About Me

My name is Jon Haver. I have torn my right ACL twice and will use this site to share what I have learned to do and not to do during ACL surgery recovery.

So how did I get here?

Well in sep 2007 I tore my right cal playing rugby at university. It was a clean tear and was misdiagnosed, it was not until some instability while skiing that I went and got a second opinion. Eventually an MRI confirmed it was torn.

In sep 2008 I had acl reconstruction with a right hamstring graph. Recovery went well and I was able to be skiing after 4 months. Based on my doctor clearing me and feeling confident after a good winter of skiing I decided to play soccer in may of 2009...8 months after surgery....bad idea

Re-Tear My Right ACL

My fiancé(wife now) was convinced I was pushing it too quickly to play and her exact words were “you shouldn’t play but if you insist I will come because you are going to need someone to drive you to the hospital when you re-tear it” well I certainly should have listened to her. The good news is I was able to drive myself home as I would have never lived it down if I had to get a ride to the hospital.

Because I was getting married, had just started a new job(project engineer with an oil and gas company in Canada) and was still able to function ok I delayed getting surgery until a more convenient time, December 8th 2010.

My goal with this surgery and rehab is to get myself into a position where I can enjoy my key sports again Skiing, Mountain Biking, Tennis and if all goes well Soccer(eventually).

3+ Years of Knee Pain

Having suffered through over 3 years at this point of having a bad knee I am very modivated to make sure I do everything I can during my ACL surgery recovery to make sure my knee is as strong as it possibly can be.

Share what I have learned about ACL Surgery Recovery!

On this site I will share practical information including post ACL surgery exercises, ACL surgery recovery timeline and my personal story of how I deal with the recovery for a second time.
ACL Reconstruction - Rehabilitation Protocol

Terminology

**CKC: Closed Kinetic Chain**; exercise with the foot in contact with a surface, ie: leg press, squats, lunge

**Concentric**: the muscle is shortening while it is contracting (‘positive contraction’)

**Cybex Test**: strength testing machine that can measure force, work, and power of muscle groups.

**Eccentric**: the muscle is lengthening while it is contracting (‘negative contraction’)

**Extension**: straightening

**Flexion**: bending

**FWB**: Full Weight Bearing

**Hamstrings**: muscles in the back of the thigh

**Isometrics**: tightening/contracting of a muscle without movement of the leg

**OKC: Open Kinetic Chain**: exercise when the lower leg is moving freely ie: leg extension

**Plyometrics**: exercises that enable a group of muscles to reach a maximum strength in as short a time as possible. It tries to bridge the gap between speed and strength training.

**Prone**: lying on your stomach

**Quadriceps**: muscles on the front of the thigh

**ROM**: Range of Motion; amount of bending and straightening of the knee

**Supine**: lying on your back
ACL Surgery Recovery Protocol

0-2 Weeks

Goals:
- Patient education re: gait, ice, strength of repair, do’s & don’ts,
- Increase ROM (0-90 degrees)
- Decrease pain and swelling
- Maintain flexibility of lower extremity
- Balance/proprioceptive re-education
- Strengthening: quadriceps, hamstrings, hip, calves

Gait:
Weight bearing as tolerated with crutches between 2-6 weeks. The physiotherapist will determine progression of 2 to 1 crutch. Must have full knee extension and walk without a limp before walking without crutch use.

ROM:
- Bike circles: high seat ½ circles fwd/back -> full circles -> lower seat
- Slider board
- Heel slides
- Ankle pumping
- Prone leg hangs
- Modalities: Ice; Interferential current therapy; Muscle stimulation
- Flexibility: Calf stretches seated with towel; Seated hamstring stretches; Supine hip flexor stretches
- Balance/Proprioception: 1 foot standing 30-60 seconds eyes open->closed.

Strength:
- Quads: CKC exercises – quadriceps tightening (isometrics) seated and in standing, weight shifting, sit to stand, static lunge, mini squat, squats on shuttle
- Hams: isometrics, prone knee flexion, standing knee flexion to 90 degrees
- Hip: standing flexion/extension/adduction/ abduction, prone hip extension, side lying adduction/abduction
- Calves: standing heel raises 2->1 foot, shuttle heel raises
ACL Surgery Recovery Protocol

3-6 Weeks

Goals:
- Achieve near or full flexion and extension
- Continue flexibility exercises
- Normal FWB gait
- Maintain cardiovascular fitness
- Continue strengthening hams, quads, hip, calves
- Add on balance/proprioception

ROM:
- Continue as outlined
- Pool: walking, squats, knee flexion, step-ups & downs
- Flexibility: Continue as outlined
- Gait: Normalize to full weight bearing
- Cardio: Bike, Stairmaster, Pool: swim/jog (no whip kick)

Strength:
- Quads: step ups 4-6-8” step fwd/lateral, ½ wall squats, shuttle leg press 2->1 leg, bungy lunge, squats with pulleys
- Hams: seated chair walking, standing knee flexion with weight/pulleys, seated knee flexion with bungy cord, seated ham curls, reverse stair-master
- Hip: standing abduction/adduction/extension with pulleys/ tubing
- Calves: heel drops, shuttle drops, mini-tramp bouncing, single heel raises

Balance/Proprioception:
- standing 1 foot eyes closed -> balance board, wobble board
6-9 Weeks

Note: Graft is at the weakest point now, Avoid OKC exercises

Reasons why open kinetic chain (OKC) exercises (ie: leg extensions especially with weight) are contraindicated after ACL reconstruction:

- When the quadricep muscle contracts with the above exercises, the lower leg (tibia) is pulled forward (shears) in relation to the upper leg (femur).
- This shear directly stresses the reconstructed ACL graft.
- It is believed that these shearing forces may lead to stretching of the ACL graft that may result in increased laxity.
- Shearing is minimized if the force is maintained down the whole leg during muscle contraction (i.e. foot is fixed), and therefore CKC exercises are recommended.

