The Shape of Things

New models are challenging the traditional pyramid structure of training.

By Carl Leivers
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At the 1960 Rome Olympics, Arthur Lydiard shocked the distance-running world when three runners he had trained from the same neighborhood in New Zealand took two gold medals and one bronze. Two years later, Lydiard published run to the top, and we were introduced to the "Lydiard Pyramid." over the next 50 years, the pyramid became so deeply rooted in running that even the vocabulary runners use today to talk about training ("building a base," "peaking") comes from Lydiard's model.

Recently, however, there have been signs of cracks in the pyramid. Elite coaches like Scott Simmons and Brad Hudson have turned the pyramid on its head and its side in an attempt to find the perfect recipe for their athletes. Their willingness to question the status quo offers new ways to look at training and can provide new tools to help you prepare for your next race. Each model has its strengths and weaknesses, and different plans are better for different runners.

THE MODELS

The hallmark of Lydiard's system is emphasizing a single element of training during each phase. Lydiard's phases progressed from aerobic conditioning to hill training, interval training, coordination and tapering. In his system, each phase must be done in sequence to build on the physical improvements gained in the previous phases.

Pete Pfitzinger, an exercise physiologist and a former Olympic marathoner, says the effectiveness of the pyramid is based on the conditioning period. "A big aerobic base provides adaptations within the muscles, which then allow the higher-intensity training to be more effective," he says. "It provides the right 'plumbing' to make that high-end aerobic work effective."

Barry Magee, who won bronze in the 1960 Olympic marathon under Lydiard's guidance and now coaches top New Zealand runners at Auckland City Athletics, agrees that conditioning is the most important phase of Lydiard's program. "Get that right and the rest follows easily," he says.
Long, slow distance is the cornerstone of Lydiard's base phase. Contrary to some interpretations of Lydiard's training, however, even the base isn't all slow running. "Ten-mile runs in 53–56 minutes are not long, slow distance," says Magee, citing workouts they did in the '60s. He also points out that Lydiard included unstructured fartlek running early in the training program. The emphasis is on volume, however -- as much as the body can handle -- which precludes much intensity.

The training philosophy sets up speed training during hill training, which follows the conditioning phase. The hills are not run at a particularly fast pace, but the new stress strengthens the legs for the coming speed work. During the subsequent interval-training phase, the paces of workouts increase. "It's important to have the leg strength from the hill phase," says Nobby Hashizume, a close associate of Lydiard's and co-founder of the Lydiard Foundation, "so that the workouts in the interval training phase can be done at a faster speed."

The true, race-specific speed work is the focus in the final phases of the pyramid. By putting this work at the end of the program, runners are able to use the strength they built as they worked their way up the pyramid.

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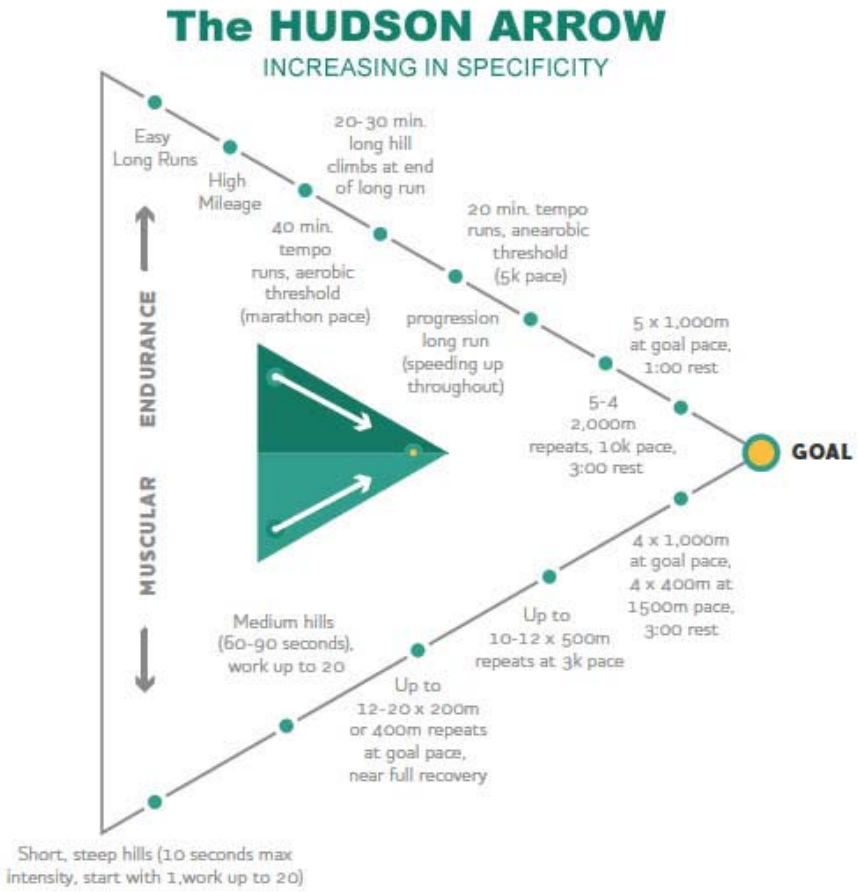


