

# What the Heck Is Fast, Legal Racewalking Technique?

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Racewalkers training for gains in fitness must also work towards a technique that will allow them to get through races legally. Nothing can be more frustrating than achieving heightened fitness only to be held back by the judges. We shouldn't be trying to trick the judges, but technical violations are the reality at all levels of competitive racewalking—just as they have been through the entire history of the sport. Walking at high speeds, however, does not necessarily mean walking illegally.

According to IAAF Racewalking Chairman and IAAF certified racewalking judge Bob Bowman, “It is exactly the opposite case, with today's elite walkers actually lifting for a smaller length of time than their predecessors years ago, while walking at greater speeds.” Walking legally is the easy part—anyone can walk legally if they go slowly enough. More importantly, we must learn to walk efficiently so that we can move as quickly as humanly possible within the rules of the sport.

The rules were intended to slow you down, but with increases in efficiency they don't have to slow you down very much. Does it sound hopeless? Hardly! With a little patience, you can ingrain technique improvements that will enable you to walk faster—much faster—without training any harder. Racewalkers can move very quickly with proper technique. Proper technique is key to racewalking, playing any sport, or even your workout at the local fitness franchise gym. The [best fitness franchise](#) owners ensure that new members learn to use all fitness equipment correctly and with the proper technique.

But what is “proper” technique?

## Keep Out of Your Own Way

Walking speed is a function of your stride length multiplied by your stride rate. To go faster you need to increase one or the other (or both). Since one foot is (theoretically) on the ground at all times, stride length is necessarily limited; to walk faster you must strive to maximize stride rate. Like the sculptor who carves away from the stone anything that doesn't look like some naked goddess holding a pomegranate, you must eliminate anything that isn't directly contributing to fast racewalking. If it's hindering rapid turnover, it has

to go. The first thing to remember about fast racewalking, then, is to keep out of your own way.

The most common way walkers get in their own way is by overstriding. When fitness walkers or inefficient racewalkers want to speed up, they generally do so not by increasing turnover rate, but by increasing stride length. But trying to increase stride length is counter-productive: The further the heel lands in front of the body at contact, the more force the walker has to generate to lift his body up and over the lead leg. It's a lot like a pole-vaulter planting his pole far forward of his body—he has to run very quickly to get himself up and over the pole. The higher the vaulter holds the end of the pole over his head, the more vertical the pole is when the other end hits the ground, and the easier it will be for him to pivot over the “planted” end of the pole. Similarly, the closer the walker's heel contacts the ground in front of the body, the more vertical the leg will be, and the easier it'll be for him to pivot over the planted heel.

Your legs should not make an isosceles triangle in the double support phase as is seen in fitness walkers and overstriding racewalkers. The legs should be asymmetrical with more leg behind you than in front.

### **Spin Your Wheels**

You may have to sacrifice stride length a bit at first to achieve a high turnover rate—don't worry about it. Efficient racewalking is a lot like “spinning” in a high gear on a [bicycle](#)—with a shorter stride it's much easier to achieve a high stride frequency because there's less resistance. In the end, you'll wind up moving forward faster and with less effort. And added speed isn't the only benefit of limiting your stride in front of your body: Those long, slow strides aren't just inefficient, they also increase your air time. So shortening your stride length in front isn't just faster, it's actually more legal.

Australian research has shown that in world-class racewalkers heel strike occurs at a point no more than thirty to forty centimeters in front of the center of gravity. And Chinese women—some of the fastest walkers in the world—achieve heel-strike distances of about 10 centimeters. The incredible turnover rates they generate enable them to cover ten kilometers in less than forty-two minutes. Get those heels down quickly and close to the body!

It all sounds great, but how do you learn to take those quick, efficient steps? The [whole body](#) is involved, so from the ground up:

## **Use Your Feet**

The feet are the only parts of the body that are ever in contact with the ground while racewalking. An obvious point perhaps, but one that is often overlooked. The feet are a very active part of the racewalking motion. But as mentioned above, the first thing to remember is to keep them out of your way.

The foot should roll like a wheel or a rocking chair rocker from heel to toe as the body pivots over the lead leg. If the muscles of the foot and the lower leg are weak, the force of the ground acting on the back of the shoe will cause the foot to “flatten out.” If the foot flattens out prematurely, the foot will be “in the way,” hindering forward motion and causing a very inefficient, percussive, “stumpy” stride.

