YOU LIKELY WORK SOME MUSCLE GROUPS HARDER THAN OTHERS WHEN YOU RUN (THANK YOU, QUADS). LEARN HOW TO MAKE EACH ONE AN EQUAL PLAYER AND UNLOCK THE SECRET TO PREVENTING INJURY AND BOOSTING PERFORMANCE.

MIRROR

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YOU'VE HEARD ABOUT SYMMETRY before: It's a mathematical principle that denotes exact equality on two sides. A butterfly's wings. A snowflake. Your face. Some elementary school teacher probably taught you about all of this years ago, and you likely haven't thought about symmetry since. But you should, and especially when it comes to running, because an asymmetrical body could be the culprit behind a nagging injury, or what's keeping you from finally nailing a new PR.

"Evaluating and working on symmetry is one of the top tips I would give new and veteran runners alike," says Michael Johnson, four-time Olympic gold medal winner and founder of the Michael Johnson Performance training programs. "It can lead to efficiency, which is very important for both sprinters and distance runners. The more efficiently you run, the faster you can cover distance, and the less fatigued you will be because you've eliminated or minimized wasted motion."

When you run, your body is moving in all three planes of motion, explains David Reavy, a Chicago-based orthopedic physical therapist. "You're going forward and back in the sagittal plane, and your body is also twisting, which is movement in the transverse plane," he says. "Meanwhile, the feet move in the frontal plane." Balanced body symmetry means there's an equilibrium of work and energy in those three planes—your muscles are all working together as one unit, Reavy says.

Sadly, none of us will ever be perfectly symmetrical because, well, we're not robots. Even Usain Bolt, the greatest sprinter of all time, made headlines earlier this year for his asymmetrical gait. Still, "of all the athletes that we work with," says Lance Walker, the global director of performance at Michael Johnson Performance, "runners can potentially yield the most performance and injury-prevention benefits from symmetry." In short: If you can identify—and correct—your asymmetries, you'll tap into stores of running potential.

WHY SYMMETRY MATTERS

AT THE END OF THE DAY, all runners want to get better at their sport and prevent injury. Symmetry—or a lack thereof—plays a crucial role in both.

"If a runner is asymmetrical, one part of the body may have to work harder than the other to compensate for weakness. That doesn't mean you're definitely due for an injury, but it increases the likelihood," says Joe Holder, a Nike+ Run Club coach and trainer. "Runners have some of the highest incidences of injuries, and a lot of that has to do with not properly fixing muscular imbalances."

Take, for example, a runner who is quad-dominant, meaning they rely heavily on the quadriceps for force. If you are constantly working those muscles—instead of equally recruiting their counterparts, the glutes and hamstrings—you're likely to end up with a quad strain, IT band syndrome, or knee pain, says Reavy.

Even if your imbalances don't manifest as injuries, that doesn't mean they aren't holding you back. Imagine an eight-minute-per-mile runner with an asymmetry in his hip flexors. That asymmetry could cause the glutes to power down, Reavy says, freezing the runner at that eight-minute pace because he can't tap into more glute strength. "When more muscles are brought to the party, you don't fatigue as quickly because your whole body absorbs force, versus placing it all on a certain area," he adds.

The trick? Pinpointing those areas of inefficiency.

FIND YOUR TROUBLE SPOTS

ASYMMETRIES TEND TO make themselves known under extreme circumstances, like when you're running a marathon or blasting through a sprint, says Walker. But if you wait until a race to recognize and attempt to correct them, it'll be too late. "If you haven't planned your training so that your weakest link doesn't break under extreme conditions, you've set yourself up for failure," says Walker. "Dumping more volume, or miles, on your system without leveling up in strength, stability, mobility, flexibility, and balance means asymmetries are just going to expose themselves at the worst possible time, leading to a less-than-optimum performance."

Unsurprisingly, pain is the biggest tip-off that there's an imbalance. But it may not be where you think. "Eighty percent of the time when you feel an injury, it's referred pain, which is when it's felt somewhere other than the actual source," says New York City–based trainer Kira Stokes. "Pay special attention to one-sided pain or tightness—that's a clear indicator."

