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Walking Lunges Improve Leg Strength and Overall Stability

Analysis by Dr. Joseph Mercola | March 26, 2026

STORY AT-A-GLANCE

- Lunges are an effective single-leg exercise that strengthens multiple muscle groups, improves balance, and highlights strength asymmetries that double-leg exercises like squats may hide
- Research shows that longer steps and stride-based lunges increase muscle activation, particularly in the glutes, which are essential for hip and pelvic stability
- Lunges target hamstrings, quadriceps, glutes, hip abductors, calves, and core muscles, making them a comprehensive lower-body exercise suitable for all fitness levels
- Beginners can start with two to three sets of 10 to 12 reps per leg, progressing gradually by adding sets, reducing reps, and incorporating dumbbells over time
- Common mistakes include letting the knee extend past toes, leaning forward, knee misalignment, and improper stance width, all of which increase injury risk

When it comes to leg exercises, squats are usually the first exercise that comes into mind, and for good reason. The Cleveland Clinic highlights squats as a "foundational exercise" because of its ability to target several muscle groups at once, leading to better stability and flexibility.[1] But have you ever considered adding lunges into the mix?

If you've never done lunges — or rarely did them — it's time to change this habit. This overlooked exercise could be one of the best things you can do to boost your overall fitness, and there's published research to back up this claim.

How Lunges Strengthen Your Leg Muscles

There's a reason why lunges are a popular exercise. According to exercise physiologist Jason Machowsky, interviewed for an article on Nike.com, "Lunges are great for single-leg strengthening, which can be helpful for highlighting asymmetries that may be masked by a double-leg exercise."[2] He also noted that it can help improve overall balance, as shown in a study published in the Journal of Functional Morphology and Kinesiology.[3]

- **Step length and stride pattern shape lunge effectiveness —** The study included 20 healthy young adults who performed four variations of weighted forward lunges — short step without stride (short-step stationary lunge), short step with stride (short-step walking lunge), long step without stride (long-step stationary lunge), and long step with stride (long-step walking lunge).

  By tracking electrical activity in major leg muscles, including the quads, hamstrings, calves, and both the gluteus maximus and gluteus medius, the researchers painted a picture of which patterns produced the strongest muscle activation.

  Essentially, longer steps triggered more muscle activity across nearly every muscle group, and adding a stride further increased activation in the glute muscles that stabilize your hips during movement. If you're looking to maximize your gains from lunges, keep this information in mind.

- **Stride length determines how hard your thigh and hip muscles work —** The researchers explain that "Lower-extremity muscle activity is generally greater in forward lunges with a long step compared to a short step, and greater in lunges with a stride compared to without a stride." In other words, taking a bigger step forces your front leg to absorb more of your body weight, which makes the front thigh and hip muscles work harder to control the descent.

- **Stride-based lunges strengthen the muscles that stabilize your hips —** The study reports that stride-based lunges — performed by stepping forward and then driving back to the starting position — produced significantly higher activation in both the

gluteus maximus and gluteus medius than non-stride versions. That distinction is noteworthy because these muscles are central to pelvic stability.

- **Balanced muscle recruitment strengthens both prime movers and stabilizers —** The quadriceps and gluteus maximus showed high to very high activity across the long-step and stride variations, while the hamstrings, adductors, and calves showed moderate activation. That combination provides a balanced strength effect — your biggest power producers do most of the heavy lifting, while the smaller stabilizing muscles still engage enough to support balance.

- **Step length builds overall strength while stride boosts glutes —** Step length had a broader impact on multiple muscle groups, whereas stride patterns specifically amplified glute activation. So, if your primary goal is bigger or stronger quads, the long step matters most. If your focus is better hip stability, adding a stride is the top priority. Understanding these differences lets you choose what your legs need.

- **Longer steps increase overall leg demand, stride increases hip power —** When you take a longer step, your center of mass shifts farther forward, increasing the torque — or rotational force — demand on the knee and hip joints, which explains the higher quadriceps, hamstring, and calf activity.

  The paper links stride-based increases in glute activation to the additional momentum created when you push back to the starting position, which requires more power from the hip extensors to counter the forward movement.

