





ISOTONE POST-FRACTURE KNEE THERAPEUTIC SELF-MASSAGE PROTOCOL

Rhythmic Activation and Circulatory Restoration Following Patellar Reconstruction

Lev Neymotin, PhD

N5Digital, Inc.

info@n5digital.net

<https://isotone.net>

Background

Fractures involving the knee—especially those affecting the **patella (kneecap)**—are among the most complex to recover from because they disrupt the finely balanced system of muscles, tendons, ligaments, and nerves that control leg motion.

Patellar fractures vary in type:

- **Transverse** – a clean horizontal break, often fixed with tension bands or screws.
- **Comminuted (shattered)** – multiple bone fragments requiring surgical reconstruction.
- **Vertical or osteochondral** – partial splits or cartilage-involving injuries.
- **Avulsion** – where tendon pulls off a fragment of bone.

In all cases, **immobilization**—necessary for bone healing—leads to secondary issues: stiffness, swelling, muscle atrophy, poor circulation, and loss of neuromuscular coordination.

Post-reconstruction physical therapy therefore has a dual goal:

1. **Restore function** by gradually re-educating muscles and joints to move naturally again.
2. **Re-establish healthy circulation and proprioception**—the body's internal sense of motion and alignment.

The **IsoTone Massage Method** transforms this recovery into an **active healing process** rather than a passive one. Unlike external mechanical massagers or therapist-delivered treatments,

IsoTone lets the recovering patient **self-stimulate circulation, muscle tone, and neural pathways** through rhythmic, controlled oscillations that combine gentle resistance, frictional heat, and guided motion.

Advantages of Self-Massage with IsoTone

While traditional in-office massage and physical therapy sessions are indispensable for diagnosis, monitoring, and technique instruction, **self-massage** offers distinct and complementary benefits:

1. **Frequency and Consistency** – Patients can perform IsoTone sessions daily, accelerating progress beyond the 1–2 professional visits per week typical in clinics.
2. **Personal Sensitivity** – The user feels the exact boundary between comfort and pain, adjusting pressure and rhythm immediately—something even skilled therapists must guess.
3. **Empowerment and Compliance** – Being able to participate actively in one’s recovery strengthens motivation and confidence.
4. **Cost and Accessibility** – Regular home use reduces dependence on office visits while maintaining professional oversight remotely.
5. **Neurological Benefit of Touch** – The IsoTone is guided entirely by the user’s hands; tactile feedback enhances brain-to-muscle reconnection through rich sensory input.

Hand-Palm Engagement Technique

The palms are among the most **densely innervated sensory zones** of the human body.

Stimulating them activates relaxation pathways and improves dexterity.

Therefore, during IsoTone sessions:

- When **squeezing**, **open the hands slightly** and press with the **palms**, keeping the **fingers spread out**—this massages the palms and avoids finger strain.
- When **expanding**, **grasp the handles with extended fingers** and pull forcefully using finger strength.

Each push-pull cycle thus provides a **triple benefit**:

1. Palm relaxation,
2. Finger strengthening, and
3. Protection from hand pinching.

Objective

To restore circulation, reduce stiffness, improve neural signaling, and re-educate the periarticular muscles (quadriceps, hamstrings, gastrocnemius) following immobilization and surgical reconstruction of the patella.

1. PREPARATION PHASE — WARM-UP (3–4 MINUTES)

Goal:

Raise local tissue temperature, lightly activate surrounding musculature, and preheat IsoTone’s cylinder for effective deep massage.

Method:

Perform while **standing or seated**. Use **light IsoTone resistance**, not effort training.

Exercise	Description	Duration
Arm Swings with IsoTone	Hold IsoTone horizontally at chest height; perform rhythmic forward-backward sweeps while slightly squeezing.	30 seconds
Trunk Rotations	Rotate the torso slowly left-right with IsoTone held in front of chest.	30 seconds
Knee Flexion–Extension Without Load	While seated, gently bend and extend the recovering leg, supporting the movement with hands. No weight-bearing.	30 seconds
Overhead Lift and Lower	Lift IsoTone overhead and lower slowly to chest. Generates warmth in shoulders and raises core temperature.	30 seconds

Check:

Knee area should feel warm to touch; IsoTone’s metal cylinder should be mildly warm.

Avoid any movements that trigger pain at the patella site.

2. ISOTONE OSCILLATORY MASSAGE — CORE TREATMENT (8–12 MINUTES)**General Parameters:**

- **Frequency:** 4–5 Hz ($\approx$ 5 short strokes per second)
- **Pressure:** Firm but non-painful; enough to deform soft tissue without discomfort.
- **Motion Range:** 1–3 cm oscillations.
- **Sequence:** Work *proximal to distal* — upper thigh → around knee → lower leg.
- **Environment:** Patient seated or lying with knee slightly flexed ($\sim$ 20–30°) to relax tendons.

A. Quadriceps and Suprapatellar Region (Above the Knee)

IsoTone Part: *Large metal cylinder*

Technique:

1. Place the cylinder horizontally on the quadriceps, about 5–7 cm above the kneecap.
2. Apply **short oscillating strokes** along the muscle fibers (vertical to the femur).
3. Cover medial, central, and lateral zones separately.
4. Repeat for **30 seconds per zone**, total $\sim$ 3 minutes.

