

Rx for running

Doc tells you how to run smarter, faster

By Markeshla Riels
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Dr. Mark Cucuzzella knows what it's like to be so injured from running that he was told by doctors to give up the sport.

Instead of hanging up his running shoes, Cucuzzella, 46, a lieutenant colonel in the Air Force Reserves, revised his training in a way to avoid his previous injuries, without losing speed.

He's proof his method works: Cucuzzella's still running fast and injury-free more than a decade after his doctors told him to stop running. A two-time winner of the Air Force Marathon, he recently completed the Boston Marathon — his 20th — in 2:42:54.

Cucuzzella, a family physician in Harper's Ferry, W. Va., and the medical director for the Air Force Marathon, wants to share with airmen what he's learned about running, how to do it without injury and how to enjoy it. After all, the 15-mile run accounts for 60 percent of an airman's physical training test score.

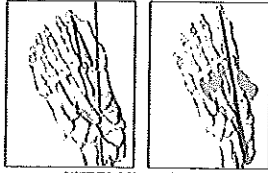
With the support of the Air Force, Cucuzzella has created an interactive course called Efficient Running to help airmen reduce injury and shave precious time off their 1.5-mile run time, which is a key component of the new Air Force PT test all airmen have to pass.

It doesn't take fancy equipment or the most tricked-out running shoe, but some basic knowledge and a lot of repetition.

And here's the bonus: Running injury-free helps airmen achieve the main objective of the Air Force's new fitness standards — a healthy lifestyle.

"Physical health and fitness is essential for job performance," Cucuzzella said. "It is critical to have a fit and healthy force. The better you feel, the more productive you are. You can deploy. Everything about your job is better if you're fit."

He conducts running clinics all around the country, including Air Force bases. The course is available on the Air Force Medical Service's Knowledge Exchange site.



ILLUSTRATIONS COURTESY OF DR. MARK CUCUZZELLA

Improper alignment of the big toe, left, and the proper alignment, right.

Three modules

The course is broken down into three modules, the first of which is designed to teach the science behind efficient running, including the principles of good running form, injury prevention and nutrition. The other two modules are aimed at airmen who might serve as their unit's physical training leader and for individual airmen preparing for their PT test.

This is not a quick fix. Cucuzzella's plan is based at walking and running six days a week, for at least 16 weeks to build aerobic endurance.

The running programs he's devised leading up to your PT test include interval training, running hills and fartleks, where you run fast and relax for 30 seconds with a slow recovery jog or walk in between. But, if done too soon, injuries may occur.

"Unlike many programs, we place the major emphasis on aerobic development, running skill, specific strength, health, progression over years, and not on high intensity workouts," Cucuzzella said. "Any intense program can give you short immediate gains, but this comes at a cost."

And that short-term gain can lead to long-term hurt, the doctor said.

"I think people get overwhelmed when they see these things that look way too advanced, and we have to deconstruct this down to the simplest ingredients," he said. "We have to start with the basics ... so they understand these things themselves and feel things themselves."

Slow down. Cucuzzella said in the task-oriented, no-pain, no-gain

world of the military, running hard every day to get faster seems logical, except it doesn't work. Most people get hurt because they're running too fast, too hard, too soon, he said.

Cucuzzella is a proponent of building aerobic endurance so the body learns to burn fat as fuel, which is more efficient than burning glycogen. The best way to do that is to stop running fast, which only depletes glycogen stores quickly.

