

REHABILITATION AFTER DISTAL FEMORAL REPLACEMENT (KNEE MEGAPROSTHESIS)

Recovery after distal femoral replacement for bone tumour: early weight bearing, quadriceps programme, extension lag and honest goals.

PATIENT NAME

DATE OF SURGERY

WHAT IS INSIDE

- What was done, and what to expect week by week
- Weight bearing, walking aids and precautions
- Your exercises, with a diagram and a dosage for each
- Warning signs, and exactly who to call
- Getting back to driving, work and sport
- A progress chart to fill in and bring to appointments

24 minutes to read. Reviews: Wound review at about 2 weeks. Clinical review with an X-ray at 6 to 8 weeks. Then reviews and surveillance imaging on a schedule the sarcoma team sets, which continues for years.

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This is a general guide. Your operation record and the instructions you are given always take precedence over anything written here. Last reviewed 5 August 2026.

This guide covers recovery after a distal femoral replacement: a megaprosthesis that replaces the lower part of the thigh bone and the knee joint, using a rotating-hinge knee, after a bone or soft-tissue tumour is removed. It is written for patients of the RPA Bone & Soft Tissue Sarcoma Unit and for the physiotherapists, often on the Mid North Coast, a long way from Sydney, who will deliver most of the programme.

One rule sits above everything else in limb-salvage rehabilitation: the site of the reconstruction, not the diagnosis, determines the protocol. A distal femoral replacement and a proximal tibial replacement are both “knee megaprotheses”, yet they follow very different programmes. This one is comparatively liberal, the proximal tibial one is strictly immobilised, because different muscles and tendons are disturbed at each site. And within that, the operation record governs: what was removed, what was reattached and how the implant was fixed decide your restrictions, and Dr Broadhead’s operation note always overrides the general figures here.

A megaprosthesis replaces a segment of bone and the adjacent joint. The metal is fixed and stable straight away; what dictates your programme is which muscles had to be disturbed, here, chiefly the quadriceps, whose architecture and leverage are changed by the surgery. Recovery is measured in months, not weeks, and the functional ceiling is lower than after a standard knee replacement: most patients walk independently, with or without a stick, and return to daily activities, but not to running or impact sport. Early, staged, active rehabilitation is safe: reviews of limb-salvage rehabilitation show early active mobilisation does not increase dislocation or infection and is associated with better quality of life.

Three things are lifelong. Avoid impact loading, to limit wear. Expect that revision surgery is likely at some point over a lifetime. These implants are serviced, not set-and-forget. And keep lifelong vigilance for infection: deep infection is the most significant risk in this surgery, considerably more

common than after standard joint replacement, and never a wait-and-see problem. Surveillance imaging of both the tumour site and the prosthesis continues for years.

AT A GLANCE	
WEIGHT BEARING Usually as tolerated early, commonly reaching full weight bearing around the third week. Cemented implants progress faster; uncemented are protected while bone grows in. The operation record governs.	WALKING AIDS Frame or crutches early, weaning to a stick as gait control allows, over months, not weeks. Your team sets the pace.
BRACE A hinged knee brace early on, with controlled bending: your team sets and advances the range.	PRECAUTIONS Protect the brace settings; no impact; the central task is active knee straightening, every day.
DRIVING Individually assessed: off the brace for driving movements, off strong painkillers, and criteria met. Your team will confirm.	DESK WORK When comfort and transport allow. Your team will confirm; commonly somewhere in the 6–12 week window.
PHYSICAL WORK Assessed individually. Heavy physical work is often not a realistic goal: discuss your duties early.	SPORT & ACTIVITY Walking, swimming and cycling are the long-term goals. Running and impact sport are not part of life with a megaprosthesis.
REVIEWS Wound review at about 2 weeks. Clinical review with an X-ray at 6 to 8 weeks. Then reviews and surveillance imaging on a schedule the sarcoma team sets, which continues for years	

WHAT WAS DONE IN YOUR OPERATION

The tumour was removed together with the segment of thigh bone (femur) it involved, including the knee end of the bone, with a margin of healthy tissue around it. The reconstruction is designed around what that removal required.

The missing bone and joint were replaced with a modular metal implant anchored in the remaining femur, connected to a component in the shin bone through a rotating-hinge knee. The hinge provides the stability that the resected ligaments can no longer supply, which is why there are no ligament-protection rules in this guide, and why the knee can be moved and loaded early.

The part that shapes your rehabilitation is the quadriceps: the muscle at the front of the thigh that straightens the knee. Removing the tumour changes the muscle's architecture and its leverage over the new joint, even when the muscle itself is largely preserved. The central challenge of this entire programme is regaining active knee straightening: the knee will usually bend willingly enough, but making the quadriceps hold it straight under load is the work.

THE IDEAS THAT MAKE EVERYTHING ELSE MAKE SENSE

1. The site of reconstruction determines the protocol, and the operation record governs

Limb-salvage programmes are built around what was removed and reattached, not around the name of the tumour. A distal femoral replacement rehabilitates very differently from a proximal tibial one, despite both being "knee" operations. Your operation record is the final word on your weight bearing, brace settings and pace, if anything here conflicts with your team's instructions, your team is right.

2. The metal is stable immediately: loading follows the fixation

Weight bearing is usually as tolerated early, and most patients are walking with full weight around the third post-operative week. A cemented implant is solid at once and progresses faster; an uncemented implant is protected while your bone grows into it, so its loading is advanced more slowly. Which you have is in the operation record: follow it.

3. The central task: an actively straight knee

An extension lag: a knee you can straighten with your hand but not hold straight with your muscle, is common after this operation, because the tumour surgery changes the quadriceps' architecture and leverage. The programme attacks it relentlessly: quadriceps activation from day one, the straight leg raise as the key milestone, and graded loaded straightening work after that. A knee that straightens actively walks well; final bend usually ends up somewhat less than a native knee, and that trade is worth making.

4. Bend is advanced steadily, in the brace, on your team's schedule

Early bending is done as controlled movement in a hinged brace, with the permitted range set and advanced by your team. Flexion is advanced steadily and usually comes on well; the reason it is staged is to let the soft tissues heal in balance with the new mechanics, not because the hinge is fragile.

5. Months, not weeks, and an honest ceiling

Most patients end up walking independently, with or without a stick, managing stairs and daily life. Running, jumping and impact sport are not part of the picture; final bend is usually somewhat less than a native knee. Knowing the ceiling from the start is how you recognise a good result when you reach it.

6. How results are measured: MSTS and TESS in plain language

Your team may mention two scores. The MSTS score is the clinician's rating of limb function from 0 to 100%. The TESS is your own rating of how difficult everyday tasks are. Good limb-salvage results typically land in the 70–85% range on these scales: good function, not normal function. A score in that range is a genuinely good outcome after this surgery.

