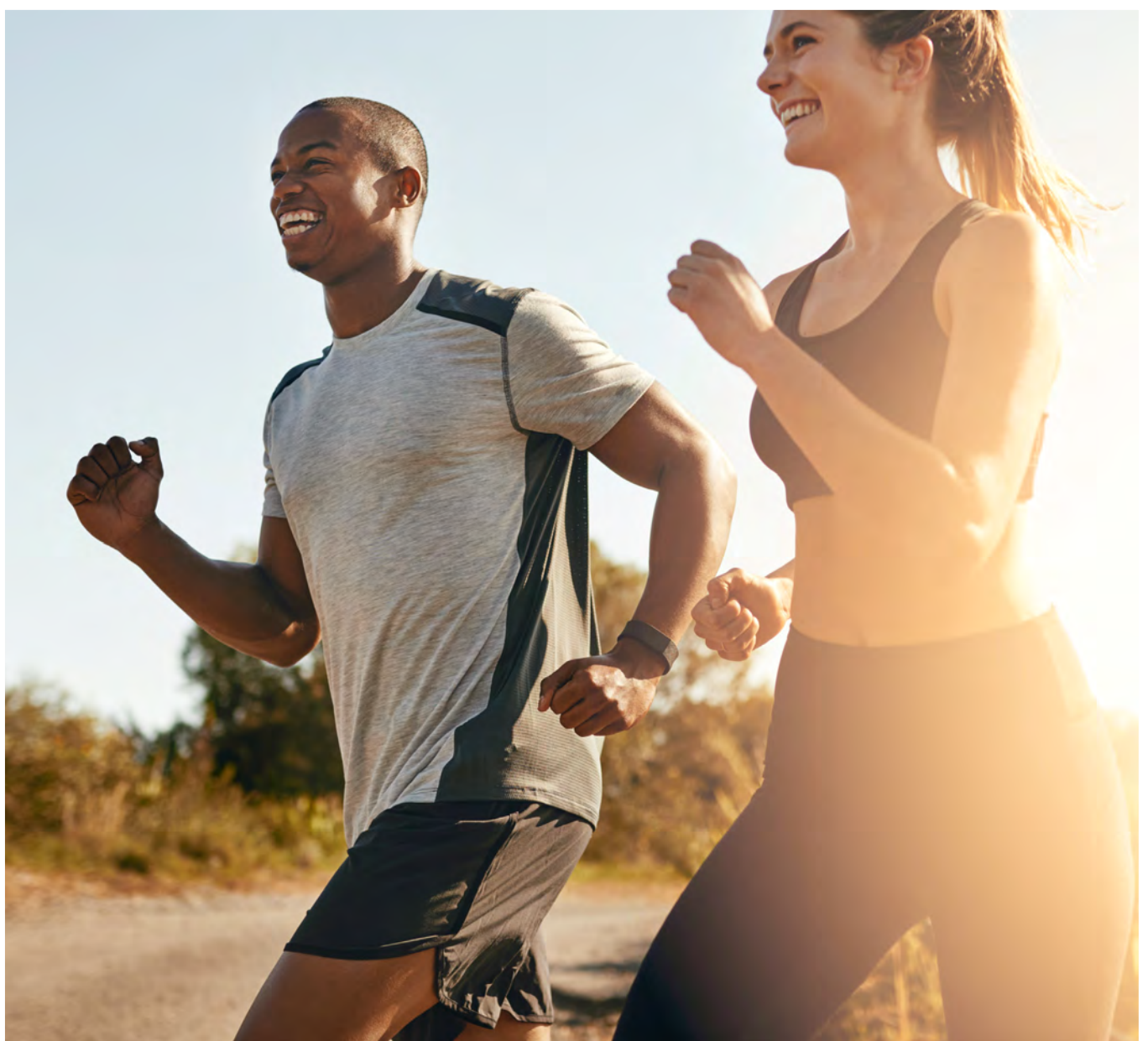


The Runner's eBook

STRENGTH, ENDURANCE, AND CORRECTIVE EXERCISE



INTERNATIONAL
SPORTS SCIENCES
ASSOCIATION

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Strength Training for Runners



Neither rain nor snow nor dark of night will prevent a runner from completing his or her run. To know one is to know the familiar phrase that can border on obsession: “I have to get my run in.”

