

ACL Rehabilitation Protocol

A criterion-based guide for recovery after ACL reconstruction, built around the supplied NSOSMC protocol and updated with Fowler Kennedy and AAOS/JAAOS guidance.

Goal based

Progress when your knee earns it, not just when the calendar changes.

Sport focused

Strength, landing control, confidence, and testing all matter.

Patient language

Every exercise in the guide has a generated demonstration image.

Important: this is a general rehabilitation framework. Your surgeon and physiotherapist should individualise it for graft type, meniscus repair, cartilage work, multi-ligament injury, wound healing, pain, swelling, and sport. If your knee swells after a progression, step back and tell your treating team.

Calm knee first

Swelling shuts down the quadriceps. Settle swelling before chasing more load.

Straight knee early

Full extension is a priority from the start. Losing it makes walking and strength harder.

Strength plus control

Strong muscles help, but safe hips, knees, feet, and landing mechanics protect the graft.

Testing before sport

Return to sport needs objective strength, hop, movement, confidence, and team-training checks.

When To Slow Down Or Seek Help

Contact your surgical team urgently if you notice:

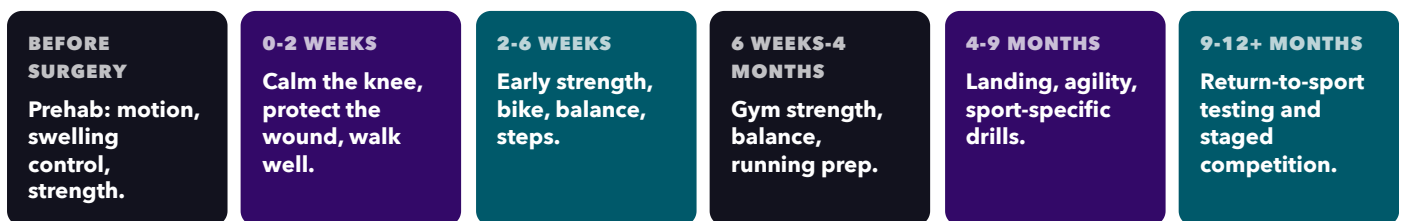
- Fever, wound redness, drainage, or increasing wound pain.
- New calf pain, marked calf swelling, chest pain, or shortness of breath.
- A sudden pop, giving way, or rapid increase in swelling.

Adjust your rehab load if:

- Swelling appears or increases after exercise.
- Your walking pattern gets worse after a session.
- You lose knee extension, develop sharp pain, or cannot control knee alignment.

Recovery Map

The dates below are guideposts, not guarantees. Biological graft healing continues beyond 12 months, so the protocol combines time, knee status, strength, movement quality, and confidence.



Phase-by-Phase Protocol

BEFORE RECONSTRUCTION, WHEN POSSIBLE

Prehabilitation before surgery

Go into surgery with a calm knee, full straightening, near-full bending, and the best strength you can safely build.

MOVE ON WHEN

- Pain and swelling are settling.
- You can straighten the knee fully and bend it comfortably.
- You can activate the quadriceps and walk without repeated giving-way episodes.

EXERCISE MENU

- Knee extension heel prop
- Heel slide
- Quadriceps set
- Straight-leg raise
- Stationary bike
- Supported mini squat
- Single-leg balance

Avoid running, jumping, and pivoting if the knee feels unstable.

0-2 WEEKS AFTER SURGERY

Phase 1 - Calm, protect, and move

Protect the wound and graft, settle swelling, restore straightening, and begin normal walking mechanics.

MOVE ON WHEN

- Wound is healing as expected.
- Swelling is controlled and not increasing day to day.
- You can tighten the quadriceps and perform a straight-leg raise without knee lag.
- You are walking with a normal heel-to-toe pattern, with crutches only as needed.

EXERCISE MENU

Knee extension heel prop Heel slide
Quadriceps set Straight-leg raise
Stationary bike

Ice, elevation, compression, and short frequent movement sessions usually beat one long hard session.

