MYTHBUSTING

Re-Examining Some Common Practices in the Sprints

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Question

When is 90° not a right angle?

Answer

When it comes to the elbow during sprinting.

Myth #1

In proper sprint mechanics, the angle of the elbow joint should be maintained at approximately 90°.

An analysis of elite sprinters shows that significant movement occurs in the elbow joint during sprint arm mechanics.

- What matters with the arms occurs primarily during the backswing.
- As the arm swings back and down, the elbow should open to create a longer lever.
- When swung down and back hard and quickly, this lever creates significant downward momentum.
- This momentum travels down the body through the opposite leg and into the track.
- This increased application of force results in a longer stride length.


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TENNESSEE
TARMOH

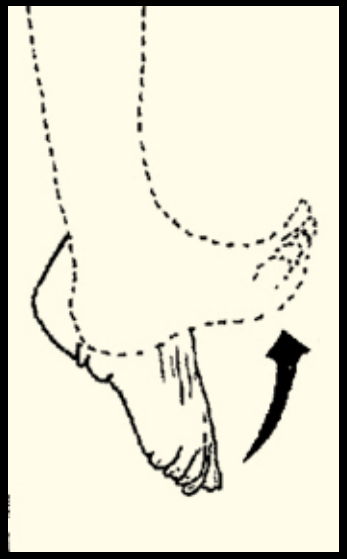

USA
CARMELITA
JETER
USA
PhotoRun

Myth #2

The ankle joint should be dorsiflexed as the foot makes contact with the ground.