Runners are among the most dedicated of those who regularly work out, and they are forever looking for ways to improve distance, time, and overall performance. Which is why it’s baffling when runners sometimes overlook a key component to maximizing success: strength training.

It is widely accepted that a balanced diet is a key to good nutrition, just as a combination of cardio workouts and strength training is paramount to achieving good overall fitness. Despite that, there are runners who balk at the idea of going into the gym. Some say that they are not interested in “bulking up,” while others simply don’t feel comfortable in the gym or don’t know enough about strength training to get anything out of it.

Overcoming such obstacles should be a priority because if you or your client is a runner then including strength training in regular workouts is an extremely [effective way](#) to improve performance.

Gym Intimidation

Many runners are used to being outside, running through their neighborhood or on local trails. Heading inside for a workout may seem daunting—it’s a whole new environment to get to know. The intimidation factor though is simply much ado about nothing. The gym that doesn’t have numerous personal trainers and club members who willingly share some knowledge with newcomers is few and far between.

Alternatively, there are those who are able to work on a few simple machines, but they wouldn’t dare find their way to the free-weight area, “where the real lifters work out.” But anyone who is in the gym to get stronger and improve fitness is a real weight lifter—including you. No one should ever think otherwise.

As it is with anything else, familiarity leads to comfort, which leads to success. Take it slow and ask for help, or give your client a tour so they feel comfortable even if you’re not around. And before long, the former newbie is sharing knowledge with someone else new to the gym.

Why Strength Training is Important

Getting into the gym is the first step. Making the most of your time there is the next step. Doing so likely will take a runner to the next level. For starters, adding strength promotes the ability to run at a higher intensity for longer periods of time.

Additionally, strength training improves [balance](#), while also aiding in the prevention of injuries. All those things rate at the top of any runner’s list when it comes to setting and reaching goals.

Education and knowledge hold the key to getting past all those obstacles.

The aerobic effect of running combined with the anaerobic effect of weight training balance out, effectively eliminating any chance of becoming overly muscular. Running sprints, lifting weights, and explosive jumping are examples of anaerobic exercises that work well for runners.

While adding leg strength certainly should be a goal, upper-body strength is important, too. Weight training that strengthens arms and shoulders leads to more efficient running and improves power and coordination.

Adding Strength to a Runner's Workout

It is generally recommended that runners do a weight training program twice a week on non-running days. Workouts need not be any longer than 25-30 minutes. For those who have limited knowledge of strength exercises, the ISSA website is an excellent source for a [how-to guide](#).

In addition, running a series of sprints once a week can lead to major breakthroughs for runners. The purpose is to recruit the growth of fast-twitch muscle fibers that aren't activated when running longer distances. Adding [fast-twitch muscles](#) leads to added strength.

Don't be afraid to step outside the box and get creative with your workouts, as a trainer or as the runner. Adding strength training to the schedule can help you power past plateaus and maximize your overall performance.

Now if you're ready to step up your fitness knowledge even more or want to help others meet their fitness goals, check out the [ISSA's Personal Trainer Certification](#) course online.

Building Speed and Endurance



Approximately 18.1 million Americans run road races every year according to data collected by [Running USA](#). The race with the most participants is the 5k, accounting for 8.9 million of these entries.

Creating running workouts can help clients better prepare and compete. They do this by providing benefits in both speed and endurance.

Reasons to Improve Running Speed

One of the most compelling reasons to work on running speed is that it enhances your body's ability to use oxygen. A VO2 max test indicates maximum oxygen uptake when engaged in an intense workout. 'Running economy' refers to the body's ability to convert this oxygen in a way that contributes to forward motion.

