CQ HAND + UPPER LIMB
SPECIALIST ORTHOPAEDIC SURGEON

REHABILITATION PROTOCOL

Rotator Cuff Repair — Rehabilitation Protocol

This protocol guides your recovery after rotator cuff repair with Dr Kieran Hirpara at Mater Private Hospital Rockhampton. Each phase below opens with a plain-English explanation of what is happening and what matters most, followed by the structured protocol written **for your physiotherapist** — bring this page or its PDF to your first physiotherapy visit so your rehabilitation stays coordinated. Your physiotherapist may adjust the plan depending on how your recovery progresses.

If you have any concerns about your wound after surgery, get in touch with the rooms. It is often helpful to take a photo of the wound and email it for review.

Rotator cuff repairs are often combined with other procedures in the same operation — most commonly a subacromial decompression, distal clavicle excision, biceps tenodesis or suprascapular nerve release. **When that happens, this protocol governs the whole recovery**: the repaired tendon is the slowest-healing part of the operation, and its timeline sets the pace.

What to expect

A rotator cuff repair re-attaches torn tendon to bone, and that biological attachment is what this protocol protects. The attachment is still soft at six weeks and keeps maturing for many months afterwards: in healing studies the repair has only around a quarter of its normal strength at six weeks and roughly half at twelve, and it does not approach full strength until at least six months after surgery. That is why movement and load are reintroduced in stages rather than all at once.

It is tempting to start exercising early, but the evidence is reassuringly clear: the extra range of motion gained from early movement is temporary, and by one year there is no difference between early and delayed motion. Patience in the first weeks costs you nothing in the long run — and protects the repair when it is at its weakest.

Not every repaired tendon heals perfectly — healing is slower with age, poorer tendon quality, smoking and diabetes — but imperfect healing does not necessarily mean a poor result, and function usually improves regardless. What clearly does matter is protecting the repair early: most re-tears happen in the first three to six months, and patients who do not follow the early restrictions are far more likely to re-tear. Sticking to the protocol is the single most useful thing you can do for your shoulder.

You will wear a simple sling rather than an abduction sling. There is no proven difference in outcomes between the two, and abduction slings are more complicated and awkward to live with.

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The journey at a glance:

- **Protection** – weeks 0–4
- **Restoration** – weeks 4–10
- **Strengthening** – weeks 10–18
- **Advanced strengthening** – weeks 18–22
- **Return to activity** – week 22 onwards

Wearing your sling

Your sling (shoulder immobiliser) supports the repair while it heals. The rules are simple:

- Wear it for **6 weeks**, especially when out of the house. You don't need to sleep in it.
- Take it off only for showers and for your exercises, once you have been shown how – and whenever the sling is off, keep your arm by your side.
- Resting at home, it can come off if you are sensible about it: arm supported on a pillow while sitting.
- Use ice if the shoulder is swollen or sore, especially after exercise.

Fitting it correctly matters – a loose sling does not protect the repair:

1. Position your elbow right into the corner of the sling, well supported.
2. The end of the sling should rest at the knuckle of your little finger. If your hand extends further out, the sling is not supporting you properly.
3. The sling has two Velcro straps – one for your neck, one for your waist.
4. With your elbow and forearm positioned, use your non-operated arm to swing the upper strap around your neck and attach it through the upper loop.
5. Attach the lower strap around your waist through the lower loop the same way.

While you are in the sling, watch your posture. Keep your ears, shoulders and hips in line and avoid letting your shoulders slump – good posture protects your back and helps prevent your shoulder stiffening. A rolled-up towel in the small of your back when sitting is a useful reminder.

Your first days in hospital

Your rehabilitation starts on the ward. Before you go home, the hospital physiotherapist will fit your sling, teach you to put it on and take it off yourself, and walk you through the early exercise program below so you can do it confidently at home. Unless you have chosen to arrange your own physiotherapy, your first outpatient physiotherapy appointment is made for you and detailed in your discharge pack.

A few practical tips for the early days:

- Take your painkillers **before** you do your exercises, and before your physiotherapy appointments.
- Use ice for pain relief if needed.
- When wearing the sling, relax your shoulder and let the sling take the weight of your arm.
- You may take your arm out of the sling for your exercises and for showering.
- If you have any problems, contact the rooms or let your physiotherapist know.

Phase I – Protection (Week 0–4)

The first four weeks are about one thing: protecting the repair while the tendon starts to heal onto the bone. You will be in the sling, managing swelling with ice, and doing gentle exercises that keep your hand, wrist, elbow and neck moving without loading the repaired tendon – the early exercise program below. The rules that matter most: no active shoulder movement, no lifting with the operated arm, no pushing up through your hands, and no driving while the sling is required.