Overstriding will tend to cause an even more pronounced “flattening,” since the heel strikes the ground at a sharper angle. Big, heavy, inflexible, “klunky” shoes will also exacerbate “flattening,” barring a smooth rolling motion. Keeping your feet out of the way at the front of the stride is critical, but it’s equally important to use the feet for propulsion and stride lengthening at the back of the stride. Forward propulsion comes from pushing the rear leg back against the ground, which creates leverage that will vault you forward. Keeping the rear foot on the ground as long as possible by rolling up onto the toe at push-off will maximize this leverage.

To get the right asymmetrical “look,” and to maximize effective stride length and turnover rate, your feet must be very active, rolling smoothly from the heel all the way to the toe with each stride. Failing to do so will result in a “stumpy” technique and difficulty generating forward propulsion and speed.

Weakness and inflexibility hinder effective use of the feet and ankles, but strength and flexibility can be improved. One of the best ways of doing so is by racewalking while wearing a wet vest or other floatation device in a swimming pool. The resistance of the water forces the foot to open and close in relation to the shin. Calf raises and “Theraband” exercises can also be used to strengthen the feet, shins and ankles (see *The Importance of Shin and Ankle Strength in Racewalkers*).

## **Toe the Line**

Each foot should fall along the same imaginary line as the one before to limit lateral motion of the body and to maximize effective stride length. Proper use of the feet and hips is the key to such “on the line” racewalking. As you push off behind the body with your left foot by rolling up onto the toes, the right

side of the hip will swing forward, causing the right foot to land directly in front of the body, rather than out to the side.

Fitness walkers and inefficient racewalkers tend to walk without rolling off the rear foot or using their hips, so the front foot does not land directly in front of the body. Walking efficiently means using your hips and feet so that the feet fall in-line with each stride.

Also, if biomechanically possible, the toes should be pointed forward rather than angled out to the sides, to add further inches to your stride. Some athletes walk with the toes pointed out to the sides as much as 30 degrees. Doing so cuts stride length by as much as two inches per stride with no gain in power. Two inches per stride x 200 strides per minute = 400 inches (33 feet, 4 inches) per minute. Over the course of a 10km race that's more than two minutes! Minor technique changes can make a very big difference in race times without requiring that you train any harder.

### **Use Both the “Driving” and “Vaulting” Phases of Your Stride**

Keeping out of your own way is only the first step—now you need to generate some force to propel yourself forward. There are two ways to do this, and you should take advantage of them both. They are the “driving” and “vaulting” components of your stride. The two phases proceed concurrently: As one leg creates momentum by driving forward, the other leg pushes back, launching the body forward by way of a powerful vaulting effect.

Some authors refer to the driving component of your stride as the “swing” phase, but this indicates a passive movement. The knee should drive forward aggressively, as opposed to passively swinging forward. You may also hear the vaulting component of your stride called the “propulsive” phase. This is also a bit of a misnomer, since the legs provide forward propulsion during both phases of the stride cycle. Driving and vaulting more accurately describe how the legs generate force throughout the stride cycle.

### **The driving phase.**

The driving phase begins with the body in the double-support phase, balanced on the heel of the front foot and the toe of the back foot. The rear leg then punches forward after the toe of the back foot pushes off the ground. Simple physics: When you take a 25 or 35 pound object—your leg—and throw it forward, the momentum of the moving mass will cause your body to pivot over the planted foot, carrying your body forward.

As the left leg drives forward, the body pivots over the right leg. Many walkers think the rules say you can't bend your knees when racewalking. Wrong! You can, you should, and you have to bend your knees—but only as the leg is moving forward. The advancing leg should drive ahead a lot like a runner's leg, with the knee bending to 90 degrees after push-off, then punching forward vigorously. Think about your arm swing: You bend your elbows at 90 degrees to create a shorter, faster pendulum. You bend your knees to 90 degrees for the same reason: to maximize the speed of the advancing leg.

After punching the knee forward, you use your gluteus and hamstring muscles to pull the leg back; planting the heel on the ground close to the body just as the knee straightens. Don't try to straighten the knee by contracting the quadriceps muscles: After the thigh changes direction from forward to rearward motion, the momentum of the lower leg continuing to move forward will straighten the knee automatically. Just relax and let it happen. Have you ever opened a swing blade? You flick your wrist, then suddenly stop or change the direction of that flicking motion—the blade opens up as it continues moving in the same direction, straightening just like your leg does at the knee as the thigh changes direction.

