



## Case for cross-training, Part 1: Five reasons every runner should cross-train

By **Matt Fitzgerald**

For Active.com

10/12/2004

As recently as 10 years ago, few elite runners did much in the way of cross-training, which I like to define broadly to include all forms of resistance training, stretching, and non-impact endurance training activities such as bicycling.

Non-impact alternatives to running were grudgingly taken up only when injuries made running impossible and were quickly cast aside when running was resumed.

Most of the elite runners of the previous generation did some stretching, but without much effect on injury risk because they usually failed to customize their stretching routine to fit their individual needs. Only a handful of runners did any amount of resistance training, and again, with questionable methods.



Within the past few years, a rapidly growing number of elite runners (in the United States, at least) have chosen to make cross-training central to their training programs and have begun using more sophisticated methods.

The athletes leading this trend are crediting the new approach to cross-training with reducing injuries, accelerating injury rehabilitation, facilitating recovery, and not least of all, helping them run faster by increasing their aerobic fitness, power, and efficiency.

The poster boy of the new approach to cross-training is Alan Webb, winner of the 2004 Olympic Trials 1500 meters. Under the guidance of his coach, Scott Raczkowski, Webb maintains an unorthodox training schedule in which less than half of his training time is spent on running.

The rest is spent on dynamic stretching and flexibility drills, medicine ball exercises, calisthenics, balance training, pool running, and functional strength training.

The rationale is simple. Webb, like any other runner, can only do so much running without getting injured. But the maximum amount of running he can handle is not the maximum amount of total exercise he can handle.

By doing other types of training that enhance his fitness in ways that complement his running, he can actually reduce his injury risk while further enhancing his running performance.

Few age-group runners are willing to follow an example like Webb's, in part because they simply prefer running to other forms of exercise, but mostly because they aren't fully convinced of the benefits of cross-training.

So I'd like to devote this first installment of my six-part series on cross-training to giving you a hard sell on the benefits of cross-training.

I want to first persuade you to give an honest try to a balanced cross-training approach to training for distance

running. Then, in subsequent articles, I can move on to explain how.

For a full treatment of this topic, including complete cross-training-based training programs for all types of runners, see my book, *Runner's World Guide to Cross-Training* (Rodale, 2004).

Following are five proven benefits of cross-training.

### **1. Fewer injuries**

Many overuse injuries are caused by instability in the hips, knees, and ankles resulting from inadequate strength in important stabilizing muscles. For example, weak hip abductors (the muscles on the outside of the hip) can cause the pelvis to tip toward your unsupported side when your foot lands, placing undue strain on the hip and/or knee joints. Strength training can correct such problems.

Tightness in certain muscles and tendons also contributes to some running injuries. For example, runners who develop iliotibial (IT) band friction syndrome typically have tight IT bands. Stretching can loosen tight connective tissues and thereby prevent such injuries.

Finally, by replacing one or two weekly recovery runs with easy workouts in non-impact modalities such as bicycling and pool running you can reduce the amount of repetitive impact your lower extremities are subjected to, and in this way reduce injuries (without sacrificing fitness). Impact forces are the true origin of nearly every running injury.

### **2. Faster rehabilitation**

When you do get injured, cross-training comes to the rescue by correcting the root cause of the problem, allowing you to get you back on the road quickly and reducing the risk that this particular injury will recur. (An estimated 50% of all running injuries are in fact re-injuries.)

For example, eccentric strengthening of the calf muscles is a very effective way to correct the root cause of Achilles tendinosis, which is essentially an inability of the calf muscles to properly absorb impact forces.

Non-impact cardio workouts can be used to maintain your aerobic fitness while your running is limited due to injury. Olympic silver medallist Meb Keflezighi used this strategy with great success when injuries hampered his running in the lead-up to the 2004 Olympic Trials Marathon.

By replacing a number of runs with bike workouts he was able to build enough fitness despite his injury setbacks to finish second in that race and earn a trip to Athens.

### **3. Greater aerobic fitness**

Due to the pounding running inflicts, even the most gifted runners can handle no more than about 15 hours of running per week, whereas athletes in non-impact endurance sports such as swimming and cycling routinely perform twice this amount of training.

By adding non-impact cardio workouts to your running schedule, you can gain a little extra aerobic fitness without increasing your injury risk.