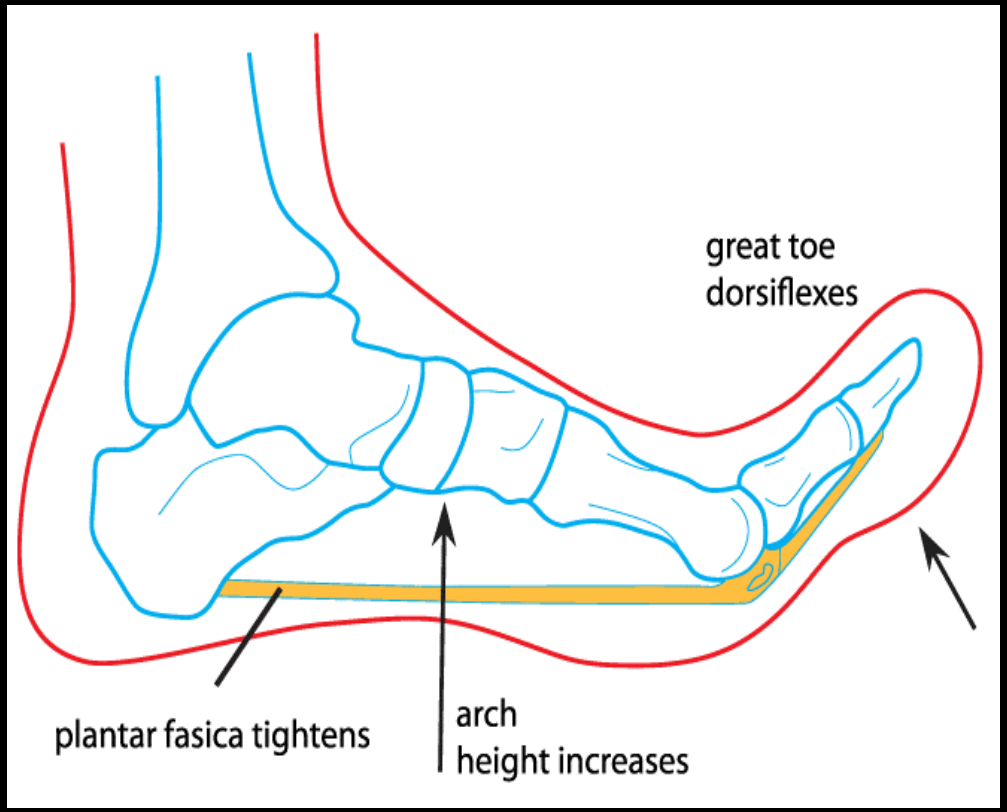
Windlass Mechanism

Plantarflexion



Dorsiflexion

Neutral Ankle Flexion

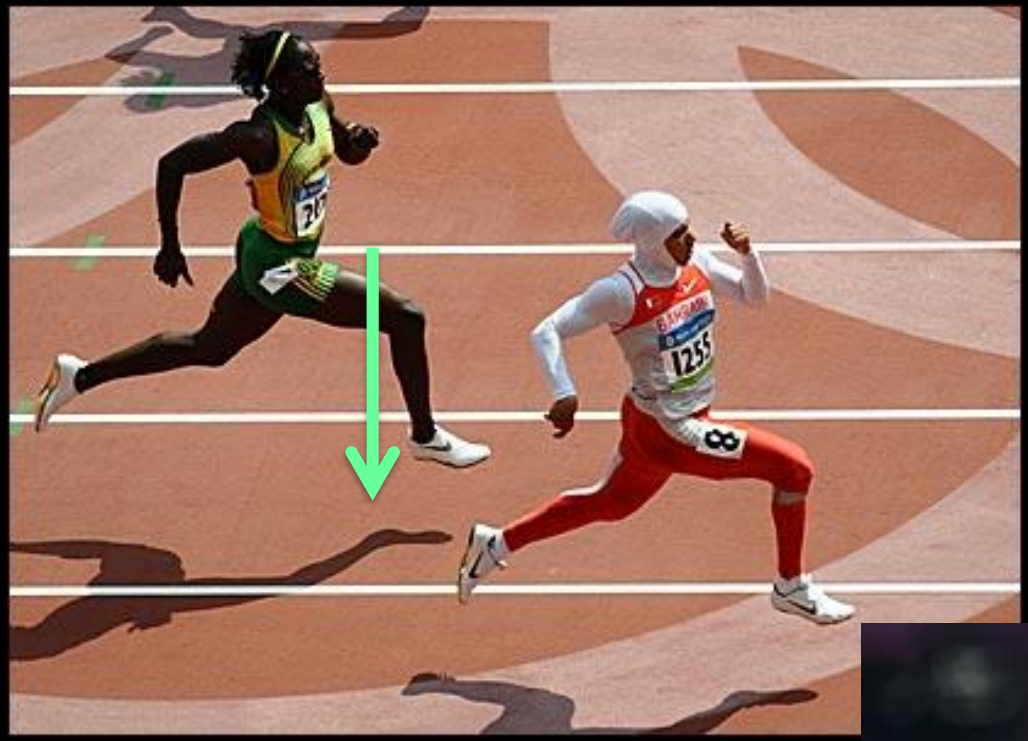


- Analysis of elite sprinters reveals a neutral angle of ankle flexion upon ground contact.
- Rather than ankle dosiflexion, we should emphasize flexion of the big toe to create the “Windlass Mechanism.”
- This effect prepares the foot for groundstrike by raising the arch, increasing tension in the plantar fascia and tight-packing the foot bones.
- The foot becomes a more rigid lever, thus reducing ground time and maximizing force application.

Myth #3

There is a “pawing action” by the leg during front-side mechanics to create “negative foot speed” prior to ground contact.

- Once an athlete overcomes inertia through the acceleration process (pushing), s/he simply needs to get airborne again.
- This is accomplished by applying downward (vertical) force into the track.
- Although it looks as if pawing action (pulling) is occurring, this is actually an illusion created by the body's center of mass moving horizontally over the foot.



When does pawing action actually occur?

