

FORTIFY PHYSICAL THERAPY • PATIENT & RUNNER EDUCATION

Single-Leg Strength Training for Runners

A quad, glute, hamstring & core program built for the single-leg demands of running

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Why Single-Leg Strength Matters for Runners

Running is a single-leg sport. Every stride requires one leg to absorb impact forces of roughly 2 to 3 times body weight while the hip, knee, and ankle control motion in all three planes. Traditional double-leg lifts like the squat or leg press build general strength, but they don't train the balance, hip control, and tendon stiffness a runner actually needs at foot strike.

This program targets the four muscle groups most responsible for shock absorption and forward propulsion — quadriceps, glutes, hamstrings, and core — using single-leg positions that mimic the demands of stance phase. Consistent single-leg strength work is associated with improved running economy and is one of the most effective tools we use clinically to address patellofemoral pain, IT band syndrome, hamstring strain, and hip/glute-related running injuries.

How to use this guide: Work through the four sections in order 2–3x per week on non-consecutive days, ideally on easy run days or rest days — not immediately before a hard workout or long run. Choose 1–2 exercises per muscle group per session rather than doing everything at once.

General Guidelines

- Warm up with 5 minutes of easy movement (walking, cycling, or light jogging) before loading single-leg exercises.
- Prioritize control and full range of motion over speed or added weight — quality reps build tendon resilience.
- Mild muscle fatigue or burn during the set is expected; sharp joint pain is not — stop and modify if it occurs.
- Progress load or difficulty only after a movement can be performed with good form for the full prescribed dosage.
- Allow 48 hours between strength sessions targeting the same muscle groups to allow for recovery and adaptation.

1. Quadriceps

The quadriceps control knee flexion at landing, absorbing impact and preventing the knee from collapsing inward. Weakness here is strongly linked to patellofemoral (runner's knee) pain.

Single-Leg Step-Down

QUADS

Why it matters: trains eccentric knee control, directly mirroring the landing phase of running gait.

Setup: Stand on a step or sturdy box 6–8 inches high, hands on hips.

- Slowly lower the non-stance heel toward the floor by bending the standing knee.
- Keep the kneecap tracking over the 2nd-3rd toe — don't let it drift inward.
- Lightly tap the heel down, then push through the standing leg to return to start.

Dosage: 3 sets of 8–12 reps per side

Progress to: raise step height, slow the lowering phase to a 4-second count, or add a dumbbell held at the chest.

Bulgarian Split Squat

QUADS

Why it matters: builds quad and hip strength through a large range of motion in a stable, supported single-leg stance.

Setup: Stand ~2 feet in front of a bench, rest the top of the rear foot on it.

- Lower straight down until the front thigh is close to parallel with the floor.
- Keep the torso tall and front knee tracking over the foot.
- Drive through the front heel to stand back up.

Dosage: 3 sets of 8–10 reps per side

Progress to: add dumbbells at the sides, then progress to a barbell or front-loaded goblet position.

Single-Leg Wall Sit

QUADS

Why it matters: builds isometric quad endurance and tendon capacity, useful early in rehab or as an accessory finisher.

Setup: Back against a wall, thighs parallel to the floor as in a standard wall sit.

- Lift one foot slightly off the floor, holding it out in front.
- Keep hips level — don't let the lifted side drop.
- Hold, breathing normally throughout.

Dosage: 3 sets of 20–30 second holds per side

Progress to: increase hold time toward 45 seconds, or add a light weight across the lap.

2. Glutes

The glute max and glute medius control the pelvis and femur during stance phase. Weakness here shows up as excess hip drop or knee valgus and is a common driver of IT band and hip pain in runners.

Single-Leg Glute Bridge

GLUTES

Why it matters: isolates glute max to drive hip extension, the primary force behind forward propulsion.

Setup: Lie on your back, knees bent, one foot flat on the floor, the other leg extended or held to chest.

- Drive through the planted heel to lift hips until the body forms a straight line knee to shoulder.
- Avoid arching the low back — the lift should come from the glute, not the spine.
- Lower with control and repeat.

Dosage: 3 sets of 10–12 reps per side

Progress to: elevate the planted foot on a low step, or add a band around the thighs for extra hip stability demand.

Lateral Step-Up

GLUTES

Why it matters: trains glute medius in a frontal-plane pattern that closely reflects pelvic control during stance.

Setup: Stand sideways next to a step or low box, inside foot on the step.

- Push through the stepping leg to lift the body up, keeping the hips level.
- Avoid hiking the opposite hip up to compensate — control comes from the working glute.
- Lower slowly back to the starting position.

Dosage: 3 sets of 8–10 reps per side

Progress to: increase step height, add a dumbbell, or slow the lowering phase for greater eccentric demand.

Single-Leg Romanian Deadlift (RDL)

GLUTES / HAMSTRINGS

Why it matters: trains hip hinge control and posterior chain strength while challenging single-leg balance.

Setup: Stand on one leg with a slight knee bend, holding a light dumbbell or kettlebell in the opposite hand.

- Hinge forward at the hips, letting the back leg extend behind you for counterbalance.
- Keep the back flat and hips square to the floor throughout the movement.
- Reverse the motion, squeezing the glute to return to standing.