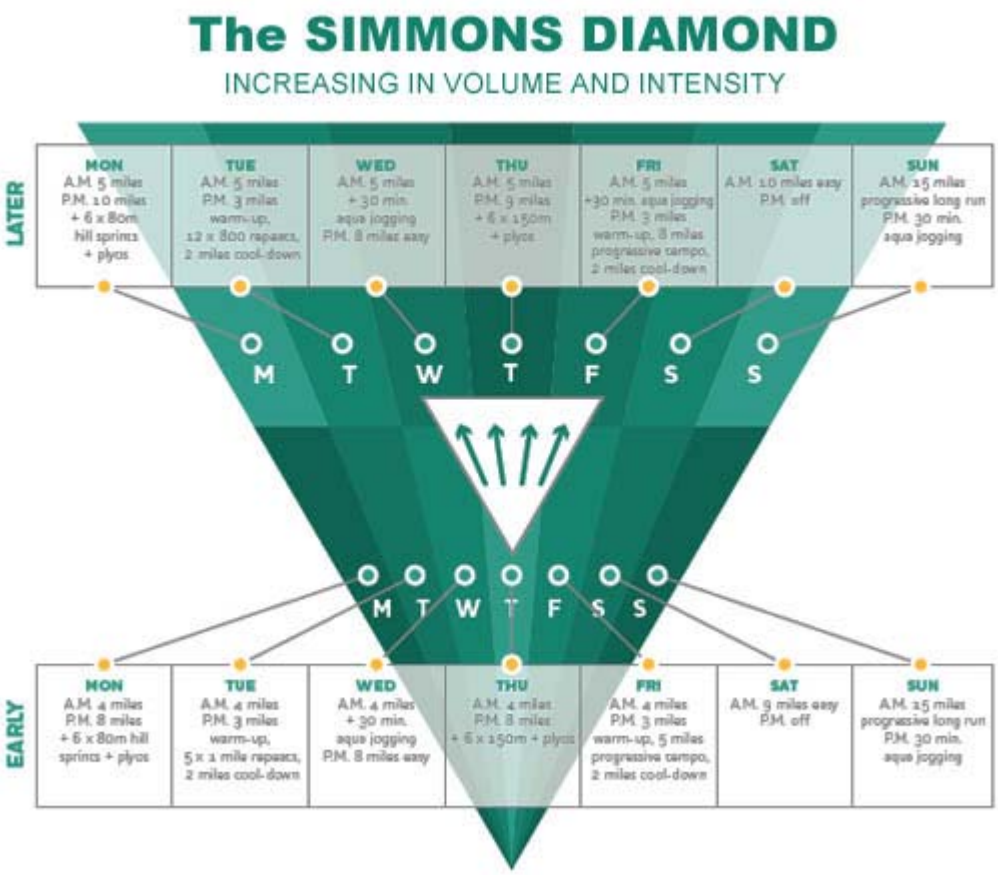
Brad Hudson, the elite coach who took Dathan Ritzenhein to ninth in the 2008 Beijing Olympic marathon, says there might be a better model. Based on his own experiences as a runner and his observations of other runners who struggled with aspects of the Lydiard pyramid, Hudson began to move away from the strict phases of that system.

While Lydiard's plan is symbolized as a base of strength with levels of speed layered on top, Hudson's model tips the pyramid on its side to form an arrow. Training begins both faster than and slower than goal race pace, with the two lines gradually meeting like the tip of an arrow at the goal race. Because the program works toward goal pace from two different directions, no phase of training focuses on any single type of conditioning.
"We start bringing workouts in a little sooner [than Lydiard]," says Hudson. "We start threshold work very soon, and we do short hill sprints right away." By introducing speed earlier in the program, Hudson aims for more balance in the cycle.

Mike Sayenko, a three-time Olympic trials qualifier in the marathon and 10,000m who trains under Hudson, says this balance is key to Hudson's system. "It allows you to become an overall strong athlete throughout the training cycle," says Sayenko. "And it really works on your weaknesses."
Developing speed, strength and endurance at the same time was new for Addie Bracy, an Olympic trials qualifier in the marathon and 10,000m who is also coached by Hudson. "[We] incorporate relatively high-volume workouts, really focusing on strength," says Bracy, noting that they never neglect speed work. For example, Hudson could have Bracy doing a morning workout of 4 or 5 × 2K cut-down repeats with 3 miles warm-up and 2 miles cool-down, then come back in the evening for 10 × 200m in 33 down to 31.5 seconds with the same warm-up and cool-down. Another day could have an 8K climb in the morning with the 200s later in the day.

