

## Tape Locking Screw (TLS) Short Graft

The TLS short graft is a relatively new method of reconstructing a ruptured anterior cruciate ligament (ACL). The graft is harvested from a single hamstring tendon. Due to the strength of this graft, rehabilitation can be accelerated, which results in less muscle wasting, preservation of neuromuscular strength and an earlier return to work or sport.

### Before surgery

Pre-operative rehabilitation is recommended.

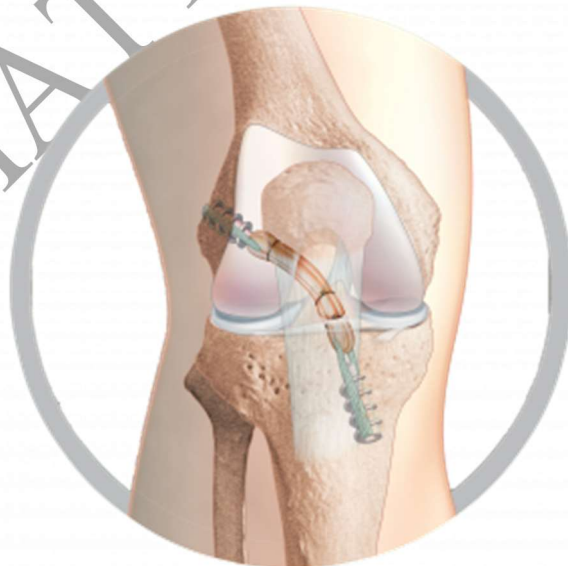
### After Surgery

Our care is specifically tailored to each patient, which allows recognition and modified care for those patients who may progress slower than others.

Our rehabilitation protocols are “milestone driven” designed to provide rehab guidance for all our patients. The aim is to limit unnecessary visits to the rooms and help to identify when specialists' review is required.

### Rehabilitation Protocol

Some of the physiotherapy terms may be unfamiliar to you now. They will become clear as you work with your physiotherapist.



## Phase 1: Early Rehab

**Goals: Normal range of motion + Normal daily activities.**

Time after surgery	Physiotherapy/Support
<p><b>Day 1- 7</b></p>	<p>The first phase of rehabilitation starts immediately after surgery. Before you leave the hospital, your physiotherapist will take you through some exercises including:</p> <ul style="list-style-type: none"> <li>- Bending the knee as far as possible and then straightening it out as far as possible</li> <li>- Contracting your quad and hamstring at the same time by pushing your foot firmly down into the bed and holding for 5 seconds.</li> <li>- Walking, with or without crutches depending on your physiotherapist's advice.</li> <li>- Double leg calf raises using a high table for support in front</li> <li>- Mini squats as far as comfortable and using support if needed.</li> </ul> <p>These exercises should continue at home. You should aim to do 10-15 repetitions of each, 3-5 times per day as long as you remain comfortable.</p> <p>It is recommended that you see your physiotherapist in the first week after discharge so they can assess your swelling and range of motion and progress your rehabilitation program.</p> <p><b>Therapy and Exercises</b></p> <p><b>Swelling and inflammation control</b></p> <ul style="list-style-type: none"> <li>- Cryotherapy (ice)</li> <li>- Analgesia as appropriate</li> <li>- Elevation</li> </ul> <p><b>Muscle stretching</b></p> <ul style="list-style-type: none"> <li>- Knee flexion</li> <li>- Knee extension</li> <li>- Calf</li> <li>- Hip</li> <li>-</li> </ul> <p><b>Muscle strengthening</b></p> <ul style="list-style-type: none"> <li>- Straight leg raise</li> <li>- Static quads</li> <li>- Hip extension/abduction</li> <li>- Standing hamstrings</li> <li>- Bridging</li> <li>- Calf raises</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>- Exercise Bike</li> <li>- Walking</li> </ul> <p><b>Milestones for progression to next phase</b></p> <ul style="list-style-type: none"> <li>- Walking 50m with normal gait</li> <li>- Standing on operated leg with control for 20 seconds</li> <li>- Range of motion 0-120 degrees.</li> </ul>

## Phase 2: Neuromuscular rehabilitation

Goal: Full everyday function

Time after surgery	Physiotherapy/Support
1-6 weeks	<p>During this phase, you can expect the following:</p> <p><b>Therapy and Exercises:</b></p> <p><b>Inflammation control</b></p> <ul style="list-style-type: none"><li>- Continue use of ice, compression and elevation, as needed</li></ul> <p><b>Muscle Strengthening</b></p> <ul style="list-style-type: none"><li>- Lunges</li><li>- Squats</li><li>- Resistance training</li><li>- Core strengthening</li></ul> <p><b>Balance</b></p> <ul style="list-style-type: none"><li>- Single leg balance</li><li>- Walking figure 8 patterns</li><li>- Throwing/Catching</li><li>- Wobble board</li><li>- Clock-face toe touching</li></ul> <p><b>Other</b></p> <ul style="list-style-type: none"><li>- Walking increased distance</li><li>- Exercise bike/cross trainer</li></ul> <p><b>Milestones for progression to next phase:</b></p> <ul style="list-style-type: none"><li>- Full range of motion</li><li>- Y-excursion balance test 90% of un-operated leg</li><li>- Sit to stand 20 times without pain</li></ul>

