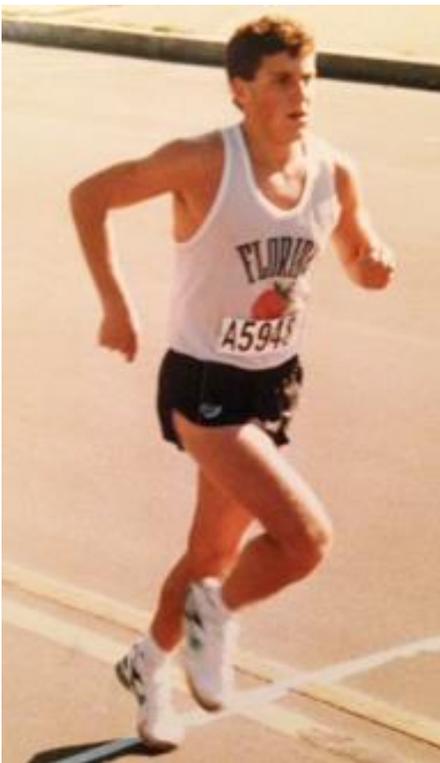


How to Run the Air Force Marathon 2015

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I've had the pleasure of running the first 2 Air Force Marathons in the 1990's, had a break due to work duties, and now have a string now of 10 consecutive. I've had fun and success here, finishing 2nd in the inaugural event and winning in 2006 and in 2011. At 48 years old now it is never too late to learn new things and share with others. Although slowing now with age and new priorities, my average finish time of all these races is 2:40. Along with the Air Force Marathon I love the Boston and Marine Corps Marathons, two other events with a strong military and patriotic presence. The average time of the 20 Boston finishes is 2:36 with a string of 15. Along the way I have also compiled 22 Marine Corps finishes with an average of 2:38 and a current string of 16.

Looking back at these marathons has given me a new perspective on running. In today's culture there is a trend and emphasis on high-intensity training as the path to success. I agree that for immediate performance this is true, but the jury is out if we are talking about long-term health and balance if one has a busy life. There are also lots of folks who read stuff, write stuff, make claims as to what is true based on short term results, but do not actually run or are former runners.



The late Dr. George Sheehan often wrote “we are all an experiment of one”. This is true, but I think one must understand the principles of overall health and how to treat your body to keep the experiment going. Since my foot surgeries in 2000, I have not done any training which would be considered “hard” or “anaerobic” by modern extreme fitness zealots. Most proponents of “pain is gain” cannot produce this type of sustainable performance data in themselves or any of their clients or athletes. I have not missed a Boston or Marine Corps since 2000 (and have not had running related injury since then either) and despite some years of extreme weather at these races the times are all consistent with the gentle physiologic age related decline.

Here is a photo of my first marathon, the Marine Corps Marathon in 1988. I was in my first year of medical school and had taken the summer off of running after four years of college running and the toll it had taken on my body. I also lived in LA that summer and tried to run one day and the air so bad my lungs actually hurt.

I quickly put on 20 pounds as I did not change my diet from the “runners diet” of low fat and high carbs (notice a bit bulkier body). On return to medical school I again found the joy in running for stress relief and to allow me to concentrate better in studies. Two weeks before the race I joined a friend for a long run and ended up running about 16 miles. He convinced me to line up with him in D.C, two weeks later where I finished in 2:34 in my minimal Nike Duelists. I was hooked.

Unfortunately I wore these same shoes in Boston the following spring to fly down the hills in the first half of the race (1:08 split) but my quads were mashed potatoes by Boston College. So took the T home for one of only two marathon DNFs. Learned that lesson! (the other DNF in NYC in 1991 when I lined up with severe plantar fasciitis). I wore an old Florida Track Club singlet given to me by my Loyola High School Phil Kirby since I did not feel like I had returned to fitness as a runner worthy of representing my University or the US Air Force.