### **4. More power**

Another benefit of strength training -- particularly of jumping drills, or plyometrics -- is increased stride power, which translates into greater stride length and reduced ground contact time and consequently faster race times.

Among the recent studies demonstrating these benefits was a Swedish study in which trained runners replaced 32% of their running with plyometrics for a period of nine weeks.

After nine weeks, their maximum sprint speed, running economy, and 5K race times were all found to have improved, whereas runners in a control group who maintained their normal training schedule showed no improvements.

### 5. Greater efficiency

Dynamic flexibility is the ability to perform sports movements such as running with minimal internal resistance from your own muscles and joints.

Dynamic stretches are movements that enhance dynamic flexibility by mimicking the way your muscles and connective tissues actually stretch during running. An example is giant walking lunges (i.e. walking with the most ridiculously long steps you can take).

Performing dynamic stretches on a regular basis reduces internal resistance in your running movements and thereby enhances the efficiency of your stride.

In part two of this series we'll take a closer look at strength training.

▶ **Part 2: Strength training**

▶ **Part 3: Stretching**

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*Matt Fitzgerald coaches runners and triathletes online through Carmichael Training Systems ([www.trainright.com](http://www.trainright.com)) and is the author of "Triathlete Magazine's Complete Triathlon Book" and "Runner's World Guide to Cross-Training."*

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## Case for cross-training, Part 2: Strength training for joint stability and injury prevention

By Matt Fitzgerald

For Active.com

10/19/2004

*This series is adapted from Matt Fitzgerald's forthcoming book, "Runner's World Guide to Cross-Training." [Part 1 begins here.](#)*

We all know running puts us at high risk for injury, but researchers are finding out there's a lot more behind running-related injuries than impact forces.

Specifically, it's the combination of impact and joint instability that puts running on par with tackle football when it comes to numbers of injuries.

Here's why: When your foot makes contact with the ground, your muscles and connective tissues must work together to resist the potential joint-destabilizing effect of impact.

Most runners, particularly those who do not cross-train, are weak in key stabilizing muscles. As a result, the body is forced to absorb impact in a way it's not built to handle.

"The biggest thing I see is that runners have very weak core musculature, and because of this they can't control their posture while they're running," says Michael Fredericson, M.D., a running injury expert at Stanford University.

"Their pelvis goes into a forward tilt and they get an arch in their low back." This, Fredericson, says, results in extra stress on both the hamstrings and knees.

The hips are also problematic in many runners.

"The hip abductors and external rotators of the hip tend to be weak, or they're just not firing appropriately -- they're not becoming active when they should," says Bryan Heiderscheit, P.T., Ph.D., who directs an injury clinic for runners at Des Moines University in Iowa.

"You'll end up assuming an internally rotated position at the knee and at the hip." This can cause injuries ranging from knee pain to tendonitis in the hips and groin.

Other muscles that tend to be dangerously weak in runners are those of the lower back and the front of the lower leg.

Luckily, strengthening these running stabilizers doesn't need to take a lot of extra time. Simply add another 15 minutes to your running routine twice a week (if you're really pressed for time, steal it from the time you already run -- you'll thank yourself later) and mix in the following strength exercises.

(For photo illustrations of these exercises and a lot more information about strength training for runners, see my book, *Runner's World Guide to Cross-Training.*)



### **Lower abdominal squeeze**

Lay face up with your arms relaxed at your sides and your legs extended straight toward the ceiling with your heels together. Then contract the muscles of your lower abdomen and, by doing so, try to lift your heels ever so slightly toward the ceiling. (This is a very small movement).

Hold the contraction for one second, then relax for one second. Repeat the exercise until you feel a nice burning sensation in the targeted muscles.

**Benefit:** Strengths lower abdominals and prevents forward tilt of pelvis during running.

### **Side step-up**

Stand with your side next to a 12- to 18-inch platform (such as a weight bench or tall aerobics step). Place your right foot on the platform keep your left foot on the floor (your right knee is bent and your left leg is straight).

Shift your weight onto your right leg stand on that leg, lifting your entire body 12 to 18 inches.

Pause briefly with your left foot unsupported in the air next to your right foot, then bend your knee again and slowly lower your left foot back down to the floor.

