

the **CrossFit** JOURNAL ARTICLES

Form for Runners, from Head to Toe

Keysha McClenton-Benzing

Have you ever wondered “What is proper running form?” or “Am I doing this right?” while getting some in a CrossFit workout or just out on leisure run? If you watch track and field runners, you might become even more confused. Some runners are smooth like gazelles; some are awkward like fish out of water. Some have powerful knee drives while others have none and shuffle their feet. So why is there so much variance in running technique and form? Because every person has their own running style depending on their individual physical differences.

Exactly how these biomechanical elements are expressed in your individual style always depends on your physical characteristics and body structure. However, while everyone has their own style, there are still basic, biomechanical positions and functions that are required to be the most energy efficient, to generate the most power and speed, and to prevent injury.

The following is a mechanical breakdown from the head down to the feet.

Head

Look straight ahead naturally and scan the horizon. This will help keep your neck and back in alignment. Limit looking down at the ground or any unnecessary head

movement or closing of the eyes. How you position or hold your head is crucial to your overall posture. Your body posture dictates how energy is transferred through your body and determines how efficiently you run.



Good



Not so good



Form for Runners, from Head to Toe (continued...)

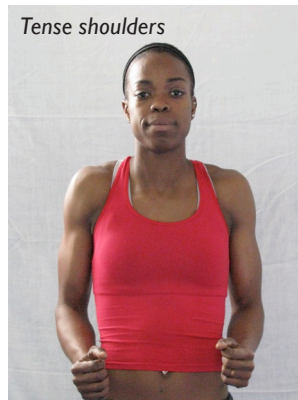
Shoulders

Shoulders play a crucial role in keeping your upper body relaxed while you run. Maintain an upright body position while relaxing the shoulders and face. Less tension in these areas helps promote a more relaxed, free-flowing movement throughout the entire body. Your shoulders are a pendulum. For optimal performance, your shoulders should be low and loose. They should also remain level. Minimize and eliminate dipping side to side as well as any kind of rotation with strides. As you fatigue during a workout, don't let your shoulders creep up toward your ears. While running, the body works through a series

of muscle actions, both concentric (muscle shortening) and eccentric (muscle lengthening). Part of what makes some of us faster than others is how rapidly our muscles can switch from concentric to eccentric muscle action as well as how many muscles we can activate at the point of impact. If your shoulders are tight, most likely you are getting tense elsewhere, and this means that some of your muscles are not contracting and relaxing like they should. The result is a decrease in power/force production and therefore speed. Usually, if you feel tightness creeping in, giving your arms and shoulders a good shake can help release the tension and remind you to loosen up.



Good



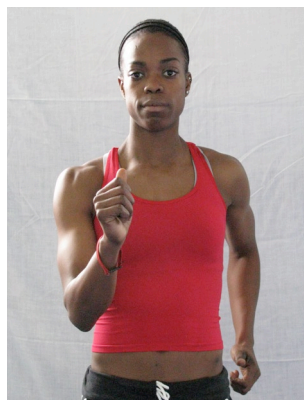
Not so good



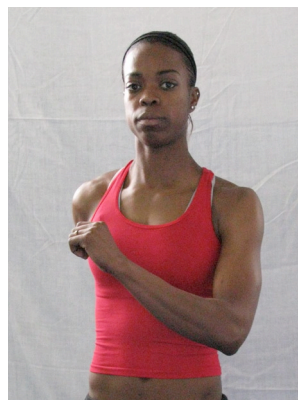
Arms

The arms are used for balance, for helping generate and sustain momentum, and to assist your body in forward propulsion. They should also be in a synchronized

rhythm with the legs. Maintain a relatively fixed 90-degree angle in the elbow. The arms are driven only one direction: back. When you drive your arms back, it creates a stretch reflex or eccentric loading on



Good



Eliminate crossing the body with the arms

Not so good

Form for Runners, from Head to Toe (continued...)

your shoulder joint that produces a natural (unforced) powerful upswing in sync with your knee drive.

You must make sure that you are getting an efficient elbow drive backward, that your elbow angle is not too sharp, and that you are not “pumping” your arms forward. To resolve these issues, the track and field world uses a phase called “chin pocket.” That is, when you drive your elbows back (still maintaining a relatively fixed elbow bend of 90 degrees), your back hand should reach to where your shorts pocket would be. The front hand, which is in the powerful upswing, should be “blocked”

or stopped right as your hand reaches chin height, then immediately driven backward and down, toward the pocket again. Also be sure to limit any crossing of the body with your arms. Your arms give direction to the momentum that you are generating. You want to go straight ahead as fast as possible, so the path of your arms should be straight back and forward at your sides. Crossing the body with the arms causes some torso rotation and directs the momentum from side to side, making you less efficient slowing you down.