Emphasizing balance also means that Hudson focuses on aerobic endurance throughout the training cycle, not just during the early stages. "We're constantly trying to build our base," says Hudson. "We use threshold training in place of some anaerobic work even in the last phase of training, to help build our athletes' endurance."

This balance keeps the final weeks of a program from consisting almost exclusively of fast running, which can lead to overtraining and burnout. "Especially at altitude, I saw a lot of athletes who couldn't really work specific endurance two to three times a week without overdoing it," Hudson says.



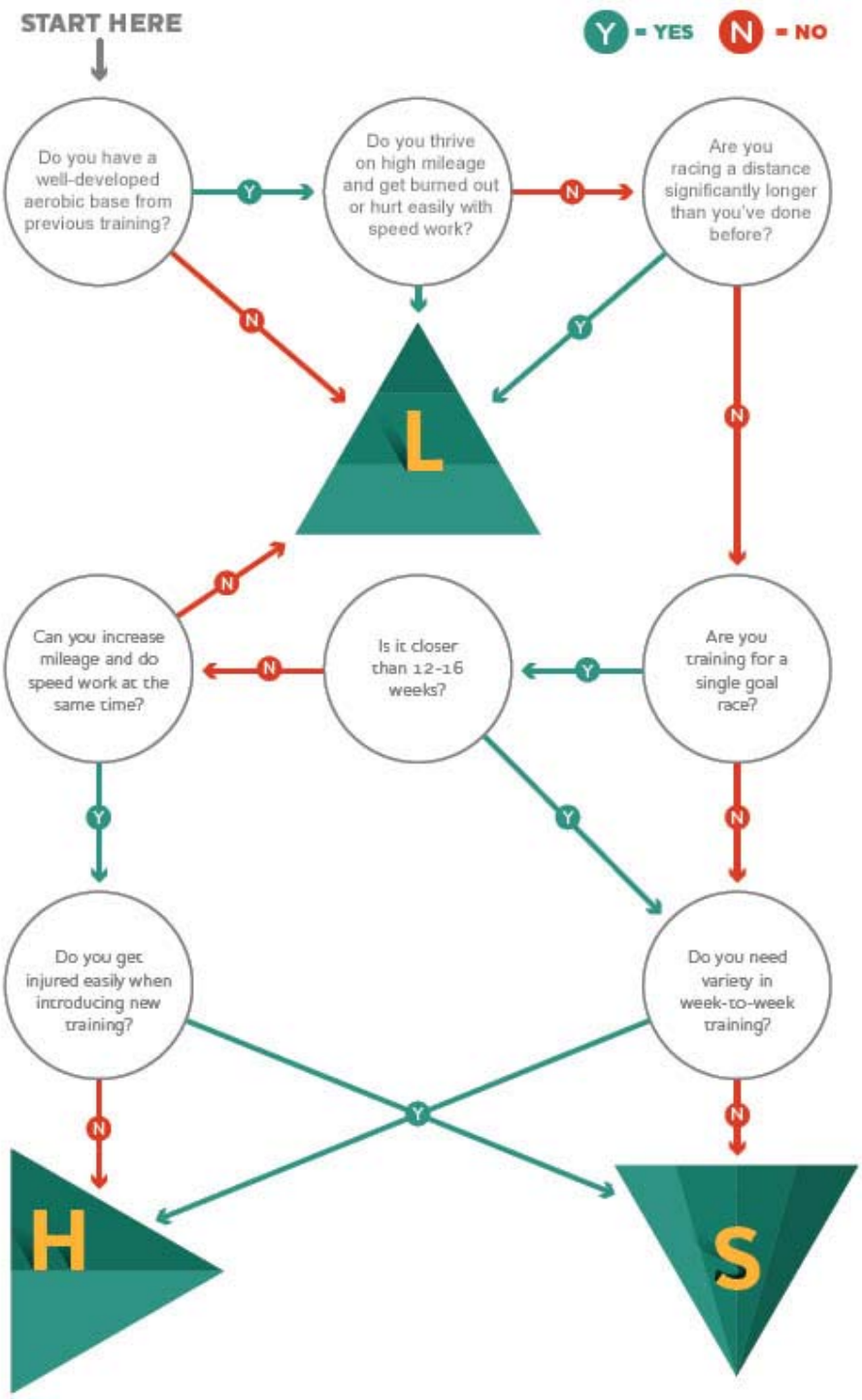
Hudson describes his system as "never getting too far from anything," a belief that he shares with Scott Simmons, who is the lead coach for the American Distance Project, based in Colorado Springs, Colo. Simmons has worked with 14 U.S. national team qualifiers and 16 Olympic trials qualifiers. But in Simmons' training model the pyramid is turned upside down. The point at the bottom represents a runner's current fitness. From there, lines representing different elements of training -- speed, endurance, strength, stamina -- expand outward simultaneously to form what Simmons refers to as a diamond.