**Benefit:** Strengthens the thighs, hips, and glutes, improving knee and hip stability.

### **Pillow balancing**

Place a pillow on the floor and balance on it with one shoeless foot for 30 seconds, and then balance on the other foot, and repeat. At first it will be difficult to last 30 seconds, but you'll quickly improve. Keep it challenging by using a bigger or softer pillow, by stacking pillows, and/or by balancing longer.

**Benefit:** Strengthens the muscles that oppose the calf muscles, improving ankle stability.

### **Hip twist**

Lie face up with your arms resting at your sides and your palms flat on the floor. Extend your legs directly toward the ceiling, keeping your feet together, and point your toes.

Keeping your big toes side-by-side, tip your legs 12 to 18 inches to the right by twisting at the hip, so that your left buttock comes off the floor. Fight the pull of gravity by maintaining stability with your abs and obliques.

Pause for a moment, then return slowly to the start position, again using your core muscles to control the movement. Repeat on the left side. Do 8-12 repetitions on each side.

**Benefit:** Strengthens the abdominal muscles, including the obliques, improving pelvic stability.

### **Single arm dumbbell clean and press**

Assume a wide athletic stance with a single dumbbell placed on the floor between your feet. Begin with your left arm fully extended and bend forward from the hips and grasp the dumbbell with your left hand.

With a single, fluid, powerful movement, pull the dumbbell off the floor, stand fully upright, and continue raising your left arm until it is extended straight overhead.

Pause briefly and then reverse the movement, allowing the dumbbell to come to rest again on the floor briefly before initiating the next lift. Complete 10-12 repetitions and then switch to the right arm.

**Benefit:** Strengthens the thighs, hips, glutes, lower and upper back, chest, and shoulders, improving knee and hip stability and running posture.

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*Matt Fitzgerald coaches runners and triathletes online through Carmichael Training Systems ([www.trainright.com](http://www.trainright.com)) and is the author of "[Triathlete Magazine's Complete Triathlon Book](#)" and "[Runner's World Guide to Cross-Training](#)."*

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## Case for cross-training, Part 3: Stretching

By Matt Fitzgerald

For Active.com

10/26/2004

*This series is adapted from Matt Fitzgerald's forthcoming book, "Runner's World Guide to Cross-Training." [Part 1 begins here.](#)*

The primary perceived benefit of stretching for runners is injury prevention.

But in the best recent controlled studies, stretching has not reduced the incidence of injuries to the lower extremities to a statistically significant degree. On the basis of such studies, many exercise physiologists advise runners not to stretch.



The main problem with this advice and the studies upon which it is based is that they come at stretching from the wrong side of injury. Targeted stretching of abnormally tight muscles and tendons has proven to be an extremely effective means of rehabilitating and preventing the recurrence of specific injuries in runners.

This is because abnormal tightness in specific muscles and tendons is without question a contributing cause of particular running injuries, and stretching can increase the elasticity of muscles and tendons.

Every day, physical therapists prescribe targeted stretching exercises to rehabilitate and prevent recurrence of five different injuries that are frequently associated with tightness in muscles and tendons.

Abnormally tight calves and Achilles tendons contribute to plantar fasciitis, shin splints, Achilles tendinosis, and calf muscle strains. Abnormally tight hamstrings and hip flexors often precipitate strains in these muscles. And an abnormally tight iliotibial band is commonly seen in runners suffering from IT band friction syndrome.

There is no doubt that stretching plays a positive role in the successful rehabilitation of many cases of these injuries, so it only stands to reason that it can also prevent many cases of these same injuries (or at least prevent their recurrence).

For this reason, I recommend that you stretch the above-mentioned muscles and tendons daily.

Another controversial question is the relationship between flexibility and performance. Stretching advocates claim that runners need to be very flexible in order to take long strides. Others believe that runners get all the flexibility they need through the activity of running itself.

In this case both sides are half-right. There are two muscle groups that are unusually flexible in most elite runners: the hips and the shoulders. Non-elite runners can surely benefit from stretching these muscle groups and thereby increasing the range of motion of the shoulders and hips.

But this alone will probably not improve your stride length, because regular stretching exercises increase only passive range of motion, whereas running requires dynamic flexibility, which is the ability to perform sports movements with minimal internal resistance from your own muscles and joints.

