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Posture

by Phillip Molesworth

When you run, are you running correctly? Does it matter?

Why do I want to talk about posture? If you look around you find many running styles, but what is correct? And why is it important?

In my last article "Are you doing it correctly", I mentioned Percy Cerutti and the time he spent sitting at a primary school taking notes as he watched the children playing in the grounds. He noted that the youngest had quite a good running posture and as they got older they lost it and developed bad habits. He was puzzled as to why this was the case, and concluded that their natural running style was good if they just did it and didn't think about what they were doing. As they got older they were influenced by the bad posture of others. This problem still exists today and many runners learn bad posture from others who have developed their own theories on what is correct. This is usually a recipe for problems and can cause serious running posture issues. Even while writing this paper, I am conscious of the possibility of misinterpretation resulting in incorrect posture. It is my hope that this will not be the case and the document is able to point out the pitfalls in trying to invent your own running style.

Running posture is the foundation of the runner's future. It is what enables the body to move with efficiency. When they build a formula 1 racing car, or V8 Super Car, it is pointless putting a supercharged motor in the car if it's out of tune, if the wheels aren't pointing in the right direction, the wheel bearings squeak or if the car wobbles on the track and so on. Every part of the car is tuned to perform at its maximum efficiency. As an athlete, it is equally important to fine tune every part of the machine we call the human body. So in this paper we will take a look at what is needed to fine tune this machine for the best performance it is capable of producing. This starts with posture.

This is a subject that I prefer to do in person as I need to see the athlete in action in order to correct the running posture and fine tune the body. Each athlete has some individual traits that are not all bad so seeing them in action allows me to work out the ones that need work in order to achieve a smooth flowing movement across the ground that uses the minimum energy to achieve the maximum result.

Unfortunately this is the area where most runners make the mistakes and develop bad habits. They see an athlete that has enormous talent but has a flaw in their technique and what does the young runner do? That's it, they copy the worst elements in their technique because that's what stands out as being different, so they assume it is part of what makes them good. When Cliff Young won the Sydney to Melbourne marathon with his terrible posture, young runners around Australia copied him. As a club coach at the time it was hard work fixing the damage and getting them to run with balance and smooth rhythm. While I am describing the correct running posture for the distance runner in this paper, it is open to misinterpretation and therefore resulting in bad habits. It is my hope that I can get the message across and many can benefit from it.

In distance running you need to get from the gun to the tape in the fastest possible time and a lot of things will influence the result. One of them is your running technique.

1. Is it energy efficient?

2. Does it handle the conditions?
3. Are you well balanced?

These and many other questions come into the equation and during these papers we will look at a lot of them, but they don't replace the need for the coach and the watchful eye to pick up on problems as they develop, **and they will.**

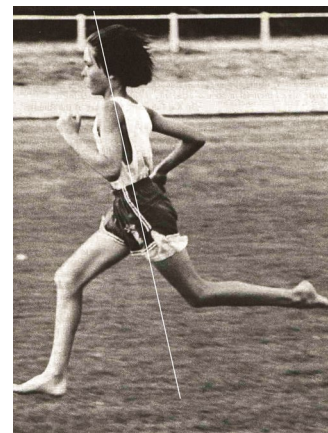


Also, in the previous paper we took a quick look at Cliff Young and his chosen footwear. Now we can look at the running technique. His arms are hanging by his side and give no knee lift and very little balance, for this reason he tripped on small variations in the ground. In other words he didn't run he shuffled.

In this article I am going to discuss the correct technique for the middle and distance runner. This is different to the sprinter. The sprinters main muscle group is the gluteus maximus (the large muscle that forms the backside) and the muscles of the upper leg. This is where the power comes from to develop speed. The distance runner on the other hand uses mostly the calves to cover the ground smoothly with not as much knee lift as the sprinter.

The posture of the distance runner is a position where the body is upright with a little forward lean that comes from the feet and not the waist. There should be a straight line through the hips, shoulders and head.

Note the young runner in the picture his hips and shoulders are square to the track and don't move from this position. The head remains still on the shoulders with no wobble or movement, his eyes are looking into the distance keeping his throat clear for maximum air intake.



The photo below is of P Vasala (Finland) and K Keino (Kenya) in the final straight of the 1972 Olympic 1500 final.



P. Vasala (Finland) and K. Keino (Kenya) in the final straight of the Olympic 1500 metres, 1972.

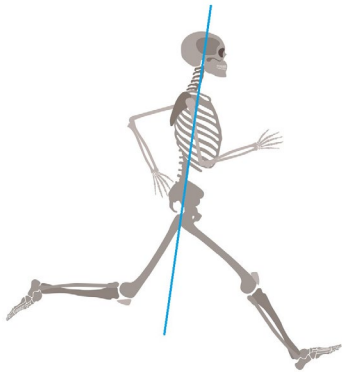
Note that in both photos the body remains still the head does not move. All of the work is in the legs and arms no shoulder roll, the head is looking at the horizon, the arms are providing the drive that controls the leg speed and knee lift, the torso and head are along for the ride with minimal energy expended other than in the legs, shoulders and arms.

I have drawn lines through their head shoulder and hips that shows the body position. While there are small differences, there is nothing wrong in all three. Each has a good posture that aids them in achieving maximum performance with minimal energy used by the muscles that don't need to work. Even though they are exerting effort the shoulders remain relaxed and the head stays still.