Effect:

Stimulates blood and lymph flow, softens post-surgical fibrosis, and reawakens neural input to quadriceps.

B. Peri-Patellar Edges (Around the Knee Cup)

IsoTone Part: *Wooden ball handle*

Technique:

1. Using the **ball handle**, apply **gentle circular strokes** around the perimeter of the patella — not over the surgical scar.
2. Work in **clockwise and counterclockwise patterns**, maintaining light pressure.
3. Avoid direct vertical pressing on the patellar apex; instead, glide along its edges.

Duration: 2 minutes.

Frequency: Slow rhythmic circles, about 2 Hz (soothing, not oscillatory).

Purpose: Reduce residual edema, mobilize soft tissue adhesions, stimulate synovial circulation.

C. Infrapatellar Tendon and Upper Tibial Zone

IsoTone Part: *Cylinder* for the tendon and *ball handle* for the tibial insertion.

Technique:

1. Place cylinder just below the kneecap; perform **short 5 Hz oscillations** along the tendon length (vertical direction).
2. Switch to the ball handle to apply small **cross-fiber micro-strokes** across the tendon insertion at the tibial tuberosity.

Pressure: Light to moderate.

Duration: 2–3 minutes.

Effect: Promotes tendon elasticity, prevents scar tightening, and reestablishes proprioceptive sensitivity.

D. Popliteal Fossa and Posterior Knee

IsoTone Part: *Cylinder, angled diagonally*

Technique:

1. Support the leg slightly bent.
2. Roll or oscillate IsoTone gently across the soft posterior knee tissues — from inner to outer side — avoiding direct compression of the popliteal artery.
3. Use **slow 2–3 Hz oscillations** for lymphatic drainage.

Duration: 1–2 minutes.

Effect: Relieves posterior stiffness, enhances venous and lymph return, prevents stagnation.

E. Calf (Gastrocnemius) and Hamstring Insertion

IsoTone Part: *Cylinder*

Technique:

1. Massage longitudinally along the gastrocnemius and hamstring insertions, moving upward toward the knee.
2. Use **fast 5 Hz oscillations**, maintaining moderate pressure.

Duration: 3–4 minutes.

Effect: Promotes upward lymphatic flow, reduces secondary swelling, rebalances muscle tone between anterior and posterior compartments.

3. INTEGRATION AND MOBILITY PHASE (3–4 MINUTES)

Goal: Reinforce neural reactivation and restore natural knee motion.

Exercises:

1. **Passive Flex–Extend:** Slowly bend and extend the knee within pain-free range.
2. **IsoTone-Assisted Isometrics:**
 - Hold IsoTone between hands, perform light push–pull movements while maintaining focus on contracting quadriceps gently.
 - Encourages coordination between upper and lower neural circuits (motor network reeducation).

3. **Circular Knee Tracing:** With leg extended, draw small circles in the air (10 each direction).

4. COOLING AND RESET PHASE (2 MINUTES)

- Switch to **slower 1–2 Hz sweeping strokes** using the cylinder from thigh to calf.
- Pressure: very light, allowing full relaxation.
- Focus breathing and let the tissue remain warm and pliable.
- Finish by resting the leg elevated slightly for 1–2 minutes.

5. SAFETY & PROGRESSION

Phase	Week Range	Focus	IsoTone Mode
Early Recovery	6–8 weeks post-op	Edema reduction, scar softening	Light pressure, low frequency (2–3 Hz)
Mid-Phase	8–12 weeks	Muscle reactivation, tendon elasticity	Moderate pressure, 5 Hz oscillations
Late Phase	>12 weeks	Functional restoration, deep flexibility	Full 5 Hz massage + isometric coupling

Do not use IsoTone directly over scar tissue until fully healed and non-tender. Stop immediately if swelling, heat, or sharp pain appears.

6. SUMMARY

IsoTone Part	Area	Frequency	Pressure	Purpose
Cylinder	Quadriceps & calves	5 Hz	Moderate	Deep circulation, muscle activation
Ball handle	Around patella, tibial edge	2–3 Hz	Light	Trigger-point and adhesion release
Cylinder (angled)	Posterior knee	2–3 Hz	Light	Lymphatic stimulation
Cylinder (slow sweep)	Entire leg (cool-down)	1–2 Hz	Very light	Relaxation and recovery

7. CONCLUSION

Recovering from a fractured or reconstructed knee requires more than time—it requires **guided reactivation**. The IsoTone Massage Method allows this reactivation to happen safely at home, within the comfort and control of the user’s own perception. By replacing passive waiting with rhythmic engagement, IsoTone restores **circulation, tissue elasticity, and neuromuscular balance**.

Self-massage does not replace professional therapy—it extends and amplifies it. The patient becomes an active participant in healing, not a recipient. The combined benefits of IsoTone’s rhythmic oscillation, frictional warmth, and tactile palm-finger engagement produce a systemic

recovery response: faster muscle awakening, smoother joint mobility, and renewed confidence in movement.

IsoTone turns rehabilitation into a daily act of self-guided precision—a pathway from immobilization back to full motion and life.