



## **How to Run the Freedom's Run Marathon (or Half Marathon if your time is over 1:30)**

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Thank you all coming to Freedom's Run! As you enter the week prior to the Freedom's Run Marathon or Half Marathon here are a few visualizations to help you set your plan. Running your best 10k is mostly about fitness. Running your best marathon or half is part art, science, guts, and faith in what you can do. At 50 years old now it is never too late to learn new things and share with others. One year when not directing this run I will join you in the Marathon, but like you all continuing the journey and just this year continued a streak of 30 years sub 3 hour marathons which is the longest active streak and 3 more years to have the record (my kids will hold me to it)

For starters, remember when you are on the line Saturday morning you are already over 95% done. That is the training you have done to prepare. So the race is the final fun lap in the company of others and with bands on the course. 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.

Races lasting longer than 90 minutes require you to use fat as fuel. So for half marathoners running above this time the same strategies apply, just modify this article for the half when distances apply. 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 90 minutes 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. This assumes you are a really efficient runner and the conditions ideal (rarely are either of these the case). 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 (and slower half 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 or half 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. 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. Breathing comfortably, even through your nose, and being able to talk is a good indicator of proper pace. Charging and surging early will tap your gas quickly.

You must rehearse in training. I focus on relaxation and belly breathing. If able to breathe through my nose 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 CO<sub>2</sub> to rise naturally to assist in offloading the oxygen to the tissues. Blowing off CO<sub>2</sub> 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 controlled and your legs are the springs. Find you own cue for this. If you use a Heart Rate Monitor in training strongly consider one during the event.

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 hit Sharpsburg after exiting Antietam. In a marathon, the last 3-4 miles you will be mostly gas to maintain the same speed as fatigue sets in, your springs lose bounce, and heart rate rises. The breathing is usually increased a bit- that is OK. Still stay relaxed and use the cues that you have rehearsed to keep your form.

Now a little on running style. Land softly, especially on the early downhills. 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 just slightly.....think “face forward” and look ahead. Run over the ground not into the ground. I’m never sore after marathons now and feel I can keep doing them until I enter the retirement home. 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.

Now for a little on the most important organ for running- your brain. Your brain is the captain of the ship and will always try to protect you. Even at “all on” we are only really using 50-60% of our capacity. The brain likes homeostasis and running 26 miles is counter to this. Assuming you are medically healthy you can play some tricks to outwit your brain which is constantly telling you to slow down or stop. Work around the bad patches with your mind and find a better mental place. You are not “done”. Shift your stride, take a little sugar, run mile to mile, sing a song, smile, relax and slow the breathing. You want to be “parasympathetic”. This is happy land. If your brain tells you the body is in peril, “sympathetic” stress kicks in. This is good for running from a wild animal (a sprint), but not for persistence hunting ( a marathon) .

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, glutes, and hip flexors. For a library of information of footwear, running form, and biomechanics visit RunRX on <http://naturalrunningcenter.com/> or visit <http://www.tworiverstreads.com>.

Have a course specific plan. For Freedom’s Run Marathon this is pretty simple. Relax on the first downhill entering lower Harpers Ferry and enjoy the sunrise as you cross the Potomac. Relax and find a nice rhythm on the peaceful 11 miles of C&O Canal . 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. If you feel like you want to speed up in this section....don’t. You should feel good. It is a marathon and you are early in the run on the easiest part of the course.

You blend with half marathon runners at mile 15. Enjoy the company as you enter the very hilly sections of the course. From this point on the race to mile 20 is a constant battle of hills. But remember you are in Antietam Battlefield and nothing you experience will be remotely as severe as what the soldiers suffered through 150 years ago. So gather spirit and energy as you feel the power of the terrain and the history.

You enter Historic Sharpsburg at mile 22 and from here is it mostly flat. Save energy for the later stages of the race, this is where things can get tough. If you feel really good at 5k to go then is it time to take some chances and charge for home as you smell the bratwurst from the Oktoberfest. You will soon be at the Ram Stadium finish.

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

- The early downhill out of Harpers Ferry is fun but if run too hard it can damage your quads....go smooth and easy down the hill. Allow gravity assist you down. Do not overstride and heel hit on the down hills-remember run over the ground not into the ground.
- 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.
- Do not over drink water. This can lead to a dangerous condition called hyponatremia. [See 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

- If you can add a little gas along the way then you can go more into gas mode. This helps a little at best. If running too fast or if temperature high you shunt all blood to working muscles and skin to cool 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 fuel- the key is not only the correct fuel, but the right pace. A gel every hour is easy to digest and tops off the tank. Carry a couple with you at the start. If you do the gels then you can drink water instead of the energy drinks which are often less predictable on the run. We will have ample Gatorade Endurance on the course as well as Honey Stinger.
- 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.
- 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. We learn from experience, taking chances, and occasional failures. I’ve learned a few things in over 30 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.

I’d like to especially thank our wonderful volunteers, the National Park Service, the historic towns of Harpers Ferry, Sharpsburg, and Shepherdstown, hosts at Shepherd University, and our sponsors. May the wind be at your back!

See you at the start!

Mark Cucuzzella MD