

Underground Secrets  
To  
Faster Running

Breakthrough training  
for breakaway running

Barry Ross

**Underground Secrets**  
**To**  
**Faster Running**

**BREAKTHROUGH TRAINING**

**FOR**

**BREAKAWAY RUNNING**

**By Barry Ross**

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*Published by:*

**BearPowered**  
.com

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## **-Introduction-**

The strength training concept presented in this book is simple yet powerful. Powerful enough to make you run faster than you've ever run before. Perhaps faster than you ever dreamed!

The concept isn't just for sprinters. In fact, the training can increase running speed and performance from 10 meters to 10,000 meters.

Yet the concept is so focused on providing **exactly** what is necessary for faster running that your total strength training time may be cut by up to 50%. And, most of that time will be spent resting!

The training routine, based upon both physics and muscle physiology, does not require any special equipment or gimmicks. A barbell and a set of weights will work just fine.

The most difficult part of the concept is accepting that something so simple can be effective: so effective that it can be used to improve performance in almost every sport or virtually any other endeavor that requires strength.

As you go through each section, much of what you read might not fit into your current perception of strength training. You may question the adaptation of the concept to your event or your sport. You may take exception to the way in which the material is presented or question the science behind the concepts.

Let me encourage you to do just that, because that is exactly what I did. It will be worth every moment you spend in thinking through what is being presented, in challenging the research, the science, the "experts" and me. I hope it will be as interesting and informative a journey as the one that began for me in 2000.

In that year, Peter Weyand, Ph.D. (a physiologist and biomechanist specializing in the locomotion of humans and other terrestrial animals) and his associates published the results of a study, completed at Harvard University, in the Journal of Applied Physiology. They had hypothesized that greater force applied to the ground rather than shorter minimum swing time (the time a given foot was not in contact with the ground) enabled humans to increase top speed. The results of the study led them to conclude that this was indeed the case.

The conclusion should lead the reader to question whether or not the accepted methods of training to increase running speed are focused on the factors that actually cause speed to increase.

That same year, at a small high school in the San Fernando Valley section of Los Angeles, California, a 14 year old freshman enrolled in track. Her name was Allyson Felix.

These two events, occurring 3000 miles apart, would combine to make track and field history. Felix would run the fastest 200 meters in the world, besting all of the U.S. high school records set by Marion Jones as well as the Junior (under 20) 200 meter world record. She would be crowned the American Women's 200 meter indoor champion in 2003...

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## **-MSF-**

Peter Weyand's study "Faster top running speeds are achieved with greater ground forces not more rapid leg movements," published in the *Journal of Applied Physiology*, underscores the fact that there is a disconnect between what science shows to be the major factors involved with running speed and what coaches focus on to increase an athlete's running speed.

At the core of the disconnect is the traditional equation for running speed: **Speed = Stride Length x Stride Rate.**

Runners that take more frequent steps (Stride Rate, a time factor) should run faster than they did when they took steps less frequently. If those runners decide instead to increase the distance between each step (Stride Length, a distance factor), then running speed would also increase. A combination of the two, longer distance between steps *and* more frequent steps would be a third alternative to increasing speed. Seems simple enough, at least in theory.

But it's that theory that the study challenged.

The three components of faster running are actually this: How often you contact the ground; how much muscular force you can deliver during ground contact; how much ground contact time is available to deliver that force.

Stride length and stride rate are *effects* of the three components.

Among the components, the **predominant factor** in running faster is the ability to *generate and transmit* muscular force to the ground. Not just any amount of force will do because there is still one

shadowy figure whose impact is hidden in the speed equation. It's name? **Gravity**.

The same gravity that keeps pulling you back to earth when you jump up from the ground or jump out of an airplane also has a powerful impact on how fast you run. The major component of gravity is **Mass**: greater mass equals greater gravitational pull.

There are two reasons for the gravity factor remaining hidden. One reason is the fact that gravity is invisible (which makes it your toughest opponent), and the other is the commonly held belief that the horizontal direction of a stride is where the power goes. While the second reason seems intuitive, it's simply wrong. A study published in the Journal of Biomechanics in 1987 showed that the amount of force used horizontally during constant speed running is as little as *one-tenth* the amount of force applied vertically. It's the vertical direction of the stride that needs our help because it is the portion of the stride direction that faces the major assault from gravity. How can this be?