For your physiotherapist:

Goals

- Protect the integrity of the surgical repair
- Settle pain and inflammation
- Prevent muscular inhibition
- Promote independence in activities of daily living within the limits of the repair

Management

- Educate on the post-operative precautions below – non-compliance with restrictions in the first 6 weeks is strongly associated with re-tear or non-healing (Thigpen et al., 2016)
- Check sling fit; teach independent donning and doffing
- Postural advice and scapular retraction
- Cryotherapy, with advice on home use
- Keep exercise selection within the passive category (supraspinatus activity ≤ 15% MVC); use only as many repetitions as needed to achieve the staged range goals
- Home exercise program:
  - Pendular exercises, performed in trunk flexion with a circle under 20 cm diameter – this produces under 10% maximum voluntary contraction (MVC) of supraspinatus, well within the passive range (passive exercise is defined as below 20% MVC)
  - Active-assisted range of motion (AAROM): external rotation to neutral at 0° abduction; supine self-assisted flexion to below 90°, guided by pain
  - Active range of motion (AROM): hand, wrist and elbow; cervical lateral flexion and rotation

- Staged range guidance: passive forward elevation in the scapular plane 60–90° by week 2, progressing towards (not beyond) 90° by the end of the phase; movements gentle and comfortable, never forced

Precautions

- No active or resisted shoulder movement
- No lifting with the operated arm
- No weight-bearing through the hands
- No external rotation past neutral
- No driving while the sling is required (6 weeks)

Criteria to progress

- Comfortable passive forward elevation to 90° (supine)
- Comfortable passive external rotation to neutral
- Pain settling and controlled with simple analgesia (under 4/10)
- Palpable activation of scapular and shoulder musculature without pain
- Wound healed, with no signs of complication

Repair-specific variations (per the Massachusetts General Brigham protocol): if the subscapularis was repaired, limit external rotation to 30° and avoid active internal rotation for 12 weeks. If the teres minor was involved, avoid early scapular retraction loading. If a biceps tenodesis was performed at the same time, its additional restrictions apply — these are confirmed at the post-operative review.

Phase II — Restoration (Week 4–10)

The repair is healing, but it is still weak — at this stage the tendon attachment has only about 20–30% of its normal strength. So this phase restores *movement*, not strength. The sling is weaned off at week 6, and your physiotherapist will work with you to gradually recover full shoulder motion — assisted movement first, then movement under your own power from about week six. Strength work stays off the menu apart from gentle muscle-activation (isometric) exercises late in the phase. Keep anything you lift under 2 kg, avoid sudden or jerky movements, don't force your arm behind your back, and don't drive until you are out of the sling.

For your physiotherapist:

Repair strength is likely only 20–30% of normal at week 6, rising to roughly 30–50% by week 12.

Goals

- Full active range of motion by the end of the phase
- Restore scapular symmetry and proprioception
- Maintain trunk mobility

Management

- Wean from the sling at week 6
- AAROM weeks 4–6: self-assisted or cane-assisted forward elevation, external rotation and abduction — supine at week 4, semi-recumbent (~45°) at week 5, upright from week 6; pulleys may be added from week 6
- AROM from week 6: begin in gravity-minimised positions (supine, side-lying, short lever) and progress to upright elevation; monitor for shoulder hitching and scapular substitution (mirror feedback is useful)
- Progressive passive range of motion, with manual therapy as appropriate; staged guidance — by week 9, passive forward elevation 130–155°, passive external rotation 30–45° at the side (45–60° at 90° abduction if comfortable), active elevation 80–120°; near-full passive range by the end of the phase
- Stretches that load the repair directly — behind-back internal rotation, horizontal adduction, external rotation in abduction — only late in the phase (after week 9), gently and judiciously; defer forceful behind-back stretching until after week 12
- Scapular symmetry and proprioceptive drills
- Address trunk mobility as required
- Rotator cuff isometrics from week 8, if clinically appropriate — submaximal only (about 25% effort), pain-free; maximal isometrics load the repair more than active movement and must be avoided

Precautions

- No lifting over 2 kg
- No resisted isotonic work; no sudden or jerking movements
- No weight-bearing through the hands
- Avoid excessive behind-back (internal rotation) movement
- No driving until out of the sling (week 6)

Criteria to progress

- Near-full, pain-free passive range of motion (forward elevation 150° or more)
- Active elevation to at least 120° without hitching or scapular substitution
- Light activities of daily living below shoulder height pain-free
- Submaximal isometrics tolerated without reactive pain
- Pain no more than 2/10 before resisted work begins

Phase III — Strengthening (Week 10–18)

This is the phase in which the repair matures fastest: tendon-to-bone healing is approaching maturity by the middle of the phase, and the focus shifts from regaining movement to rebuilding strength, endurance and control. Resistance work with bands and light weights starts from about week 12 — high repetitions, low loads.

