



**ORTHO
PRECISION**

PATIENT REHABILITATION PROTOCOL

Knee Arthrofibrosis Rehab After MUA

A motion-first guide after knee manipulation under anaesthesia. The manipulation has opened a window of movement; the priority is to keep using that window every day.

Move often

Short, frequent sessions are the backbone of recovery.

Control swelling

A swollen knee stiffens quickly and switches off quadriceps.

Make ROM useful

Turn the gained bend and straightening into walking and stairs.

Important: this is a general framework after knee MUA for arthrofibrosis, commonly after knee replacement or major knee surgery. Your surgeon and physiotherapist should individualise it for the procedure, wound status, implant or ligament precautions, fracture risk, pain control, and any weight-bearing restrictions.

Range first

The first 2 weeks are about preserving the bend and straightening gained in theatre.

Little and often

Motion every 60-90 minutes while awake usually works better than one big painful session.

Swelling is a brake

Use elevation, ice/compression, medication as prescribed, and sensible pacing.

Function follows motion

Strength matters, but not at the expense of daily end-range flexion and extension.

Red Flags And Load Rules

Contact the surgical team urgently if:

- Fever, increasing redness, wound drainage, or escalating wound pain occurs.
- You develop calf pain, marked calf swelling, chest pain, or shortness of breath.
- The knee rapidly swells, gives way, locks, or loses motion suddenly.

Scale back and reset if:

- Swelling or heat increases after exercise and persists into the next day.
- Your limp worsens after a session.
- You lose extension, lose flexion, or cannot relax enough to stretch safely.

Recovery Map

Time matters, but the main measure is whether the knee is keeping the motion gained at MUA. Measure flexion and extension regularly with your physiotherapist.

DAY 0-2

Protect the motion window: bend, straighten, walk, reset swelling.

DAYS 3-14

Hold the gain: frequent ROM plus quadriceps activation.

WEEKS 2-6

Convert motion into walking, sitting, stairs, and strength.

WEEKS 6-12+

Maintain ROM while rebuilding load tolerance and confidence.

Daily Motion Prescription

First 14 days

- 5-8 short ROM sessions per day while awake.
- Every session should include extension and flexion.
- Use the bike for rocking or full revolutions as soon as comfortable.
- Ice/elevate after sessions so swelling does not steal the next session.

Simple session template

- 3-5 minutes heel prop extension.
- 10-20 heel slides or seated flexion reps.
- 5-15 minutes bike rocking if available.
- 10 quadriceps sets, then a short heel-to-toe walk.

Phase-by-Phase Protocol

DAY 0-2 AFTER MUA

Phase 0 - The motion window

Protect the range gained during manipulation. Motion is the treatment.

PRIORITY

- Begin the prescribed motion program the day of MUA or within 24 hours, unless your surgeon says otherwise.
- Short, frequent flexion and extension sessions while awake.
- Pain and swelling control so the knee can keep moving.
- Safe heel-to-toe walking; usually weight bearing as tolerated unless restricted.

EXERCISE MENU

Edema reset: elevate and ice

Knee extension heel prop

Heel slide with strap

Seated knee flexion chair scoot

Stationary bike rocking

Quadriceps set

Heel-to-toe walking practice

DAYS 3-14

Phase 1 - Hold the gain

Prevent re-stiffening and make the new motion usable for walking, sitting, and stairs.

PRIORITY

- Aim for several motion sessions per day, not one heroic session.
- Use the best bend and best straightening every day.
- PT is often frequent in this window; home work is still essential.
- Measure flexion and extension regularly so loss of motion is caught early.

EXERCISE MENU

Heel slide with strap

Wall slide knee flexion

Seated knee flexion chair scoot

Knee flexion stair stretch

Stationary bike rocking

Patellar mobilisation

Quadriceps set

Short arc quadriceps

Straight leg raise

WEEKS 2-6

Phase 2 - Convert motion into function

Keep the range while rebuilding strength, gait, and confidence.

PRIORITY

- Continue daily end-range flexion and extension.
- Increase walking and activity only if swelling does not rebound.
- Build quadriceps, hip, calf, and stair control.
- Do not let strengthening replace motion work; both are needed.

EXERCISE MENU

Stationary bike rocking

Knee extension heel prop

Heel slide with strap

Sit-to-stand

Supported mini squat

Low step-up

Glute bridge

Calf stretch with towel

Seated hamstring stretch

Make the range durable under daily life, work, gym, and recreation.

PRIORITY

- Keep a daily ROM maintenance block until motion is stable for several weeks.
- Progress load, stairs, balance, and low-impact cardio gradually.
- Use swelling, night pain, and next-day stiffness as load feedback.
- Return to kneeling, squatting, golf, cycling, swimming, work, or sport by individual clearance.

EXERCISE MENU

Stationary bike rocking

Controlled step-down

Seated leg press

Supported mini squat

Low step-up

Heel-to-toe walking practice

Progress Checks

Range

Can you reproduce the best extension and flexion achieved after MUA, or are you losing ground?

