REGENETEN®

Bioinductive Implant · Rehabilitation Protocol

ShoulderEducation.com

REGENETEN® is a collagen bioinductive implant that promotes tendon regeneration, used for partial supraspinatus tears and as tendon repair reinforcement. All progression is individualized and guided by pain levels, tissue quality, and clinical response.

General Objectives

- Control pain and inflammation throughout all phases
- Biological protection of the tendon during implant integration
- Progressive recovery of joint range of motion
- Restore scapular control and rotator cuff function
- Progressive return to functional and sports activities

PHASE 1 Protection Phase — Weeks 0 – 3

Goals

- Protect the surgical site and ensure wound healing
- Diminish pain and inflammation
- Prevent stiffness and begin gentle motion
- Maintain circulation in hand, wrist, and elbow

■ Precautions

- No lifting (cell phone weight OK)
- No supporting body weight through hands — no pushing up from bed or chair
- No active ROM elevating the shoulder/arm
- Avoid active shoulder extension (reaching behind you)
- Avoid active external rotation (moving hand away from belly)
- Avoid ABD plane — do NOT raise arm out to the side (prevents edge abrasion on implant)

■ PT Scheduling

Week 3 — Initial PT Evaluation: Formal evaluation, baseline measurements (ROM, strength, pain), and HEP education. Patient is instructed in home exercise program prior to ongoing PT.

Week 5 — PT Resumes / Active Treatment Begins: Formal PT treatment commences and continues through the remainder of the protocol.

Activities / Exercises

- Sling: use as medically indicated; remove 4–5×/day for exercises

- Sleep with sling and pillow support; recliner or propped pillows recommended
- Use affected hand at waist level only; elbow flexion is OK
- Ice regularly: 20 minutes at a time, 4–5× per day
- Elbow, wrist, and hand ROM exercises to maintain circulation
- Submaximal isometrics only if completely pain-free
- Pendulum: small dinner-plate circles only
- Scapular retraction: pinch blades back and together

PHASE 2 Controlled Mobility Phase

Weeks 3 – 8 | PT begins Wk 5

Goals

- Restore non-painful range of motion (ROM)
- Retard muscular atrophy
- Decrease pain and inflammation
- Improve postural and scapular awareness
- Minimize stress to healing structures
- Independent with activities of daily living (ADLs)

■ Precautions

- No lifting over 5 lbs
- No pushing up from bed or chair; no pulling heavy doors or handrails
- Limit active ROM elevation to forward plane only
- Continue ABD restriction — do not lift arm out to the side
- PT should not hurt — do not force painful motions

■ PT Scheduling

Week 3 (Evaluation Only): Baseline measurements, HEP review, and patient education — no formal treatment session.

Week 5 (Active PT Begins): Ongoing PT treatment sessions commence. Progress PROM → AAROM → AROM as tolerated within Phase 2 precautions.

Activities / Exercises

- Wean from sling; keep wearing in public for protection
- OK to drive and use arm for ADLs: bathing, dressing, eating, typing
- Continue icing 20 min, 4–5×/day as needed for discomfort
- PROM: non-forceful flexion and forward elevation
- Active-assisted ROM (AAROM) progressing to AROM
- Pulley passive forward flexion
- Shoulder wand exercises and table stretch (hold 90–120 sec)

- Internal rotation recovery
- Scapular strengthening: serratus anterior, mid/lower trapezius
- Progressive rotator cuff isometrics — pain-free only
- Motor control and scapulohumeral rhythm training
- Joint mobilization for arthrokinematics and pain modulation (PT)

PHASE 3 Initial Strengthening Phase — Weeks 6 – 12

Goals

- Improve strength and neuromuscular control
- Progress volume before intensity
- Begin eccentric loading progressively

■ Precautions

- Must meet criteria before introducing elastic bands (see Criteria section)
- No intense eccentric loading until Phase 4
- Avoid high fatigue and scapular compensation patterns
- Caution with repetitive motions — progress as tolerated