Hands

The hands can be kept open or closed, as long as they are relaxed. I personally go with the closed hand. My hands want to naturally close (from my Olympic lifting training, I think), and I do it strictly for comfort, since I feel really awkward forcing a straight hand. If you decide to go with a closed hand, imagine yourself using an old-school Nintendo or Super Nintendo controller. Lightly

place your thumb across the middle phalanx (center bone) of your pointer finger. Lightly close your palm and envision holding something very delicate so that you do not clench your hands. Clenching the hands tends to happen very easily, especially when fatigued. A benefit of using an open hand is that it makes it difficult to clench your hands, which leads to the same tension problems as holding your shoulders tight.



Open palm



Closed palm

Torso

The position of your torso is directly affected by the position of your shoulders and head. Your head should be stable, looking straight ahead, and your shoulders should be nice and relaxed with minimal rotation and dipping. Engage your trunk muscles with a slight forward lean to help support the upper body over a moving lower body. Hold your sternum high and visualize long extension through the spine. This allows the chest to expand and promotes both optimal lung capacity a good stride length. This has been termed “running tall” in the track and field world. Your torso dictates the position your hips will be in while running. It is critical that you not let your torso hunch over too far in front of your center of gravity. If you do allow your torso to hunch forward in a sprint or run, your pelvis will tilt forward as well (anterior tilt), throwing the rest of your body out of alignment. This is not an efficient way to run.



Good

Form for Runners, from Head to Toe (continued...)



Good: Neutral pelvis

Hips

Your hips are your center of gravity, so they are crucial to your running posture. When running, you want to have your pelvis rotated slightly backward (so that your sacrum is in line with your lumbar spine, opposite of an anterior tilt). If you put your hands on your hips (the bony part), your fingers lie on the portion of the iliac crest called the “anterior superior iliac spine” (ASIS). These points of the hip move slightly forward as the legs swings through and prepare for the foot strike. This hip extension provides forward propulsion as well as momentum while being very energy efficient.



Not so good: Anterior pelvic tilt

Legs

While sprinting or running, you want to have a relatively high knee drive. You want to aim at getting your foot above your opposite knee. A higher knee drive ensures a more explosive hip extension and helps you obtain maximal leg power. As soon as your knee reaches optimal height, you want to actively drive it back down toward the ground. This will help prevent “floating” problems. The more time spent off the ground means the slower you are running! Upon ground contact, you want to have your knee slightly bent to help absorb landing forces and to assist storing some of the force as elastic energy. That energy can immediately used to push off the ground in your next stride.

Some runners are smooth like gazelles; some are awkward like fish out of water... while everyone has their own style, there are still basic, biomechanical positions and functions that are required to be the most energy efficient, to generate the most power and speed, and to prevent injury.

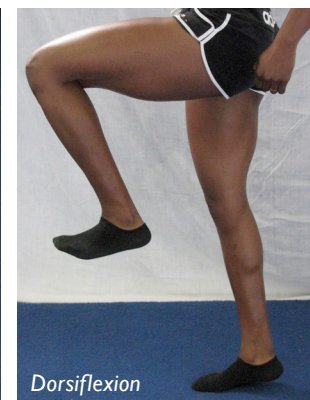
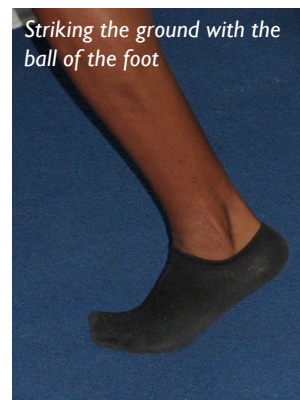
Form for Runners, from Head to Toe (continued...)

Ankles/feet

One of the key elements to your speed is what we call the “foot paw.” The term comes from the move a cat makes while scratching a post. While sprinting, you bring your drive leg up in front of your body and then actively drive it back toward the ground. Let the knee drive the leg forward with the foot strike directly under your center of gravity (your hips). Your feet need to stay under your hips, and the hips underneath your torso. This maintains your body’s center of gravity. In preparation for striking the ground, keep your ankle flexed and toes pointed up toward the sky. This position of the ankle is termed “dorsiflexion.” Upon striking the ground, you want to make instant contact with the ball of your foot (mid sole to your toes) and imagine yourself pulling the ground behind you with your foot, as if you are “pawing” the ground. Not only does this generate greater forces to propel your body forward, but it produces minimal braking forces. The speed of the leg pawing the track will equal the speed of your body. You want to strike the ground with the ball of your foot for a very important reason; it reduces the braking forces of your landing. Striking with the ball of your foot and pulling it through engages your posterior chain (glutes and hamstrings). You now have two of the most powerful muscle groups on your body aiding in propelling your body forward. These muscle groups help bring your center of gravity forward and ensure

that when you push off the ground with your ankle, the momentum of your body is directed forward and not up.