This is the distinction that stretching skeptics are trying to get at when they say running itself gives us all the

flexibility we need. While the distinction is real, the best way to increase dynamic flexibility is not by running but rather by performing dynamic stretching exercises.

*Dynamic stretches* are movements that mimic the way your muscles and connective tissues actually stretch during running. An example is the leg swing (described below).

Performing dynamic stretches on a regular basis reduces internal resistance in your running movements and thereby enhances the efficiency of your stride.

These stretches also make for excellent warm-up movements, because they increase dynamic flexibility acutely from resting to active levels by warming, loosening, and lubricating the muscles.

### **Dynamic stretching warm-up**

The following dynamic stretching warm-up will increase your active range of motion for individual workouts and increase your dynamic flexibility generally. Do it 2-3 times per week as a part of your warm-up, following several minutes of easy jogging.

#### **Arm swings**

Swing your right arm in a giant circle. Do 6 forward rotations and 6 backward rotations and then repeat with your left arm.

#### **Trunk twists**

Raise your arms straight out to the sides. Twist your torso as far as you can to the right. Without pausing, reverse direction and twist over to the left. Repeat 10 times.

#### **Leg swings**

Stand on your left foot and swing your right leg backward and forward in an exaggerated kicking motion. Complete 10 swings and repeat with the left leg.

#### **Side leg swings**

Stand facing a wall, lean forward slightly at the waist, and brace your hands against the wall. Lift your right foot off the ground and swing your right leg from side to side (like a pendulum) between your left leg and the wall. Do 10 swings and then switch to the left leg.

#### **Giant lunges**

Take 10 giant steps forward with each foot, lunging as far forward as you can each time.

#### **Ankle bounce**

Lean forward against a wall with your feet close together and flat on the ground. Raise both heels as high as possible and then "bounce" them off the ground. Repeat 20 times.

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## Case for cross-training, part 4: Non-impact cardio training

By Matt Fitzgerald

For Active.com

11/2/2004

*This series is adapted from Matt Fitzgerald's forthcoming book, "Runner's World Guide to Cross-Training." [Part 1 begins here.](#)*

Runners have long used low- and non-impact forms of cardiovascular exercise to keep in shape when unable to run due to injury.

But today many elite runners perform endurance cross-training workouts throughout the training cycle to promote recovery and to provide an additional training stimulus without increasing the risk of injury.



Pool running

The current standard among the elite runners who take this approach is one active recovery workout in the pool or on the bike each week.

But a few cutting-edge runners do a lot more endurance cross-training -- sometimes as much as they do running -- because they experience a significant crossover fitness benefit alongside substantially reduced injury risk.

It makes sense. The pounding that running inflicts on the body causes it to break down through injury well before its fitness potential is tapped out.

Adding an activity like pool running, bicycling, or walking to one's running allows a runner to realize more of this fitness potential without additional pounding.

Here are basic guidelines for the three uses of endurance cross-training:

### Active recovery

As a baseline, do one workout per week in your cross-training modality of choice. Maintain a steady, moderate intensity for 30 to 60 minutes.

Replace scheduled runs with additional endurance cross-training workouts when you are feeling especially sore or are experiencing warning signs of a potential running-related injury (pain felt in a specific area during and/or following runs).

### Injury rehabilitation

When you have an injury that limits your running or makes running impossible but allows you to safely perform at least one type of non-impact alternative to running, simply maintain the structure of your running program but replace runs with pool runs, bike rides, or whatever.

In other words, perform endurance cross-training workouts that imitate as closely as possible the duration, intensity, and structure of the land running workouts you would be performing if you were healthy.

For example, if you were scheduled to perform a dozen 400-meter repeats on the track at 90 seconds per quarter, then perform a dozen hard 90-second intervals in the pool or on the bike separated by rest intervals that also match what you normally do on the track. Be sure to warm up and cool down as normal, too.

## **Performance enhancement**

If you wish to use endurance cross-training to enhance your running performance, you'll need to experiment a little.

The core of your training program will remain your key run workouts (mainly your long runs and high-intensity runs). There is no substitute for these.

How much more additional running you do depends on how much more you feel you need, but should remain well within the range of what you know you can handle.