- **Hip stability supports smoother walking and stair climbing —** The gluteus medius fires more intensely during stride lunges because your pelvis needs to stabilize while your body travels through a larger range of motion. If the gluteus medius does not do its job, the pelvis drops on one side, which strains the knee and lower back. Stronger activation here directly translates into smoother walking, easier stair climbing, and greater confidence during balance challenges.

How to Do Walking Lunges — A Step-by-Step Guide for Beginners

As noted earlier, walking lunges are a great way to strengthen your balance and overall fitness in your lower body. Here's an overview of how to do them:[4]

1. Start by standing straight, with your arms at your sides.
2. From this position, step forward with your left leg to a position that is comfortable for you.
3. Keeping a straight back, lunge down, then as you come up, step forward with your right foot and perform another lunge.
4. Continue to alternate legs as seen in the video above.

What's great about doing walking lunges is that even if you've already plateaued, you can increase the difficulty. One simple way of doing this is by holding dumbbells to increase the intensity.

Walking Lunges vs. Stationary Lunges — Which Is Better?

When it comes to lunges, the walking variation is one of the most popular, but it's not the only one. You can also do it from a stationary position, or in reverse. While reverse lunges are a popular variation, does reversing the movement provide any benefit? Based on a study published in Physical Therapy Rehabilitation Science, the differences are negligible.[5]

According to the analysis, the range of motion in the knee and angle were greater in forward lunges compared to reverse lunges. In practical terms, that means forward lunges tend to bend the knee more and place slightly greater mechanical demand on the joint. However, the researchers did not conclude that reverse lunges are inferior, per se. In fact, reverse lunges can be a better choice if you need less joint stress, more control, or a modification based on a musculoskeletal condition.

The table below compares walking, stationary, and reverse lunges so you can match the variation to your specific goal — whether that's improving balance, protecting your knees, or building strength efficiently:

Lunge type	Balance demand	Knee friendliness	Why pick it
Walking	High (dynamic)	Moderate	Best carryover to gait, coordination, and space control
Stationary (in-place)	Medium	Medium	Great when space is limited; easier when using heavy weights[6]
Reverse	Medium	Often higher	Less stress on the front knee; reduced tension on the quadriceps[7]

Muscles Worked When Doing Lunges

Walking lunges strengthen multiple muscle groups at once while also improving balance and stability. Machowsky lists them one by one below:[8]

- **Hamstrings —** Lunges primarily target the hamstrings, which are found on the back of your thigh bone. They help power up your legs' ascent to a standing position. "Sometimes people tend to underutilize their glutes or hamstrings and overuse their quads," he said.
- **Gluteus maximus —** Often called glutes, these are basically the muscles located in your buttocks. These activate during the concentric (rising) phase of the lunge.

- **Quadriceps —** Located in the front of the thigh bone, the "quads" are another main driver in the concentric and eccentric (lowering) phase of the lunge. You'll feel higher activation in your quads when your front knee moves farther forward during the movement.
- **Hip abductors —** A group composed of the gluteus medius, gluteus minimus, and tensor fasciae latae, the hip abductors help maintain stability in the pelvis and trunk to retain an upright posture.
- **Calves —** These muscles on your shin bones help stabilize both of your feet throughout the entire lunge.
- **Core —** Several muscles are activated in your core, namely the transverse abdominis, obliques, rectus abdominis, lumbar spinal erectors, and multifidi. They help stabilize your body as you lunge.

Setting Up Your Lunges Program: Sets, Repetitions, and Progressions

Now that you know how walking lunges can benefit your overall fitness, it's time to incorporate it into your workout routine. They can be performed by most people — barring any serious injuries — including beginners all the way up to high-level athletes. Considering this, here are some basic routines you can follow, depending on your fitness level:

- **Beginner —** Start with just two to three sets with 10 to 12 repetitions per leg.[9] Do these two to three days per week.
- **Intermediate —** Do three to five sets with six to 10 repetitions per leg. Rest for a minute or two between sets.[10] Add light to moderate dumbbells, twice a week.
- **Expert —** Do five sets with 10 repetitions per leg using moderate weight. This helps with building more muscle.[11] Go with even heavier dumbbells, twice a week.