Remember that your body is traveling forward and that it has momentum. Newton’s laws state that things in motion like to stay in motion unless acted upon by another force. If you heel strike when your foot contacts the ground, you create a braking mechanism that detracts from your ability to gain speed and to direct all your force into making forward progress. Also, when you heel strike, your body is no longer in a position to absorb and use the landing forces. The momentum from your body then goes to your foot and your body takes the shock. If heel striking is repeatedly done over a period of time, it can lead to injury.



Good



Not so good

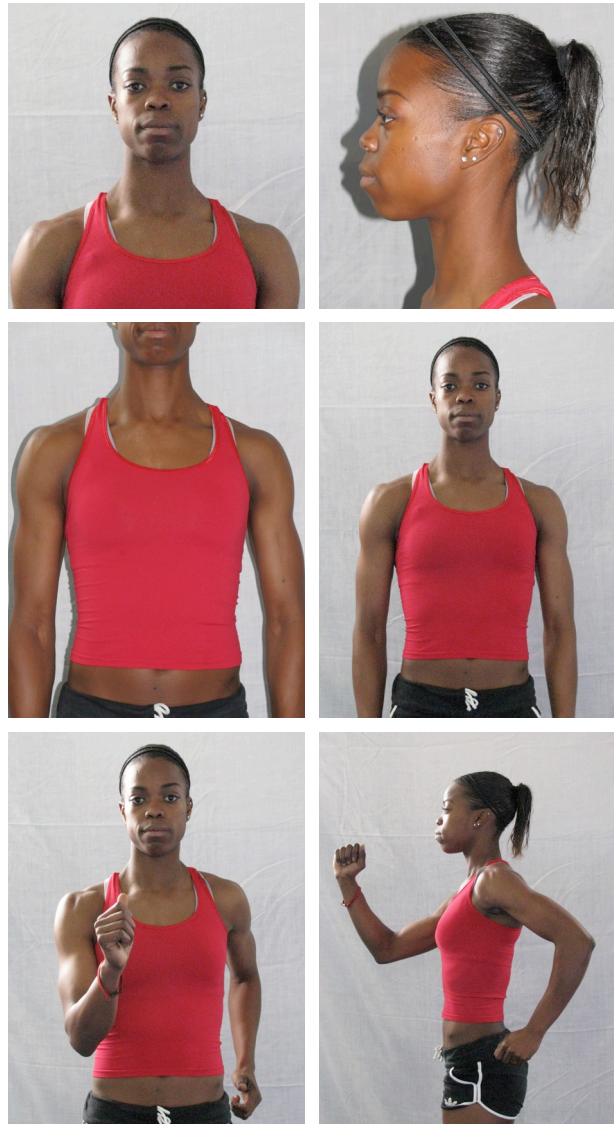
5 of 6

Form for Runners, from Head to Toe (continued...)

The whole package

In general, good sprinters and runners are mechanically sound, springy, and light on their feet. They also have very minimal variation in their running form, whether jogging or performing a max-effort sprint. Strong supporting muscles will help you maintain efficient running form. When these muscle fatigue, your form deteriorates. When you first start trying to run with perfect form, your body will fatigue very quickly, so it is important to think about maintaining proper form. Being consciously aware of your mechanics is very critical for your further speed development and injury prevention. I am aware that it is very difficult to think about your mechanics during a race or the middle of a workout, but reminding yourself of a few key points when you start to fatigue (mantras work well), can help you refocus on your mechanics and will optimize your performance.

Remember that everyone is going to look a little different, but still strive for your own perfection. Your body will naturally produce its own running style. You must also be very patient, especially if you have prior running experience and have developed poor habits. The human body learns motor patterns, and it can sometimes be difficult, not to mention frustrating, to break the bad habits and learn new ones.



Keysha McClenton-Benzing earned her B.S and M.S in kinesiology from California State University, Fullerton, while also competing for the Titans as a four-year varsity letterman in cross country and track. She was three-time athlete of the year, two-time All-Conference, and two-time NCAA Nationals qualifier, and she holds two school records in the 800 meters and the 4 x 400-meter relay. She and her husband Skipp are both strength and conditioning coaches at the University of San Diego. She is still competing as a National-level Olympic weightlifter and an Olympic Games hopeful in the 800 meters.

Keysha gives special thanks to Ed Nuttycombe, Jim Stinzi, Mark Guthrie (University of Wisconsin, Madison), Kenny McDaniel (Arizona State University), Mike Powell (University of California, Los Angeles), and Brandon Campbell and John Elders (California State University, Fullerton): "They are all outstanding track and field coaches who have all been involved in my training and have influenced my training philosophies today."