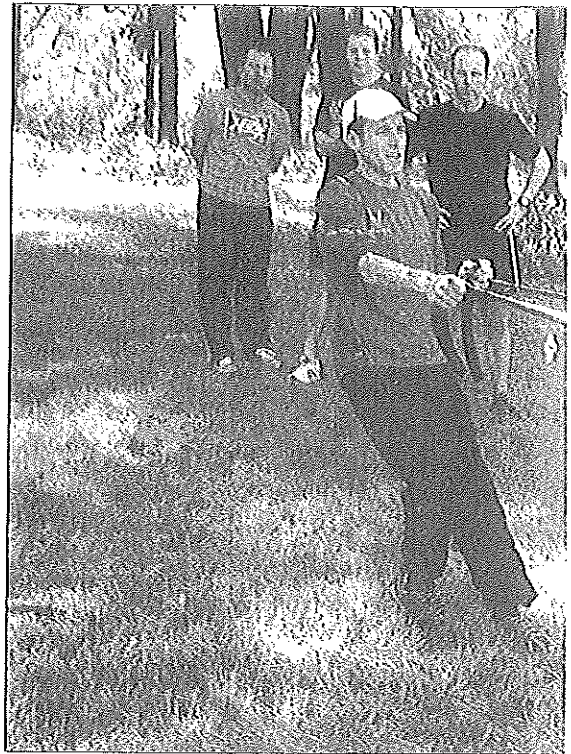
Instead, Cucuzzella recommends running at what he calls the "cruising speed." That means you should be able to easily carry on a conversation with a running buddy, or sing a few choruses of "Happy Birthday" without being out of breath. If you are, you need to slow down.

To take it a step further, Cucuzzella recommends using a heart-rate monitor to ensure you don't run faster than your maximum aerobic training heart rate, which is determined by subtracting your age from 180. Subtract 10 from the resulting total if you're recovering from a major illness; subtract 5 if you are recovering from an injury or have allergies or asthma. If you've been training consistently without illness or injury, add 5.

Engage the right muscles. Cucuzzella said running injuries are 100 percent preventable but many people don't have the posture, core stability or the proper muscle balance in their gluteus maximus (buttocks), legs and feet to keep from getting injured. Cucuzzella said the strongest runners are better at using the power in their glutes, rather than their quadriceps and legs to run. These are all things that can be corrected with simple stability exercises.

Among the exercises Cucuzzella recommends for strengthening the glutes are the bridge and side bridge, which are designed to improve gluteal activation while extending the hips and improve core and gluteal functional strength. The exercises require no equipment and can be done while watching television.

Practice running. Most people just



EXERCISES



Bridge. Lie on your back with your feet firmly planted on the ground about hip width apart. Brace your abdominal muscles and contract your glutes. Lift your hips toward the ceiling until you form a straight line with your knees and shoulders, holding for two to three seconds. Release your glutes to return to the start position. Do three sets of eight to 12 reps.



Side bridge. Come out of the bridge exercise and roll onto your side. Bend your knees at a 90-degree angle with your knees stacked on top of each other. Place your elbow under your shoulder. Drive your hips up to form a straight line between your head and your knee. Hold for two to three seconds. Do three sets of eight to 12 reps on each side.

throw on their running shoes and go for a run, and they do that without a lot of thought to whether they've been slumped in a desk chair all day, or walking around in high heels. Cucuzzella wants people to get in tune with their bodies.

The Efficient Runner program is designed to help airmen practice proper posture, strengthen the core and create correct muscle memory by running drills that engage specific muscles, increasing leg turnover and developing a softer foot strike.

A simple technique that immedi-

ately improves form is running while jumping rope, an exercise Cucuzzella learned from his daughter. Cucuzzella said it encourages the ever-so-slight tilt forward and forces you to run with your feet properly aligned under your body.

"It's impossible to overstride when you run with a jump rope," he said.

Don't think minimal or barefoot. Think flat. You can find videos all over the Internet of people running without shoes. Cucuzzella is in some of those videos and routinely runs

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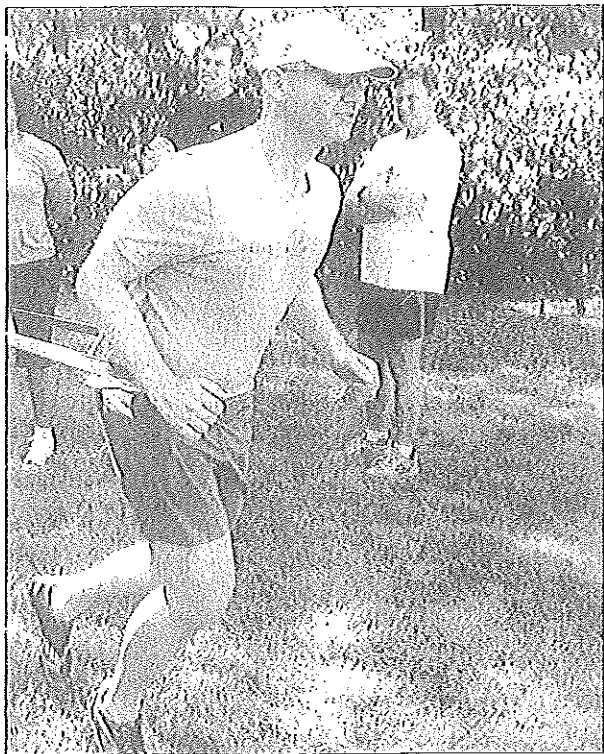
Small changes, big improvements