At first, add just one easy endurance cross-training workout to your schedule of run workouts. When you've adjusted to this, add another, and so on.

If you're highly competitive and seem to derive a lot of benefit from endurance cross-training, you can do as many as six such workouts per week at appropriate times in the training cycle.

Most or all of these workouts should be active recovery or foundation-type workouts, but you can experiment with some high-intensity work if you wish, as long as it does not interfere with your key run workouts.

## **Four modalities**

The best endurance cross-training modalities for runners are those that are most similar to running in terms of the manner in which they engage and affect various systems of the body, because these activities will offer the greatest crossover fitness benefit.

Swimming and rowing are rather dissimilar to running as compared to some other choices, so they are not the best options. The four modalities I recommend are:

### **1. Pool running**

Pool running, or deep-water running, when done correctly, is the cross-training modality that is most similar to land running in terms of the demands it places on the body.

Studies have shown that runners are able to maintain a high level of running-specific fitness through as much as six weeks of exclusively pool-based training. It's no surprise that pool running is the endurance cross-training modality of choice among today's elite runners.

When running in water it is important to emulate a natural land-running stride as closely as possible. This is next to impossible if you're not wearing a pool running vest such as an AquaJogger vest. These cost \$40 to \$60 and are available at many running specialty shops.

Because it is totally non-weight-bearing, pool running is the best land-running substitute to use when rehabilitating bone strains and stress fractures.

However, because it is totally non-weight-bearing, pool running exclusively for a few weeks or more will result in steady diminishment of the shock-absorbing capacity of your lower extremities, putting them at greater risk of re-injury when you return to running.

So it's best to mix pool running with a weight-bearing activity such as walking during long periods of

rehabilitation.

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## 2. Elliptical training

The elliptical trainer was specifically designed to simulate running without impact. This makes it an excellent endurance cross-training modality for active recovery, injury rehabilitation, and performance enhancement.

The only significant drawback of elliptical training is that it is rather boring in the opinion of many runners (including this one).

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## 3. Bicycling

Bicycling is not quite as similar to running as pool running or elliptical training, but it has been used effectively by many top runners, including 5000-meter American record holder Bob Kennedy. One advantage of bicycling is that it builds muscle strength in the legs.

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## 4. Inline skating

Inline skating is unique among running alternatives in that it tends to strengthen several of the important stabilizing muscles that are commonly underdeveloped in runners, and whose weakness leads to many overuse injuries.

Specifically, inline skating strengthens the hip abductors and hip external rotators, the vastus medialis (a quadriceps muscle), the lower back, and the ankle dorsiflexors on the front of the lower leg.

At the same time, inline skating provides an excellent non-impact cardiovascular workout. Its chief disadvantage is that it requires a very smooth, relatively flat skating surface and good weather.

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*Matt Fitzgerald coaches runners and triathletes online through Carmichael Training Systems ([www.trainright.com](http://www.trainright.com)) and is the author of "Triathlete Magazine's Complete Triathlon Book" and "Runner's World Guide to Cross-Training."*

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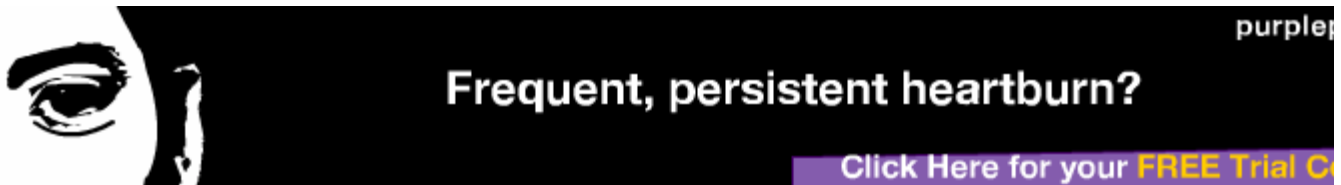
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## The case for cross-training, Part 5: Form training

By Matt Fitzgerald

For Active.com

11/16/2004

*This series is adapted from Matt Fitzgerald's forthcoming book, "Runner's World Guide to Cross-Training." [Part 1 begins here.](#)*

Most runners believe that, for better or worse, the stride you're "born with" is the stride you're stuck with. Not so.

It is more difficult to improve your running form than, say, your golf swing, because the former is learned at an earlier age and repeated with much greater frequency.



