In this article BRIAN MARTIN explains how strength training to improve coordination of the gluteal and hamstring muscles can benefit the technique, performance and injury resistance of runners. This is the first of a series that directly links strength training to improved running technique.

Principles of Strength Coordination Training

1. Focus on exercises that are closely linked to running posture and movement.
2. Regularly make changes in your routine to simulate neurological adaptations.
3. Do some exercises barefoot to stimulate your natural foot balance and strength.
4. Do some exercises before you run to stimulate general and hamstring muscles.
5. Increase strength gradually over months and years.
6. Don’t isolate large muscle groups.
7. Don’t get stuck in a routine; mix up your exercise combinations during the week.
8. Activate your core, glutes and hamstrings.
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Training the gluteal and hamstring muscles in postures and movement patterns similar to the body’s natural rhythm can considerably improve technique. These muscles thrive on good coordination because they control the posture of the hip and lower back and the generation of movement through the hips and knees. These exercises can help strengthen the muscles around the hip and improve coordination with the hamstrings. For runners who enjoy the outdoors and resent time spent indoors, there are numerous exercises runners can perform that will help strengthen the muscles and hamstrings in running and is a great way to add strength and stability to your stride. These exercises can also be performed at home or the track.

**Double Leg Bridging**

- Lie on your back with your knees flexed, feet flat, and arms relaxed by your side.
- Position your feet so they align with each hip.
- Engage your core.
- Push your hips up by squeezing your buttck muscles.
- Push through your whole foot until your hips and torso form a sloping straight line.
- Avoid activating your hip flexors; the muscles at the front of your hip and thigh may try to help.
- Hold the position for 10-60 seconds and keep breathing.
- Repeat 2-5 times.
- You should feel a burning sensation through the buttck and upper hamstrings. Once you can complete this successfully, try the exercise using a single leg.

**Single Leg Bridging**

This is more difficult. The key is to keep your pelvis level. If you focus on activating only your glutes and hamstrings in running, it’s easy to add a lagging sensation. This exercise stimulates the buttck and hamstring muscles. Once the exercise has been mastered, try standing on one leg while raising the opposite leg. Use the same muscle activation pattern to lock the hips and knees in a running-like posture.

**Control During Running**

Once you have become comfortable connecting your hip in static holds, progress to incorporat- ing movement. This challenging progression combines motion and improved posture at the hip. The exercise closely mimics the activity of the glutes and hamstrings in running and is a great way to add strength and stability to your stride. While it’s not glamorous – it gets results! Hardening the buttck and hamstrings increases muscle mass around the hamstrings. It is also an easier exercise for beginners to master than body weight or barbell squats. The increased strength allows runners to propel their body efficiently and capture all the energy produced by the hamstrings with each stride.
Dynamic Single Leg Bridging
The technique is the same as single leg bridging, but the addition of movement makes the exercise more applicable to running.
1. Place the foot in line with or under the hip; practice keeping them stable and strong.
2. With the glutes and hamstrings push up through the whole foot and don't pause at the top of the movement. Keep the glutes engaged and lower the body toward the ground.
3. Don't pause at the bottoms of the movement. As your coordination and control progresses, add more bounce to the upwards phase.
4. Begin with ten repetitions
5. Progress to 20, 30 or even 40 repetitions
This exercise creates a strong burning sensation through the hamstrings and glutes and is more challenging than you initially expect. If your hips are unstable while running, this exercise will help ease the problem. Dynamic single leg bridging also provides strength and coordination needed to progress to more difficult strength training exercises, including: squats, dead-lifts and back extensions.

Single Leg Back Extension
Another exercise to improve posture, power and hip control while running, is the single leg back extension. This is a difficult exercise to perform, but can be made easier by restricting range of motion. This exercise is one of the best for mimicking the balance, strength and coordination needed in running. It promotes control of the pelvis and lower back, while activating the glutes and hamstrings. If done barefoot it also helps strengthen muscles of the lower leg and foot.
1. Place your foot under your hip; toes slightly pointed out
2. Flex your knee and hips, keeping your hips back and externally rotated by engaging the glutes.
3. Dip forwards at the knee and tipping forward while keeping the back extended and core engaged; tilt your pelvis rather than using your back. Keep a good arch in the lower back.
4. If you are advanced you can tilt forward to the point where your torso is almost horizontal to the ground (beginners should dip forward only slightly).
5. You'll feel pressure in your forefoot as you tilt, keep strong: this is strengthening the plantarflexors needed to form a stable springy platform in running.
6. Maintain good tension in the glutes and hamstrings as you tilt forwards; contract the glutes powerfully to return your body to the start position.
7. Don't lock your knee; keep it flexed throughout.
8. Keep your hips flexed.
9. Keep your hip and pelvis square; don't allow the hips to twist sideways.
10. Hold the exercise for ten seconds to begin.
11. To progress, make the movement dynamic and bouncy; aim for 10-20 repetitions.
12. Practice in front of a mirror to correct any sideways twisting at the waist, and ensure your knee stays outside the line of your big toe.

Advanced Dynamic Single Leg Bridging start position.
Advanced Dynamic Single Leg Bridging end position.
Advanced Dynamic Single Leg Extension start position.
Advanced Dynamic Single Leg Extension end position.
Beginner Dynamic Single Leg Extension start position.
Beginner Dynamic Single Leg Extension end position.

Advanced athletes can perform this exercise with barbells, but this is not recommended for beginners.
In the next in this series we’ll look at the relationship between running technique and squats.

References:

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About the Author...
Brian Martin is the author of a recently published eBook, Running Technique. The eBook is designed to teach athletes of all abilities how to adopt an optimal running technique. For more information visit www.runningtechniquetips.com

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