This next finish photo is two years later 1990 when I was chasing my first sub 2:30. In those years, the Marine Corps Race finished on top of Iwo Jima and my sub 2:30 evaporated with the Hains Point winds (miles 20-23 used to be there) and the steep last half mile climb and finished in 2:31. I again felt like a runner and wore my college colors (University of Virginia) and even the painters cap with the bill flipped up in homage to Dick Beardsley who ran Alberto Salazar to the line at Boston a few years prior.

For a great read on the 1982 “Duel in the Sun” read this book excerpt from John Brant here <http://www.runnersworld.com/boston-marathon/duel-in-the-sun>

Here is me running happy at the 2014 Air Force Marathon. Note my “Garmin”...a smile on my wrist and a cue to run with my glutes and “tan my soles”, which cues me to plantar flex my foot so the sole sees the sun. This gives free energy (see picture to left where my foot is plantar flexed on takeoff)





So what is the “secret sauce” of long-term healthy running?

- Run for joy
- Recover
- Do not run too hard; finish each run as if you could do it again
- Keep “fast and agile” with short sprints and drills
- Keep mobile, esp in the ankles and hips.
- Keep your foundation strong—this is your foot. Wear flat shoes shaped like your foot to stand, walk, run, and play. Go barefoot as often as you can.
- Learn the skill of running and keep trying to master this. A tool like TrueForm motorless treadmill helps.
- Do simple strength training with Kettle Bells and Burpees
- Be your own body sensor and coach
- Don't sit
- Eat real food
- Do not put pain into your body
- And pass it forward...we all continue to learn by teaching and sharing with others.

..... Race-Day Strategies

As you enter the week prior to the race here are a few strategies to help you set your plan. The best analogy I can think of is this: if you have trained your body properly with the right mix of aerobic level training and some up tempo stuff in recent weeks, you have built your efficient hybrid engine ready to race the marathon. Many of you have driven in a Prius and watched the subtle shifts between gas and electric on the dashboard. You do not perceive these shifts. Your engines (muscles) run on a mixture of gas (sugars) and electric (fats). Utilizing gas or electric power depends on the effort. This is why slow aerobic training is critical for marathon success, you build a massive electric (fat burning) engine.

You are starting the race with one gallon in the gas tank- assuming you have eaten a nice meal the night before with a light breakfast top off. If you race in all gas mode, your engines will run about 1.5 hours at a strong pace....then you are out of gas. If your effort is mostly electric you can run for hours, but not as swiftly.

With the correct effort you (1) will use the proper fuel mix and you will be efficient for duration of your event and (2) you can even do some topping off along the way. Too hard early you will sabotage the day by not only depleting the gas but also shunting all blood flow to working muscles, thereby not allowing the aid station top offs to assist.

Running utilizes about 1kcal/Kg/Km. So for a lean marathoner of 80 kg you need about 3360 kcals (80kg x 42 km) to make it. The gas is the glucose utilizing pathway. Even fully carbo loaded, your stored liver glycogen (300-500kcal), muscle glycogen (1000-1500kcal), and blood glucose (less than 20 kcal). Glucose is easy to access for ready energy but adds up to less than 2000kcal. The fat utilizing pathway is the electric. In marathons you must be in hybrid mode to make it. Hybrid is where your energy (ATP) is coming from both fuel sources. Conserving the gas and using electric early in the race is critical.

Many runners are in great "10k shape" (an all gas event), run their marathon in the all gas mode....and crash. Glycogen sparing strategy need not apply in races of less than an hour as long as you had a good pre-event meal to fill the tank. In marathons and ultras, top end anaerobic fitness matters little and can only be applied very near the finish. Glucose gives 36 ATP per molecule with a limited supply, fat 200-400 ATP per molecule and an unlimited supply. You must tap into the fat burning tank. Now you know how a bird can migrate 7000 miles without an aid station. *It's all about the pace.*