Your pelvis is a prime example, says Reavy. "The hip and foot are dependent on the pelvis, and the knee depends on the hip and the foot." So if you feel knee pain, the root cause could be a pelvic imbalance, he says.

Paying closer attention to how your body feels during strength-training can help you zero in on problems. "If you're doing a glute-specific exercise, do you feel your glutes working? There are primary mover muscles and secondary mover muscles; if you're doing a squat correctly, your glutes should take the primary load," says Reavy. "That's something you can clearly feel."

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Your phone can be a helpful tool, too. Have someone take photos and videos of you at the beginning, middle, and end of a run. "Analyze them and ask yourself: What's happening to my knees when my foot strikes? Are they going in or out? And how high is my kick? Are my arms crossing the front of my body? All of those things can be clues to whether your body is out of alignment," says Stokes.

There's even wearable footbed technology that can tell you how symmetrical your stride is: Athletes at Michael Johnson Performance use RPM2 ($499), a footbed-measurement device that provides data related to deficiencies in gait, range of motion, force, and power. And Walker believes there's more symmetry-promoting technology to come. "Right now, we're only really measuring time, distance, and heart rate," he says. "But when you drive a car, you don't look at how far it's gone, how fast, and how much gas it used without glancing at the tire pressure, too. Analyzing symmetry gives you a clearer, more well-rounded picture of what's going on."

FIX THE PROBLEM

THERE IS NO CURE-all for asymmetry. Just as every runner's gait is different, imbalances unravel in unique ways. "It's about getting to know your own body, and having people whom you trust take an objective, quantifiable look to help you identify where you can improve," says Walker.

First, make an appointment with a physical therapist who has a strong background in manual therapy. "This means they're trained to identify muscular and skeletal imbalances, and many offer free screenings," says Reavy. "They can tell you what your alignment looks like, examine flexibility, and tell you what muscles are and aren't firing." From there, your PT can prescribe exercises that are appropriate for improving your specific weaknesses.

In general, though, Holder recommends that runners incorporate microcycles of one-sided strength work (think single-leg squats and glute bridges), plus exercises that work multiple planes of motion at once to ensure the body is equally challenged.

That's where the following routines come in. The first will help you establish your baseline with six easy screening moves that bring asymmetries to light (see "The Test"). The second is loaded with symmetry-promoting strength moves, which you should incorporate into regular workouts to stay in peak performance mode. Do the exercises three times a week, and you'll soon be running stronger, faster, and smarter.

FOLLOWING SPREAD: HAIR & MAKEUP: BY COLLEEN KOBRICK; STYLING BY ARGY KOUTSOTHANASIS; CLOTHING: GAPFIT MEDIUM IMPACT SPORTS BRA ($39.95), ADIDAS TECHFIT SHORT TIGHT ($30), ATHLETIC PROPULSION LABS WOMEN'S TECHLOOM PHANTOM RUNNING SHOES ($165)

THE TEST

THESE SIX MOVES CAN HELP YOU EVALUATE SYMMETRY. RE-TEST EVERY EIGHT WEEKS, AND NOTE ANY WEAKNESSES SO YOU CAN ADDRESS THEM WITH A PT.

In-Line Lunge

(A) Start in a narrow lunge, right heel aligned with ball of left foot. Hold a towel vertically down your spine, right elbow pointed toward ceiling and left hand at lower back.
(B) Lower into a lunge, keeping towel straight.
PAY ATTENTION TO: Front knee. If it's moving away or toward the midline, it could mean an imbalance in the hips and glutes.

Deep Overhead Squat

(A) Start with feet slightly more than shoulder-width apart. Hold a towel and lift overhead.
(B) Sit into a deep squat, towel aligned over feet.
PAY ATTENTION TO: Knees and heels. If the knees cave in, that can indicate hip weakness. If the heels come off the ground, that means calves may be tight, limiting ankle mobility.