## Phase 3- Dynamic Strengthening

**Goal: Return to running**

Time after surgery	Physiotherapy/Support
<p><b>6-12 weeks</b></p>	<p>This phase and the next focus on building strength and fitness up to pre-op levels. By this stage the graft is healing well but is weaker than in the early stages as it has yet to regain full blood supply.</p> <p>The stronger and better at activating your muscles you are, the better protected the new ACL will be when it comes to returning to sports training. So, in this phase, we add more resistance to strength training and begin to retrain the muscles that activate in an explosive and dynamic manner.</p> <p><b>Therapy and exercises:</b></p> <p><b>Inflammation control</b></p> <ul style="list-style-type: none"> <li>- Continue use of ice, compression and elevation, as needed</li> </ul> <p><b>Dynamic Strengthening</b></p> <ul style="list-style-type: none"> <li>- Single leg strengthening</li> <li>- Dynamic lunges</li> <li>- Increase resistance</li> <li>- Hamstring resistance</li> </ul> <p><b>Balance and Control</b></p> <ul style="list-style-type: none"> <li>- Walking on uneven surfaces</li> <li>- Change in direction walking</li> <li>- Jumping/hopping in a straight line</li> <li>- Single leg catch/throw</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>- Running on treadmill and road</li> <li>- Return to trade/active job</li> </ul> <p><b>Milestones for progression to the next phase:</b></p> <ul style="list-style-type: none"> <li>- Running 50% of pre-op distance with no pain</li> <li>- Single leg press 90% of un-operated side</li> <li>- Jump and hop 10m in a straight line with no pain</li> </ul>

## Phase 4- Athletic Rehab

### Goal: Return to Sports Training

Time after surgery	Physiotherapy/Support
12-16 weeks	<p>If you do not wish to return to competitive pivoting or contact sport, this stage of rehab should be all that is required for you to return to a fully active life.</p> <p>In this phase, pivoting exercises are gradually increased but it's important that these are always done under controlled conditions. Your physiotherapist will analyze the quality of your movements throughout this more rigorous training.</p> <p><b>Therapy and Exercises</b></p> <p><b>Plyometric</b></p> <ul style="list-style-type: none"><li>- Box Jumps</li><li>- Single leg landing</li><li>- Hopping drills</li><li>- Cleans/jerks/kettlebells</li></ul> <p><b>Agility</b></p> <ul style="list-style-type: none"><li>- Slalom running</li><li>- Pivoting at controlled pace</li><li>- Un-anticipated change in direction</li></ul> <p><b>Physio</b></p> <ul style="list-style-type: none"><li>- Full cardio training</li><li>- Mental preparation for return to sports</li><li>- Address specific risk factors (e.g. landing technique, weakness in other areas such as hip/core)</li></ul> <p><b>Milestones for discharge or progression to the next phase:</b></p> <ul style="list-style-type: none"><li>- Able to run pre-op distances with no pain</li><li>- Hop tests 80% of un-operated side</li><li>- Single leg press equal both sides.</li></ul>

## Phase 5- Preparation for return to competitive sport

### Goal: Return to competitive sport

Time after surgery	Physiotherapy/Support
<b>16-20 weeks</b>	<p>Sports training can begin in this final stage, but it should be done in a controlled manner and initially in a non-competitive environment.</p> <p>It is wise to continue a certain amount of strength and dynamic training alongside any sport specific session to maintain the muscle strength and the control you have built up. A major factor in returning to competitive sport is your confidence in the reconstructed knee. Once you feel you may be ready, discuss this with your physiotherapist and if they agree you must make an appointment to see your surgeon.</p> <p><b>Exercises</b></p> <p><b>General</b></p> <ul style="list-style-type: none"> <li>- Full strength training</li> <li>- Full fitness/running training</li> <li>- Ongoing plyometrics</li> </ul> <p><b>Sport Specific</b></p> <ul style="list-style-type: none"> <li>- Sprinting</li> <li>- Pivoting at pace</li> <li>- Un-anticipated change in direction at full speed</li> <li>- Sports drills</li> <li>- Jumping and landing in sports context</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>- Kinematic evaluation and training</li> <li>- Neuromuscular control after fatigue</li> <li>- Patient specific risk factor identification and training</li> </ul> <p>Returning to competitive sport is a great achievement after an ACL reconstruction but it also carries with it inherent risk. There is ongoing debate and numerous studies that try to standardize a return to sport criteria but there is little consensus.</p> <p>Before considering a return to high level competitive sport, it is recommended that you undergo a comprehensive return to sport assessment by a specialized APA Sports Physiotherapist.</p>