Speed training also helps create stronger bones. For instance, [research](#) shows that they help improve the structure and strength of the tibia bone. Also known as the shinbone, the tibia is located in the front of the lower leg. The stronger this bone, the lower the risk of fracture to this area.

Regularly doing speed work also increases running speed. This is beneficial for clients who want to place in running races. Some clients use max speed to monitor their progress over time.

Passionate about learning how the body works and how to make it look, perform, or function better? Sign up for [ISSA's Personal Trainer Fast Track program](#). It's an incredible course you can complete online from the safety of your home in as little as 4 weeks!

Why Running Endurance Matters

Adding endurance training to a speed workout provides additional benefits. For instance, the [American Heart Association](#) shares that improving aerobic capacity is good for the circulatory system. It reduces your risk of heart disease and stroke.

Improving your running stamina via aerobic endurance exercises also boosts metabolism. [Research](#) indicates that it does this by increasing a specific metabolic hormone. This hormone is known as fibroblast growth factor 21 (FGF21). And it is a different hormone than the one instigated by weight lifting.

Some studies have further shown that endurance athletes tend to live longer. A [review of 13 such studies](#) revealed that their life expectancy was increased by as much as 6.9 years.

Clients that Benefit Most from a Speed Endurance Workout

Not every client wants or needs a running workout. For instance, some people don't like to run. Others can't run due to illness or injury.

Those training to run a 5k, half marathon, or full marathon would benefit from a workout designed to improve speed and endurance. If your client is [training for a triathlon](#), running training can provide advantages as well.

Running Workouts to Build Speed and Endurance

What type of workouts lead to the ability to engage in longer, faster runs? Here are nine to consider.

#1: SPRINT WORKOUT

There are many [benefits associated with a sprint workout](#). Speed and endurance are two. Sprint training also helps build muscle and burn fat.

Because sprint drills require maximum effort and speed, it's important to do a proper warm-up. This helps reduce injury risk. It also prepares the body for intense, physically-exhausting exercise.

To add sprints to your client's running regimen, start small. Pick an item or object that is 20 meters away and have them run toward it at half-speed. Once they master that, increase the speed followed by increases in distance.

Swinging their arms helps increase their sprint speed. So too does increasing their stride length.

#2: HILL WORKOUT

An [animal study](#) found that hill running helps increase lactate threshold. This refers to lactate that accumulates in the blood faster than your body can remove it. This can lead to muscle cramps, fatigue, and increased weakness.

For clients living in flat terrain, hills can be mimicked with a treadmill workout. By lifting and lowering the running platform, the same effect can be achieved.

#3: INTERVAL WORKOUT

[High-intensity interval training](#) (HIIT) involves alternating between short bursts of intense effort and slightly longer, yet lower intensity. Some clients like interval workouts because they provide many benefits without spending all day in the gym.

One example of a good interval workout for runners is the ladder run. This involves running for a specific distance at a faster speed (the workout interval), doing a one-minute jog (the recovery interval), then running the distance again (another workout interval).

#4: LONG RUN WORKOUT

For clients interested in running a marathon, a long run workout is a great way to improve endurance. It trains their body to sustain an elevated heart rate and more stress on the body for a longer period of time.

Long run workouts also help improve run pace. Marathon pace is important because starting too fast can cause the body to burn out. Long runs help them better identify the speed they need to run to make it to the finish line.

#5: EASY RUN WORKOUT

Many running workouts require going full-out, even if for short periods of time. There are also benefits of running at an easy pace. These include increased performance and improved mental health.

The goal pace for an easy run is roughly half to three-quarters of a 5k pace, which ranges from 8:00 to 9:40 minutes. This helps support optimal capillary and mitochondria development.

#6: TEMPO RUN WORKOUT

What exactly is a tempo run? It's a run that feels difficult, but not too hard. The goal of this run is to push your body in a controlled, sustainable way. These types of running workouts are generally 30 minutes or less and cause labored breathing at the beginning before the body adjusts.

