

The rehabilitation tightrope.

Max Ganderton/ January 2017

In reality participating in physical activity increases the risk of injury⁽¹⁾. The likelihood and type of injury varies depending on the type of exercise performed. Contact sports such as rugby have higher incidents of traumatic injury ⁽²⁾, whilst sports such as tennis create a susceptibility to repetitive strain ⁽³⁾. Irrespective of the type of sport played, injuries to the *“Anterior Cruciate Ligament” (ACL)* are widely reported ⁽⁴⁾ and often result in a surgical intervention⁽⁵⁾.



(The Wallabies David Pocock had two ACL reconstructions in twelve months in 2014)

Often patient's subjectively report a *“popping”* sensation, describe hearing a *“snapping”* noise at the moment of injury, are unable to *“fully weight bare”* on the affected side because of pain and observe *“increased swelling”* around the joint⁽⁶⁾. Diagnosis is traditionally made by the pitch-side physiotherapist but will often require *“Magnetic Resonance Imaging” (M.R.I)* to confirm the injury. This ultimately results in a referral to an orthopedic specialist but pre-habilitation can commence within 24-48 hours to improve postoperative success.

The surgical techniques utilised are typically performed arthroscopically (a smaller, less invasive entry to the damaged region). The surgery aims to completely reconstruct the damaged ligament, in a procedure called an *“Anterior Cruciate Ligament Reconstruction”* (ACLR)⁽⁷⁾. The ligament is often harvested and created from the hamstring tendon of the patient, less frequently from the patellar tendon and occasionally with an allograft (ACL from a cadaver)⁽⁸⁾.



(Quade Cooper ruptured his ACL against Wales in the 2011 World Cup)

Selecting which type of graft is utilised during surgery often relates to the preference and recommendations of the operating surgeon. Within elite sport it is not unusual to utilise a synthetic polyethylene ligament⁽⁹⁾ in a procedure such as the *“Ligament Advanced Reinforcement System”* (LARS)⁽¹⁰⁾, which theoretically establishes a stronger structure to cope with the excessive loading experienced during sport. The advantage in doing so is that it does not require sacrificing other autogenous (existing) tissue⁽¹¹⁾. The recovery of function afterwards is also significantly quicker, which allows the athlete to *“Return To Play”* within three to six months and not twelve ⁽¹²⁾.

Many patients ask, *“How and why do the footy players get back so quick?”* Obviously this predominantly relates to the amount of time that can be committed to rehabilitation in the professional setting. However fundamentally an athlete is seen as a commodity, no sport franchise enjoys paying a superstar NOT playing! However the use of synthetic materials has historically presented risks:

- **Carbon fiber (CF) ligament** (Deposits of CF in the joint and regional lymph nodes).
- **Polyester composites** (High rates of long-term rupture).
- **Polypropylene** (Graft induced inflammatory responses causing excessive effusion/synovitis).
- **Expanded PTFE** (mechanical fatigue and loosening)⁽¹³⁾



(Jayden Hodges of Manly Sea Eagles needed ACL surgery following the Auckland 9's)

The long lonely journey after knee reconstruction.

The reality is that for the general population the rehabilitation process is a long one following reconstruction. This comes with the knowledge that re-occurrence rates of re-rupture are extremely high⁽¹⁴⁾, especially if deficits (restricted range, poor motor control

and weakness) are not resolved and *“return to play”* occurs before twelve months⁽¹⁵⁾.

In brief closed-chain exercises (*feet in contact with floor*) prescribed in the first 3 months post-operatively, look to increase *“range of movement”, “muscle girth”* and *“reduce pain”*⁽¹⁶⁾. Rehabilitation progresses until 6 months utilising open-chain exercise (movement away from the floor) to improve *“proprioception”* (joint coordination), *“Dynamic capacity”* (hopping/jumping) and *“functional fitness”* (Straight line running)⁽¹⁷⁾. The last phase is the most tedious, time consuming but vital- REGAIN the *“fitness”, “skills”* and *“capacity”*⁽¹⁸⁾ to make it back on the field!



Lastly and this is my personal view, it is the small things that make a difference. So as a patient expect more from your physiotherapist. Three particular things I think should be used to achieve the best gains. Firstly, the techniques being used *should be measurable* so that it is clear when progress is being made (or not). One measure I particularly like is the Single-Leg Loading Qualitative Assessment tool (QASLS)⁽¹⁹⁾, which evaluates the performance of each leg on functional tasks. Secondly, the new ligament is vulnerable around the ten-week mark because the new tissue is being scaffolded by scar tissue ⁽²⁰⁾, so take things easy around this time.

Thirdly and possibly the most important, the memory of becoming injured can create anxiety, which is not overly useful and can become overwhelming. Therefore it is *imperative to explore and eradicate such emotions during rehabilitation*, if you were hurt jumping for a ball, during a tackle or when changing direction, this must be integrated into rehabilitation. The therapist should have the skill to invent drills to re-create the mechanism of injury to increase patient confidence, which in turn will aid a full recovery!

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