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Your Hips: Balance is Key

Imagine a game of tug of war. There are six ropes attached to a ring and extending in different directions. At the end of each rope is a 200-pound body builder. This tug-of-war would be a well fought and even battle and may take a while to declare a victor.

Now imagine the same game with different players, including a body builder, a 6-year-old child, 85-yearold man, pregnant woman, elite runner and a "weekend warrior." The outcome of this match would be completely different. It would be an unfair fight and likely conclude quickly. These inequities are very similar to what can happen if a runner's hip muscles are unbalanced.

There are hundreds of muscles at work when you run, creating a complex and sophisticated system of push and pull, balance and counterbalance. Muscles work from your neck to your toes. The biggest muscle groups you'll use are in the hips and legs, which will be the focus of this article. The most important ones are the hip flexors, quadriceps muscles, gluteal muscles, hamstrings and calf muscles. Balancing this complex system of muscles will result in optimal function while running. If any of these muscle groups are not functioning correctly because of weakness or tightness, you may experience a significant imbalance in your running gait, which increases the difficulty of a work-out and makes you more prone to fatigue and injury.

For example, what would happen if you drove your car for a significant distance without fixing a flat tire? It would damage the other tires, cause alignment issues and other damage that may require costly repairs. Similarly, muscle imbalances, can lead to injury if not addressed in a timely manner. The most common tightness occurs at the anterior (front) and lateral (outside) parts of the hips. Most weakness occurs at the lateral area. Below, we will discuss a few muscle groups, their function and how they can contribute to running abnormalities. Stretches and strengthening exercises addressed in this article are demonstrated in this video.

Iliotibial Band:
Although the iliotibial (IT) band is not a muscle, it can be the bane of many a runner and stop even the most elite runners from training due to significant pain. The IT band is the fascia/connective tissue that starts on the outside of the hip and extends to below the knee. The repetitive motion of running and knee flexing can cause tightness in the tissue and repetitive rubbing/friction that can cause pain at either the outside of the hip or the outside of the knee. Many times, tightness in the IT band is due to muscle imbalance. A simple way to stretch the IT band is to cross the affected leg behind the other leg and lean into the affected side, while making sure to keep the torso straight without twisting or flexing.

Iliopsoas/Hip Flexors:
If you have groin or anterior hip tightness, it likely originates from the iliopsoas muscle, which is a combination of the iliacus and psoas muscles. These muscles run from the spine and iliac crest to the femur. The main function of the iliopsoas is hip flexion. Tightness of this muscle it can lead to pelvic instability and poor running gait. One of the best stretches for the iliopsoas is the pigeon pose (see video).

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Adductors:
The adductors, also known as the groin muscles, include the adductor magnus, adductor longus, adductor brevis, gracilis and pectineus. These muscles are responsible for bringing the leg inward or closing the thighs. Tightness of the adductors can lead to a groin strain or, more commonly, a groin pull. The butterfly stretch is good for the adductor muscle. This is where you sit on the ground with the soles of your feet together while pushing your knees toward the ground. It's important to keep your back straight to maximize the stretch.

Quadriceps:
The quadriceps are a group of four muscles in the front of the leg: the rectus femoris, vastus lateralis, vastus intermedius and vastus medialis. This muscle group works to extend the knee but is also involved in hip flexion. Abnormal function or tightness in the quadriceps muscles can lead to imbalances and over-activation of the hamstrings, resulting in hamstring injuries. The easiest way to stretch the quadriceps muscles is to grab your ankle, flex your knee so your heel reaches up toward your buttocks and hold.

Gluteal muscles:
The gluteal muscles are, in my opinion, the most important muscle group. This is where I see the most imbalance and weakness. This muscle group is made up of the gluteus medius, gluteus minimus and gluteus maximus and provides the most stability of the pelvis as well as power. These muscles give the hips the most stability. Most of the time it is weakness, not tightness, in this muscle group that causes problems for runners. Weakness will cause an abnormal running gait which can trigger pelvic instability, tightness in other muscles and injury. This can also be a major source of knee pain because the quadriceps muscles overactive and contribute to tracking disorders in the patella (kneecap).

Hamstrings:
The semimembranosus, semitendinosus and biceps femoris make up the group of hamstring muscles in the back of the thigh. These are responsible for hip flexion and knee flexion. Runners may complain of pain in the muscle belly or at the origin of the hamstrings in the buttock, otherwise known as the "sit" bone. If there is tightness, the quadriceps in the front of the thigh may overreact. The easiest way to stretch the hamstrings is to cross one foot in front of the other and flex forward, trying to touch one's toes.

The bottom line is that you should try to enhance strength and range of motion in your hips to ensure that all muscle groups are working together. This will improve distances, training and time while decreasing fatigue and rate of injuries.

There are many different stretches and strengthening exercises to help you achieve this goal. This video will help get you started.

Most importantly, if you are having pain that does not resolve with stretching and a few days' rest, there may be something more contributing to your pain and I recommend a medical evaluation. If you have any questions or concerns regarding an injury or pain, please reach out to one of our experienced sports medicine physicians at Corewell Health Medical Group Orthopedics at (616) 267-8860. You can also find more information about our orthopedic program and providers here.