Tempo pace is slightly slower than a 5k pace, by about 30 seconds per mile. Warm-ups and cool downs are important for a tempo run.

#7: PROGRESSION RUN WORKOUT

As the name suggests, progression runs involve starting slow, then speeding up. This helps boost endurance, reduce fatigue, and aid in recovery.

Another benefit of progression runs is that they let the body warm up before increasing speed. This reduces injury risk and contributes to a more successful workout.

#8: FARTLEK WORKOUT

Unlike many of the other types of running workouts, a fartlek workout is not structured. The runner switches from moderate to high intensity in an unpredictable fashion. The benefit of this type of workout is that it enables the runner to vary the exercise based on how they feel.

One way to do a fartlek workout is to change running speeds every time a new song begins on their playlist. Another option is to look for landscape markers and run as fast you can toward them before slowing down to recover.

#9: RECOVERY RUN

It's not uncommon for endurance athletes to do a recovery run within one day after engaging in an intense training or competition. These sessions involve short, easy runs that increase heart rate to roughly one-half of the client's max.

Recovery runs help reduce the risk of overtraining. They give the muscle and tissue time to heal from more intense exercise sessions.

An Effective Speed Endurance Training Program Offers Variety

When creating a running program for clients, variety is key. Running drills can be performed 5-6 days a week, but varying the type of workouts provides clients optimal results in both speed and endurance.

Also consider other types of exercise that can cause improvements in these areas. For instance, there's value in [including strength training in a running regimen](#). The stronger the muscles, the faster the run. Strong muscles also contribute to strong bones, reducing fracture risk.

Another option is yoga. The [Yoga Journal](#) reports that engaging in yoga helps runners in several ways:

- Improve range of motion
- Reduce stress on the body
- Increase running confidence
- Lower injury risk

If you'd like to help your runners more, the ISSA offers [Yoga Instructor Certification](#). In this course, you will learn the philosophies behind yoga, as well as how to teach the various forms. Upon completion, you will be able to design yoga sequences for your students based on their individual goals and needs.

Correcting Pain Caused by Running



Anyone who has set out for a run knows that injury happens. Whether from deconditioning, improper gear, or previous injury. In fact, some statistics say two of every three athletes will suffer at least one health issue each season. Most of these injuries won't be traumatic, but gradually develop. In this article, we'll identify common health issues and injuries that plague long-distance runners and recreational runners. Then we'll share the top corrective exercises fitness professionals use in case you or your client sustains an injury.

Common Health Issues for Runners

Any time someone laces their shoes for a training run or race, there is a chance they will end up with an acute injury. Blisters, sunburn, a rolled ankle, a pulled leg muscle, and dehydration are common acute injuries.

Chronic injuries are often the result of multiple acute injuries. They can also occur simply due to repeated stress on the body. For example, a rolled ankle may eventually lead to knee pain or hip pain if not properly rehabilitated before returning to the training program. Long-distance runners who get injured at the beginning of the race must choose to stop or continue and endure more pain and a potentially worsened injury.

Stress fractures are often the result of prolonged and repetitive training. Often the training program is not properly periodized or cross training is not used, causing overuse injuries.

Many runners experience these common running injuries:

- Acute musculoskeletal injuries (muscle sprain)
- Gastrointestinal issues
- Dehydration or hyponatremia (imbalance of electrolytes)
- Stress fracture
- Achilles tendinopathy
- Blisters
- Environmental injuries such as sunburn, heat exhaustion, frostbite, or hypothermia

Common Movement Issues for Runners

In addition to acute and chronic injuries, an athlete may develop muscular imbalances or improper movement patterns. These may include:

RUNNER'S KNEE

Runner's knee happens when the kneecap (patella) is out of alignment. According to Johns Hopkins Medicine, this may happen because of weak thigh muscles, tight hamstrings, tight Achilles tendons, ill-fit running shoes, overuse and overtraining, or prior injury.