The key principle is *one plane at a time*: strength work in any direction waits until you have near-full, comfortable movement in that direction. Aggressive overhead work and contact sport are still off-limits — the repair is strengthening, but not yet strong enough for those.

For your physiotherapist:

Repair strength is roughly 30–50% of normal at week 12, with tendon-to-bone healing approaching maturity by about week 15 (animal data — slower with poor tissue quality, smoking or diabetes). Most re-tears occur within the first 6 months; progress load gradually.

Goals

- Full active range of motion
- Dynamic shoulder stability
- Graduated restoration of strength, endurance and neuromuscular control
- Graduated return to functional activities

Management

- Progress strengthening plane by plane: introduce strengthening or functional work in a given plane only once range of motion in that plane is near-full and comfortable
- Resisted isotonic work from week 12: elastic bands and light dumbbells, high repetitions and low loads — external rotation and internal rotation with the elbow at the side, rows, and short-lever forward elevation/reaching
- Keep long-lever or elbow-extended elevation loads to about 0–1 kg to keep supraspinatus activity below 50% MVC
- Use the thumb-up ("full can") position for assisted, active and resisted elevation; avoid the thumb-down ("empty can") position
- Introduce overhead strengthening only once resisted elevation in the scapular plane is comfortable
- Rhythmic stabilisation and motor-control drills; progress closed-chain and periscapular work
- Maintain passive range with continued stretching — do not strengthen a stiff or painful shoulder; restore mobility first, and do not progress patients who have not met range milestones

Precautions

- Do not overstress the anterior capsule with aggressive overhead activity or strengthening
- No contact sports or activities
- Avoid empty-can (thumb-down) resisted elevation

Criteria to progress

- Full, pain-free active range of motion with symmetrical scapular mechanics
- No reactive pain or swelling after strengthening sessions

- Comfortable resisted elevation in the scapular plane
- External/internal rotation strength approaching the other arm (around 80% on submaximal dynamometry – submaximal testing is appropriate from 4 months; defer maximal testing until 9–12 months)

Phase IV – Advanced strengthening (Week 18–22)

This phase is the bridge back to a fully working shoulder: keeping the range you have won, and building the strength, power and endurance to use it confidently – reaching, carrying, working overhead. Most everyday activities are back by now; what remains is conditioning the shoulder for the heavier demands ahead.

For your physiotherapist:

Goals

- Maintain full, pain-free active range of motion
- Improve strength, power, endurance and neuromuscular control
- Graduated return to full functional activity

Management

- Continue stretching and passive range of motion as indicated
- Advanced conditioning exercises for functional use of the upper limb
- Progressive resistance including eccentric loading and functional positions; rotator cuff strengthening at 90° abduction as tolerated
- Work-specific conditioning for manual workers; introduce controlled plyometric and sport-specific drills late in the phase as appropriate

Criteria to progress

- Full, pain-free active range of motion maintained
- External/internal rotation strength at least 85% of the uninvolved side, with an external:internal rotation ratio of about 60% or better
- No pain, instability or reactive swelling with advanced loading

Phase V – Return to activity (Week 22 onwards)

The final phase is a graduated return to the things the shoulder was repaired for – strenuous work, sport and recreation. Returns are staged rather than sudden, and for sport an interval program (building up volume and intensity step by step) is the safest route back.

For your physiotherapist:

Goals

- Graduated return to strenuous work
- Graduated return to full recreational activity and sport

Management

- Continue strengthening and stretching
- Initiate an interval sport program as appropriate — for overhead and throwing sports, complete the graded progression before unrestricted play
- Return-to-sport decision-making should be individualised — level of upper-limb demand, contact versus non-contact, frequency of participation — and coordinated with the surgeon
- Defer maximal strength testing until 9–12 months post-operatively

Criteria to progress

- Full, pain-free range of motion
- External/internal rotation and elevation strength at least 85% of the uninvolved side
- Completion of the graded interval program without pain, swelling or a sense of instability

These are the exercises for the early (protection) phase, starting on the ward and continuing at home — performed with your operated arm out of the sling and your shoulder muscles relaxed. Start them as guided by your physiotherapist, and stop anything that causes sharp shoulder pain.