Vasala and Keino are at full speed as they power to the line to decide the gold and silver. Both have very similar technique they are similar height and their arm work gives both of them the same knee

lift maximising the stride length. The effort reaching the last 100 metres has not taken away any of their form enabling them to attack at a crucial stage of the race.

So who won? It was the Fin Vasala. This photo was taken just as he drew alongside Kip Keino half way down the straight.



Now lets have a look at what is happening to the skeleton when you run. If you run with stiff shoulders (a common fault) your shoulders will move forward instead of the arms swinging on its pivot at the shoulder, this rotation of the shoulders swinging forward with each stride results in the upper body rotating with each stride. This upper body rotation is countered by the hips rotating on the opposite side to the shoulder. The effect is that the right shoulder moves forward as the left hip rotates. This causes excessive twisting in the back with the vertebra rotating with each stride resulting in excessive wear in the spine that could bring about early retirement with back problems if not corrected.

Back in the 1980's there was a young female runner that reached a very high standard over the 5,000 metres in Melbourne. I sat in the stands of Olympic park with my squad and watched as she dominated the event and won the national title. My athletes were very excited for her and talked about how great she would be in a few years. I surprised them by telling them that she would not be running at this time next year with her work load if someone didn't correct her bad shoulder roll. That was one time when I didn't want to be right, but the next year she was not to be found at the championship as she had retired with back issues. She was a star of the future lost because she was given the correct workloads to achieve but a simple technique problem was not corrected early in her development.

So what should it look like? The body should be straight with a slight forward lean as can be seen in all of the photos including the skeleton except Cliff. The shoulders should not move forward and backward but should remain square to the track or direction you are moving. This will have the effect of keeping the hips also square to the track and prevent the spinal rotations. The head should be still and never wobble about as the weight of the head is about 4.5 to 5 kilograms and if it moves to one side or moves around it unbalances the body causing muscles on the side it moves to have to counter this weight. You now have muscles working that shouldn't be using energy creating bad balance which can cause muscle strain in the neck, back and even legs if one side is constantly having to cope with more than its share of the load. The head should also be looking to a spot on the horizon or looking straight ahead. If it is leaning forward so the runner is looking at the track then the 5 kg is pulling the body down once again unbalancing the athlete and having a detrimental effect on the leg movement and stride length. This also puts a kink in the throat closing the air ways and restricting the free flow of air to the lungs.

So how does posture effect the stride length?

An athlete with an average stride length of say 1.5 meters will take 267 strides to run 400 meters or 3333 strides in 5,000 meters. So what if a fault exists that has an effect of just 10 cm reduction giving a stride length of 1.4 meters instead of 1.5. Each stride whether it is 1.5 or 1.4 meters takes about the same time per stride but now they will take 19 strides more for 400 meters requiring 286 strides or an extra 283 strides for 5,000 meters with 3571 strides. This is a considerable loss caused by posture. I should comment at this point that trying to extend the stride will have detrimental effects

on your leg muscles. The stride length is determined by good posture, good use of the arms for balance and the training program. Don't think you will run faster by over striding.

The arms play an important role in your rhythm and tempo as well as balance. They are the metronome of your body. It is the arms that determine the speed of each stride and the correct use of the arms that determine the knee lift and stride length. If we go back to the photos earlier all of them, except Cliff display excellent arm movement giving them a powerful stride. While Cliff had very poor arm action and subsequently had a short stride length and low knee lift which caused the problems mentioned earlier as his feet hardly lifted off the ground.

So to round it up. What are we looking for?

1. In summery the head is still and centred over the shoulders giving a good balance. There is no point in looking at the ground in front of you, there is no money or gold nuggets there and the forward lean of the head cramps the neck and chest.
2. The shoulders should remain square to the direction of movement and not move backward and forward, they are the pivot point for the arms, not the balance for the leg movement.
3. The muscles around the neck and shoulders should be relaxed as any tension in this area or the back results in a reduction in fluency of movement.
4. The arms should be relaxed with no muscles unduly stressed so they can move easily from around the centre of the chest to around the hip (the position at the chest is dependent on the speed and the slower the event the lower the swing forward).
5. The hands should be relaxed with no tension. The arms should be bent to about 90 degrees. Many runners have what I call soccer syndrome. They have their hands tucked up around their chest giving the impression that they are afraid of touching the ball.
6. The torso should be relaxed and going for the ride. It should not rise and fall with the stride pattern. If you look at video of a champion distance runner and place your hand so that you can't see their legs, you will notice that they look like they are on wheels and moving forward being pulled along the ground.
7. The hips stay square to the track the same as the shoulders with the legs doing all of the work underneath.
8. The throat is open giving a good supply of air to the lungs and by keeping the muscles that are not required relaxed you are not using any more oxygen and energy operating muscles that aren't needed for the job at hand.

Get these elements wrong and it's like trying to drive the car with the handbrake on. You may still get there but you will use a lot more fuel than you needed to and it will take longer or something will break. It's all about fluid smooth movement and efficiency.

As I said at the beginning. These issues are best handled by the coach who can see what is happening and work on correcting them. Sometimes this is achieved by instruction. Sometimes the coach develops programs and exercises and sometimes it may be a strength issue and corrected in the gym. There is a myriad of reasons for posture issues and just as many ways to correct them. In this paper I have given you an outline of what is needed to succeed but it is not everything. Every athlete is different so there is no fix all solution.

Good luck with your endeavours. Don't despair if it's not working out, there is help available.