One caveat: When driving the knee forward, avoid a high knee lift at all cost. You want your energy going forward towards the finish line, not up. Bringing the knees high is horribly inefficient and it looks illegal as heck. If you punch the knee through low and vigorously, the advancing leg should come through with the foot sweeping very low to the ground. If you get the timing right, your heel should make contact with the ground very close to the body just as the leg becomes straight. It's fast, efficient, and man does it feel cool!

### **The vaulting phase.**

The vaulting phase begins as soon as the heel contacts the ground in front of the body. As the bent knee of one leg drives forward, the body passes over the other leg—the straightened “support leg.” This is where racewalking differs considerably from running: When a runner's foot is on the ground directly under the body, the knee is bent with the leg “cocked” and ready to spring the body forward. Racewalkers, on the other hand, keep the knee straight in the single-support phase, using it as a lever to vault the body forward, rather than using a runner's springing action.

The key to an effective vaulting phase is to maximize the leverage propelling the body forward. More high school physics: The longer a lever is, the more force it will generate. After the body's center of gravity passes over the planted foot, the calf muscles contract, plantar-flexing the ankle (pointing the toe.) Rolling off the toe in this manner is one way to lengthen the lever. Using your

hips more effectively is another way to create a longer, more powerful lever. Instead of walking with just your feet and legs, imagine that your leg starts all the way up at the base of your rib cage. Use the hips and the strong oblique muscles along both sides of the abdomen to, in effect, create a longer leg; a longer lever with which to vault yourself forward. Not only will you generate more propulsive force by using your hips, you'll also increase your "effective stride length"—the part of your stride that extends behind your body, pushing you from behind.

Even without actively using your abdominal obliques to create more leverage and open up your stride, a "blocking" effect acting upon the hips will tend to open them up automatically if you roll off the toes properly. As one side of the hip is "anchored" by the leg whose foot is in contact with the ground, the opposite side of the hip swings forward like a gate, carried by the driving knee of the other leg. Proper hip action extends your effective stride length and helps to align the feet "on a line," one in front of the other.

As you may have inferred by now, our hips are very important in racewalking. Forward propulsion is achieved by pushing the ground behind you with the rear leg, while the advancing leg punches forward with a low, but vigorous knee drive. A strong front-to-back hip action will facilitate both the vaulting and driving phases of the stride. Concentrate on this front and back action rather than the old fashioned side-to-side hip "sashay."

"Hip drop" should occur naturally after push-off: As the rear leg comes forward, and the foot loses contact with the ground, the hip is no longer supported so it drops slightly. This natural effect does not need to be learned, exaggerated, or fretted over—I don't know why so many coaches bother confusing their athletes by talking about it.

### **Maintain Erect Posture**

"Forward Lean" is a myth! Despite being mocked by other coaches and athletes all over the globe, many American coaches still tell their athletes to lean forward five to eight degrees "from the ankles" to try to take advantage of the force of gravity.

There are several reasons why this doesn't work: First of all, there's the simple fact that the horizontal acceleration of the advancing leg far exceeds any minor effect of gravitational acceleration. Try standing balanced on one foot, leaning forward five to eight degrees. Now allow yourself to fall forward. You will fall forward, but you'll do so by accelerating relatively slowly, then "catching" yourself by extending the other leg out in front of you. It'll take more than one second for your other foot to make contact with the ground; that's three to

four times as long as it takes a racewalker walking at 180 to 240 strides per minute to complete each stride. Gravity simply doesn't have enough time to act upon even the slowest moving racewalker to provide any meaningful benefit.

Another major flaw of the "forward lean" technique has to do with that straight leg that catches you as you fall forward. Leaning forward while racewalking artificially forces the lead leg to extend far out in front of the body. This causes a tooth-jarring "braking effect" as you land onto the straight leg like Boris Karloff lurching around the laboratory in his Frankenstein getup.

Even if the force of gravity did somehow help to propel Frankenstein's racewalking monster forward—and when I took physics, gravity pulled all the apples, bullets and cannon balls down, not forward!—the "braking force" of this percussive, stiff-legged landing prevents a smooth transition into the next stride. I could never understand why the villagers always ran away from poor Frank. Sure, a forward leaning, overstriding monster coming after you is scary to look at, but with that inefficient technique, he sure couldn't walk very fast!

