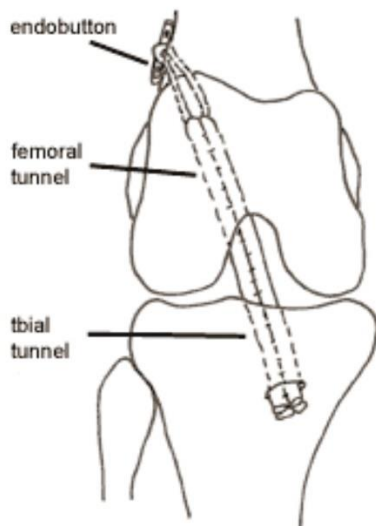


## ACL rehabilitation protocol – Salford Hip and Knee Clinic

### Background

This ACL rehabilitation protocol is designed to be read by physiotherapists and patients alike. The intention is to provide some background about ACL (anterior cruciate ligament) reconstruction and subsequent graft healing (conversion) into a functional ligament. The aim is to provide knowledge that leads to increased compliance with the protocol presented, and therefore reducing the risk of mishaps and graft failure.

Unless otherwise specified, your graft is a hamstrings graft using tendons from two of the hamstring muscles, gracilis and semitendinosus. Tunnels are created in the femur and tibia using a drill. The 2 tendons are looped and suspended from an endobutton device in the femur. Therefore, the graft has 4 strands. These strands are fixed using an interference screw in the tibia.



Once the graft is fixed, biological processes convert the graft tendons into a new ligament. I want this process of ligamentization to take place without problems. The graft needs to mature into the new ligament. In addition, the graft needs to be incorporated into the tunnels that have been drilled in the femur and tibia.

Remodelling takes place in the bone tunnels and in the graft tendons within the joint in 3 phases. The graft is at highest risk of failure in the first 6 weeks following surgery (early phase). The graft actually weakens during this early period. During the next phase (proliferation) 6-12 weeks following surgery, the graft starts to gain strength slowly. During this second phase, graft loading should be enough to stimulate the new cells in the graft to help remodelling without risking graft failure. During the third (ligamentization) phase from 12 weeks onwards, the graft undergoes continual remodelling and starts to regain strength. By 6 months, the graft starts to resemble the new ligament. From 6 months after surgery, the graft can be loaded more, but rehabilitation still needs to be done in stages under guidance of your physiotherapist until you can safely return to sport at around the 12 month stage.

## **Physiotherapist led rehabilitation program**

### ***Prehabilitation***

Prior to the surgery, you should have a full range of motion in the affected knee. Maintain as good muscle strength in your quadriceps and hamstrings as possible. This will help with post operative recovery and may improve the quality of the tendons for the graft.

### ***Rehabilitation***

#### ***Months 0-3 post op***

The main aim here is to get back your full range of motion early on and maintain it thereafter. At the same time, I want you to work with your physiotherapist on regaining strength in a graded manner. Start initially with light loads and progress to moderate loads by 12 weeks.

You should concentrate on closed chain exercises during this period as these give more control during early rehabilitation. Your physiotherapist will go through a variety of exercises that you can do. I encourage use of a static bike with low to moderate resistance during this early period.

#### ***Months 4-6***

During this period the main aim is to continue to increase the load with similar exercises to those in the early stages of rehab. You can increase the resistance on the static bike. I encourage use of the treadmill for walking on the flat and inclines at speeds which you can manage without losing balance. You should be able to achieve at least 80% of maximal power on the rehab leg compared to the other side at the end of this period of rehab.

I **DO NOT** want you to run at this stage of your rehabilitation. The reason for this is it is unlikely that that you will have the muscle strength required for running without giving way, particularly as your muscles tire in the later stages of a run.

#### ***Months 6-9***

Provided you have made good progress up to this point, straight line running on flat surfaces (such as a treadmill or on a track) can be added to your rehab regime. You can increase loading in your exercises further, aiming to get up to 100% of maximal power.

During this period I **DO NOT** want you to do side to side running or running on uneven surfaces.

#### ***Months 10-11***

At this stage you can add side to side running into your exercise regime. These exercises use lateral movements and pivoting drills. You can go through these with your physiotherapist and if needed, these can be tailored to your specific sport.

#### ***Month 12***

Add sports specific drills to your rehab program. You should do plyometric exercises specific to your sport. This is the last stage of rehab before returning to sport for most people. If you don't feel quite ready, please discuss this with your physiotherapist and myself to see what we can do to help.