Dosage: 3 sets of 8–10 reps per side

Progress to: increase load, or perform on an unstable surface (foam pad) to add a balance challenge.

3. Hamstrings

The hamstrings decelerate the swinging leg just before foot strike and assist in hip extension. They are one of the most commonly strained muscles in runners, particularly during speed work and hill running.

Single-Leg Hamstring Bridge (Feet Elevated)

HAMSTRINGS

Why it matters: loads the hamstring through hip extension with the knee bent, mimicking late swing-phase demands.

Setup: Lie on your back with heels on a bench or stability ball, one leg lifted toward the ceiling.

- Press the grounded heel down and lift the hips until the body is in a straight line.
- Keep the pelvis level — avoid rotating toward the lifted leg.
- Lower under control and repeat.

Dosage: 3 sets of 8–12 reps per side

Progress to: use a stability ball instead of a bench, or add a slow 3-second lowering phase.

Standing Single-Leg Curl (Band or Cable)

HAMSTRINGS

Why it matters: isolates the hamstring in a standing, weight-bearing position closer to running posture than lying variations.

Setup: Anchor a resistance band at ankle height, loop it around one ankle, stand facing the anchor.

- Keeping the thigh stationary, bend the knee to curl the heel toward the glute.
- Control the return — don't let the band snap the leg back.
- Keep hips level and core braced throughout.

Dosage: 3 sets of 10–15 reps per side

Progress to: increase band resistance or slow the return phase to 3–4 seconds.

Slider/Towel Eccentric Hamstring Curl

HAMSTRINGS

Why it matters: builds eccentric hamstring strength, shown to reduce hamstring strain risk in runners and sprinters.

Setup: Lie on your back, one heel on a slider or towel on a smooth floor, hips lifted in a bridge position.

- Slowly straighten the leg by sliding the heel away from you, keeping hips lifted.
- Move as slowly as possible — aim for a 4–5 second extension.
- Use both legs to bend back to the start position, then repeat single-leg on the way out.

Dosage: 3 sets of 6–8 reps per side

Progress to: increase the eccentric duration, or progress to single-leg Nordic curls once tolerated.

4. Core

The deep core and lateral trunk muscles resist excess rotation and side-bending as each leg cycles through the running gait. A stable trunk allows force from the hips and legs to transfer efficiently instead of leaking into wasted motion.

Single-Leg Dead Bug

CORE

Why it matters: trains anti-extension core control while one leg moves independently, similar to trunk demands during running.

Setup: Lie on your back, arms reaching toward the ceiling, knees bent to 90 degrees (tabletop position).

- Flatten the low back gently into the floor and brace the core.
- Slowly extend one leg out until it hovers just above the floor.
- Return to start without letting the low back arch, then switch sides.

Dosage: 3 sets of 8–10 reps per side

Progress to: extend the opposite arm overhead simultaneously, or add ankle weights.

Side Plank with Top-Leg Lift

CORE

Why it matters: targets the obliques and glute medius together to resist lateral trunk and pelvic drop during stance.

Setup: Lie on one side, forearm under the shoulder, knees straight, feet stacked.

- Lift the hips so the body forms a straight line from ankles to shoulders.
- Keeping hips stacked, lift the top leg a few inches and hold.
- Keep the hips from rotating forward or backward throughout the hold.

Dosage: 3 sets of 20–30 second holds per side

Progress to: progress hold time toward 45 seconds, or add small controlled leg lift pulses.

Single-Leg Balance Reach (Y-Balance)

CORE / HIP CONTROL

Why it matters: combines single-leg balance with controlled trunk and hip movement, closely replicating mid-stance control demands.

Setup: Stand on one leg with a slight knee bend, arms relaxed at sides.

- Reach the opposite foot forward, then out to the side, then behind you, tracing a wide 'Y' shape.
- Touch the floor lightly with the reaching foot at each point without losing balance.
- Keep the stance-leg knee tracking over the foot the entire time.

Dosage: 3 sets of 6–8 reaches per direction, per side

Progress to: close the eyes briefly during the hold, or perform on a foam pad for added instability.

Sample Weekly Structure

This is one way to fit the program around a typical running week. Adjust exercise selection and volume based on training phase and individual tolerance — this is a starting template, not a fixed prescription.

Day	Focus	Notes
Monday	Easy run	—
Tuesday	Strength Session A (Quads + Core)	Pair with an easy run or rest day
Wednesday	Speed/interval workout	No new strength work same day
Thursday	Easy run	—
Friday	Strength Session B (Glutes + Hamstrings)	Pair with an easy run or rest day
Saturday	Long run	—
Sunday	Rest / mobility	—

When to Seek Guidance

If any exercise consistently reproduces sharp pain, if symptoms don't improve after several weeks of consistent training, or if you're returning from an injury, a physical therapist can individualize this program to your specific movement pattern, strength deficits, and training goals.

Fortify Physical Therapy works with runners of all levels to build individualized strength and return-to-run programs. Call (435) 216-7929 or visit fortifyphysicaltherapy.com to schedule an evaluation.