

BY BRIAN METZLER

Run Softly, Naturally

CAN A GAIT MAKEOVER IMPROVE YOUR RUNNING?

FOR YEARS, running coaches and elite athletes have preached that good running form is the key to efficient running and faster times.

Now the concept of running “naturally” and hitting the ground on your midfoot instead of your heel is being advanced by university studies, biomechanists, stride gurus and shoe companies as a highly efficient way to run and prevent common running injuries.

Many longtime runners are hesitant to tweak their form, especially if they’re skeptical about falling for what they might consider a fad. But the basis of natural form or midfoot running gaits has been around for decades, much of it derived from the super-efficient form elite runners have been employing for years.

“It’s not new, it’s just that most runners have either gone away from what they used to do or they were never taught the proper way to run in the first place,” says **MALCOLM BALK**, a Montreal-based running coach, form guru and competitive masters runner who teaches The Art of Running workshops in Canada and the United Kingdom.

One of the first technique gurus to preach midfoot running was **DR. NICHOLAS ROMANOV**, a Russian biomechanist who in the mid-1970s developed and started teaching the Pose Method — a running technique that stresses impact reduction and, its proponents claim, maximizes the use of gravity and momentum. More recently, ChiRunning, Evolution Running, Newton Running, Radiant Running and Stride Mechanics have espoused natural running techniques that include upright posture with a slight forward lean, short strides with a high cadence and feet striking directly under the hips.

While the programs are similar, there are plenty of not-so-subtle differences in semantics and techniques that have become fodder for debate among runners, coaches, biomechanists, physical therapists and shoe designers. In his workshops, Balk doesn’t necessarily adhere to any particular program, but instead stresses many of the things the programs have in common, including

lessening muscular force by reducing braking with every step (even and especially at slower training paces) and the general notion of running more relaxed.

Ultimately, natural form leads to running “softly,” a style that can help reduce overuse injuries caused by excessive impact forces typical of heel-strike running.

“I think the most important thing is that you need to keep braking to a minimum if you want to reduce muscular effort and the impact that goes with it,” says Balk, who practices and teaches the Alexander Technique, which isn’t specifically about running form but is a self-help system aimed at developing awareness and efficiency while respecting the natural movement patterns of the body — especially the relationship between the head, neck and spine.

“If you get people to run tall, run with a fast cadence, and get their feet landing underneath them and not in front of them, they can make themselves more efficient fairly quickly. But the hard part is letting go of their old habits.”

CHANGING YOUR STRIDE

If you’re an aspiring elite or fast recreational runner, the idea of running with a midfoot gait could be old hat to you. But then again, maybe not. As you get older, your body changes, and often because of bad habits or injuries or both, you alter your running form, Balk says.

And a quick glance at the faster runners in any 5K or marathon — both in open and masters divisions — shows that there are plenty of good runners who are slightly crouched over, landing on their heels or exhibiting other biomechanical inefficiencies, even while running at a fast pace.

A gait makeover could be the key to better running, Balk says, no matter what your age or PRs. “As people age, a runner’s stride almost becomes a caricature of what it once



Cucuzzella is sharing what he learned about efficient form with the medical community.

was,” says Balk, 54. “They weren’t aware of what they were doing in the first place, and they’ve never gone through the process of re-educating themselves to develop a better, more sound technique.”

That’s exactly where sub-2:30 marathoner **DR. MARK CUCUZZELLA** found himself in 2000. After more than 20 years of competitive running, the former University of Virginia track and cross country competitor started experiencing severe pain in his feet due to arthritis and other degenerative changes. Although he was only 34 at the time, running was becoming very laborious.

“I figured my days of running pain-free were over,” says Cucuzzella, an associate professor at the West Virginia University Department of Family Medicine.

Instead of giving up, he set out to learn about the biomechanics of running and came across the Pose Method. Cucuzzella started to retool his running form with a lower-impact midfoot gait and started to feel improvements.

But it wasn’t until 2005 when he read **DANNY DREYER**’s *ChiRunning*, which offers a holistic approach to running technique utilizing tenets of the Chinese martial art of Tai Chi, that Cucuzzella put it all together — running with a high cadence, short strides, footstrikes under his hips and an upright posture, and deriving power from his core.

Since then, Cucuzzella’s running has been revitalized and pain-free, even if he admits he’s slowed down slightly as he’s gotten older. Now 42, he ran two 2:34s last year, at Boston (14th masters finisher) and Marine Corps Marathon (first masters finisher), and

then won the masters division (11th overall) at the JFK 50-miler in a PR of 6:45:48.