Symptoms of runner's knee include:

- Pain during activity
- Pain after sitting for a long time
- A grinding or clicking sound in the knee
- Sensitivity to touch (kneecap)

SHIN SPLINTS

The constant pounding of running can cause stress fractures in the tibia. Shin splints are a reaction to these minute cracks. Muscle weakness in the thighs or glutes and a lack of flexibility are common causes of shin splints. You may also develop shin splints if you have flat feet, run downhill, run on uneven surfaces, run on the street or sidewalks, or use [old running shoes](#).

You may have shin splints if you feel:

- A dull ache in your lower leg
- Pain on either side of the shin bone
- Tenderness or have swelling in the lower leg

An athlete may also complain of numbness or weakness in the feet.

PLANTAR FASCIITIS

Having tight calf muscles and high arches may make you more prone to suffering from [plantar fasciitis](#). The plantar fascia is the largest ligament in the human body. It becomes injured over time, the cause of repetitive micro tears to the ligament. Symptoms that will clue you into this injury include:

- Heel pain
- “Stabbing” foot pain especially in the bottom of the foot or in the heel
- Stiffness
- Tenderness

ILIOTIBIAL (IT) BAND SYNDROME

The iliotibial band is a large tendon that runs along the lateral aspect of the upper leg from the iliac crest to the tibia. It crosses both the hip joint and knee joint. Runners most commonly develop iliotibial band syndrome if they do not adequately warm-up, cool-down, or stretch after training. Weakness in the hip abductors also contributes to injury. As with many common running injuries, overtraining, improper gear, and running surface may increase the risk of developing [IT band syndrome](#).

Symptoms of IT band syndrome include:

- An aching or burning sensation on the lateral aspect of the knee
- Feeling a pop or snap on the outside of the knee
- Shooting pain that travels up and down the leg
- Heat and redness on the outside of the knee

Corrective Exercises for Runners

Corrective exercises for running are necessary if an athlete has a muscular imbalance from overcompensation or poor posture. Functional training, including training movement patterns in novel ways, is a great way to prevent injury.

If you want to become an expert in helping clients with corrective exercises, consider getting certified. [Check out the ISSA's certification program for becoming a Corrective Exercise Specialist.](#)

Let's review some of the top corrective exercises for running.

DYNAMIC WARM-UP

Corrective exercises include proper warm-up and stretching. Mobility training (covered in [this article](#)) is especially beneficial for runners. Exercises should be specific to the activity and be dynamic—not static—in nature. Some exercises to add to the warm-up include:

- Walking butt kickers
- Walking lunge with twist
- Thoracic spine rotation (on all fours)
- Leg swings
- Clamshells
- Butterfly hip thrust

STRENGTH TRAINING

Knee pain, hip pain, runner's knee, shin splints, and other common running injuries can be prevented by including functional strength training. Weak muscles are often the cause of injury. However, research suggests that the greatest risk factor for sustaining a running injury is a history of injury. Strength training can be both preventive and corrective.

Here are some exercises to include:

- Leg curls
- Russian twists
- Stability ball jack knife
- Knee drives (with band)
- Bird dogs
- Fire hydrants
- Split squats

CROSS TRAINING

Including cross-training into the training program helps avoid overuse injuries. When deciding which activities and exercises to use, consider how the movement patterns or energy systems used translate into running.

For example, swimming is an excellent way to increase cardiovascular endurance and overall muscle strength. The movement of swimming is not vastly different from running. And swimming is far gentler on joints, making it a great activity for runners who are rehabilitating an injury.

Another great cross-training exercise for running is cross-country skiing. During cold and snowy winter months, runners can use cross-country skiing to stay in shape. The movement patterns are nearly identical to running. However, the gliding motion of the feet over the snow reduces impact stresses and strengthens the joints.

How to Design a Corrective Exercise Program for Runners

Now that we've covered the corrective exercises for running, let's discuss the process for designing a training program.

CONSULT THE DOCTOR

If clients are experiencing chronic, persistent pain with training, refer them to their primary care physician for additional diagnostics. Do not attempt to diagnose or treat injuries. Once they are cleared for exercise, start by conducting assessments.

