PROPER RUNNING FORM FOR ENDURANCE ATHLETES

Is there a right way to run?

- Highly debatable topic

What separates the elite's from the average runner?

The obvious . . .

- Fitness level
- Genetics

Running mechanics . . .

- Elbow drive
- Stable torso and head/limited vertical and side-to-side movement
- Long stride (knee drive and leg extension)
- Quick stride
- Pushing rather than pulling
- Dorsiflexion of foot
- Land under center of gravity

Will teaching a person how to run like the elites improve running mechanics?

- Research says no
- I say in certain cases, it will help, but more is required to make significant gains

What will improve running mechanics?

People run the way they do for a reason – poor movement quality leads to poor mechanics.

Movement Quality refers to a person's ability to move (mobility), control movement (stability), and produce tension within the body (strength).

The body functions as a cohesive unit, meaning limitations in one area of the body will negatively affect surrounding areas, and potentially the entire movement chain. Certain joints require a wide range of mobility to function properly, while others require stability to maintain function. If a joint meant to have mobility becomes too stiff (too stable), the body will compensate in one way or another. And thus a dysfunctional movement pattern develops overtime.

Most runners (and athletes in general) struggle with similar movement issues . . .

- T-Spine Mobility
- Core Stability/Scapular Control
- Hip Mobility

How to correct movement issues?

This is discussed in the strength training presentation. To learn more download "Strength Training for Endurance Athletes" notes.

Along with mobility and stability, strength is a key component to improving running mechanics.

What happens within the body while strength training?

When a person performs an exercise at a high weight, low rep, they shock their basal metabolic rate and nervous system, forcing the body to take the exercise seriously. The nervous system is forced to fully engage and contractile proteins within the muscle tissue are forced into full recruitment. A strong and fully functional neuromuscular system leads to better motor control, and produces strong, powerful athletes.

Why is strength important?

The ability to produce strength is the base of athleticism. Without it, the body loses movement skill. Strength is the foundation for all human movement. The body will not move well and will not allow you to perform at your best if you don't have strength.

Endurance is the ability to maintain strength over time. *Power is the ability to produce strength quickly. Endurance is also power – the ability to forcefully push yourself off the ground as you run*. Therefore, strength, power, and endurance go hand-in-hand. To perform at your best, you can't have one without the other. Strength is always functional, and is the baseline for movement. By maintaining the ability to move well, an athlete has better performance potential. Fundamental strength in turn also leads to core stabilization, spinal protection, and mobility.

For runners (and most athletes), a specific kind of strength is necessary to perform well. *Mass-Specific F*

orce is the key to running faster.

Mass-Specific Force:

"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, otherwise known as Mass-Specific Force (MSF)." – *Underground Secrets to Faster Running by Barry Ross*

Traditional equation for running speed . . .

- Speed = Stride Length X Stride Rate → is this true?

Yes, but what improves stride length and rate? Speed depends on three components . . .

1) How often you contact the ground
2) How much muscular force you can deliver during ground contact
3) How much ground contact time is available to deliver that force

Our goal in running is to oppose gravity. How do we do that? By getting strong and applying more force to the ground!

Most people believe . . .

- More mass = more strength = more force applied to the ground → Not ideal
- More mass = more gravitational pull → Mass works against you!!

Because of gravity, it isn't merely the amount of force applied to the ground that increases stride length and frequency; it's the amount of force in relation to bodyweight (MSF).

MSF Example:

A 400 lb man generates 700 lbs of ground force, while a 170 lbs man generates 500 lbs of ground force.

Between the two men, who would win a running race?

The 400 lb man generated 1.75 times his bodyweight, whereas the 170 lb man generated 2.94 times his bodyweight. Even though the large man generated 40% more force, the thin man produced 68% greater MSF. The thin man would win!

Therefore MSF produces speed. Improved stride length and frequency are effects of MSF.

How to improve MSF?

Go to the weight room and get strong! Lift low sets/reps, heavy weight, and include a lot of recovery between sets (5+ minutes). For more details, download "Strength Training for Endurance Athletes" notes.

The three factors to focus on when it comes to running faster are . . .

1) More MSF
2) Faster delivery of MSF
3) Aerobic Capacity (for endurance athletes only)

Does every element of your training meet these guidelines? If not, cut it out!

What does the research say?

- Wayand P, Sternlight D, Belizzi M, Wright S. Faster top running speeds are achieved with greater ground forces not more rapid leg movements. *Journal of Applied Physiology. Sep 2000.*
- Paavolainen L, Hakkinen K, Hamalainen I, Nummela A, Rusko H. Explosive-strength training improves 5-km running time by improving running economy and muscle power. *Journal of Applied Physiology. Jan 1999.*
- Millet P, Jaquen B, Borrani F, Candau R. Effects of concurrent endurance and strength training on running economy and VO2 Kinetics. *American College of Sports Medicine*. Sep 2002.