Being able to run without injury for many runners seems almost as realistic as finding a pot of gold at the end of a rainbow, or believing in unicorns.

But fans of Dr. Mark Cucuzzella's Efficient Running method say not only are they injury-free, but they're

faster than ever, even as they inch closer to 40 and 50 years old—a time when many runners see their times slowing, not ramping up.

Three airmen shared their running story with Air Force Times.



COLIN KELLY/STAFF

Lt. Col. Mark Cucuzzella (left) demonstrates a resistance drill during one of his Efficient Running clinics for Pentagon staff April 26 in Arlington, Va. His methods help airmen run faster by training slower and longer.

without shoes, but he knows running barefoot isn't for everyone. One thing every person can do is wear a flat shoe in running and in everyday casual footwear too, he said.

Most people are wearing a shoe that has an elevated heel and a narrow toe box, which keeps the foot from doing what it should do naturally, he said. "A shoe without a heel facilitates a normal posture," he said. "What a heel does is forces you to compensate. It's not possible to stand at a perfectly neutral and correct posture."

There will be speedwork—eventually. To get faster, it is necessary to run faster, but Cucuzzella said you have to prepare your body to do it properly and without injury.

The running schedules Cucuzzella recommends are designed for runners who have either built the aerobic endurance and proper biomechanics for good running form over 16 weeks, or who already have it and are injury-free.

If you're moving on to his progression and maintenance plan, or six weeks away from taking your PT test, you'll mix up your long,

slow runs with tempo runs, running at about 90 percent of your 1.5 mile running pace for up to 30 minutes, strides and pickups, gradually accelerating and then slowly decelerating over 50 to 80 meters, and fartleks three times a week. Cucuzzella cautions against running all out, or thinking of these workouts as races.

Go out and have fun. Cucuzzella knows all about being too busy to run. In addition to being in the Air Force Reserves, he's a professor of Family Medicine at West Virginia University School of Medicine. He also is the executive director of the National Running Center, the owner of a minimalist shoe store, a husband and father of two young children. "I'm 46 and I have like three jobs," he said. "I don't want to run hard."

So instead of training with a specific mileage in mind, he runs for a specific amount of time. Shorter efforts might be however far he can get in 30 to 60 minutes. Long runs don't last more than two hours. These runs are done at his easiest effort and are used as stress relievers, not stress inducers, he said. □

Staff Sgt. James Munnis

Age: 48
Flight Engineer/commercial pilot
West Virginia National Guard
Staff Sgt. James Munnis ran his first marathon in the late 1990s and hated every minute of the tedious training and the pain, so he hung up his running shoes and hopped on a bicycle.

Bicycling was a great sport for zipping around Florida, or pacing his wife—an avid runner. But when he and his family moved back to Shepherdstown, W.Va., his three children started getting into running, so the commercial airline pilot thought it might be time to join his family in exercise.

"The kids were having fun... and that kind of got us involved," he said. "In Florida, I could cycle all I wanted, but I was trying again and you can't take a bicycle with you when you work. But you can run everywhere we go."

He used what he learned from Cucuzzella to run his first 50-mile race even though he was suffering from a bout of plantar fasciitis he'd developed while painting soccer fields.

He said it took a lot of patience and discipline to build an efficient aerobic system and train his form, but it is paying off. Munnis has gone from being ready to give up running for good to coaching youngsters in cross country and long-distance track events, and qualifying for the National Guard's All Guard marathon team.