Activities / Exercises

- Elastic bands introduced at Weeks 6–8 if pain ≤ 3/10 and motor control criteria met
- Begin with low-resistance bands: external/internal rotation at 0°
- Progressive elastic band exercises — concentric loading first
- Scapular plane elevations with low load
- Proprioception and dynamic stability training
- Isotonic program with light dumbbells
- Scapulothoracic strengthening: isometric, isotonic, PNF
- Upper extremity endurance exercises

PHASE 4 Advanced Strengthening Phase — Weeks 12 – 16

Goals

- Progressive load increase and greater eccentric emphasis
- Kinetic chain integration and functional movement patterns
- Prepare for sport- or work-specific demands

■ Precautions

- Monitor symptoms 24h post-exercise — no reactive flare
- Progress load only if previous session was pain-free

Activities / Exercises

- Theraband at 90/90 for IR and ER — slow and fast sets
- Theraband for scapulothoracic musculature and biceps
- Kinetic chain work and functional movement patterns
- Greater eccentric loading emphasis
- PNF diagonal patterns (D1 and D2)
- Isokinetics and upper body endurance (UBE)
- Introduction of sport- or work-specific movement patterns

PHASE 5 Return to Sport / Function — Week 16+

Goals

- Return to full athletic, recreational, or occupational activity
- Confirm bilateral symmetry before clearance

■ Precautions

- Monitor residual pain at 24h post-activity
- Progressive return based on tolerance — no sudden load spikes

Activities / Exercises

- Plyometrics for rotator cuff; velocity and execution speed work
- Progressive overhead gestures and throwing mechanics
- Functional tests with bilateral comparison
- Sport-specific or work-specific simulation and conditioning
- Continue rotator cuff–specific exercises; advance gym work as tolerated

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■ ABD PLANE RESTRICTION (Phases 1–2): Avoid lifting the arm in the coronal / abduction plane for the first 6 weeks post-op. The Regeneten patch edges are vulnerable to compression between the humeral head and acromion during abduction, causing edge abrasion. Always favor the forward flexion and rotation planes. Abduction-plane exercises (lateral raises, abduction pulleys) may be introduced after adequate implant integration — typically no earlier than 6 weeks post-op.

Criteria for Phase Progression

Criterion	Requirement

Pain	Controlled during and after session — no reactive flare; pain ≤ 3/10 for band introduction
Inflammation	No reactive inflammation following exercise
ROM	Functional range of motion present without movement compensations
Scapular Control	Correct scapulohumeral rhythm demonstrated; no dyskinesis
Load Tolerance	Adequate tolerance confirmed before advancing intensity or resistance
Phase III Entry	Full painless ROM + no/minimal tenderness on examination

Elastic Band Introduction Criteria

Factor	Detail
When	Typically weeks 6–8, based on pain level and motor control quality
Start with	Low-resistance bands only
Initial exercises	External and internal rotation at 0°; light face pulls; scapular low rows
Avoid	High fatigue, scapular compensation patterns, abduction arc
Criteria	Pain ≤ 3/10 · Functional ROM present · Adequate scapular muscle activation

Common Errors to Avoid

- Introducing excessive load or resistance too early
- Fatiguing the rotator cuff during early phases
- Ignoring scapular dyskinesis — address it proactively
- Prioritizing strength before establishing motor control
- Allowing abduction-plane movement in the first 6 weeks
- Failing to monitor 24h post-activity pain before progressing
- Not individualizing progression based on pain and tissue quality

Quick-Reference Timeline

Phase	Weeks	Key Focus	PT Scheduling	Resistance?	Eccentric?
1	0–3	Protection, sling, pendulums, gentle isometrics	Wk 3: Eval + HEP ed.	No	No
2	3–8	Active ROM, pulley, scapular & cuff activation, motor ctrl	Wk 5: Active PT begins	No	No
3	6–12	Elastic bands (criteria-based), concentric loading	Ongoing	Low bands	Starting
4	12–16	Progressive load, kinetic chains, eccentric, functional	Ongoing	Moderate+	Yes
5	16+	Plyometrics, overhead, bilateral testing, return to sport	Ongoing / PRN	Full	Yes