2-6 WEEKS

Phase 2 - Walking control and early strength

Build basic leg control without stirring up swelling.

MOVE ON WHEN

- Full knee extension is maintained.
- Bending range is improving without a swelling flare.
- You can walk without a limp and climb basic steps with control.

EXERCISE MENU

Stationary bike Supported mini squat
Glute bridge Wall squat Step-up Calf raise
Side-lying hip abduction Single-leg balance

Avoid heavy resisted knee extension machines early. If your knee swells after exercise, reduce volume, load, or depth.

6 WEEKS TO 4 MONTHS

Phase 3 - Strength, balance, and endurance

Develop enough strength, endurance, and balance for controlled running preparation.

MOVE ON WHEN

- No recurrent effusion after strengthening sessions.
- Good single-leg squat control with knee aligned over toes.
- Physiotherapist confirms strength and gait are ready for running preparation.

EXERCISE MENU

Stationary bike Step-up
Standing hamstring curl with band Calf raise
Side-lying hip abduction Single-leg squat
Walking lunge Lateral band walk Leg press
Wobble board balance

Hamstring resistance is usually delayed until about week 6-8, especially after hamstring-graft surgery. Road cycling and swimming kicks also need clearance.

4-7 MONTHS

Phase 4 - Running, landing, and agility foundations

Relearn soft landings, safe single-leg control, and early change-of-direction mechanics.

MOVE ON WHEN

- No swelling with gym-based strengthening.
- Running is straight-line, pain-free, and symmetrical.
- You can land softly from simple hops with no knee collapse.

EXERCISE MENU

Single-leg squat

Walking lunge

Lateral band walk

Wobble board balance

Single-leg hop and stick

Drop jump landing

Lateral bound / skater hop

Keep strength training going. Plyometrics are about clean mechanics before height, distance, or speed.

7-9 MONTHS

Phase 5 - Sport-specific training

Build sport-specific confidence and repeat safe mechanics under distraction, speed, and fatigue.

MOVE ON WHEN

- Strength and hop symmetry are progressing toward at least 90 percent.
- Landing and cutting mechanics stay clean when tired.
- Your sport-specific program has been individualised by your physiotherapist.

EXERCISE MENU

Single-leg hop and stick

Drop jump landing

Lateral bound / skater hop

Cone plant-and-cut drill

Ball catch landing

Team drills and non-contact sport-specific work come before uncontrolled contact or competition.

9-12+ MONTHS

Phase 6 - Return-to-sport decision

Return only when the knee, the athlete, and the sport demands are ready at the same time.

MOVE ON WHEN

- Stable knee examination and no recurrent swelling.
- Full range of motion and confident running, jumping, landing, and cutting.
- Quadriceps strength and hop tests at least 90 percent of the other side.
- Patient-reported confidence and function are high, such as IKDC above 90 and ACL-RSI above 60 when used by your team.
- Completed sport-specific rehabilitation and a gradual return to team training.

EXERCISE MENU

Cone plant-and-cut drill

Ball catch landing

Lateral bound / skater hop

For young athletes in pivoting team ball sports, many protocols favour delaying competitive return until about 12 months, even if earlier milestones look good.

Return-To-Sport Checklist

For cutting, pivoting, contact, and jumping sports, do not rely on time alone. Use your treating team's testing battery. A brace may be used in selected cases, but current AAOS guidance does not support routine functional bracing as a substitute for good rehabilitation.

Knee status

No recurrent swelling, full range of motion, stable examination, and comfortable sport-specific drills.

Strength

Quadriceps and key lower-limb strength usually at least 90 percent of the other side, with sport-specific power work completed.

Hop and landing tests

Hop symmetry at least 90 percent, plus clean drop-jump mechanics: soft knees, no valgus collapse, symmetrical loading.

Confidence and readiness

Patient-reported function and psychological readiness should be high, often using tools such as IKDC and ACL-RSI.

Training exposure

Completed progressive sport-specific rehabilitation, then non-contact and team training before competition.