WEIGHT BEARING AND WALKING AIDS

WEIGHT BEARING

USUALLY AS TOLERATED EARLY, COMMONLY REACHING FULL WEIGHT BEARING AROUND THE THIRD POST-OPERATIVE WEEK: FASTER WITH CEMENTED FIXATION, PROTECTED LONGER WITH UNCEMENTED. THE OPERATION RECORD GOVERNS.

The rotating-hinge implant is stable from the moment of surgery, so early standing and walking are safe and are part of the programme. Most patients progress to taking full weight around the third week after surgery.

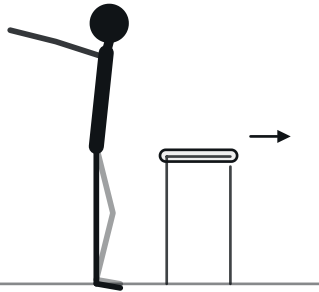
The pace depends on how the implant was fixed. A cemented stem is at full strength immediately and progresses faster. An uncemented stem relies on your bone growing into its surface over the early weeks and is protected with partial weight bearing while that happens. Your team will tell you which you have and set your progression.

Weight bearing and walking aids are separate questions. You may be cleared for full weight long before you are ready to give up the crutches: the aids come off as your quadriceps control improves, not on a calendar date.

STAGE	TYPICAL TIMING	MOVE ON WHEN
Wheeled frame or two crutches	From day 1, for the first weeks	Safe transfers; steady stepping in the brace
Two crutches, weight bearing progressing	Commonly full weight around week 3 (cemented); uncemented advanced on the team's schedule	Comfort; wound settled; team confirmation for uncemented stems
One crutch or a stick (opposite hand)	Your team advances this as quadriceps control returns, typically well after the 6 to 8 week review	Straight leg raise achieved or nearly so; knee not giving way; gait controlled

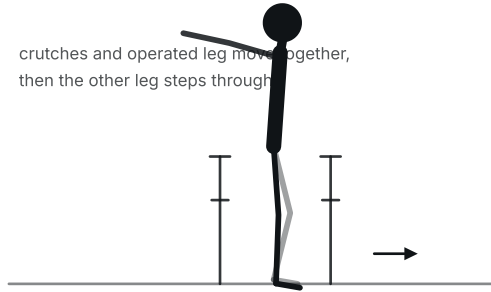
STAGE	TYPICAL TIMING	MOVE ON WHEN
Stick as needed	Over months: many keep a stick for distance	Confident, safe walking; active extension holding under load

1. frame
2. operated leg
3. other leg



Frame first, then the operated leg, then the other leg

crutches and operated leg move together,
then the other leg steps through



Crutches and operated leg together, then step through

PROTECTING THE RECONSTRUCTION WHILE IT HEALS

THROUGH THE EARLY MONTHS, WITH THE BRACE AND LOADING RULES RELAXED STAGE BY STAGE AT YOUR REVIEWS.

The hinge does not need ligament-style protection, but the soft tissues and the quadriceps mechanism do, and bone that has been operated on, and sometimes irradiated or exposed to chemotherapy, is more fragile than it looks. These rules protect the things that take months to heal.

RULE	WHY	HOW TO MANAGE
Wear the hinged brace as prescribed, at the settings prescribed	The brace lets the knee move through a controlled, team-set range while the soft tissues heal in balance with the new mechanics.	Only your team changes the dial settings, never adjust them yourself, and bring the brace to every review.
Respect your weight-bearing status if you have an uncemented stem	The implant's long-term anchorage depends on bone growing into it undisturbed over the early weeks.	Use the aids exactly as prescribed until your team formally advances you, comfort is not the signal here.
No impact: no jogging, jumping, or twisting under load	Impact accelerates wear of the hinge and risks fracture through bone weakened by resection, radiotherapy and chemotherapy.	This one is permanent. Build exercise around walking, swimming and cycling instead.
Do not force the bend through sharp pain	Flexion is advanced steadily on the team's schedule and usually comes on well; forcing it inflames the very tissues that allow it.	Work firmly into stretch within your permitted range; report a bend that is stuck rather than fighting it alone.

EVERYDAY SITUATIONS

Stairs. Early on: up with the non-operated leg first, down with the operated leg and crutches first, using the rail. Your physiotherapist will drill the pattern until it is automatic.

Getting in and out of a car. Passenger seat fully back, back in bottom-first, then bring the legs around together. The braced leg needs room: plan the angle before you commit.

Sitting at a desk or table. Choose a chair that lets the knee rest within its permitted range, and get up to move every hour. A footstool that keeps the knee straighter is better than a cramped bend.

Showering. Follow the wound-care rules first; a shower chair and a hand rail make the early weeks safer while you are braced.

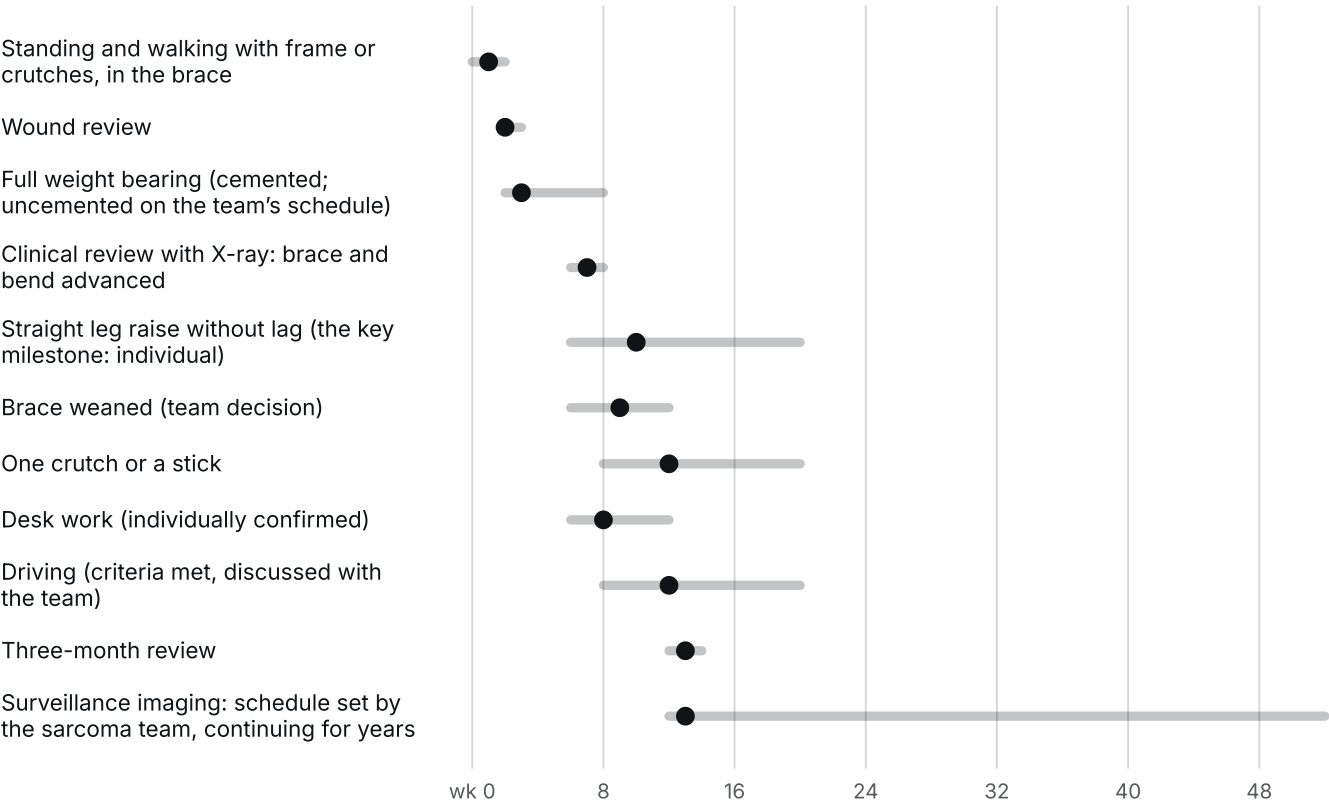
YOUR BRACE: HINGED KNEE BRACE WITH AN ADJUSTABLE RANGE-OF-MOVEMENT DIAL, WORN FROM SURGERY THROUGH THE EARLY WEEKS.