Goals:
- Full pain free ROM Increase cardio fitness
- Continue to strengthen hip and calves
- Intermediate proprioception
- Functional quads strength
- Concentric-eccentric hams strength

Cardio:
Bike, fitter, stairmaster, swim (flutter kick only), pool, jogging, treadmill power walking

Strength:
- Quads: stairmaster fwd/bkwd, bungy lunge in different directions, clock face lunges, squats with pulleys increasing weight
- Hams: backward walking, ham curls progress concentric - eccentric
- Hip: increase weight standing abduction/ adduction/ extension with pulleys/tubing, tubing kick backs, fitter
- Calves: as above with an increase in weight

Balance/Proprioception:
balance board progressions, wobble board progressions, trampoline balance
9-12 Weeks

Goals:

Progress quad and hamstring strength

Progress proprioception

Sport specific cardio fitness

Cardio:

- Add treadmill quick walk +/- gradient—>slow jog
- Stationary jog against bungy cord resistance
- Pool running
- Bike and stairmaster interval training

Strength:

- Quads: continue with CKC progressions, lunge walking forward/backward aggressive pool exercises, bungy cord eccentrics - reverse lunges
- Hams: increase weight with pulley ham curls prone and standing
  - emphasis on full angle (90-130)
  - focus on eccentric component – strength (high load, low rep) and endurance (low load, high rep), shuttle
  - kneeling hip/knee extension, shuttle- standing hip/knee extension, Hydrafitness – hamstrings only
- Hip: slider, skating machine, fitter, pulleys/tubing with increased weight,
- Calves: eccentric heel drops 2->1 leg, eccentric toe press 2->1 leg

Balance/Proprioception:
mini-tramp balance -> eyes open->closed
12-16 Weeks

Goals:
- Sport specific cardio fitness; Sport specific quad and hamstring strength.
- Sport specific proprioception training; Continue with flexibility and strength of lower extremity

Cardio:
- Treadmill jog-> run; Land jogging forward without cutting;
- Stationary jog against bungy cord resistance; Pool running
- Bike standing with interval training; Mini tramp jumping 2->1 leg

Strength:
- Quads/Hams: continue with CKC progressions increasing weight, bungy cord eccentrics - reverse lunges with variable speed, shuttle kick backs, high steps, lunge walking fwd/bkwd, split squats, ham curls all with emphasis on endurance, progress to pool plyometrics deep water ->shallow water

Balance/Proprioception:
- mini-tramp jump and land, 2 ->1 leg balance with upper body or opposite leg skill i.e., throwing on rebounder, phantom kicking with bungy cord resistance, throwing/passing drills, single leg balance clock drill with mini pylons
16-20 Weeks

**Note.** Your physical therapist may decide to perform a Cybex test on you at week 16 or later to help define your specific strengths deficits i.e., strength, power, endurance in hamstrings and quads and the balance between the two muscle groups. This can redefine some specific goals for you to work on the next 8 weeks.

**Goals:**
- Progress sport specific lower extremity strengthening to plyometrics
- Increasing strength, power and endurance of lower extremity muscles
- Increase sport specific proprioception training
- Increase specific cardio fitness

**Strength:**
- Quads/Hams: if concentric/eccentric strength is adequate, gradually add on plyometrics on land, 2->1 foot progressions – diagonal lunges or running with bungy cord around waist incorporating upper or lower body skill i.e., kicking, jumping, catching, passing, shooting, 2 leg fwd/back/side hops, 4 square hops, 2 square diagonal hops - > progress to single leg, rebounder – jumping, jump & land, shuttle – ski hops (side to side), jumping 2-> alternating->1 leg, hopping, skipping, bounding, cutting, box hops 2-4-6” side to side, front to back, jumpdown with fwd sprint, diagonal/lateral cone jumps.

**Balance/Proprioception:**
Continue with sport specific drills as outlined above, cutting drills with quick stopping and maintaining balance

**Cardio:**
Increase distance, duration or intensity with bike, stairmaster, treadmill, outdoor running or cycling depending on the demands of your particular sport. Add on tight turns and hills as tolerated.
20-24 Weeks

Goals:
- Back to sport practice for upper body skills
- Functional testing in clinic to determine return to sport skills on own at practice
- Continue with sport specific proprioception training
- Continue with specific cardio fitness

Practice Drill Ideas:
- Straight forward and backward running
- Figure 8s gradually decreasing in size
- Zig-Zag running
- Cross over stepping
- Backward with cutting
- Stop and go drills

Functional Testing in Clinic:
- Lunge walk with control both forward and backward
- Forward hop and lateral hop with control with comparable distances L and R side
- One foot hopping with control
- Triple jump and landing with control with comparable distances L and R side
- Sport specific demands with adequate skill, speed and control

Bracing:
- This is a very controversial topic. Talk to the physiotherapist and surgeon to see if it is recommended for the athlete to use a brace to return to sports/activities.