But with a little knowledge and some discipline, a variety of small but crucial adjustments are feasible.

It's worth the effort, because making even small improvements in your stride can increase your efficiency (the energy cost of running at any given pace) and reduce your risk of injuries.

The foundation for most improvements in running form is cross-training for core strength and dynamic flexibility. For more information about how to improve your running form through these methods, check out my new book, *Runner's World Guide to Cross-Training* (Rodale, 2004).

These methods alone are not sufficient, however. In order to effect specific technique improvements, and make them stick, you also need to take the same approach golfers take to improve their stroke: conscious control.

Technically, these "conscious control" workouts are not cross-training workouts, because they entail actual running. But it's a very special type of running that very few runners do, so I lump it in with the various cross-training modalities.

It's a two-step process. The first step is to *identify a specific flaw* in your running form or, put another way, to identify an aspect of correct form that is missing from your own stride. This may require the assistance of a coach or other observer.

Step two is to begin playing around with incorporating this technique modification into your running stride. Once you've gotten a basic feel for the new technique, your task is to repeat this improved movement pattern as exactly as possible with every single stride until it has become automatic, which will probably take several weeks.

This process requires great concentration and focus. Therefore I recommend that you work on just one technique modification at a time.

It's also important to run for only short periods of time when using conscious control to groove a technique change.

If you go too long, fatigue (which will come more quickly than usual, as you're using some muscles in new

ways) and/or inattention will cause you to revert back to old habits.

Here are six basic technique changes to work on:

### **1. Reduce your stance pause**

One of the key features of the stride of the most efficient runners is the lack, or near total lack, of any pause during the stance phase of the stride. The stance phase is when the foot is flat or almost flat on the ground, between the foot strike and toe-off phases.

To reduce your stance pause, begin to retract your leg just before your foot lands with each stride, so that you're already thrusting backward when your foot makes contact.

### **2. Run tall**

Many runners tend to "collapse" at the hips and pelvis when their foot comes in contact with the ground. This wastes energy and can lead to a variety of overuse injuries. To overcome this type of collapsing, concentrate on running more erectly.

Imagine wires attached to your shoulders and pulling gently upward. Thrust your hips forward just a bit and gently engage the muscles of your lower abdomen to keep your pelvis neutral.

### **3. Relax your upper body**

Most runners run with unnecessary tension in their arms, shoulders, neck, and even their faces, especially when running hard. All of this tension equals wasted energy.

Practice running with your fingers, forearms and upper arms loose, and with no hunch in your shoulders and a placid facial expression.

### **4. Land on the midfoot**

Landing heel first is like driving with the emergency brake engaged. Not every heel striker can transform himself or herself into a midfoot striker, but many can.

A good way to begin the process is to practice running with shorter strides. Use the same technique of retracting your forward leg before foot impact described in point #1 above.

### **5. Use your big toe**

The metatarsophalangeal (MP) joint at the ball of the foot was designed to actively plantar flex (flex downward) during push-off. The rigidity of running shoes inhibits the MP joint from actively plantar flexing, reducing the power of your stride. You can get some of it back by consciously pushing off the ground with your big toe, beginning at its origin at the midfoot-forefoot juncture.

### **6. Bounce less**

Runners need to push themselves upward slightly in order to float between footstrikes. By becoming airborne you can take longer strides than you do when you walk.

Faster runners in fact spend more time airborne and less time in contact with the ground than slower runners. But as much as possible, you want to float forward not upward, and indeed faster runners tend to keep the top of their head closer to the ground (relative to their height) than slower runners.

Practice this "scooting" style of running.

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## The case for cross-training, Part 6: Shoe and foot science

By Matt Fitzgerald

For Active.com

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*This six-part series is adapted from Matt Fitzgerald's forthcoming book, "Runner's World Guide to Cross-Training." [Part 1 begins here.](#)*

Running shoes are indispensable to protect your feet from hard surfaces, cold air, and the like. But they also have certain disadvantages.

Fortunately, however, you can counteract these disadvantages with some special cross-training methods designed to enhance the performance of your ankles and feet.



The actions of the foot during barefoot running are highly complex. The actions of the foot during shod running are decidedly less so, because shoe structure constricts them.