Common Mistakes When Doing Lunges (and How to Fix Them)

It's normal to make mistakes when practicing exercises you're not familiar with. That said, continuing down this road will eventually lead to bad habits that are hard to correct. So, it's helpful to review your technique from time to time. Keep these tips from Verywell Fit in mind:[12]

1. **Knee extending past your toes —** Be mindful of your forward knee so that it does not go past your toes. This can aggravate the knee joint and lead to injury.

2. **Leaning forward —** Throughout the lunge, it's important to keep your back straight along with an upright torso. If you find yourself leaning forward, tuck in your core before you take a step. Also, use your own body weight first to practice proper form.

3. **Knee misalignment —** The back knee needs to be in line with your body and pointed to the floor. If you have balance problems, you'll notice that your knees can turn inward or outward, which can lead to knee pain. When this happens, shorten your stance until you can do lunges properly.

4. **Improper stance —** Feet that are too close together put more force on your knees, which can cause injury. Conversely, having your feet too wide apart will make you lose stability. Find the right width to create the proper balance.

Who Needs To Be Cautious of Lunges?

According to physical therapist Christina Ruggeri, interviewed for a Harvard Health article, lunges can be safely done by most people, including seniors. However, she stressed that you need to "have the leg strength to do it correctly to prevent injury." Here are some guidelines to remember:[13]

- **Don't strain your muscles —** Ruggeri noted that straining can lead to muscle or tendon injuries, which can take several weeks to completely heal. This will greatly set your fitness goals back.

- **Modify the movement to match your ability —** If a full lunge feels too challenging, don't skip it altogether. Shorten the range of motion instead. Lower your back knee only partway toward the floor, then return to standing. As your strength and stability improve, increase the depth little by little.

  If balance feels unsteady, position yourself next to a wall for light support. You may also hold a railing or cane. When your right foot steps forward, hold the support with your left hand to steady your body. To reduce strain, place your front foot on a low step or sturdy platform. This adjustment decreases how far you need to lower your body.

  You can also build strength with simpler movements first. Try standard squats. For an even gentler option, use a sit-to-stand. Stand in front of a chair, lower yourself as if you plan to sit, lightly touch the chair with your hips, then stand back up. Aim for two sets of 10 repetitions. If that feels too difficult, place a firm pillow on the chair to raise the seat height. Remove the pillow once you can complete the movement with control.

- **When to avoid dumbbells —** Don't add weights to your routine if you have chronic instability problems or an ankle injury.[14]

- **Safety first —** If you develop pain in your knee, hip, or ankle, stop doing lunges right away and reassess your technique.[15]

Frequently Asked Questions (FAQs) About Walking Lunges

Q: Do walking lunges improve balance or stability?

A: Yes. Walking lunges improve balance because they train one leg at a time while your body moves forward. Research shows that stride-based lunges increase activation of the gluteus medius, a key muscle for pelvic stability. Stronger hip stabilizers help keep you steady during walking and other movements.

Q: Which muscles do walking lunges work the most?

A: Walking lunges mainly work the quadriceps, gluteus maximus, and hamstrings. Research shows the quads and glutes have the highest activation, especially with longer steps and stride variations. Calves, hip stabilizers, and core muscles assist throughout the movement.

Q: How many walking lunges should I do?

A: Beginners should start with two to three sets of 10 to 12 reps per leg, two to three times weekly. Intermediate and advanced lifters can increase to three to five sets and add dumbbells. Heavier loads and five sets of 10 reps per leg are suggested for experienced exercisers.

Q: Are walking lunges bad for your knees?

A: Only if done improperly. Poor form, such as letting the knee move too far past the toes or allowing it to cave inward, can strain the joint. When performed with proper alignment, walking lunges are considered moderately knee-friendly.

Q: Should beginners start with reverse lunges instead?

A: Often, yes. Reverse lunges tend to be smoother on the front knee and easier to control. They may be a better starting option for beginners or anyone with knee sensitivity.

Sources and References

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