Prevention plan

Continue an ACL injury-prevention warm-up while playing sport, not just until you are cleared.

Exercise Library

Use these exercises only in the phase and dose recommended by your physiotherapist. The pictures show the shape of the movement; your exact range, resistance, and progression should be individualised.



PREHAB TO WEEK 6

Knee extension heel prop

Dose: 3-5 minutes, 3-5 times/day

Rest your heel on a rolled towel so the knee can relax straight. Keep the thigh relaxed and let gravity do the work.

Key cue: Aim for a straight knee without forcing pain. A small stretch behind the knee is okay; sharp pain is not.



PREHAB TO WEEK 6

Heel slide

Dose: 10-15 reps, 3-5 times/day

Slide your heel toward you, then slowly slide it away. Use a towel under the heel if it helps.

Key cue: Move within swelling-free range. The goal is smooth motion, not winning the bend in one session.



DAY 1 ONWARD
Quadriceps set

Dose: 10 reps, hold 5-10 seconds, 4-6 times/day

With the knee straight, tighten the front of your thigh as if you are pressing the knee gently toward the floor.

Key cue: Watch for the kneecap to glide upward. Keep your hip and glutes relaxed.



WHEN THERE IS NO KNEE LAG
Straight-leg raise

Dose: 2-3 sets of 8-12 reps

Tighten the thigh, lock the knee straight, lift the leg about 30 cm, then lower slowly.

Key cue: Only progress if the knee stays fully straight. If it bends as you lift, go back to quadriceps sets.

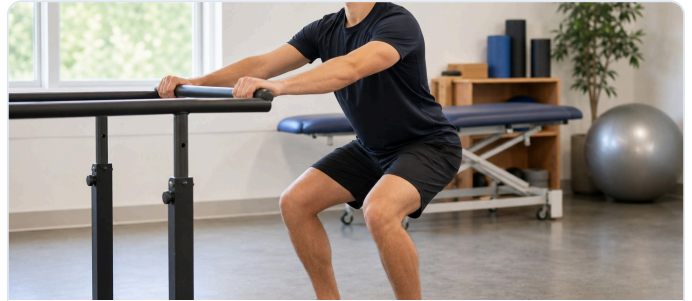


ONCE COMFORTABLE RANGE ALLOWS
Stationary bike

Dose: 10-30 minutes, low resistance

Use a high seat and easy resistance. Start with partial revolutions if a full circle is not comfortable yet.

Key cue: Bike work should reduce stiffness, not increase swelling later that day.



WHEN WALKING IS CONTROLLED
Supported mini squat

Dose: 2-3 sets of 8-12 reps

Hold a rail lightly. Sit the hips back and bend both knees a short distance, then return to standing.

Key cue: Knees point over toes. Stop before the knee dives inward or the movement feels uneven.



WEEKS 2-6 ONWARD
Glute bridge

Dose: 2-3 sets of 10-15 reps

Lie on your back with knees bent. Lift your hips until your shoulders, hips, and knees make a straight line.

Key cue: Push through both heels and keep the knees hip-width apart.



WEEKS 2-6 ONWARD
Wall squat

Dose: 2-3 sets of 8-12 reps

Lean against a wall and slide down into a partial squat, then stand tall again.

Key cue: Use a comfortable depth. Do not chase a deep bend early.



WEEKS 2-6 ONWARD

Step-up

Dose: 2-3 sets of 8-12 reps each side

Step onto a low step by pushing through the whole foot. Control the knee as you rise and lower.

Key cue: Your kneecap should face forward. Avoid letting the hip drop or the knee wobble inward.



USUALLY FROM WEEK 6-8, IF CLEARED

Standing hamstring curl with band

Dose: 2-3 sets of 10-15 reps

Hold a stable support. Bend the knee against light band resistance, then return slowly.

Key cue: Keep the thigh still. If you had a hamstring graft, confirm timing with your physiotherapist.