Running shoes essentially force the foot to function as a rigid, two-part plank with a single fulcrum at the ball of the foot. There are several unfortunate consequences of this constriction, but perhaps the greatest is that it greatly reduces the amount of thrusting force that the forefoot and toes are able to generate in the last segment of the push-off.

The metatarsophalangeal (MP) joint at the ball of the foot was designed to actively plantar flex (flex downward) during push-off to squeeze a last bit of thrust out of this phase of the stride. Shoe structure does not allow the MP joint to actively plantar flex.

The resulting loss in force generation is analogous to the loss in vertical jumping height you'd experience if forced to jump without flexing your ankles.

In addition, because shoes do not allow us to use our little foot muscles the way they were designed to be used, over the long term they cause these muscles to weaken, so that they're less useful, shod or unshod.

Furthermore, all that cushioning in running shoes reduces the ability of your feet to "feel" the ground (called proprioception). Consequently, your feet are unable to feed your brain as much useful information with which to fine-tune your stride.

The result is slower reaction times in response to irregularities in the running surface and also higher levels of muscle activation, because the muscles, in a sense, have to be braced for anything. This bracing effect costs energy and increases tissue strain.

Here are some things you can do to address these problems.

### Walk barefoot

Get in the habit of not wearing shoes when you don't have to. Remove your shoes in the entryway when you come home. Walk your dog barefoot when weather permits. Don't start with a two-mile walk on asphalt,

though. Either stick to soft surfaces like grass or ease very gradually into walking on harder ones.

### **Do balancing exercises**

Any time you challenge your ability to stay upright -- either by standing or moving on one foot or by standing on an unstable surface -- your feet and lower leg muscles work overtime to maintain balance and thereby become stronger.

Balancing exercises also develop proprioception. The single leg squat and pillow balancing exercises described in [part 2 of this series](#) are excellent strengtheners of the feet and ankles and enhancers of proprioception.

Balancing on a wobble board is another good one. Wobble boards are available at many running specialty stores for between \$40 and \$110.

### **Wear flexible running shoes**

Some shoes are a lot more flexible than most others and allow the foot to move more naturally. Shoes with less cushion and stability are by and large more flexible.

Racing flats tend to be the most flexible running shoes. Runners with fair to good biomechanics should do a small amount of their training (specifically their high-intensity training) in racing flats or lightweight trainers to develop their push-off power from the ankle down.

To develop it further, you can begin to do some of your easy runs in flexible shoes too. This option is not for everyone and should be pursued with great caution by anyone who cares to try it.

Take it very gradually, paying close attention to the comfort of your feet and any developing aches and pains. There are some elite runners who do all of their training in racing flats, but of course they are very light and have nearly perfect biomechanics.

Even if you find that you are able to emulate them with great success, I'd still recommend that you do your longest runs in shoes with more cushioning, because your body's ability to absorb impact forces deteriorates as it fatigues.

Shoe manufacturers have recently begun to make training shoes that are designed to allow plantar flexion at the MP joint. The very first to hit the market was the Nike Free 5.0.

The average runner is advised to run just a few miles per week in these shoes in order to strengthen the feet, but runners with good foot and ankle stability can safely use these shoes for everyday training.

### **Run barefoot**

There is a full-fledged barefoot running subculture within the larger running community. Its members prove that even people who grew up wearing running shoes can reach a point where they can safely do all of their running barefoot if they proceed sensibly.

I'm not asking you to do that. But I do recommend that you try to do a small amount of barefoot running on soft surfaces to strengthen your feet and ankles. Even doing two sets of barefoot strides per week on a grass soccer field will probably be of some benefit.

If you have access to a beach or golf course you can do complete barefoot running workouts on them. If you own a treadmill you can run barefoot on it once a week or so.

Start by walking barefoot on the treadmill, then after a week or two advance to no more than 5 minutes of running at a time.

Increase the amount of running very gradually until you're comfortably able to do normal running workouts on the treadmill.

- ▶ **Part 1: Intro to cross-training**
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*Matt Fitzgerald coaches runners and triathletes online through Carmichael Training Systems ([www.trainright.com](http://www.trainright.com)) and is the author of "[Triathlete Magazine's Complete Triathlon Book](#)" and "[Runner's World Guide to Cross-Training](#)."*

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