During constant speed running (with no air resistance) propulsion forces and braking forces are equal. In other words, the amount of force applied to the ground to propel your body horizontally is offset by the braking force when you contact the ground again. In order to run, we must elevate our body above the ground. And that's where gravity, arch-enemy of faster running speed, lurks. If we don't oppose it, we won't take longer or quicker strides.

So how do we oppose this villain bent on robbing us of our speed? We do it like NASA does: Boost up the power! Get stronger and apply more force to the ground!

Coaches recognized early on that stride lengths increased when runners applied more force to the ground. Unfortunately, coaches

and athletes wrongly believe that the *only* way to increase strength is by increasing mass. Their goal is to increase mass because they believe more mass=more muscle=more strength=more force applied to the ground. What they don't realize, and what you can use to your advantage by using the principles presented in this book, is that added mass creates more gravitational pull – mass is actually working against you!

Recall that the predominant factor in faster running is the ability to *generate and transmit* muscular force to the ground. But, because of gravity, it isn't merely the amount of force applied to the ground that increases stride length; it's the amount of force in relation to bodyweight, or mass-specific force (**MSF**).

To clear up any possible confusion about the concept and importance of **MSF**, let's revisit our comment about NASA to illustrate **MSF** in action:

Suppose two rockets, A and B, are of equal size, carry equal fuel load, have equal power and differ only in weight. Rocket A weighs in at a hefty 100 pounds while B is a mere 50 pounds.

When the engines fire, B blows off its launch pad before A, quickly puts an increasing amount of distance between them, then cruises while A's added weight causes it to drain its fuel supply and drop like a brick.

All other things being equal, the lighter rocket will go faster and further every time.

If force alone was the major factor in speed, then a 400 pound man able to pound down 700 pounds of force would win every race - but we know that's not what happens. If we match our 400 pound

behemoth against a 170 pound man able to lay down 500 lbs of force, there's no contest. The big man bites the dust.

Why? **MSF!**

The 400 pound man is generating a meager 1.75 times his bodyweight against the ground while our thin man is applying a whopping 2.94 times his bodyweight. Like our rocket example, the big man can't keep up from the start and quickly runs out of gas trying to push his mammoth mass. Even though the big man can generate 40% more force, it pales compared to the thin man's 68% greater **MSF**. Thin man's stride length will far exceed big man's.

Stride length isn't the only part of the equation affected by greater force: Stride rates also show significant gain.

The two main factors of Stride Rate are ground contact time and swing time (the time between ground contact for the same foot). Coaches who work on increasing Stride Rate spend their time attempting to decrease swing time. But you will soon see that decreasing swing time is really of little consequence in speed training because contact time is the more important factor in Stride Rate. Greater **MSF** causes the ground contact times to decrease, so Stride Rates become faster by the amount of time NOT spent on the ground. Think of it like a bouncing ball, the harder you throw it against the ground the faster it bounces back up.

Yes, it is hard to believe that swing time is of little consequence. After all, runners must swing their feet from behind to in-front...

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# Underground Secrets To Faster Running

"...being a 3 time Olympian and former American record holder, I recognize a quality coach and I can say without a doubt that Mr. Ross is one of the best coaches I have ever encountered. His continuing research and willingness to adapt his program to current research makes his program one of the best in the nation."

Pamela Spencer Marquez  
Secretary, USA Track & Field

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"...effective workouts provided by coach Ross enabled me to decrease my times and elevate my distances...As a result of my success, I was recruited by a number of top Division 1 colleges and will be attending the University of California, Berkeley in the fall on a full track scholarship."

Eghosa Isa

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"I've seen dramatic gains from using coach Ross' strength program, including higher knee effect from greater ground force. The effect has improved hill climbing, running economy and overall speed in my cross country runners. We even use the weight training system as warm up prior to our harder running workouts."

Wesley Smith  
Track & Cross Country Coach

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"The advantage gained by the time spent in the weightroom using coach Ross' system is the early adaptation to high intensity workouts on the track. Training for high speed can occur much earlier and continue throughout a long season with little concern about injury."

Jonathan Patton  
Sprint Coach

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"The workout is very efficient and easy to do. The proof is in the numbers, the results are there. The players are faster and stronger."

Tim Von Busch  
Head Football Coach, L.A. Baptist High School

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