PERIOD	INSTRUCTION
Early weeks	Worn for walking and, if your team directs, at rest and overnight: your team sets the exact schedule.
As quadriceps control returns	Your team weans the brace as your straight leg raise and gait control return, commonly over the first 6–12 weeks, but this is a decision made at review, not a date.

PERIOD	PERMITTED RANGE
From surgery	Set by your team at surgery: early controlled bending within a limited range, locked straighter for walking if directed
At each review	Advanced steadily by your team: flexion is opened up stage by stage as the soft tissues settle; do not adjust the dial yourself

- Only your team changes the dial settings.
- Check the skin under the straps daily; report rubbing rather than padding it yourself.
- Bring the brace to every physiotherapy session and every review so fit and settings can be checked.

YOUR RECOVERY TIMELINE



Bars show the earliest-to-latest normal window; the dot is typical. Your own dates are set with us, not by this chart.

THE PHASES, ONE BY ONE

You move to the next phase by meeting its exit criteria, not by the calendar. The week numbers are typical, nothing more.

PHASE 1: PROTECT, SETTLE AND SWITCH ON

WEEKS 0-2

Wake the quadriceps from day one, walk early in the brace, control swelling, and start controlled bending within the brace range.

GOALS: TICK THEM OFF

- ☐ Quadriceps visibly contracting on demand
- ☐ Walking short distances with frame or crutches in the brace
- ☐ Swelling controlled; wound settled
- ☐ Controlled bending within the brace range established with the physiotherapist

DO THIS

- Static quadriceps sets: the single most important exercise in this guide: many times a day, plus ankle pumps every waking hour.
- Begin straight leg raise attempts as your physiotherapist directs; do not be discouraged if the knee sags at first, closing that lag is the project of the coming months.
- Walk little and often in the brace with your aid.
- Ice and elevate as set out in the swelling section.
- If your team prescribes muscle stimulation (NMES) for the quadriceps, use it exactly as directed. It is a supplement to your own effort, not a replacement.

AVOID THIS

- Adjusting the brace dial yourself.
- Forcing the bend: work within the permitted range.
- Sitting for long periods with the leg hanging down.

READY FOR THE NEXT PHASE WHEN...

- Wound reviewed and settled at about 2 weeks
- Quadriceps contracting reliably
- Safe with aids, brace and stairs pattern

PHASE 2: LOAD AND LENGTHEN

WEEKS 2–6

Progress towards full weight bearing, open the bend stage by stage, and make the straight leg raise the daily scoreboard.

GOALS: TICK THEM OFF

- ☐ Full weight bearing, commonly around the third week (cemented; uncemented on the team's schedule)
- ☐ Straight leg raise with a shrinking lag: the key milestone of this phase and the next
- ☐ Bend advancing within the brace settings your team prescribes
- ☐ Stairs safe with crutches and rail

DO THIS

- Keep the quadriceps work relentless: static sets, straight leg raises, and NMES if prescribed.
- Practise controlled bending in the brace to the permitted range, several times daily.
- Add sit-to-stands from a firm chair and heel raises as your weight bearing allows.
- Start scar massage once the wound is fully healed (from about 3 weeks).

AVOID THIS

- Measuring yourself by the bend: active straightening is the metric that matters this phase.
- Walking without the prescribed aid because the leg feels strong; a knee that gives way once undoes weeks of confidence.

READY FOR THE NEXT PHASE WHEN...

- Clinical review complete; brace and range advanced by the team
- Straight leg raise achieved or clearly improving
- Walking with full weight, gait controlled

PHASE 3: ACTIVE EXTENSION UNDER LOAD

WEEKS 6–12 (TEAM-LED)

Graded, loaded straightening work, turning a quadriceps that can lift the leg into one that holds the knee straight under body weight.

GOALS: TICK THEM OFF

- ☐ Straight leg raise without lag
- ☐ Knee holding straight during walking, no giving way, no back-knee thrust
- ☐ Brace weaned on the team's instruction
- ☐ Progress from two crutches towards one crutch or a stick

DO THIS

- Graded loaded extension work as your physiotherapist prescribes: sit-to-stands, controlled mini-dips, step patterns: progressed deliberately.
- Sometimes your team will prescribe an orthosis (a supportive device) to let you load the straightening muscles progressively while the lag closes, use it as directed; it is a training tool, not a crutch.
- Start the stationary bike when your permitted bend allows a pedal revolution: saddle high at first.
- Add single-leg balance work as prescribed.

AVOID THIS

- Trick movements that dodge the quadriceps: swinging the leg, locking the knee back. Your physiotherapist will police these; let them.
- Impact of any kind.

READY FOR THE NEXT PHASE WHEN...

- No extension lag, or a small stable lag your team is satisfied with
- Walking with a stick or less, knee trustworthy
- Independent with daily activities

PHASE 4: FUNCTION FOR THE LONG TERM

MONTHS 3–12 AND BEYOND

Endurance, strength and confidence for real life, honest expectations about the final bend, and the lifelong routine of surveillance.

GOALS: TICK THEM OFF

- ☐ Walking distance and stairs confidence building month on month
- ☐ Final bend developing, usually somewhat less than a native knee, and enough for daily life
- ☐ Return to driving, work and low-impact activity as your team confirms
- ☐ Surveillance appointments and imaging attended without fail

DO THIS

- Keep a permanent quadriceps and general strength habit. It protects the result for years.
- Build low-impact endurance: walking, swimming once cleared, cycling.
- Report anything new between reviews: new pain, a lump, a wound concern: the same day you notice it.