So leaning from the waist is ugly and slow, but it's also very hard on the body—on the lower back in particular. Try balancing a broom handle on the palm of your hand. It feels very light when it's standing vertically, doesn't it? Now try holding the broom parallel to the ground by the end of the handle. It feels much heavier. Even holding the broom five to eight degrees beyond vertical is much more difficult than holding it upright. The same thing happens when you try to lean forward when you racewalk. And your torso—supported by your lower back—is a whole lot heavier than any broom handle. I could blather on all day here, but I'll stop now if you promise to straighten up and fly right.

Moving right along...

### **Relax Your Neck and Shoulders**

Walking with your head down can cause tension in the neck and shoulders that is transferred to the rest of the body. If possible, focus your eyes on a point on the horizon. If you have to, keep your head level but your eyes down to keep from tripping, kicking road-kill, etc., but do try to look at least 15-20 meters down the road. Wearing a hat with a brim or visor will often cause you to walk with your eyes and head down, so either turn the hat backwards, or simply remind yourself to look ahead while wearing a brimmed hat.

Your shoulders should remain relaxed and as low as possible, and trunk rotation should be minimized. The torso makes up some 40% of the body's

mass; any excess upper-body motion will cause substantially increased energy demands and will create tension in the neck and shoulders.

### **Use a Relaxed, but Effective Arm Stroke**

Many “old school” coaches say to “drive with your arms.” This is nonsense. Unless you’re using ski poles, you do not propel yourself forward with your arms—it’s physically impossible! A powerful arm stroke does, however, help to initiate a good front-to-back hip action. But keep the arm drive an effective arm drive. “Chicken-winging” your elbows out to the sides will cause a side-to-side hip wiggle, while “uppercut punches” will alternately raise and drop your center of gravity, adding an inefficient and DQ-drawing “hoppyness” to your stride.

At worst, your hands should cross in front of the breastbone and swing back only to the hip socket. Your hands should be relaxed—no clenched fists—and your arms should move freely as if they were pendulums hung from the shoulders. The forearms should be held at about 90 degrees relative to the upper arm, but this will vary depending upon the distance of the race and personal preference. The most important thing is to keep the neck and shoulders relaxed and to just let the arms swing naturally.

### **Relax Your Head—Inside**

I’ve said a lot about the action of various body parts, but fast, efficient racewalking doesn’t really begin with the feet—it begins with the mind. Relaxation is one of the real keys to walking fast, and relaxed technique begins with mental relaxation. Due to the limitations imposed by the rules, the energy costs of inefficient racewalking accumulate much more quickly than in running. What does that mean? You can fake it to some degree in running, but you’ll fatigue and slow down much more quickly when racewalking with inefficient technique.

It’s very important to continually remind yourself to relax—especially during stressful races or workouts. You don’t need to clench your teeth and fists to walk quickly. Tightness in the jaw and upper body will be referred to the lower extremities, shortening effective stride length considerably. Similarly, attempting to “power” yourself forward by driving with your arms will only result in lifting and costly overstriding. Try not to force things—just relax and let it flow.

## **An Irrelevant Note on Technique vs. Style**

Although used interchangeably by some authors—including me—the terms “technique” and “style” are really not synonymous. Technique refers only to racewalking under the constraints of the rules: Everyone who walks with continuous contact and straightens the supporting leg is exhibiting racewalk technique. Each of these individuals, however, has their own “style.” A walker’s style is the sum total of all individual variations in arm carriage, body posture, hip drive, etc.

The rules of the sport make no mention of aesthetics. Many top racewalkers cruise by with an extremely fluid style that may or may not technically allow them to maintain contact with the ground at all times. Other walkers may be less efficient, exhibiting a herky-jerky style that attracts the unwanted attention of the judges. These less efficient athletes may actually be more technically legal than more fluid athletes who often float above the ground for several milliseconds per stride, but the “klunky” walkers are often disqualified by the judges for lifting while the more efficient walkers get by. Is this fair? Maybe not, but it is the reality of the sport. Not only is a smooth walking style faster, more efficient, and less likely to cause injuries, it also gives the appearance of legality whether the walker is actually on the ground at all times or not. In the next chapter we’ll go over the various ways to learn fast, efficient technique. No wait... I mean style!