Usain Bolt

Mechanics

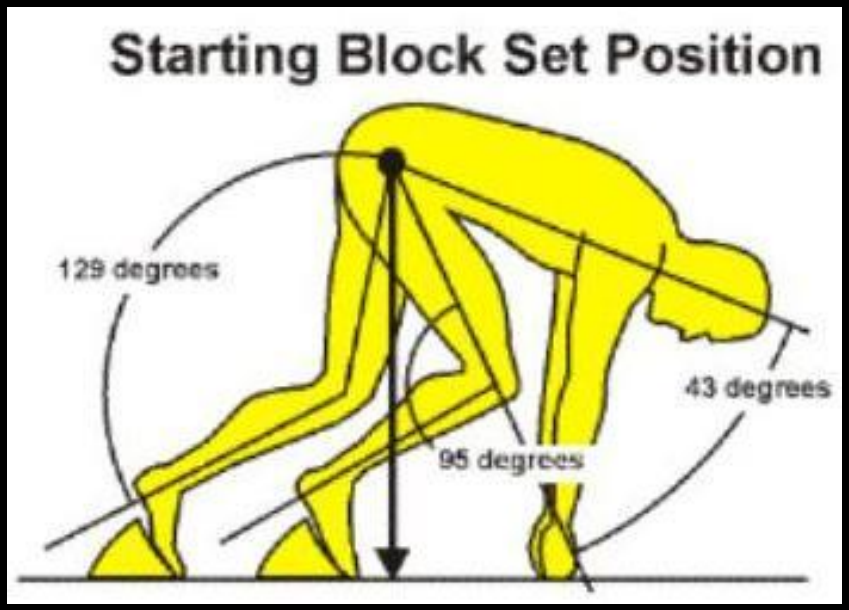
Myth #4

Minimizing reaction time and a quick first step are keys to a good block start.

- Although good reaction time is desirable, it accounts for a very small percentage of the total race time.
- A short quick first step appears ideal, but it actually sacrifices power and impedes acceleration mechanics on subsequent steps.
- We should teach our athletes to have a substantial, powerful first step out of the blocks.
- “Don’t be in a hurry to be fast.”

Myth #5

In the blocks, weight should be shifted forward, with shoulders in front of the starting line and major loading placed on the front block.


Starting Block Set Position
129 degrees
43 degrees
95 degrees

- It is extremely important to maintain balance in the blocks so that force can be applied with both feet.
- Loading on the front and back blocks should be relatively equal.
- Shoulders well in front of the hands (starting line) will unload the back block unless pressure is relieved on the front block.
- How to teach athletes to load back block?
- Try raising hips with back leg by flattening foot against the back block.