Hurdle Step-Over

(A) Stand in front of a hurdle or step with feet together, holding a towel directly overhead.
(B) Lift knee to step over the hurdle and bring your heel to the floor. Step back to start. Repeat on other side.
PAY ATTENTION TO: Path of your front leg. If you kick the leg out, you could be lacking hip mobility or strength.

THE SOLUTION

"THINK OF THESE MOVES AS PREHAB TO AVOID REHAB," SAYS STOKES. DO THEM THREE TIMES A WEEK; PERFORM THE INDICATED REPS OF EACH MOVE, REST FOR 60 SECONDS, AND REPEAT THE CIRCUIT TWO MORE TIMES.

Triceps Pushups

Ⓐ Start at the top of a pushup position, elbows tucked in by your sides.
Ⓑ Perform a pushup, keeping elbows tucked and body in a straight line.

PAY ATTENTION TO: Butt and shoulders. If you're "worming" up butt first, that could signal core weakness. If your shoulder blades aren't moving in sync, there may be an imbalance in your postural muscles.

Thoracic Spine Rotation

Ⓐ Start on all fours, spine in a neutral position. Place left hand behind head.
Ⓑ Rotate left elbow toward right forearm as far as possible.
Ⓒ Reverse the motion, rotating left shoulder upward. Switch hands and repeat on other side.

PAY ATTENTION TO: Your rotation, or lack thereof. If you are able to rotate farther on one side, that may indicate an imbalance in core mobility and flexibility.

Same-Side Bird Dog

Ⓐ Start on all fours with a neutral spine.
Ⓑ Extend right arm and leg, keeping hips square. Hold for a few seconds. Return to start and repeat on the opposite side.

PAY ATTENTION TO: Your positioning, and overall ability to perform the move. If you're leaning too far to one side, or you simply can't do the exercise, you may have weakness or instability in your pelvis and core.

Single-Leg Tap

WORKS Hamstrings, glutes, and improves stability

A From a standing position, lift left foot and hinge forward at the hips, keeping them square, until you can tap left fingertips to the floor.

B Return to starting position without letting left foot touch floor. Do 10 to 12 reps. Repeat on opposite side.

Single-Leg Squat

WORKS Hips, quads, glutes, and improves hip stability

A Stand on left foot with right foot lifted slightly off floor.

B Lower into a squat, keeping your right foot lifted (you can reach arms out for balance). Press through left heel to return to standing. Do 10 to 12 reps; switch sides.

Single-Leg Glute Bridge

WORKS Glutes, improves core control

A Lie faceup with feet planted near butt, arms at sides. Extend right leg toward ceiling, foot flexed.

B Squeeze glutes to lift hips as high as you can. Hold at the top for 2 seconds, then lower until hovering just above the floor. Do 10 to 12 reps; switch sides.

Side-Lying Leg Lifts

WORKS Core, hips, glute medius, and improves hip stability

A Lie on right side, legs stacked. Extend bottom arm to rest head on shoulder, and place top hand on floor in front of chest.

B Squeeze thighs together and lift legs several inches. Hold 2 seconds; lower legs to hover above floor. Do 10 to 12 reps; switch sides.

Clamshell

WORKS Hip abductors, glutes, and improves hip rotation

A Lie on right side; stack legs with knees at 90 degrees. Rest head in right hand and place left hand on floor.

B Keeping heels together, raise left knee toward the ceiling. Return to start. Do 10 to 12 reps. Repeat on opposite side.

Compound Bird Dog

WORKS Core, and improves stability

A Start on all fours, spine in a neutral position, right arm and left leg lifted and extended.

B Pulse arm and leg up an inch and down an inch twice.

C Bend right elbow and left knee under torso until they touch.

D Return right arm and left leg back to start. Moving at the same time, guide arm and leg straight out to sides to about 2 and 8 on a clock.

E Return to start. Do 10 to 12 reps of the entire sequence. Switch sides and repeat with opposite arm and leg.