



Four Corner Fusion — Rehabilitation Protocol

Overview

- Applies to: four corner fusion (4CF) / midcarpal arthrodesis for SLAC/SNAC wrist arthritis
- Procedure includes fusion of capitate, hamate, triquetrum, and lunate (with scaphoid excision)
- Solid bony union is essential before active loading — typically 3–4 months
- Hand therapy (OT with hand therapy expertise) is strongly recommended

Rehabilitation Phases

Phase 1 — Immobilisation	Weeks 0–8
<p>Goals:</p> <ul style="list-style-type: none">• Protect fusion site• Control pain and swelling• Maintain digital and shoulder ROM	<p>Exercises & Interventions:</p> <ul style="list-style-type: none">• Below-elbow cast (wrist in slight extension/neutral) for 6–8 weeks• Finger and thumb AROM (IP, MCP) daily• Shoulder AROM (elevation, rotation)• Elbow flexion/extension• Edema management: elevation, finger compressive wrap• Ice above cast if possible
<p>Precautions:</p> <ul style="list-style-type: none">■ Absolute: no wrist movement■ No weight bearing through wrist■ Cast must not be removed	
Phase 2 — Controlled Motion (Post-Cast)	Weeks 8–12
<p>Goals:</p> <ul style="list-style-type: none">• Initiate gentle wrist flexion/extension within pain-free range• Monitor fusion site healing on imaging• Prevent wrist and tendon stiffness	<p>Exercises & Interventions:</p> <ul style="list-style-type: none">• Transition to removable thermoplastic wrist splint Week 8 (if imaging confirms union progress)• Gentle active wrist flexion/extension (gravity-eliminated)• Forearm supination/pronation AROM• Tendon gliding exercises (fingers)• Light grip (putty, no load)• Splint worn full-time except supervised exercise and hygiene
<p>Precautions:</p> <ul style="list-style-type: none">■ Confirm fusion progress on CT/X-ray at 8 weeks before proceeding■ No resisted wrist movement before confirmed union	



Rehabilitation Phases (continued)

Phase 3 — Progressive Loading	Weeks 12–18
<p>Goals:</p> <ul style="list-style-type: none">• Full forearm rotation• Progressive wrist and grip strengthening• Functional hand use	<p>Exercises & Interventions:</p> <ul style="list-style-type: none">• Wean from splint (use during heavy activity)• Active wrist AROM (expected arc 50–70% of normal)• Theraband wrist flexion/extension (light)• Resisted grip and pinch strengthening• Functional ADLs (cooking, dressing, writing)• Occupational therapy for tool adaptations• Scar management
<p>Precautions:</p> <ul style="list-style-type: none">■ Residual motion limited by design: advise patients on expected ROM plateau■ Fusion non-union: persistent pain/tenderness requires CT review	
Phase 4 — Return to Function	Weeks 18–26
<p>Goals:</p> <ul style="list-style-type: none">• Functional grip and pinch for ADLs and work• Long-term joint protection• Patient education on long-term expectations	<p>Exercises & Interventions:</p> <ul style="list-style-type: none">• Progressive resistance exercises (1–3 kg loads)• Work hardening if manual labour• Sport-specific reintegration (golf — adapted grip, cycling)• Occupational therapy — adaptive equipment as needed• Long-term wrist protection splint for heavy activities indefinitely
<p>Precautions:</p> <ul style="list-style-type: none">■ Contact sport/heavy manual work: surgeon clearance required■ Hardware removal: not routine; consider if painful at 12 months	

Clinical Notes

- CT scan at 12 weeks to confirm union
- Non-union rate approximately 5–10% — early identification important
- Expected long-term ROM: ~50° flexion/extension arc, full forearm rotation
- Patient expectations counselling: pain relief > ROM restoration

References

1. Watson HK, Ballet FL. The SLAC wrist: scapholunate advanced collapse pattern of degenerative arthritis. J Hand Surg Am. 1984;9(3):358-365.
2. Viegas SF et al. Midcarpal arthritis: four-corner arthrodesis. J Hand Surg Am. 1992;17(5):940-946.
3. Mulford JS et al. Assessment and management of chronic wrist pain: a systematic review. J Hand Surg Eur Vol. 2007;32(5):523-538.
4. Siegel JM, Ruby LK. A critical look at intercarpal arthrodesis: review of the literature. J Hand Surg Am. 1996;21(4):717-723.
5. Cohen MS, Kozin SH. Degenerative arthritis of the wrist: proximal row carpectomy versus scaphoid excision and four-corner arthrodesis. J Hand Surg Am. 2001;26(1):94-104.
6. Merrell GA et al. Scaphoid excision and four-corner arthrodesis: a single longitudinal-incision technique. J Hand Surg Am. 2003;28(2):195-201.

This rehabilitation protocol is intended as a general guide for qualified physiotherapists and healthcare professionals. It should be adapted to individual patient presentation, surgical findings, tissue quality, and progress. All progression decisions should be made in consultation with the treating surgeon.