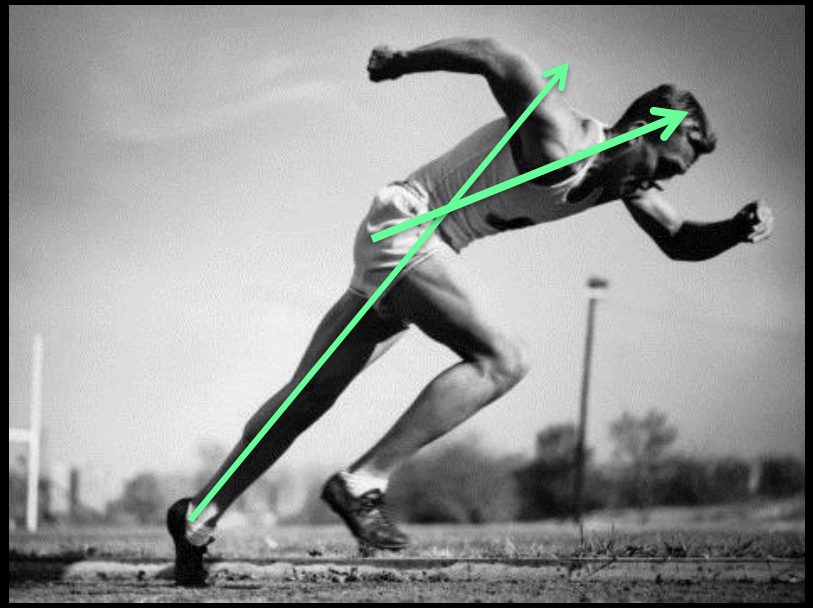
Myth #6

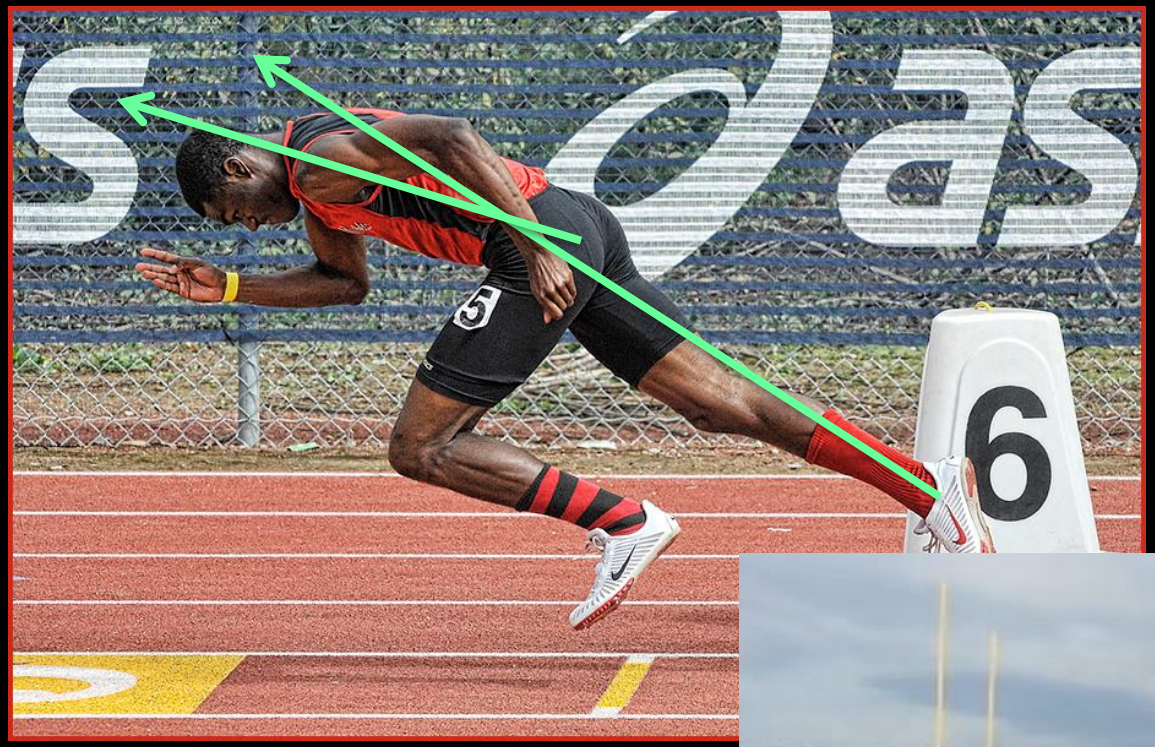
We should tell our sprinters to

“stay low”

when coming out of the blocks.

- The angle at which a sprinter leaves the blocks is determined by the amount of force applied and the rate of acceleration.
- Weaker athletes cannot apply the necessary force to exit the blocks at a low angle.
- When told to stay low, these athletes will bend at the waist, altering efficient acceleration mechanics on subsequent strides.
- Teach athletes to push hard with both feet in the proper set position, and the exit angle will take care of itself.