AVOID THIS

- Running, jumping and impact sport: permanently.
- Skipping surveillance because you feel well. The imaging is checking for things you cannot feel.

READY FOR THE NEXT PHASE WHEN...

- Stable, confident walking with or without a stick
- Long-term surveillance schedule established and understood

YOUR EXERCISES

Little and often beats one heroic session. Each exercise lists what you should feel, sharp pain that lingers afterwards means ease off and, if it persists, call.



ANKLE PUMPS

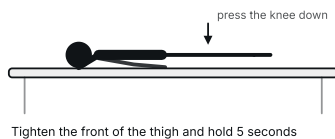
PHASE 1

Keep blood moving in the calf: your main clot-prevention exercise.

10 firm pumps, every waking hour, for the first 2 weeks

1. Lie or sit with the leg supported.
2. Pull your foot up towards you as far as it goes.
3. Point it away as far as it goes.
4. Repeat briskly.

Feel: You should feel the calf muscles working. Move through the full range each time.



STATIC QUADRICEPS SETS

PHASE 1

The most important exercise in this guide: everything about your final walk depends on this muscle switching back on.

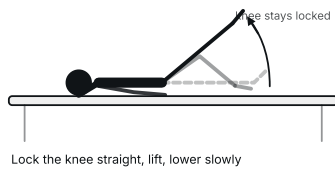
10 holds of 5 seconds, hourly while awake in the first weeks, then 3–4 times daily

1. Lie with the leg straight (brace on or off as your team directs).
2. Push the back of the knee down by tightening the front of the thigh.
3. Watch the kneecap draw upward slightly.
4. Hold, then fully relax.

Feel: You should feel and see the front of the thigh firm up. If the muscle will not fire, do not give up, put a hand on it, look at it, and keep asking; NMES can help if prescribed.

STRAIGHT LEG RAISE

PHASE 1



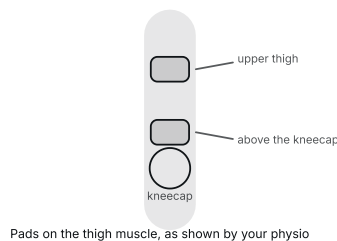
The key milestone of this whole programme: lifting the leg with the knee actively held straight, without a sag.

10 lifts, hold 3 seconds, 3 times daily: attempt from early on as your physiotherapist directs

1. Lie on your back, other knee bent, operated leg straight.
2. Tighten the thigh first, locking the knee as straight as it will actively go.
3. Lift the whole leg about 30 cm.
4. Lower slowly with the knee still held straight.

Feel: A sag at the knee as you lift is the extension lag: expected at first after this surgery. Watching it shrink week by week is how you know the programme is working. Quality beats count: five honest lifts beat twenty with a sag you ignored.

Easier: If a full lift is not there yet, keep the leg on the bed and practise pressing the knee down and holding: the lag closes from the straight end first.



MUSCLE STIMULATION FOR THE QUADRICEPS (NMES): IF PRESCRIBED

PHASE 1

Help a reluctant quadriceps fire while its architecture and leverage recover.

Exactly as prescribed by your team, sessions are typically paired with your own active exercises

1. Your physiotherapist positions the pads over the quadriceps and sets the machine: follow their placement diagram.
2. Contract the muscle actively with each stimulation cycle rather than letting the machine do it alone.
3. Stop and report any skin irritation under the pads.

Feel: The stimulation should produce a strong, visible contraction that is uncomfortable but not painful. It supplements your own effort: the exercises still have to be done.

1. frame
2. operated leg
3. other leg

Frame first, then the operated leg, then the other leg

WALKING WITH THE FRAME

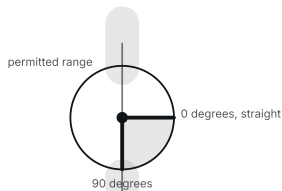
PHASE 1

Safe, rhythmic early walking in the brace.

Short walks, several times a day, building distance gradually

1. Frame forward first.
2. Step the operated leg into the frame, taking weight as prescribed.
3. Step the other leg up to meet it.
4. Stand tall between steps.

Feel: Even step lengths. Let the brace do its job: walk within it, not against it.



The dial sets the permitted bend, adjusted by your team

CONTROLLED BENDING IN THE BRACE

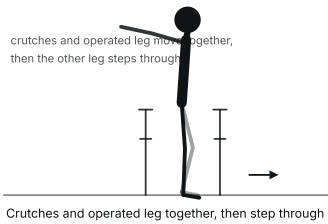
PHASE 2

Restore the bend safely, stage by stage, within the range your team has set on the dial.

10 slow bends to the permitted limit, 3–4 times daily

1. Sit or lie as your physiotherapist directs, brace on.
2. Bend the knee slowly to the brace's set limit.
3. Hold briefly at the limit, feeling a firm stretch.
4. Return slowly to straight: all the way straight, every repetition.

Feel: The dial setting is your team's decision alone, never advance it yourself. Finish every session with the knee fully straight.



WALKING WITH TWO CRUTCHES

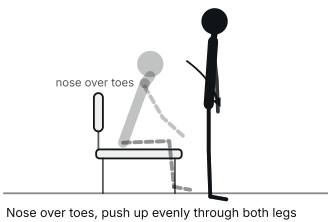
PHASE 2

A smoother, more upright walk as weight bearing progresses.

Replace frame walks once your team progresses you; build distance week on week

1. Move the crutches and the operated leg forward together.
2. Step through with the other leg.
3. Keep the pattern smooth and even.

Feel: Stand tall; look ahead, not at your feet. No back-knee thrust: if the knee is snapping back to feel stable, tell your physiotherapist.



SIT-TO-STAND

PHASE 2

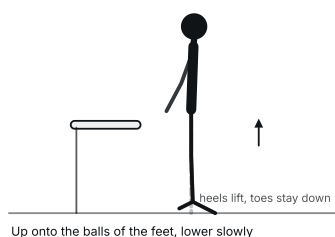
Loaded straightening in the most useful movement you own: a core part of closing the extension lag.

2–3 sets of 8–10, once or twice daily

1. Sit on a firm chair with arms.
2. Feet back, lean forward, push up through both legs: arms only as needed.
3. Lower back down slowly, making the operated thigh work all the way.

Feel: The slow lowering is where the quadriceps learns the most, do not flop.

Harder: Less arm assistance, then more of the load onto the operated leg: as your physiotherapist directs.



HEEL RAISES

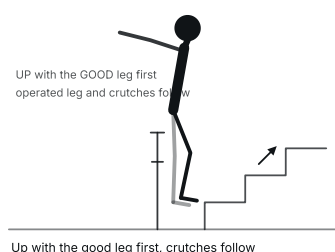
PHASE 2

Calf strength for a normal push-off when walking.