WEEKS 2-6 ONWARD

Calf raise

Dose: 2-3 sets of 10-15 reps

Rise onto the balls of both feet, pause briefly, then lower with control.

Key cue: Keep weight even through both feet before progressing to single-leg versions.



WEEKS 2-6 ONWARD

Side-lying hip abduction

Dose: 2-3 sets of 10-15 reps each side

Lie on your side. Keep the top leg straight, lift it slightly behind the body line, then lower slowly.

Key cue: Do not roll backward. Strong hips help protect the knee during landing and cutting.



WEEKS 2-6 ONWARD

Single-leg balance

Dose: 3-5 holds of 20-45 seconds

Stand on one leg with a soft knee and level hips. Use a wall nearby for safety.

Key cue: Build quiet control before adding head turns, ball catches, or uneven surfaces.



WEEKS 6-16 ONWARD

Single-leg squat

Dose: 2-3 sets of 6-10 reps each side

Stand on one leg and sit the hips back into a shallow squat, then return to tall posture.

Key cue: Quality beats depth. Knee, hip, and foot should stay stacked.



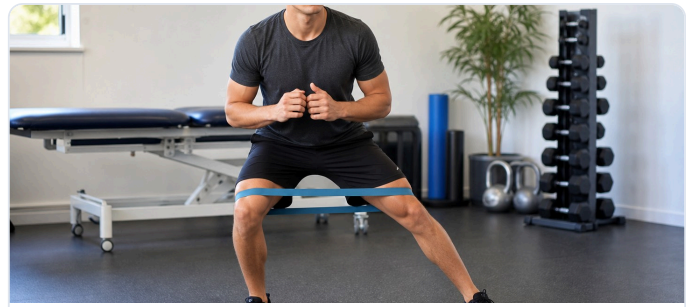
WEEKS 6-16 ONWARD

Walking lunge

Dose: 2-3 sets of 6-10 steps each side

Step forward into a controlled lunge and push back up through the front foot.

Key cue: Keep the front knee over the middle toes and the trunk tall.



WEEKS 6-16 ONWARD

Lateral band walk

Dose: 2-3 sets of 8-12 steps each way

Use a light band around the thighs. Stay in a quarter squat and step sideways with control.

Key cue: Keep toes forward and knees apart. This is a hip-control drill, not a speed drill.



WEEKS 6-16 ONWARD, SUPERVISED

Leg press

Dose: 2-4 sets of 8-12 reps

Use a controlled range and low-to-moderate load. Push evenly through both feet.

Key cue: Do not lock the knees or use heavy loads early. Your physiotherapist should set range and load.



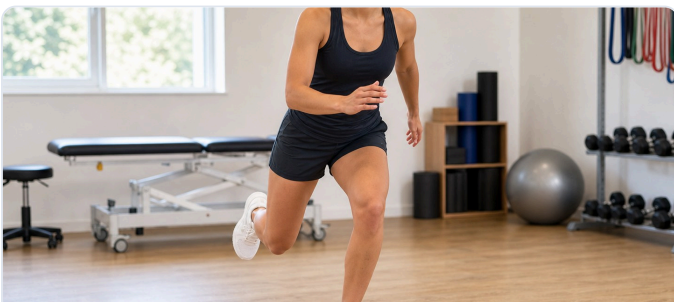
WEEKS 6-16 ONWARD

Wobble board balance

Dose: 3-5 holds of 20-45 seconds

Stand on one leg on the board and keep the knee softly bent. Start near a support.

Key cue: The board can wobble. Your knee should not cave inward.



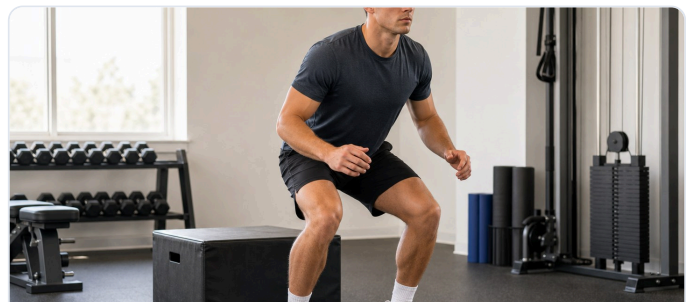
USUALLY MONTH 4 ONWARD, IF CLEARED

Single-leg hop and stick

Dose: 2-3 sets of 4-6 quality landings

Hop a short distance and land on one leg. Hold the landing for two seconds.