CONDUCT ASSESSMENTS

First, conduct movement screens. Use a movement screen that will identify imbalance and inefficiency. Two screens that have been found valuable for predicting injury in young male runners are the deep squat and active straight leg raise.

Postural assessments will also identify problem areas, such as lateral, posterior, or anterior pelvic tilt.

SPECIFIC WARM-UPS

A slow jog around the track before going for a long run isn't sufficient to warm-up the body and prepare the joints for the workout ahead. Here are some specific movements to include in a functional training program that will help warm-up the muscles that support the ankles, knees, and hips.

- Ankle circles
- Knee circles
- High knees
- Hip circles
- Lateral leg swing
- Hip hinge
- Windmills
- Side lunge
- Single-leg walking deadlifts

CROSS TRAINING EXERCISES

Include exercises in the training program that use the same energy system and movement patterns as running. Include these in the off-season and to help clients get back into running after an injury. You can also use cross-training exercises during the “de-load” phase. Some workouts include swimming, cross-country skiing, elliptical machine, and cycling.

STRENGTH TRAINING

Strength training is critical for runners. Create a progressive program to strengthen the leg muscles and stabilize the joints. Stick with a repetition range that supports muscular endurance rather than hypertrophy.

SELF-MYOFASCIAL RELEASE

Muscles are surrounded by a protective lining called fascia. Training can damage the fascia leading to tightness and reduced elasticity. Self-myofascial release helps reduce tightness and inflammation. Grab a foam-roller or tennis ball and roll out the following muscles:

- Soleus
- Gastrocnemius
- Tensor fascia latae
- IT band
- Quadriceps
- Adductors
- Piriformis
- Psoas

Ready to learn more about corrective exercise? Check out the [ISSA's Corrective Exercise course](#) and get certified as a specialist. You'll learn to identify and correct the most common movement dysfunctions in your clients and you'll add another tool to your belt to boost your business as a fitness professional.

Essential Hip Stretches for Runners



Running offers many benefits. Physically, it can help you lose weight and build strength in your lower body. Research also reveals that runners tend to live longer than non-runners by about three years. Engaging in yoga-based hip stretching is a good complement to a regular running routine.

Benefits of Stretching the Hips Before and After Running

Some of the [most common running injuries](#) involve the lower leg. More specifically, they are injuries to the knee, ankle, and foot. Achilles tendonitis, plantar fasciitis, and runner's knee all fall into this category. So, it's only natural to create fitness routines directed toward strengthening these key areas. Adding stretching exercises that focus on the muscles in the hip area provides advantages as well.

STRETCHING RELAXES TIGHT HIP FLEXOR MUSCLES

The term 'hip flexor' refers to a group of muscles in the upper thigh and groin. These muscles make it possible to raise and lower your right and left leg during your run. They also enable you to bend and swivel at the hips, such as when lacing or unlacing your shoes.

If you spend a lot of time on the road or trails without adequately stretching your hip flexors, they can tighten up. This can cause pain or discomfort when you run. If the hip flexor muscles become too tight, they can stretch or tear. This type of injury can keep you from the sport you love.

Regular stretching helps [relax the muscles in the hip area](#). Stretch before you run and you may notice less of a pull in the hip. This helps you run further, longer, and with less pain. Stretch after your run and it can ease soreness associated with tight hips.

STRETCHING HELPS OPEN THE HIP JOINT

Stretching is also a great hip opener. When your hip flexor muscles are tight, your hip joint doesn't work as effectively as it should. This equates to shorter strides and can lead to imbalance or injury.

Lengthy runs can also tighten and shorten the hip muscles. Shorter hip muscles keep the joint from opening fully when you run. It's as if a rubber band is wrapped around your hip area, restricting your movement. Stretching helps prevent this from occurring.

When you stretch your hip muscles often, it elongates them. This allows for [maximum range of motion](#) and flexibility in the hip. It also helps support a healthier gait.