2–3 sets of 10, once or twice daily

1. Stand tall holding the bench or rail.
2. Rise up onto the balls of both feet.
3. Lower slowly.

Feel: Even weight through both feet, or as your weight-bearing status allows.



STAIRS: GOING UP WITH CRUTCHES

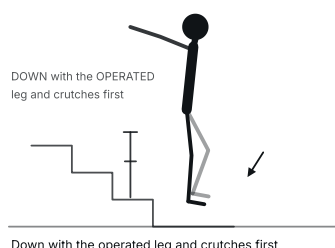
PHASE 2

Safe, repeatable stair climbing during the protected months.

Practise with your physiotherapist first, then as needed

1. Stand close to the step, rail on one side if available.
2. Step up with the non-operated leg first.
3. Bring the operated leg and crutches up onto the same step.
4. Re-balance before the next step.

Feel: "Good leg up first." Slow and square beats quick and crooked.



STAIRS: GOING DOWN WITH CRUTCHES

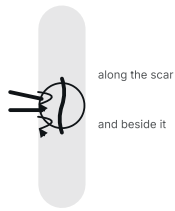
PHASE 2

The higher-risk direction: controlled descent protects the knee and your confidence.

Practise with your physiotherapist first, then as needed

1. Stand close to the edge, rail on one side if available.
2. Lower the crutches and the operated leg to the step below first.
3. Follow with the non-operated leg onto the same step.
4. Re-balance before the next step.

Feel: "Operated leg and crutches down first." If in doubt, go down sitting: dignity heals faster than a fall.



Firm small circles, 2 to 3 minutes twice daily

SCAR MASSAGE

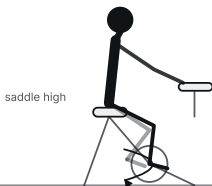
PHASE 2

Soften and desensitise the scar once fully healed. A mobile scar also helps the bend.

2–3 minutes, twice daily, from about 3 weeks once healed and dry

1. Use a bland moisturiser.
2. Firm, small circles along and beside the scar.
3. Include the skin around it, which is often more sensitive than the scar itself.

Feel: Firm enough to blanch the skin slightly; it should not be painful. If you have had radiotherapy to the area, ask your team before starting.



Saddle high at first, build time before resistance

STATIONARY CYCLING

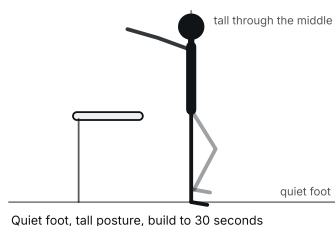
PHASE 3

Range, circulation and endurance with almost no joint load.

10–20 minutes, most days, once your permitted bend allows a full revolution

1. Saddle high at first: a higher seat needs less bend.
2. Start with gentle half-revolutions back and forth if a full turn is not there yet.
3. Progress time before resistance.

Feel: Mild stretch at the top of the pedal stroke is useful; lower the saddle gradually as the bend improves and your team permits.



SINGLE-LEG BALANCE

PHASE 3

Steadiness and confidence: protects you from trips and falls.

Build to 3 holds of 30 seconds each leg, daily, once your team clears single-leg loading

1. Stand near the bench, fingertips hovering.
2. Lift the other foot and balance on the operated leg.
3. Keep the knee softly straight: held by muscle, not locked back.

Feel: Quiet foot, tall posture. The knee wobbling forward is the quadriceps still learning: persist.

SWELLING, ICE AND ELEVATION

WHAT IS NORMAL

- Swelling is the single biggest brake on progress. It peaks about 6–8 days after surgery, then settles gradually.
- Most of the swelling resolves over the first two to three months, but it is normal for the limb to puff up after a long day or a burst of activity for some months after that, measurable swelling is still present at 7 weeks in most knee replacement patients.
- A limb that is bigger the morning after activity means you did too much the day before, not that something is wrong.
- Warmth and mild redness around the wound settle over weeks.
- After tumour surgery the swelling can be slower to settle than these general figures suggest: the operation removes more soft tissue than a standard knee replacement, and radiotherapy or chemotherapy slow things further. Persistent swelling that is stable is common; swelling that is increasing is a phone call.

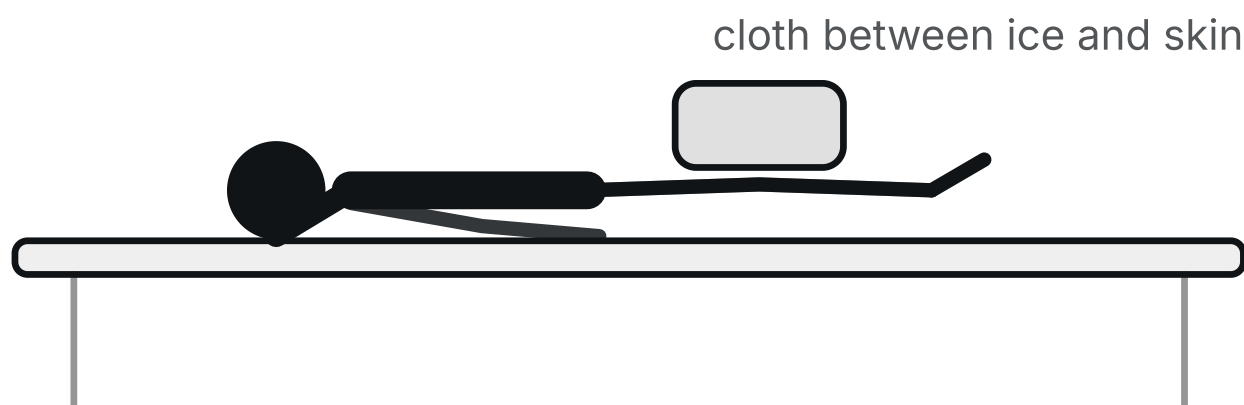
ICE

- Ice is safe, cheap and comfortable, and probably gives a small benefit for pain and swelling in the first few days.
- Use it for 15–20 minutes at a time, 4–6 times a day for the first 2 weeks, then as needed after activity and physiotherapy. It is particularly useful in the hour after exercise.
- Always place a thin cloth between the ice and your skin. Never sleep with ice on. Never ice over numb skin or a fresh wound dressing without checking with the rooms first.