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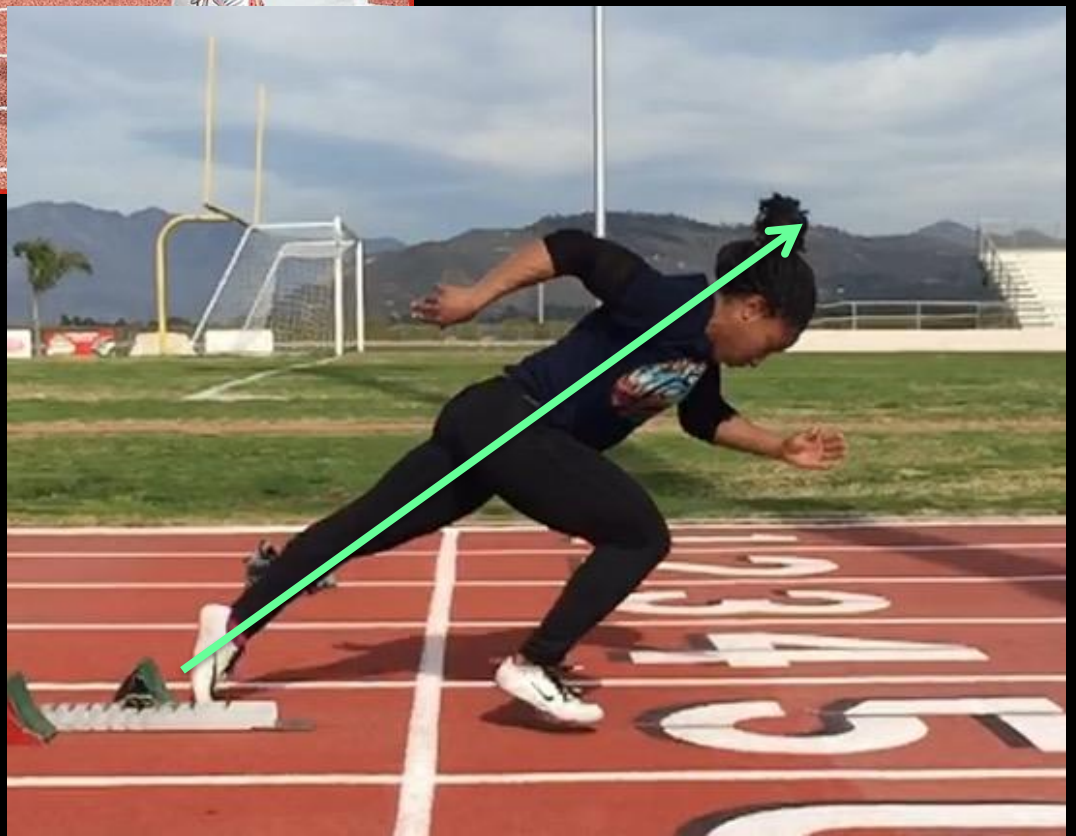
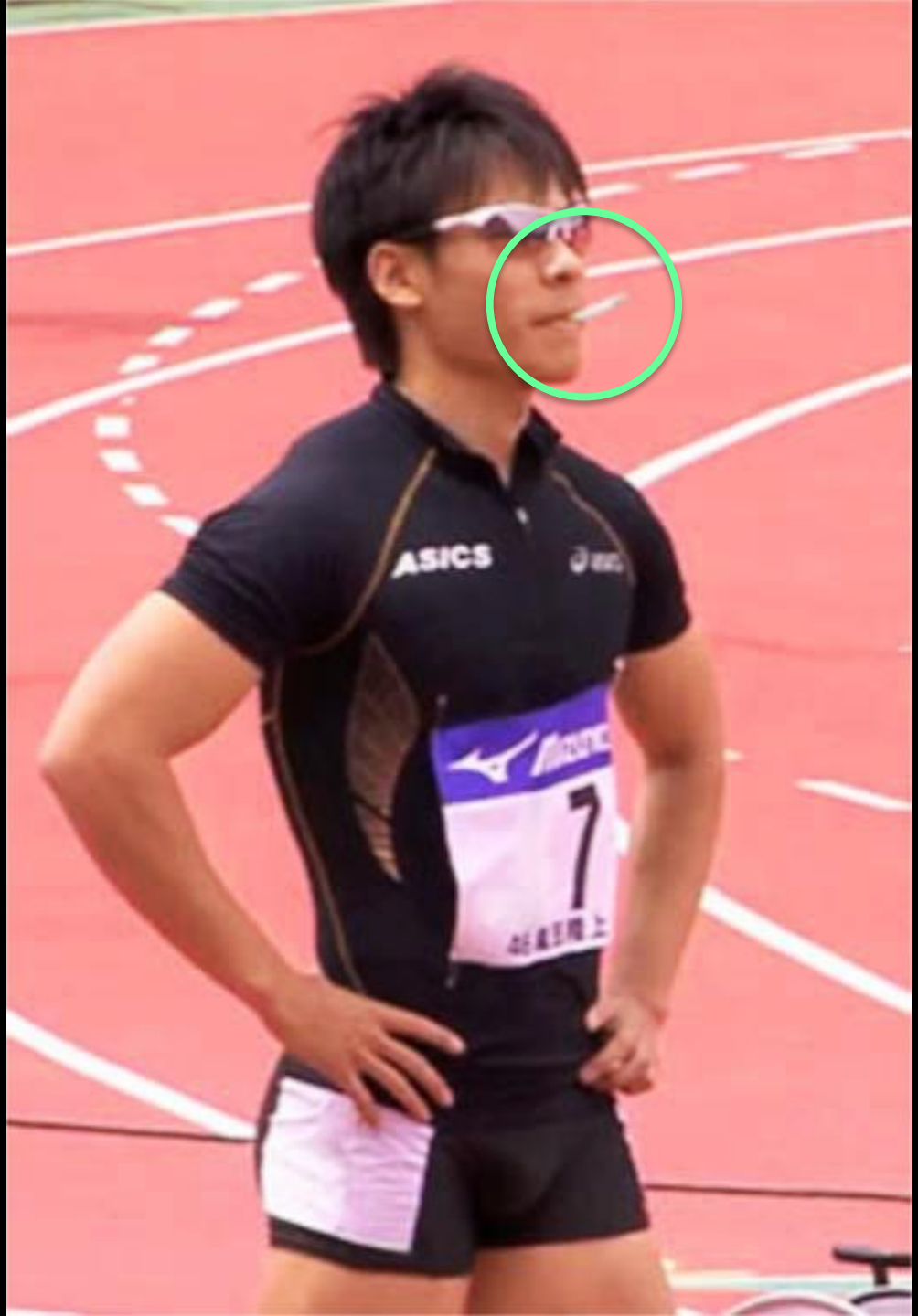


