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Murdoch

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ACL Rehabilitation

Goals

- Achieve full extension and flexion to 90 degrees by 2 weeks
- Achieve full extension and symmetrical flexion by 6 weeks
- Walking: symmetric gait by 2 to 4 weeks (with single crutch if needed)
- Driving: recovery of reflexes by 4 weeks
- Straight line running 3 months to 6 months when strength and functional targets met
- Sport: no sooner than 12 months

Adapted from Randall Cooper & Mick Hughes Melbourne ACL Rehab Protocol 2.0

Pre-op Phase:

- Eliminate swelling
- Regain range of motion
- Recover symmetrical quadriceps and hamstring strength (dynamometer, single leg hop test)

Phase 1 (2 weeks):

- Closed kinetic chain
- Eliminate swelling
- Regain range of motion
- Quadriceps activation
- Immediate weight bearing, immediate range of motion 0 – 90 (in the presence of meniscal repair) or unlimited
- Exercises:
 - Isometric quadriceps
 - Straight leg raise
 - Knee flexion while seated
 - Knee extension with roll under ankle

Phase 2 – Strength and proprioception

- Use a combination of closed and open kinetic chain exercises: closed chain for functional recovery, open chain for strength and hypertrophy
- OKC can be introduced when:
 - Range 0 – 100
 - Pain score < 2
 - No joint effusion
 - Straight leg raise with no extensor lag
 - Walking without crutches
- OKC: low resistance high repetitions allowed between 90 to 40 degrees flexion.
- Regain single leg balance
- Single leg squat
- Recover most of muscle strength



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Some examples of early phase 2 exercises include:

Knee movement exercises (Daily) 30 sec hold, 4 reps	<ul style="list-style-type: none"> • Heel props / prone hangs • Knee bending (lying with gentle pressure, on step) • Hamstring / calf stretch
Proprioception	<ul style="list-style-type: none"> • SL balance on foam/pillow • Toe taps • Hamstring flicks and wobbles • SL arabesque
Strength/Endurance (3 x week) 3 sets 10 reps each leg	<ul style="list-style-type: none"> • DL squat +/- theraband • SL/DL Bridges +/- theraband • Lunges • Crab walks • Hamstring Curls (add resistance > 6/52) • SL calf raises • Step ups • Plank to fatigue + Side plank to fatigue
Cardio (2 nd daily) Aim for 30 mins	<ul style="list-style-type: none"> • Cycling no resistance • Walking on firm surface eg footpath/treadmill

Some examples of late phase 2 exercises might include:

Strength – No Equipment (3 x week) 3 sets 8-12 reps each leg	<ul style="list-style-type: none"> • SL arabesque +/- weight • Split squat +/- weight • SL bridge elevated • SL squat +/- weight • Walking overhead lunges +/- weight
Increase weight by 10% if able to achieve >12reps in 2 sets	<ul style="list-style-type: none"> • SL Calf raises + weight • Hamstring bridge curl with exercise ball / sliders • Plank + Side plank bottom leg bent and lift top leg
Strength – Gym Equipment (3 x week) 3 sets 8-12 reps each leg	<ul style="list-style-type: none"> • Barbell back squat • Hamstring curl machine • DL/SL leg press • Deadlift • Knee extension machine • Calf raise machine • Hip Ab/Ad machine
Landing (3 x week)	<ul style="list-style-type: none"> • Double leg landing from tall position
Cardio (2 nd daily)	<ul style="list-style-type: none"> • Cycling / Walking / Rower



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Phase 3 – running, agility and landing

- Must be cleared by physiotherapist or exercise physiologist using all objective phase 2 measures before resuming running
- Good jumping technique
- Good landing control
- Run on firm surface
- Any pain or swelling should be reviewed and rehab progression paused

Some examples of early phase 3 exercises include:

Power - fast 'up' phase (3 x week), 3 sets 8-12 reps	<ul style="list-style-type: none"> • Step up with high knee • SL arabesque with high knee • Kettlebell swings
Landing/ Plyometric (3 x week) 3 sets 12-15 reps	<ul style="list-style-type: none"> • High foot terminal knee extension • Squat jump • Double leg landing from small box forward/sideways • DL box jump with single leg land • Sit to vertical jump • Skipping rope
Strength (3 x week) 3 sets 8-12 reps each leg	<ul style="list-style-type: none"> • SL squat + weight • Split squat + weight • Hamstring curl machine (seated + prone) • Quad extension machine
Increase load by 10% if able to achieve > 12 reps in 2 sets	<ul style="list-style-type: none"> • SL Leg Press • Barbell Squat / Hack squat • Deadlift
Cardio (2 nd daily)	<ul style="list-style-type: none"> • Cycling / Walking / Rower



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Some examples of late phase 3 exercises might include:

Power - fast 'up' phase (3 x week), 3 sets 8-12 reps	<ul style="list-style-type: none"> • Step up with high knee + weight • SL arabesque with high knee + weight
Landing/ Plyometric (3 x week) 3 sets 12-15 reps	<ul style="list-style-type: none"> • DL jump over hurdle – sideways / 90deg turn • Jumping lunges • SL jump over hurdle – forward / backwards • DL jump + SL box jump • SL land from box forwards / sideways + vertical jump • DL land from box + box jump • Ski jumps
Agility/ Deceleration (2 x week) 6-8 reps	<ul style="list-style-type: none"> • Ladder drills – fast feet, side shuffle, jumping • SL jumps forward over 10m distance • Jogging on spot + deceleration lunge to target • Sprint at 70-100% for 30m and decelerated over 10m
Strength (3x/wk)	<ul style="list-style-type: none"> • Progress strengthening.
Running Program	<ul style="list-style-type: none"> • Progress running program

Phase 4: Return to sport

- Must be patient-specific and sport-specific
- Continue strength, balance, agility and landing work

Phase 5: Prevention of re-injury

- Anxiety around the fear of re-injury and the work taken and sacrifices made to recover from the first injury. Invite counsel from a mate, coach, qualified psychologist, or a peer who has been through it. Help is never far away.
- Risk of reinjury: 22%
- Risk of arthritis post-ACL: 5 fold.
- Free prevention programs available