Now he feels like he can run at a high level forever, especially because his revamped style of running allows him to significantly reduce his recovery time. "You have to look at the whole mechanics of the movement," he says. "You can't just say, 'I'll try to land on my midfoot' because it's much more than that. It's about how the whole process fits together. Learning all of the principles and always improving is important."

A REVOLUTION?

Cucuzzella's personal breakthrough made him want to share it with others. Combining his medical training and running passion, he delved into the topic in 2007 by surveying 2,500 people who had bought Dreyer's book and found, among other things, respondents reported a 30 percent reduction of injuries and a 40 percent reduction in perceived discomfort over six-month periods.

While he admits it's not enough to draw conclusions, he believes it's the beginning of ways to change how people think about running form and offer new ideas about injury prevention and treatment. He presented the information at three medical conferences last year, including the Running Medicine Conference at the University of Virginia.

He followed that up last fall by putting 20 marathoners through a Run Softly workshop, the primary tenet of which was running with efficient form. He wants to be able to go beyond the conceptual evidence and testimonial results and advance the field of study. "My goal as a doctor is to keep people healthy," says Cucuzzella. "And from my perspective, we've made zero progress in preventing and treating running injuries. People still get hurt at the same rate — 40 to 60 percent a year — despite the MRIs and all of the care they get now. We need to find better ways — as runners, coaches, doctors and the shoe industry. And from my experience and preliminary research, there's a ton of validity to this."

MIDFOOT SHOES

Another thing most natural and midfoot running stride proponents agree on is the need for runners to use minimalist footwear that mimics a barefoot stride. A shoe without a thick midsole, large heel crash pad and stiff stabilization devices, they say, allows a runner to have the proprioception necessary for efficient running and allows the natural settling of the heel after the initial impact of the foot.

"You need to feel the road," Dreyer says. "The more your feet can really feel the ground, the more it will educate the rest of your body

on how to move and how to run."

As of 2009, no fewer than six brands will be offering shoes aimed at midfoot or natural running gaits, including Nike, Vibram, Newton, ECCO, New Balance and Skora.

Newton co-founder **DANNY ABSHIRE** has been preaching for years about efficiency and injury prevention through better running form and shoes. The Boulder, Colo., footwear guru has been making custom insoles for elite runners and triathletes for 20 years.

He argues that if you were to run barefoot along a smooth sidewalk, your body wouldn't allow you to land on your heels because it isn't engineered to accommodate the blunt force trauma of repeated heel striking. "If you want to run more efficiently, you have to understand your body and how it moves," Abshire says. "You have to think about how you move across a surface and stop using so much muscle power to move forward."

Newton shoes accommodate the body's natural propensity for light midfoot landings, he says, and have an innovative levering propulsion unit in the midsole that works in conjunction with the lifting of a leg (instead of pushing off) to begin a new stride. Newton calls it the "Land-Lever-Lift" technique.

Newton shoes have a row of four external rubber lugs that encourages a midfoot strike

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RUN NATURALLY

Here are several basic tenets of natural running form espoused by various technique gurus:

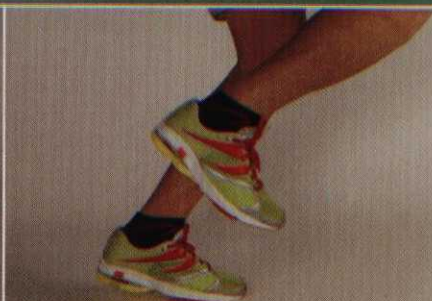
- Regardless of your running pace, run with a fast cadence of 180 to 190 steps per minute or higher.
- Run with an upright posture and a slight forward lean.
- Strike the ground below your hips and not in front of them to reduce braking. (Wearing lightweight, low-to-the-ground shoes with minimal midsole cushioning helps reinforce this stride.)
- Strike the ground at the midfoot, not the heel or the toes — the actual impact area will vary based on body type — and allow your heel to naturally settle to the ground.
- When starting a new stride, develop the habit of picking up your leg instead of pushing off the ground.
- Use a compact and fluid arm swing, keeping your elbows bent at an acute angle and your hands close to your chest.
- Keep your head upright and steady and your eyes looking forward.
- Be "present in the moment" to allow yourself to concentrate on your stride but stay relaxed and don't overanalyze. The more you adhere to good form, the quicker it will become second nature.
- Consider getting custom insoles to further your gait enhancement.



Land at the midfoot and allow the heel to settle to the ground.



Instead of rolling through a stride and pushing off, lift your leg to begin a stride.



A key to natural running form is high cadence with short strides, regardless of pace.