Myth #7

Aerobic fitness is an essential element of a sprint training program.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- Sprinting up to 400 meters is largely anaerobic.
- Training aerobically to improve VO2 max is unrelated to sprinting.
- Sprint training should target the anaerobic alactic (phosphate) and anaerobic lactic (glycolytic) energy systems.
- Having sprinters do distance runs is counter-productive.
- Develop aerobic fitness in a sprint context.


Distance Runners


Sprinters


100m vs. 5K


Full Recovery

Sprinters

Myth #8

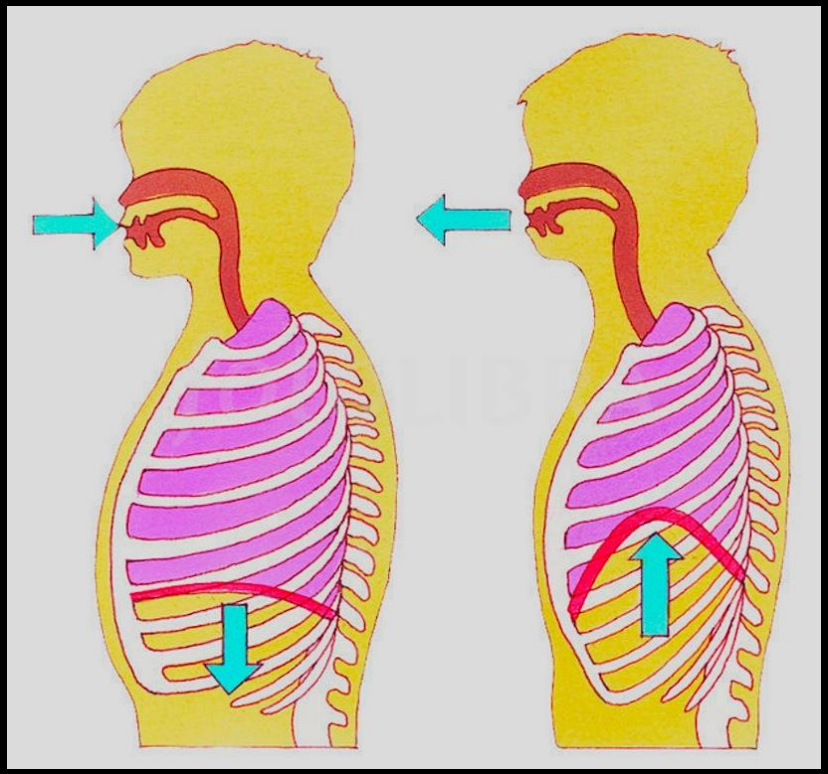
Long sprinters (200/400) must do over-distance training to create the necessary endurance for their events.

- Running repeat 800's or 600's will not necessarily make a better long sprinter.
- Question the traditional pyramid model of sprint training.
- Long sprinters can train effectively **never running *over*** their race distances.
- By utilizing high lactate "stacking" workouts, sprinters can actually train for the 400 without ever running that far in practice.

Myth #9

Don’t hold your breath when you run.

- Sprinters have different breathing patterns than distance runners.
- The cylinder that makes up the torso becomes much more rigid when the diaphragm is contracted, i.e.—when the lungs are filled.
- A more rigid core collapses less and rebounds more quickly upon footstrike, increasing stride length and reducing ground time.
- Depending on the race distance, breath can be held for 4-12 strides or more.
- Sprinters should inhale/exhale rapidly.

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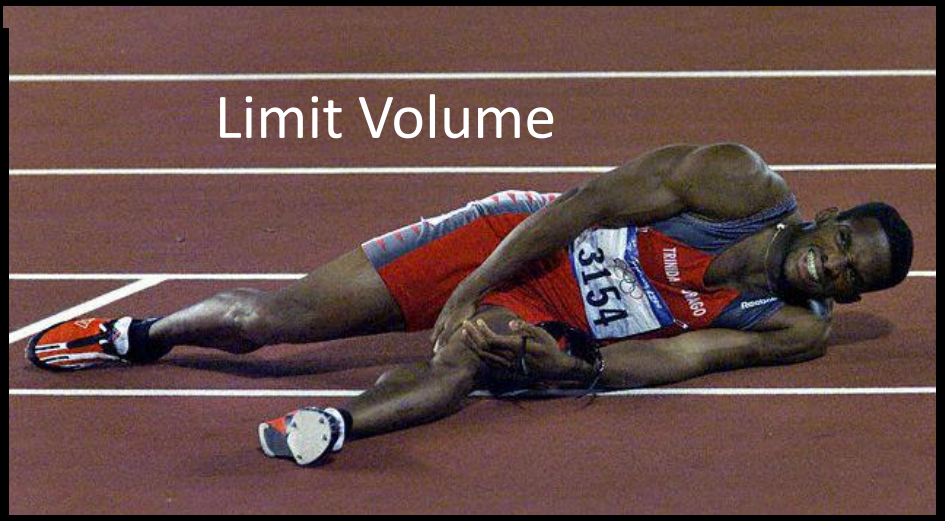
Myth #10

More is better.

- One must run fast in practice in order to run fast in competition.
- However, near maximum effort presents more risk for injury.
- Low-volume high intensity work gets results!
- Limit total volume of workout to ≤ 1200m.
- Utilize full recovery after intense effort. This could be 3-5 mins for phosphate system, and up to 15+ mins for lactate system.
- Resist feeling guilty when the distance runners run 12x400. In sprinting, **less is more!**

volume

intensity



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less is more