Another key to teaching your body how to burn fat and to maximize aerobic development is to not eat before or during your long runs. If you are reading this for the first time before this week's race then apply to your next marathon. Your body adapts to exposures and if sugar is constantly accessible it will not learn how to burn fat. You also want to convert your fast twitch fibers to make them as "red" (oxidative) as possible. Easy and moderate effort long runs of 2 hours in a fasted state will drain the slow twitch fibers ("red" fibers) of glycogen and force more capillarization of the fast twitch (mix "white"/"red") fibers, making them more "red". You are doing speed work by running slow with this method, making the powerful fast twitch fibers aerobic. Distance runners in events from 800 meters to marathons through generations have all trained this way. This is part of the Lydiard method and validated by the life work of Dr. Stephen Siler. Only recently have we been convinced we need lots of sugar before and during long runs. Race day is different as you are going for performance, not creating adaptations. More on this later.

So how do you know you are running in your best hybrid mode?

This is difficult because the body sense at this level (Aerobic Threshold) is not as profound as Lactate Threshold (or Anaerobic Threshold). A slight increase from your optimal pace will switch you from hybrid to all gas without you realizing it. The effects are felt miles later. Charging and surging early will tap your gas quickly. If you want to speed up early....DON'T. Relax and maintain comfortable effort, not always a specific speed. You *should* feel easy in the early stages, it is a marathon.

You must rehearse in training. I focus on relaxation and belly breathing. If I'm breathing one cycle to 5 steps, then I'm hybrid. If breathing faster, I'm using mostly glucose as fuel. Belly breathe- allow lower belly to blow up like a beach ball on inhalation as your powerful diaphragm contracts. You will fill the lower lung areas where oxygen exchange occurs. Notice the breathing efforts of those around you. Many are rapid breathing. They will suffer somewhere past half way. Practice nasal breathing, it forces belly breathing and prevents you from running in too high a gear. Nasal breathing also allows CO₂ to rise naturally to assist in offloading the oxygen to the tissues. Blowing off CO₂ binds the oxygen to the hemoglobin, inhibiting offload to the tissues. Rehearse complete relaxation from the top down- eyes, jaw, shoulders. Allow your legs to relax and extend behind you. Your core is solid and your legs are the springs. Find your own cue for this. If you use a Heart Rate Monitor in training consider one during the event unless you can sense the effort really well.

In a marathon, the last 3-4 miles you will be mostly gas to maintain the same speed as fatigue sets in and heart rate rises. The breathing is usually on a 3 to 4 steps per breath cycle- that is OK. Still stay relaxed and use the cues that you have rehearsed to keep your form.

Land softly, especially on the early downhill. Focus on good form. I run with a midfoot landing harnessing elastic recoil. Gently landing on and rolling from the heel can work too. Do not overstride with fully extended leg. Focus on posture and hip extension. Your trunk will lean forward slightly.....think "face forward" and look ahead. Run *over the ground* not *into the ground*. I'm never sore after marathons now

With good form it is "No pain...thank you". Find a nice rhythm. Races are filled with excitement and distractions. For you there are no distractions, just peace in the moment. You get it now- the art of a marathon is to relax and be in the moment.

Your shoes matter too. Make strong consideration to not running in minimalist racers unless you have trained substantially in them and adapted your structure to less foot support and a natural style gait. I advocate gradually adapting all of your training into more minimal and level shoes. If you relax your lower legs and load the springy tendons in your feet and lower legs, these shoes with no heel elevation put you in perfect position to allow natural elastic recoil of plantar fascia, Achilles and lower leg tendons, and hip flexors. New research and runner's experience is now making the case for running with a focus on form and questions modern running footwear. The evolving world of modern sports medicine is going back to the future too and rediscovering what evolution has taught us. For more on footwear visit Dr. Mark's Running School on upper right of home page of Two Rivers Treads (<http://www.tworivertreads.com>).The [recent ACSM guidelines](#) are also a great read on footwear.

Have a course specific plan for your race. For the Air Force Marathon this is pretty simple. Relax on the first uphill section, relax on the slightly rolling ups and downs from miles 2-6. Relax and enjoy the tour through the spirited Fairborn miles 8-11. This is the most vibrant place on the course. Lots of noise, bands, people, and you loop back to see other runners and teammates.