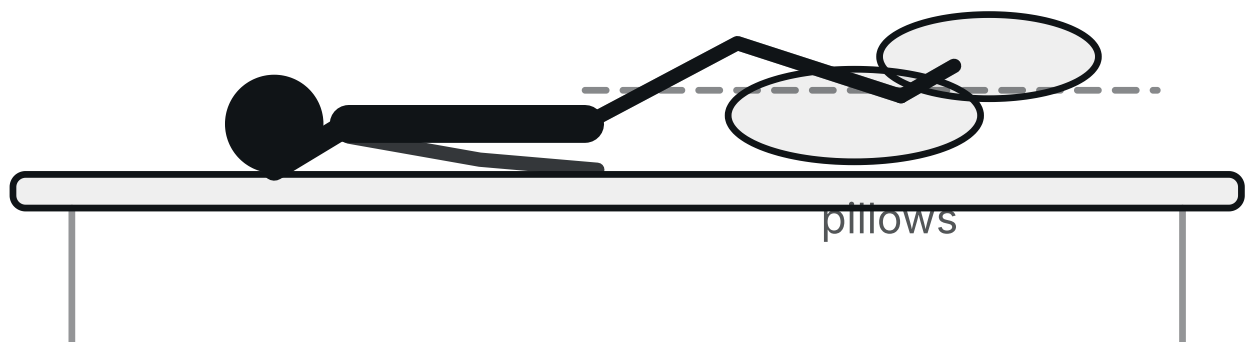
- Stop and call the rooms if the skin becomes white, mottled or numb.
- An honest note about the evidence: the 2025 Cochrane review of icing after knee replacement (22 trials, 1,839 patients) found small improvements: pain at 48 hours better by 1.6 points out of 10, about 8 degrees more bend at discharge, and less blood loss: all on low-certainty evidence. The reviewers concluded the benefits may be too small to justify routine use. Use ice because it is harmless and makes you more comfortable, not because it changes the final result.
- There is no good evidence that expensive cold-compression machines work better than a bag of ice or a gel pack. The trials have never been analysed in a way that answers that question. Please do not spend money on one on our recommendation.

ELEVATION & COMPRESSION

- Elevate the limb above heart level for 20–30 minutes several times a day: foot higher than the knee, knee higher than the hip, hip higher than the heart.
- Lie down to do this: a recliner does not raise the leg above your heart.
- Avoid sitting with the leg hanging down for long periods.
- A graduated compression stocking or sleeve helps control swelling, wear it as advised.



15 to 20 minutes, 4 to 6 times daily



Foot above knee, knee above hip, lying flat

WOUND AND SCAR CARE

- Keep the dressing dry and intact until it is reviewed. Most modern waterproof dressings allow showering, but do not soak, scrub, or put soap directly on the wound.
- No baths, spas, pools or ocean swimming until the wound is fully healed and has been reviewed, usually 2–3 weeks at a minimum.
- Do not apply creams, powders or antiseptics unless you have been told to.
- Clips or stitches are removed or checked at your first appointment.
- Tell the rooms about any dressing that becomes soaked, loose or soiled.
- Tumour surgery wounds are longer than standard knee replacement wounds and, if you have had radiotherapy or chemotherapy, they heal more slowly. Your team watches this closely: attend every wound review, and report any change between them the same day.
- From about 3 weeks, once the wound is fully healed and dry: massage the scar with a bland moisturiser for 2–3 minutes, twice a day, using firm circular pressure. This softens the scar and desensitises the skin around it.
- Silicone gel or sheeting can improve the appearance of prominent scars.

- Protect the scar from the sun for 12 months. It burns easily and can darken permanently.
- Scars take a full 12–18 months to fade and flatten.
- Numbness in the skin around and below the scar is normal and often permanent, small skin nerves are unavoidably divided during surgery.

SLEEP AND POSITIONING

Sleep on your back or either side as comfort allows, with the brace on at night if your team has directed that.

Never rest a pillow under the knee itself. It teaches the knee to sit bent, which is exactly what the extension programme is fighting. If you want support, a pillow under the whole calf keeps the knee straight.

Disturbed sleep is common for some weeks and improves as swelling and pain settle. Ice before bed and timing pain relief for the night help.

PAIN, MEDICATION AND WHAT TO EXPECT

Expect to need regular pain relief for the first few weeks, weaning gradually. Take medication ahead of exercise sessions rather than chasing pain afterwards, and wean the strongest medications first.

You will usually be on a blood thinner: take it exactly as directed.

If you are having chemotherapy, the rehabilitation and oncology timetables are coordinated by your team, energy levels, blood counts and treatment cycles all shape what each week looks like, and a slower fortnight during treatment is expected, not a setback.

Aching, warmth, tightness and tiredness after activity persist for months and are normal. Pain that is increasing week on week, or new pain at rest or at night, is not, call the rooms.

PREVENTING BLOOD CLOTS

- Get up and move at least hourly while you are awake.
- Do ankle pumps: 10 firm up-and-down pumps of the ankles: every waking hour for the first 2 weeks.
- Stay well hydrated.
- Take any prescribed blood thinner exactly as directed, and wear stockings as advised.
- Avoid long-haul flights for 6 weeks after joint replacement: discuss any earlier travel with the rooms.

DRIVING: THE CRITERIA THAT ACTUALLY MATTER

You may drive when **all** of the following are true:

- You are off opioid painkillers and any other sedating medication.
- You can sit comfortably in the driver's seat.
- You can perform an emergency stop at full force, without hesitation and without pain.
- You are not using a walking aid in the car, and not wearing a brace that limits the movement needed to work the pedals.
- You have practised the movements in a stationary car first.

What the driving research does and doesn't show

What the research actually measures is braking reaction time on a simulator. Those studies show braking performance returns to its pre-operative level at about 2 weeks after a right hip replacement and about 4 weeks after a right knee replacement, with movement time back to normal by 6 weeks. After knee arthroscopy the simulator evidence is more conservative than common practice: in the one study that measured it directly, braking was still slower one week after surgery than before it, and had recovered by four weeks, and a 2021 review of eight studies put the average return at about six weeks. Most people having a simple arthroscopy are driving well before that, which is why the criteria above matter more than the date. But these are averages, in one study, about one in three right-hip patients still could not meet an emergency-stop

benchmark at six weeks. Treat the timeframes in this guide as targets for discussion with us, not as permissions.

No published study has compared automatic and manual cars. The logical point is simply that a manual needs the left leg for the clutch, so left-sided surgery is the relevant caution in a manual. Advice about driving earlier with a left-leg operation in an automatic is clinical judgement, not trial evidence.

In Australia, your treating doctor's advice governs: under the Austroads "Assessing Fitness to Drive" standards, temporary post-operative impairment is a matter of clinical judgement, and commercial drivers are held to a higher standard. Driving while impaired may invalidate your insurance, check your insurer's position. Do not drive for at least 24 hours after any general anaesthetic or sedation.