Your early exercises

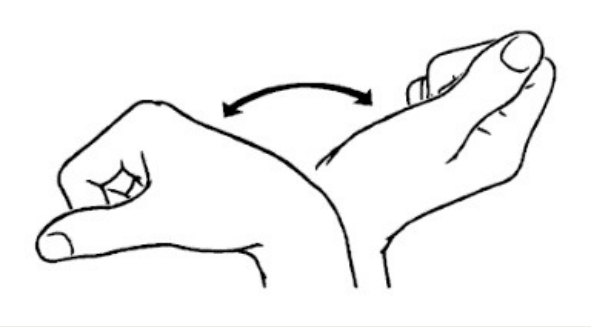
Circulation and deep breathing

To reduce the risk of post-operative complications, aim to walk for at least 30 minutes a day (this does not have to be all at once), and take 4–6 deep breaths every hour.

Open and close hand

Make a tight fist with your hand, then open it fully.

10 times per hour



Active wrist flexion / extension

Actively bend your wrist forward, then back, as far as possible.

10–15 times per hour

Active elbow flexion / extension

With your palm up, gently bend your elbow as far as possible, then straighten your arm as far as possible.

10–15 times, 2–3 times a day

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Pendulum exercises

Let your arm hang and move it in a circle — clockwise, then counter-clockwise — by rocking your body weight in a circular pattern, not by using your shoulder muscles. Also move it forwards/backwards and side to side. Your operated arm must stay RELAXED throughout.

10 in each direction, 2–3 times a day

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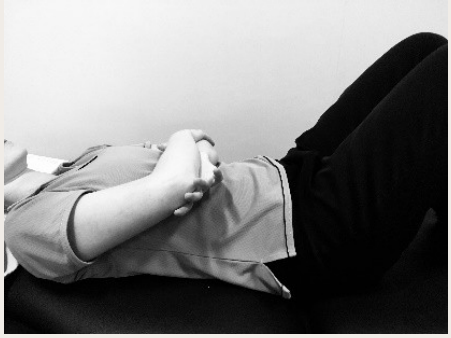

Active-assisted shoulder flexion

Lying on your back, place the hand of your non-operated arm under the elbow of your operated arm, and use it to lift the operated arm towards vertical. Do NOT lift the operated arm above shoulder height (90°). Slowly return to the start.

10 times

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Cradled abduction

Sitting on a chair and leaning forward, cradle the operated arm with your other arm and help it out to the side — like rocking a baby.

10 times, 3 times a day

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Active external rotation

Sitting or standing, start with your elbow bent and your hand against your stomach. Keeping your elbow by your side, rotate your hand outward to the position shown. Do NOT rotate past it. Slowly return to the start.

10 times

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Lower trapezius setting

Squeeze your shoulder blades downwards and together.

Hold 5 seconds, 5 times; repeat 3 times a day

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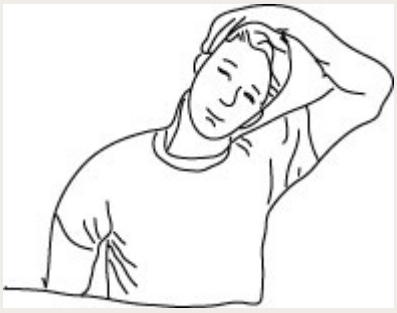

Upper trapezius stretch

Use your non-operated arm to bring your ear towards your shoulder, away from the operated side.

Hold 10 seconds, 3 times; repeat 3 times a day

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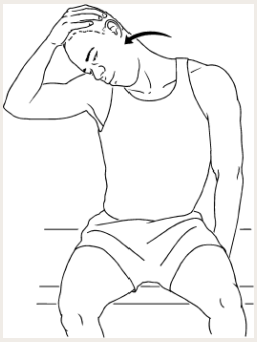

Levator scapulae stretch

Use your non-operated arm to gently bring your nose down towards your armpit, away from the operated side.

Hold 10 seconds, 3 times; repeat 3 times a day

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After your protocol

This protocol works alongside the practice's general recovery advice — see managing post-operative pain and wound care. For the operation itself, see rotator cuff repair.

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The phase structure and progression criteria are additionally informed by published rotator cuff repair rehabilitation protocols, including those of Massachusetts General Brigham Sports Medicine, the MOON Shoulder Group and The Ohio State University Wexner Medical Center, and by the American Society of Shoulder and Elbow Therapists' consensus statement on rehabilitation after arthroscopic rotator cuff repair (Thigpen et al., *Journal of Shoulder and Elbow Surgery*, 2016).

REFERENCES

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