Key cue: Soft, quiet, knee over toes. If you cannot stick the landing, reduce distance.



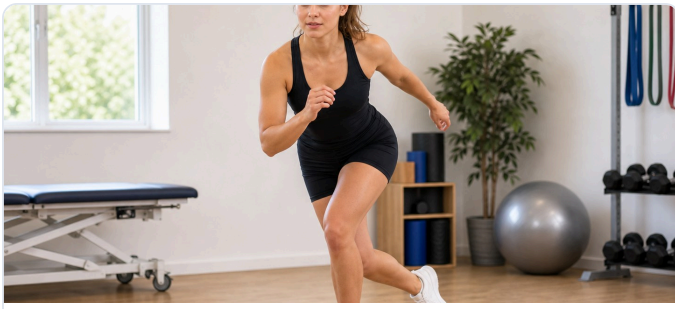
USUALLY MONTH 4 ONWARD, IF CLEARED

Drop jump landing

Dose: 2-3 sets of 4-6 landings

Step from a low box and land on two feet with hips back and knees soft.

Key cue: Both knees bend evenly. No stiff-knee landing, knee collapse, or noisy impact.

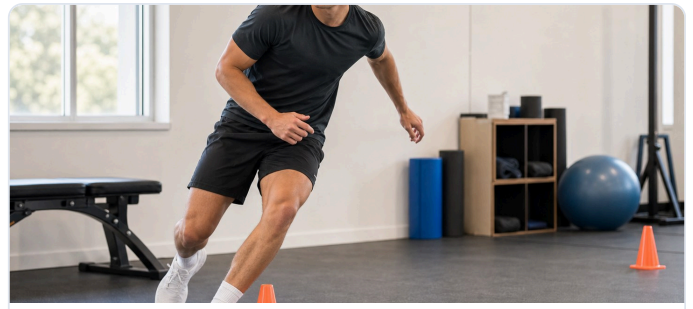


MONTH 4-7 ONWARD, IF CLEARED
Lateral bound / skater hop

Dose: 2-3 sets of 4-6 each direction

Bound sideways from one leg to the other and hold the landing before repeating.

Key cue: Control the landing first; speed comes later.



MONTH 7-9 ONWARD, IF CLEARED
Cone plant-and-cut drill

Dose: 3-5 sets of 4-6 cuts

Approach a cone slowly, plant with a soft knee, and change direction under control.

Key cue: Cut from the hips and whole foot. Avoid twisting on a straight knee.



MONTH 7-9 ONWARD, IF CLEARED
Ball catch landing

Dose: 2-3 sets of 4-6 catches

Catch a ball while landing in a soft athletic position. Start with two feet before single-leg progressions.

Key cue: The ball adds distraction. Do not add it until your landing mechanics stay clean.

Clinical Sources

This patient-facing protocol uses the supplied ACLRehab.pdf as the backbone, then aligns the phase timing, return-to-sport emphasis, and criteria-based decision points with Fowler Kennedy and AAOS/JAAOS guidance.

1. North Sydney Orthopaedic Research Group ACL Rehabilitation Protocol, updated June 2018
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2. Fowler Kennedy Sport Medicine Clinic, ACLR Rehabilitation Protocol, 2020
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3. AAOS Clinical Practice Guideline: Management of Anterior Cruciate Ligament Injuries, published 2022
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5. Jacobs CA et al. Management of ACL Injuries: Evidence-Based Guideline. JAAOS, 2015
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Prepared for OrthoPrecision. Generated exercise images are AI-created photorealistic demonstrations of young adult athletes and are not photographs of real patients.