GETTING BACK TO WHAT YOU DO

ACTIVITY	TYPICAL	WHEN IT'S RIGHT	NOTES
Walking for exercise	From the outset, with the prescribed aid and brace	Comfort and safety	The core of the programme: build distance gradually
Swimming and hydrotherapy	Once the wound is fully healed and your team agrees	Wound reviewed and closed; brace plan discussed for poolside	Excellent low-load exercise for both bend and strength
Stationary cycling	Once the permitted bend allows a revolution	Team-set range sufficient; saddle high	Progress time before resistance

ACTIVITY	TYPICAL	WHEN IT'S RIGHT	NOTES
Driving	Individually assessed	All the driving criteria below, discussed with the team, including being out of any brace that limits pedal movements	The active-straightening strength that makes an emergency stop safe is exactly what this programme rebuilds, do not shortcut it
Desk work	Commonly in the 6–12 week window. Your team will confirm	Comfortable sitting; transport sorted	Get up and move hourly; a footstool helps the knee rest straighter
Physical work	Individually assessed	Duties reviewed with the team	Heavy physical work is often not a realistic goal after distal femoral replacement, raise your actual duties early so modified duties or retraining can be planned honestly
Golf, bowls, doubles tennis and similar low-impact sport	Team-cleared, usually well after 3 months	Strength, balance and a trustworthy knee	Discuss the specific sport: rotation and uneven ground are the considerations
Running, jumping and impact or contact sport	Not part of life with a megaprosthesis	—	This is a permanent trade: impact accelerates wear of the hinge and risks fracture through bone weakened by resection, radiotherapy and chemotherapy
Air travel	Discuss with the team: see the travel notes in this guide	Clot prevention planned	Especially relevant for Mid North Coast patients travelling to Sydney for reviews. The same planning applies to long drives: break them up, move hourly

Flying after joint replacement: an honest note

You will often hear "no flying for six weeks" after joint replacement. Be aware that this is a convention, not a proven rule: a 2025 review found limited data and no demonstrated difference in clot risk between people who did and did not fly after hip or knee replacement: mostly within the first week.

The six-week convention reflects practical realities rather than trial evidence: managing airports and cramped seating, being past the highest-risk clot window while still on prevention, the higher baseline clot risk of long-haul flights over four hours, and individual airline and travel-insurance rules, check both, as some airlines impose their own restrictions.

If you need to travel long-haul in the first six weeks, talk to the rooms first so clot prevention, an aisle seat, stockings and on-board movement can be planned.

WARNING SIGNS: ACT, DON'T WATCH

None of these should be watched overnight to see how they go. Early treatment of a problem is simple; late treatment is not.

EMERGENCY: 000 Emergency department / call 000

- Sudden shortness of breath
- Chest pain
- Coughing blood, or feeling faint
- Sudden pain, new deformity, or inability to take weight through the limb, even after minor loading. Bone weakened by resection, radiotherapy and chemotherapy can fracture around a prosthesis

GP TODAY See your GP today

- New, one-sided calf pain, tenderness or firmness
- Calf or whole-leg swelling out of proportion to the rest of your recovery

CALL THE ROOMS Call the rooms: same day

- Pain that is increasing rather than decreasing after the first week
- New redness spreading out from the wound
- Wound discharge, particularly cloudy, thick or offensive fluid, or wound edges opening
- Fever of 38°C or higher, or shaking chills, or feeling generally unwell
- Any wound concern, fever or feeling unwell, after a megaprosthesis the threshold to call is deliberately lower than after standard joint replacement. Same-day contact, never wait-and-see
- A new lump near the operation site, or new persistent pain at any new site, do not wait for the next surveillance scan to mention it

For joint replacement patients, a wound problem is never something to "wait and see". Early treatment of an infected joint replacement is vastly more successful than late treatment, call the rooms the same day.

ARRANGING PHYSIOTHERAPY IN AUSTRALIA

- Most privately insured patients self-fund private physiotherapy or use extras cover. A GP Chronic Disease Management plan subsidises only five allied-health visits per calendar year, not enough for a major reconstruction, so plan for this.
- Compensable patients (workers compensation, CTP) follow an insurer-approved plan.
- Tele-rehabilitation and app-supported home programmes are reasonable additions, but a sports knee reconstruction still needs periodic in-person objective strength testing.

COMMON QUESTIONS

When will I walk again after limb salvage surgery?

You will usually stand and take your first steps with a frame within a day or two of surgery. The rotating-hinge implant is stable immediately. Most patients are taking full weight around the third week (sooner or later depending on how the implant was fixed), and the journey from crutches to a stick then plays out over months, not weeks, paced by how quickly your quadriceps control returns. Many people keep a stick for distance long term: a sensible adaptation, not a setback.

Will I be able to run?

No, and it is better to hear that clearly at the start. Running, jumping and impact sport are not part of life with a megaprosthesis: impact accelerates wear of the hinge and risks fracture through bone weakened by the resection and by any radiotherapy or chemotherapy. The realistic and genuinely good outcome is independent walking, with or without a stick, a full daily life, and low-impact exercise such as walking, swimming and cycling.

What is an extension lag, and why does my knee sag when I lift my leg?

An extension lag is a knee you can straighten with your hand but cannot yet hold straight with your muscle: the leg sags at the knee when you lift it. It is common after distal femoral replacement, because removing the tumour changes the quadriceps' architecture

and its leverage over the new joint, even when the muscle itself is preserved. It is also the central project of this programme: quadriceps activation from day one, the straight leg raise as the milestone, then graded loaded straightening work, sometimes with muscle stimulation or a supportive orthosis. Watching the lag shrink is how you know the programme is working.

How much will my knee bend in the end?

Flexion is introduced early as controlled movement in the brace and advanced steadily by your team, and it usually comes on well. Honestly, though: final bend is usually somewhat less than a native knee. The programme deliberately prioritises active straightening over maximum bend, because a knee that straightens under load walks well and feels trustworthy. That is the trade that pays.

How long will I wear the brace?

The hinged brace is worn from surgery through the early weeks, with the permitted bending range set and advanced by your team at each review, never adjust the dial yourself. It is weaned as your straight leg raise and gait control return, commonly over the first 6–12 weeks, but that is a decision made at review rather than a date on a calendar.

Why is my programme different from someone else with the same diagnosis?

Because in limb-salvage rehabilitation the site of the reconstruction, not the diagnosis, determines the protocol. A distal femoral replacement and a proximal tibial replacement are both knee megaprotheses, yet one moves early and the other is immobilised for six weeks, different muscles and tendons are disturbed at each site. Within that, your own operation record governs: what was removed, what was reattached, and how the implant was fixed. If this guide and your team's instructions differ, your team is right.

What are the MSTS and TESS scores my team mentions?

Two ways of measuring how the limb is doing. The MSTS score is the clinician's rating of limb function on a 0–100% scale; the TESS is your own rating of how difficult everyday tasks are. Good limb-salvage results typically land in the 70–85% range. That means

good function, not normal function, and a score in that range after a distal femoral replacement is a genuinely good outcome.

My physiotherapist is on the Mid North Coast, how do they work with the Sydney team?