"It's just snowballed bigger and bigger, and I've gotten faster and faster," said Munnis, who is 48. "Once you become more efficient, you run because it's fun. A side effect is you go faster and faster using the same effort."

Munnis said his love for running has paid dividends for his National Guard job. When he joined the Guard, there were no pilot positions available so he became a flight engineer. With his unit transitioning to the C-17, his position as a flight engineer is being eliminated. With prior Navy pilot training, he's been offered a job as a pilot again, which meant taking the rigorous fitness assessment. He passed and didn't need any waivers to do it.

"I owe it all to the training and running," he said. "I never would have been able to do that four or five years ago."



Munnis

Retired Lt. Col. Chris Irwin

Age: 47
Pilot
Schiertz, Texas
Retired Lt. Col. Chris Irwin was prepping for the San Antonio Marathon in 2012 when he decided to check out a running seminar Cucuzzella was leading at Joint Base San Antonio-Randolph. He was never much of a distance runner, preferring cycling and triathlons instead. But he wanted to enjoy running more so he could exercise with his wife, a runner. He figured he could learn something that would make it a better experience.

Irwin said he took to heart what Cucuzzella had to say about heart-rate training and developing good running form. He began using a heart-rate monitor during his marathon training runs and routinely logged his pace during those runs. Though he wasn't able to finish that first marathon without walking, he finished in 5 hours and 28 minutes.

"I was happy finishing," he said. "I was not happy that I couldn't run the whole thing."

Instead of jumping into longer runs at higher paces, or diving head first into speed and interval training, he kept using his heart monitor to make sure he stayed slow and steady and didn't raise his heart rate too high, or needlessly injure himself from overuse. He ran another marathon three months later and finished in 4 hours and 55 minutes.

"I think the big improvement was because of the aerobic training at a low heart rate," he said. "Those 30 minutes religiously run at a much lower heart rate built the aerobic base. I never had to walk and never had any injuries. So many I've talked to had injuries—stress fractures, their knees hurt, their feet hurt—something hurts."

But not Irwin. He's now organizing a group of runners in his squadron to run the San Antonio marathon this year and sees running as an activity he can do for the rest of his life.

The secret to running injury-free is don't get too fast too early.

"Use the 180 formula, wear a monitor and just track it," he said. "Get a training program that you didn't make up yourself and do it at that low intensity. Give yourself about six or seven months [to see results]."



Irwin

Senior Airman Adam Porter

Age: 36
Tuba player for Air Force Band of Liberty
When Adam Porter first made contact with Cucuzzella, he was in the same predicament a lot of airmen were when the Air Force introduced tougher fitness standards.

Under the old test regs, he was able to score in the upper 70s and 80s with a last-minute, crash-course style workout routine, and then go back to not working out. But not this time. Porter

The Air Force's requirement that each airman pass every component or fail the whole test meant he had to get serious. Enter Cucuzzella.

"The program that he is putting together to guide airmen and soldiers to healthy and injury-free running is eye-opening to say the least," he said in an email. "The concept that he teaches of running/training easy to get faster was foreign to me at first. I was from the school that you do a long run, intervals, tempo and easy runs every week to get a complete workout. Boy, was I dead wrong."

It was slow going at first. Using the heart rate monitor kept him right at a 12:30-mile.

"I was able to work on my form and really concentrate on... not overstriding, not pawing back with my toes, not bounding and most importantly, no pain—just a nice fluid stride that kept my center of gravity and road contact in the same place, right under my hips," he said.

Porter is now able to run faster at the same heart rate he did at a 12:30-mile.

"I can finish my run test in 9:38 with no problems and no injury," he said. "Going from a 12:30-mile, dropping 2 inches in my waist, and getting my weight, which was in the 210s, down into the 180s took about seven months. All thanks to a little time with Lt. Col. Cucuzzella and patience to see this through."

Porter has plans to max out his run during the next PT after his deployment. He also wants to break his 10K personal record of 47:11.

"All I doable with this new and healthy approach that I know every airman, regardless of fitness, can find gains doing," he said.



Porter



FASTER RUN TIMES
FEWER INJURIES
Expert insight
built for airmen 16