RUN SOFTLY Continued from page 19 and enhances the energy return in the forefoot. Newton's lab tests suggest the system returns 30 percent more energy than traditional foam-only midsoles. "We know we can get people to run more efficiently by using a higher cadence, better alignment and more upright form," Abshire says. "The key is running relaxed and having the awareness to just touch the ground and lift on every stride."

So far Newton has made a huge splash with triathletes, whom the company initially targeted. In 2007, **NATASCHA BADMANN** turned in a world-record Half Ironman effort wearing Newton racing flats, while **CRAIG**

ALEXANDER won the 2008 Hawaii Ironman World Championship in Newtons, thanks in part to a 2:45 marathon split (the fastest run split of the 1,700 athletes in the field).

It would be naïve to go by the results of sponsored elite athletes and satisfied customers, but the initial results of a study started last spring at the Massachusetts Institute of Technology reinforced Abshire's ideas.

The study, conducted through the Chemistry of Sport class taught by **DR. PATTI CHRISTIE**, took 25 athletic individuals with various running abilities and put them through an eight-week distance running program. The research was based around

running 4x800m or 4x1600m repeats while holding a constant heart rate.

The first set of intervals was done in traditional EVA foam-midsole running shoes the participants started the program with, while the latter was done in Newton training shoes. That preliminary data revealed that 100 percent of the runners who completed every workout recorded faster times in the final interval wearing Newton shoes. Results showed that 77 percent of the runners ran faster on two or more intervals wearing Newtons, and 55 percent were faster on every interval. "The results were statistically significant," says Christie, who will be continuing the study with a new group of runners this spring. "If you combine the [midfoot] running with the Newton shoes, there was definitely a significant difference."

Harvard is working with Vibram to conduct a barefoot running study, and Skora, which intends to launch its first line of shoes late in 2009, is also studying the subject.

MIDFOOT SHOES

In recent years, footwear companies have developed shoes geared to mimic the natural foot-strike patterns of barefoot running, allowing the body to move with maximal efficiency and, ultimately, reduce overuse injuries common to long-distance running. Nike's line of Free shoes and Vibram's Five Fingers were among the first. (See *Running Times*, September 2007). Here are three brands with innovative models available at stores this spring.

➤ **ECCO** — Developed in conjunction with renowned biomechanist **PETER BRUGGEMAN** of the University of Cologne, ECCO's new BIOM line of shoes (ecco.usa.com) was designed with the notion that when the foot is lower to the ground, a runner will have better proprioception and resort to a more natural running gait. The top-of-the-line BIOM A — available with either a yak leather (\$220) or textile mesh upper (\$195) — has a polyurethane midsole that allows and a significantly beveled heel to better accommodate a midfoot gait.



➤ **NEWTON RUNNING** — Launched in 2007, Newton has eight ultra-lightweight racing and training models (\$155-\$175; newtonrunning.com) with its innovative Action/Reaction Technology specifically geared to aid propulsion for midfoot strikers. Essentially, four long narrow external lugs compress through an elastic membrane and press the membrane into hollow chambers inside the shoe's midsole. Then, as you pick up your knee to begin a new stride, the energized membrane thrusts the lugs out from the midsole with a burst of energy that turns into forward propulsion.



➤ **NEW BALANCE** — New Balance designed the 800 MF trainer (\$120, newbalance.com) with the help of ChiRunning guru **DANNY DREYER** for those transitioning to a midfoot running gait. It's lightweight and has its primary crash pad under the lateral side of the shoe (as opposed to the heel).



WHAT ABOUT YOU?

Balk says he often encounters broken-down runners in his workshops, those who have become physically beat up from heel pounding and those who have started to lose their love of running because it has become so rigorous. "Those are the people who are putting more and more in and getting less and less out, and on every level," he says. "They're not getting any emotional or spiritual enjoyment out of it any more, it's just become a job. But running doesn't have to be that, and it shouldn't be that."

Whatever your case might be — the need for minor form tweaks or a complete form overhaul — the shift to a natural or midfoot running gait will take time. Virtually all proponents of natural form warn that doing too much too soon can lead to injuries and recommend making a gradual transition.

Repeating properly executed form drills and learning more from the various form gurus (go to runningtimes.com/mar09 for a list of resources) are simple ways to start. Advanced steps include seeking help from a running coach versed in one or more of the techniques or attending a workshop with video stride analysis.

"There are a lot of good programs out there with a lot of good points. I think they're all kind of speaking the same language in a little different bend," says Cucuzzella, a proponent of ChiRunning. "I really think we're on the cutting edge with this, and it's important for people to know that there is a better, more efficient way to run." RT