefer that the patient transition from two crutches to none rather than use one crutch at a time. I believe that use of the single crutch puts more stress on the knee than desired, and allows a habitual limp to develop. By four weeks the knee should be approaching full range of motion and the emphasis turns to continued strengthening and functional rehabilitation. If the knee has any remaining extensor lag, the patient should remain on crutches until the extensor lag is zero. The soft tissue connection in the doubled gracilis-semitendosis graft will take more time to incorporate, but the crutches can be discontinued at this time when indoors and doing sedentary activities.

By the time the patient is eight weeks out he is able to return to most forms of employment including construction, waiting tables, and light industrial as long as the working surface is level and predictable. But it is important to remind the patient to avoid jumping running and pivoting maneuvers at this time.

Quad strengthening can best be achieved using closed chain PRE's avoiding ACL strain with hamstring co-contraction. Proprioceptive exercise and core strengthening are very important parts of the rehabilitation. Lunges can be incorporated when they can be done under good control, but plyometrics should be delayed until after four months post-op.

Four to Six Months

The ACL graft at this time is well attached and developing its blood supply. We really don't know the status of the vascularization at this time so I do not believe that it would be wise to return the athlete to unrestricted activity until after 6 months and after they have passed neuromuscular reeducation and plyometric training.

Straight ahead running and jogging can be initiated at this time avoiding cutting and jumping activities. The knee is progressed through further strengthening, proprioceptive and plyometric training. Core strengthening and endurance training is advanced as well.

Cutting activities and jumping can be initiated at 6 months post-op providing the knee is strong enough.