Relax and find a nice rhythm on the peaceful stretch around the flight line and through the woods on the back side. This is actually my favorite part of the race. There are no distractions, just peace in the moment. You get it now....the art of a marathon is to relax and be in the moment. Rehearse relaxing head to toe and use the belly breathing. You blend with other runners in the late stages and for many this is good to have the company. If you feel really good 3-4 miles out only then is it time to take some chances and charge.

Save energy for the later stages of the race, this is where things can get tough. Remember, if you feel really good in the early stages and feel like you want to speed up....DON'T. It is a marathon and you should feel good in the early miles. Speed up only when you can "smell the barn", this occurs when you see the Citgo sign (comes into view at Mile 23). You can smell the barn. Remember, if you feel really good in the early stages and feel like you want to speed up....DON'T. It is a marathon and you should feel good in the early miles.

Now a few extra ways to get from start to finish quicker on the same gallon.

- Do not sabotage your event by having a large carbohydrate heavy breakfast the morning of the race. This will increase your insulin levels and lock out the ability to burn fat. Fill your glycogen stores by not running and eating adequate amounts of healthy carbohydrates the 3 days prior. Do not overload, you can only store a specific amount. A light breakfast of mix carb/fat/protein is a good thing as well as your morning coffee if you are a coffee drinker.
- If you can add a little gas along the way then you can run more in gas mode. This helps a little at best. If running too fast or if temperature high you shunt blood to working muscles to work and skin to cool and diverts from the gut, so nothing digests. Plus you are burning quickly through the glucose/gas. If you are in hybrid in the early going you can continually add some fuel. So the key is not only the correct fuel, but the right pace. A Powergel every 30 minutes is easy to digest and tops off the tank. The Air Force Marathon course has fuel stations every 2 to 3 miles so an overabundance of places to top off.
- The early downhills after the first big up are fun but if run too hard can drain your gas quickly and damage your quads....go smooth and easy down them. Allow gravity assist you down. Do not overstride and heel hit on the down hills- remember run *over* the ground not *into* the ground.
- Maintain effort if you hit some wind around the flight line. Your pace will slow. You can easily use all your gas here if your effort increases. Shorten your stride, relax, and use your arms. Save something for the back side of the course.
- If you are having a “bad patch” – try to refocus on relaxing, fuel a bit (sometimes a blood glucose drop triggers the sense of doom), and have faith in your training and race plan. Another nice trick is when you hit mile 21 it is not 5 miles to go, it is 4 and change. Mile 22 is 3 and change to go. Just run to the next mile marker and count them down one by one. Smile and enjoy the crowds.
- If it is windy get behind a group. This can save lots of physical and mental energy.
- Just run to the next band. There is a band every 2 miles or so.
- Do not over drink water. This can lead to a dangerous condition called hyponatremia. [See 2015 guidelines](#)
- If it is going to be hot [read this article](#) I wrote after the steamy 2012 Boston Marathon which was published in the American Medical Athletic Association Journal
- A final tip from 4 time Olympic Trials qualifier Josh Cox who spoke with me before the Air Force Marathon a few years ago. The night before the race make “the invisible man”. Get everything you are going to wear/use the next day set up to put on in the morning. Scrambling to find your number, socks, favorite hat, gels or other item adds stress. Get the outfit laid out on the floor ready to wear, then get some sleep.

The fun of the marathon is that we are always learning and enjoying the adventure of it. I’ve done over 100 marathons now with a couple under 2:25 in my younger years. We learn from experience, taking chances, and occasional failures. I’ve learned a few things in over 25 years on how to train and race efficiently and economically in the marathon, but still there are uncertainties every time you line up. I learn something new every time. So relax, taper up, and seize the day.

Here is a video from 2011 showing some of the course and discussing strategy and healthy running <https://www.youtube.com/watch?v=2p1S1md-R4>

I’d like to especially thank all the Armed Forces Members around the world who sacrifice daily in the service of their country and for all the volunteers who make the Air Force Marathon a celebration. Run a fearless race and may the wind be at your back .

Dr. Mark