Home Quadriceps NMES Protocol

After ACL reconstruction with quadriceps tendon autograft | 6-week clinician-directed program

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Purpose: Restore a strong quadriceps contraction and limit early muscle loss. NMES supplements—not replaces—your prescribed exercises and physical therapy.

SCHEDULE

Phase	Sessions	Each session	What changes
Weeks 0–2	**5 days/week**	30 minutes	Build tolerance and reach a strong, visible contraction.
Weeks 3–6	**3 days/week**	30 minutes	Reduce session frequency; keep the device frequency at 50 Hz and maintain high contraction intensity.

Start only after your surgeon or physical therapist has checked the incision, sensation and device setup. If you start later than postoperative week 1, use the same two-week high-frequency phase before tapering.

DEVICE SETTINGS

- **Mode:** NMES / muscle stimulation (not TENS).
- **Waveform:** Symmetrical biphasic.
- **Pulse frequency:** 50 Hz for all 6 weeks.
- **Pulse width:** 400 microseconds (μs).
- **Cycle:** 10 seconds ON / 30 seconds OFF.
- **Ramp:** 2 seconds up and 2 seconds down, if programmable.
- **Intensity:** Increase to the strongest comfortable level that produces a firm, visible quadriceps contraction. Re-adjust upward during the session as the sensation fades.

POSITION + ACTION

- **Position:** Sit or recline with the thigh supported and the knee bent about 40°–60°. Support the heel/ankle so the leg cannot kick out.
- **During ON:** Tighten the quadriceps hard and press the knee toward the support while the current contracts the muscle.
- **During OFF:** Relax completely. Do not change the programmed rest interval.

PAD PLACEMENT

- **Use two large pads:** approximately 3 × 5 inches (7.5 × 13.5 cm), connected to one channel. Place both horizontally across the front of the thigh.
- **1 — Proximal pad:** Upper front thigh, about one handbreadth below the groin crease, centered over the main quadriceps muscle bulk.
- **2 — Distal pad:** Lower front thigh, 2–3 fingerbreadths above the top of the kneecap, centered over the distal quadriceps. Keep the full pad above the joint line.
- **Skin:** Clean and dry. Do not place a pad over an incision, dressing, numb area, irritated skin or prominent hardware. Move a pad slightly if stimulation is sharp or does not create a broad contraction.

STOP + CALL YOUR CARE TEAM

- **Stop the session for:** sharp knee or incision pain, a skin burn/blister, new or rapidly increasing swelling, calf pain/swelling, dizziness, chest symptoms, or loss of normal skin sensation.
- **Do not use without clearance if you have:** a pacemaker or implanted electrical device, known/suspected blood clot, active infection, open wound, or impaired sensation at the pad sites.

HOME SESSION CHECKLIST

1	2	3	4
Inspect skin + pads	**Confirm NMES settings**	**Complete 30 minutes**	**Recheck skin + record intensity**

Clinician note: This is a six-week practice protocol adapted from early home NMES evidence; the exact 5-to-3 sessions/week taper has not been independently tested. Individual surgical restrictions and the current device manual supersede this handout. Evidence base: Toth MJ et al., Am J Sports Med. 2020;48:2429–2437. doi:10.1177/0363546520933622.