Swelling

Does the knee settle within hours after exercise, or stay hot and swollen into the next day?

Quadriceps

Can you tighten the thigh, keep the knee straight during leg raise, and walk without a bent-knee limp?

Function

Can you sit, stand, walk, and manage stairs using the new range rather than avoiding it?

Exercise Library

Use these exercises only as cleared by your surgeon or physiotherapist. In the early phase, the motion exercises are more important than heavy strengthening.



DAY 0 ONWARD

Edema reset: elevate and ice

Dose: 10-20 minutes after motion sessions

Lie down with the knee supported and the leg elevated above heart level. Use an ice pack or compression/cold device if prescribed.

Key cue: Swelling steals motion. Calm the knee, then move again later the same day.



DAY 0 ONWARD

Knee extension heel prop

Dose: 3-5 minutes, 5-8 times/day

Rest the heel on a towel or pillow so the knee is unsupported and can relax straight.

Key cue: The knee should feel like a stretch, not a fight. Do not place a pillow under the knee.



DAY 0 ONWARD

Heel slide with strap

Dose: 10-20 reps, 5-8 times/day

Slide the heel toward you. Use a strap or towel to assist the final part of the bend, then straighten again.

Key cue: Hold the best bend for 5-10 seconds. Breathe; do not yank.



DAYS 1-14

Wall slide knee flexion

Dose: 5-10 reps, hold 10-30 seconds

Lie near a wall and let the foot slide down the wall so gravity helps the knee bend.

Key cue: Use the other foot to help if needed. Keep the hip relaxed.



DAY 0 ONWARD

Seated knee flexion chair scoot

Dose: 10-20 reps, 5-8 times/day

Sit tall. Slide the foot back under the chair, then gently scoot the body forward to deepen the bend.

Key cue: Keep the foot flat and avoid twisting the knee.



DAYS 3-14 ONWARD

Knee flexion stair stretch

Dose: 5-10 reps, hold 10-20 seconds

Place the foot on a low step and lean forward gently so the knee bends over the foot.

Key cue: Use a rail. Keep the heel down and the kneecap facing the middle toes.



AS SOON AS COMFORTABLE

Stationary bike rocking

Dose: 5-15 minutes, 2-4 times/day early

Use a high seat and no resistance. Rock forward and backward until a full revolution becomes comfortable.

Key cue: The bike is a motion tool first. Add resistance only after motion is consistent.



WHEN WOUND IS HEALED/CLEARED

Patellar mobilisation

Dose: 1-2 minutes, 3-5 times/day

With the thigh relaxed and knee straight, gently move the kneecap side-to-side and up-down.

Key cue: This should be small and gentle. Avoid pressing on any incision or painful area.



DAY 0 ONWARD

Quadriceps set

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

Straighten the knee and tighten the front thigh muscle as if pressing the knee toward the bed or floor.

Key cue: Make the kneecap glide upward. Full extension plus quadriceps control protects walking.



DAYS 3-14 ONWARD

Short arc quadriceps

Dose: 2-3 sets of 10-15 reps

Place a roll under the knee. Keep the thigh supported and straighten the lower leg, then lower slowly.

Key cue: Move slowly through the available range. Avoid kicking fast.



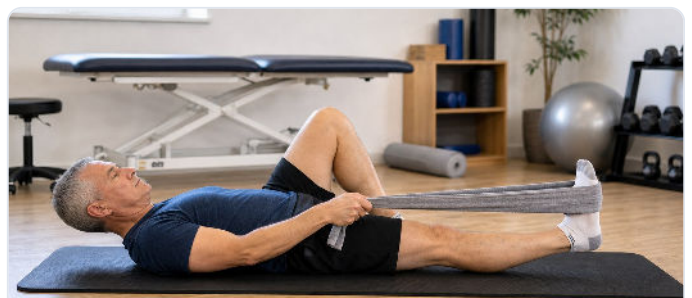
WHEN NO KNEE LAG

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 with control.

Key cue: If the knee bends while lifting, return to quadriceps sets and short arc work.



DAY 1 ONWARD

Calf stretch with towel

Dose: 3-5 holds of 20-30 seconds

Keep the knee straight and pull the toes gently toward you with a towel.

Key cue: A calf stretch can help the knee straighten without forcing the joint.



DAY 1 ONWARD

Seated hamstring stretch

Dose: 3-5 holds of 20-30 seconds

Sit at the edge of a chair, straighten the knee with the heel on the floor, and hinge forward from the hips.

Key cue: Keep the back long. Do not bounce.