This is normal and it works well. Most of the hands-on rehabilitation happens locally, guided by the operation record and the protocol your Sydney team provides. Your physiotherapist is welcome: encouraged, to contact the rooms directly with questions, and the key decision points (advancing the brace range, weaning the brace, progressing weight bearing on an uncemented stem) are made at your reviews and communicated in writing. Bring this guide and your operation record to your first local appointment.

What about infection: what am I actually watching for?

Deep infection is the most significant risk of this surgery: considerably more common than after standard joint replacement, partly because chemotherapy and radiotherapy affect healing and immunity. Watch for increasing pain, spreading redness, wound discharge, fever or feeling unwell, and call the rooms the same day, every time, for the rest of your life with the implant. Early treatment of an infected prosthesis is vastly more successful than late treatment. Also tell every future dentist and doctor you have a megaprosthesis before procedures.

Can I fly, or drive to Sydney for my reviews?

The general convention after joint replacement is no long-haul flying for 6 weeks, though the evidence behind a fixed rule is limited, talk to the team before any early travel so clot prevention, seating and movement can be planned. The same logic applies to the long drive from the Mid North Coast: break the trip, get out and move every hour, do your ankle pumps, and travel as a passenger with room for the braced leg until you are cleared to drive.

Will I need more surgery in the future?

Plan on it, calmly: over a lifetime, revision surgery of some kind is likely, bearings and hinge components wear, and the implant is serviced rather than permanent. This is one

reason for the permanent no-impact rule and for the surveillance imaging of both the tumour site and the prosthesis, which continues for years: problems found early are far easier to fix.

THE EVIDENCE BEHIND THIS GUIDE 11 sourced statements

CLAIM	SOURCE
The site of reconstruction, not the diagnosis, determines the rehabilitation protocol in lower-limb endoprosthetic surgery	Standardisation of rehabilitation after limb salvage surgery for sarcomas, Hematol Oncol Stem Cell Ther 2013 (PMID 24161605); functional outcomes of endoprosthetic reconstruction by site, Clin Orthop Relat Res 2015 (PMID 24777730)
Early, staged, active mobilisation after limb-salvage surgery is safe, no increase in dislocation or infection, associated with better quality of life	Standardisation of rehabilitation after limb salvage surgery for sarcomas improves outcome, Hematol Oncol Stem Cell Ther 2013 (PMID 24161605); occupational therapy rehabilitation after limb salvage surgery, a scoping review, Disabil Rehabil 2021 (PMID 31180732)
Weight bearing after distal femoral replacement is typically as tolerated early, with full weight bearing commonly achieved around the third post-operative week; cemented fixation permits faster progression than uncemented	Distal femur resection with endoprosthetic reconstruction, long-term follow-up, Clin Orthop Relat Res 2002 (PMID 12072766); standardised rehabilitation after limb salvage surgery, Hematol Oncol Stem Cell Ther 2013 (PMID 24161605)
Extension lag is a common and characteristic problem after distal femoral replacement, attributed to altered quadriceps architecture and leverage after tumour resection	Distal femur resection with endoprosthetic reconstruction, long-term follow-up, Clin Orthop Relat Res 2002 (PMID 12072766); functional outcomes of endoprosthetic reconstruction after tumour resection, Clin Orthop Relat Res 2015 (PMID 24777730)

CLAIM	SOURCE
Final knee flexion after distal femoral replacement is usually somewhat less than a native knee	Distal femur resection with endoprosthetic reconstruction, long-term follow-up, Clin Orthop Relat Res 2002 (PMID 12072766); functional outcomes of endoprosthetic reconstruction after tumour resection, Clin Orthop Relat Res 2015 (PMID 24777730)
NMES (neuromuscular electrical stimulation) is a reasonable adjunct for quadriceps activation failure during early rehabilitation	Early neuromuscular electrical stimulation to improve quadriceps strength after total knee arthroplasty, Phys Ther 2012 (PMID 22095207), extrapolated to limb salvage rather than studied in it
Deep infection is the most significant complication of megaprosthesis reconstruction and is considerably more common than after conventional arthroplasty	Henderson et al., failure mode classification for tumour endoprostheses, J Bone Joint Surg Am 2011 (PMID 21368074); the fate of periprosthetic joint infection following megaprosthesis reconstruction, JB JS Open Access 2021 (PMID 34841189), where 2-year survivorship after infection was 65.1% and mortality 15%
Revision surgery is likely at some point over a lifetime with a megaprosthesis; impact loading accelerates wear and is advised against	Survival of megaprostheses in lower limb reconstruction after tumour resection, Clin Orthop Relat Res 2015 (PMID 24964884): overall survival free of further surgery 75.9% at 5 years and 66.2% at 10 years, with failures in 29% of implants
MSTS is a clinician-rated 0–100% limb-function score; TESS is a patient-reported measure of everyday task difficulty; good limb-salvage outcomes typically fall in the 70–85% range	Enneking et al., MSTS functional evaluation system, Clin Orthop Relat Res 1993 (PMID 8425352); Davis et al., development of the Toronto Extremity Salvage Score, Qual Life Res 1996 (PMID 8973131); functional outcomes of endoprosthetic reconstruction after tumour resection, Clin Orthop Relat Res 2015 (PMID 24777730)
Bone weakened by resection, radiotherapy and chemotherapy carries an elevated periprosthetic fracture risk, including after minor loading	Henderson et al., failure mode classification for tumour endoprostheses, J Bone Joint Surg Am 2011 (PMID 21368074), in which periprosthetic fracture is a recognised failure mode; late complications and survival of endoprosthetic reconstruction, Clin Orthop Relat Res 2010 (PMID 20625951). The added contribution of radiotherapy and chemotherapy to that risk is a clinical concern rather than a quantified finding

CLAIM	SOURCE
Long-term surveillance imaging of the tumour site and prosthesis is standard of care for years after sarcoma resection and endoprosthetic reconstruction	Soft tissue and visceral sarcomas: ESMO-EURACAN-GENTURIS clinical practice guidelines, Ann Oncol 2021 (PMID 34303806)

This guide is general information for patients of Dr Matthew Broadhead (Harbour Orthopaedics & Sports Medicine) and is not a substitute for the specific advice given to you by Dr Broadhead, your physiotherapist or your hospital team.

Surgical findings vary, and your protocol may differ from what is written here: your operation record and your surgeon's instructions always take precedence.

If in doubt, call the rooms on (02) 9052 1883. In an emergency, call 000.

Last reviewed: 2026-08-05 by Dr Matthew Broadhead, FRACS (Orth).

YOUR PROGRESS TRACKER

Fill this in once a week: it shows your trend at a glance and makes reviews far more useful.
Bring it to every appointment.

Week	1	2	3	4	5	6	7	8	9	10	11	12
Exercises done (sessions)												
Walking distance / time												
Pain score (0–10)												
Knee bend (degrees)												
Swelling (less / same / more)												

QUESTIONS FOR DR BROADHEAD