If you change the way you run because of a closed hip joint, it can create even more problems. Your knee and lower leg fall out of alignment, increasing your risk of injury and pain. Over enough time, it can even lead to issues in the upper body.

STRETCHING WITH YOGA BUILDS MUSCLE

One of the benefits of holding yoga poses for extended periods of time is that it increases muscle mass. So, doing yoga-based hip stretches also helps build muscle. This muscle serves to add more power to your runs.

[Research](#) also indicates that gaining muscle mass provides performance benefits for endurance runners. Strength training helps boost sprint speed. It also improves running times and has positive effects on energy.

5 Best Yoga Hip Stretches for Runners

What are the best stretches for runners who want to loosen up their hips? Here are five to consider.

#1: EASY POSE

This yoga stretch is perfect for beginners because it isn't overly complicated. To do the easy pose, sit on the floor with your legs crossed so each foot sits below the other leg's knee. When you look down, your legs should form a triangle, each thigh representing one side and your shins representing the third.

Place your hands in your lap with the palms facing the ceiling. Hold the pose as long as you'd like while continuing to inhale and exhale. Halfway through, switch your legs around so each foot takes turn resting under the other leg's shin. This gives the muscle on each hip the opportunity to stretch and relax.

#2: FIRE LOG POSE

This hip stretch is also good for runners who experience sciatica, or pain that runs from the lower back and down the length of their left or right leg. To perform this stretch, sit on the floor with your knees bent. Roll your shoulders back and down before sliding your right foot under your left leg so it is below the left knee.

Keep your torso long and back straight and exhale as you bend forward at the hips. Rest your forearms on your left leg. Continue to breathe in and out. With each exhale, try to bend forward more. This helps better stretch your hips. Bend far enough forward and you may also feel stretching in your glute muscles (the gluteus maximus, gluteus medius, and gluteus minimus). Hold this stretch for 30 to 60 seconds before returning to the start position and switching your legs so your left foot sits under your right leg.

#3: BOUND ANGLE POSE

If your goal is to open your hips, this stretch delivers. Begin by sitting on the floor, your legs extended in front of you. While exhaling, bend your knees and pull your feet as close to your groin as you can. The soles of your feet should be pressed together. Let your hips and leg muscles relax while letting your knees drop toward the floor.

If you can't get your left or right knee to touch the ground, that's okay. Just let them get as close as they can without forcing them. Hold this position up to five minutes before inhaling as you lift your knees back up. Straighten your left and right leg again to return to the starting position.

#4: DOWNWARD DOG WITH CROSSED LEGS

The downward dog is good for stretching the hamstring muscle. Cross your legs while doing this yoga pose and it will stretch your hips too. To get into the downward dog position, get on the floor on your hands and knees. Your right knee should be directly below your right hip and the same for the left side. Exhale as you lift your knees off the floor, straightening your legs as your hips rise into the air. Keep your knees slightly bent to [avoid creating knee pain](#).

Next, move your right foot on the other side of your left leg. Hold for 30 to 60 seconds. Return your right foot to the downward dog position before moving your left foot in front of your right leg. Hold this position another 30 to 60 seconds to elongate the hamstring and hip.

#5: LUNGE POSE

Also known as a runner's lunge, this pose gives a good hip stretch. Start by getting in a plank position. Bring your right foot forward so it sits next to your right thumb. Your right knee should be between your arm and upper body. Consciously relax the muscle in your hips and back so both drop closer to the floor. Hold this position for 30 to 60 seconds while inhaling and exhaling.

Return to the plank position, then move your left foot forward so your left knee is between your upper arm and chest. Again, hold for 30 to 60 seconds to relax the muscle in the upper area of your left leg.

Take your training all the way to the top with [ISSA's Elite Trainer program](#). You'll build your base with the Personal Trainer course and Nutrition, then expand your reach with an additional advanced specialization of your choice. Corrective Exercise? Yoga? It's all up to you.