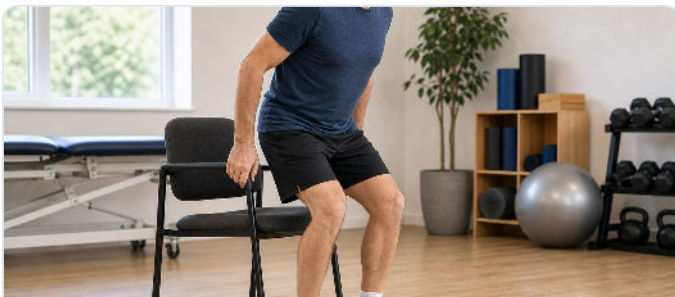
DAY 0 ONWARD

Heel-to-toe walking practice

Dose: Short walks every 1-2 hours while awake

Walk with a heel strike, straightening the knee as the foot lands, then roll through the toes.

Key cue: Several short walks are usually better than one long swollen walk.



WEEK 1 ONWARD

Sit-to-stand

Dose: 2-3 sets of 6-10 reps

Bring both feet under you, lean forward, and stand using both legs. Sit down slowly.

Key cue: Use the operated knee's new bend. Do not keep it stuck out in front.



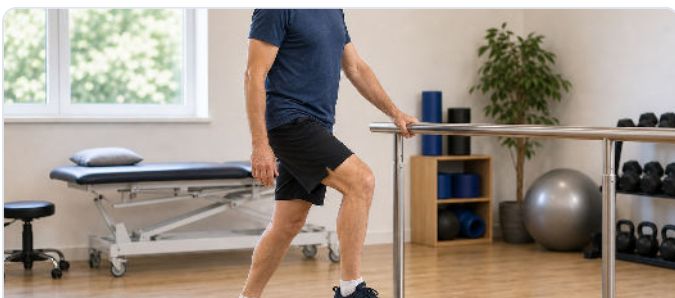
WEEK 1-2 ONWARD

Supported mini squat

Dose: 2-3 sets of 8-12 reps

Hold a rail and perform a shallow squat with hips back and knees aligned over toes.

Key cue: This is a control drill. Keep it shallow until swelling is settled.



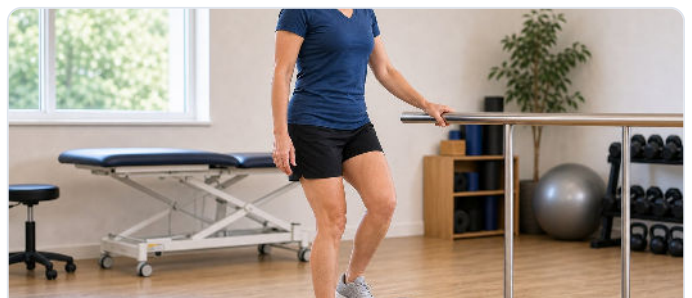
WEEK 2 ONWARD

Low step-up

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

Step up onto a low step by pushing through the whole foot, then lower with control.

Key cue: Use a rail and keep the knee facing forward.



WEEK 3-6 ONWARD

Controlled step-down

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

Stand on a low step and slowly lower the other heel toward the floor while the operated knee bends.

Key cue: Only use a height where you can control the knee without dropping the hip.



WEEK 1 ONWARD

Glute bridge

Dose: 2-3 sets of 10-15 reps

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

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



WEEK 3-6 ONWARD, SUPERVISED

Seated leg press

Dose: 2-4 sets of 8-12 reps

Use a light-to-moderate load and a range chosen by your physiotherapist. Push evenly through both feet.

Key cue: Use the leg press to strengthen and rehearse bend, not to chase heavy load.

Clinical Sources

This protocol uses the earlier OrthoPrecision knee handout style, then adapts the content for arthrofibrosis after MUA using orthopaedic patient guidance, TKA rehab protocols, and post-MUA literature. CPM can be used if your surgeon prescribes it, but current evidence does not support routine CPM as a replacement for active rehabilitation.

1. AAOS OrthoInfo: Manipulation Under Anesthesia
<https://orthoinfo.aaos.org/en/treatment/manipulation-under-anesthesia/>
2. AAOS OrthoInfo: Total Knee Replacement Exercise Guide
<https://orthoinfo.aaos.org/en/recovery/total-knee-replacement-exercise-guide/>
3. Mass General Brigham: Rehabilitation Protocol for Total Knee Arthroplasty
<https://www.massgeneral.org/assets/MGH/pdf/orthopaedics/sports-medicine/physical-therapy/rehabilitation-protocol-for-total-knee-arthroplasty.pdf>
4. Behrns et al. Rehabilitation after Manipulation Under Anesthesia in a Patient with Total Knee Arthroplasty: Case Report of a Recreational Rower. Orthopaedic Physical Therapy Practice, 2019
https://www.orthopt.org/uploads/Rehabilitation_after_Manipulation_Under_Anesthesia_in_a_Patient_with_Total_Knee_Arthroplasty.pdf
5. van Duren et al. Postoperative Continuous Passive Motion Does Not Improve the Range of Movement Achieved After MUA for Stiffness in Total Knee Replacement. Arthroplasty Today, 2024
<https://pubmed.ncbi.nlm.nih.gov/38882466/>