"Anything that's important to racing success needs to be included all the time, to the right degree," says Simmons. What the right degree is depends on the current ability of the runner and the distance he or she is training for. In Simmons' system, the starting point for training is based on the current fitness and abilities of the runner in each aspect, rather than assuming starting from zero, and progressions are planned around the demands of the race.

Mileage increases throughout the training cycle in Simmons' program, concurrent with intensity. "As you adapt to training volume, we should be able to increase that volume," says Simmons. "We should have a generally ascending line. And the same is true for intensity."
This constant progression also means there are no distinct phases in Simmons' training. "When you're only focusing on one area, then you have a lack of development in another," says Simmons. Likewise, "If you're not training a system, then you're losing that ability."
In practice that means the training schedule from week to week can look similar on paper. "The workout schedules that I write may look boring because they're very repetitive," says Simmons. "But they're very specific to the race."

This type of plan also means that a majority of the training is at a high quality. Alisha Williams has seen great success since 2011 when she began training with Simmons, winning the 2012 California International Marathon and qualifying for the 2012 USATF track championships in the 5,000m with a PR of 15:09. She says that the increased workload was the biggest change when she started to work with Simmons. "My workouts are a lot longer," says Williams. "My long runs are considerably longer. The intensity on my distance days has also changed. I used to do everything [on the roads] somewhere between 7:30 and 8:30 pace, and that has picked up quite a bit."

WHICH MODEL SHOULD YOU FOLLOW?



THE CHOICES

Given the differences between these models, choosing the right one may seem daunting, but a look at the benefits and drawbacks of each can guide you. Which model is best for you depends on your experience, racing plans and temperament.

GAUGE EXPERIENCE

Pfitzinger says Lydiard's system may be the most beneficial if you have a limited mileage background. According to Pfitzinger, the greatest strength of the Lydiard model is that it recognizes that a big aerobic base has to be developed before the full benefits of other types of training can be gained. Because it prescribes aerobic development before focusing on speed, Lydiard's model guarantees that base is in place.

You should be able to experiment more if you have a developed mileage background. "It is not as clear that the pyramid approach must be followed strictly every year, particularly if a big aerobic base is maintained essentially year-round for many years," Pfitzinger says. Hashizume agrees that prior endurance development plays a big role in how a runner's training should be structured. "Consider very established, mature runners," he says. "Do they need to run 100 miles a week for 10 weeks to get a good aerobic base? Probably not. But if you're a typical American high school kid who doesn't even walk much at all, would he need specific base-building work? Probably."

Still, some athletes will benefit from a buildup of straight mileage even as they become more experienced. Some runners thrive on volume, gaining strength the longer they go but feeling beat up whenever they hit the track and peaking quickly with any up-tempo training. For them, the more miles the better. Given that they don't tolerate speed training well, it would be a negative to include it in the preparatory phase. But for athletes who are speed-oriented? "They need some kind of speed stimulus every couple of days or they get sluggish from doing more strength work," Hudson says. "Keeping some of that speed in keeps them what they are."

A final element of your experience to consider is injury history. "The body does not respond well to any sudden shifts in training, so the transitions [between phases] in the Lydiard training model need to be made with care," says Pfitzinger. The lack of those transitions in Hudson's and Simmons' programs may allow you to progress through the training cycle to your goal race with less risk of injury.

DECIDE RACING PLANS

Choosing a model with speed mixed in throughout the training cycle is more practical if you don't plan your goal races far in advance or prefer racing often rather than focusing on a peak goal. "You need at least 12 weeks to do a Lydiard cycle," says Hashizume. "Twenty-four is ideal." Because of the strict sequence of the phases in the Lydiard model, you aren't really race-ready until late in the training cycle, which leaves you with fewer racing opportunities.

Using the Lydiard model doesn't mean settling for only one race a season, however. Magee says that many runners following the Lydiard model perform well in races leading up to their goal race. "Often runners were setting PRs over all sorts of distances even before starting later speed work," he says of his training group under Lydiard.

The Lydiard system does have phases that prohibit racing, which cramps some runners' style. "Some people get antsy with that," says Hashizume. "They can't take, say, three months doing nothing but training."

If you like to race throughout the year, the Lydiard model may not be the best. Back in Lydiard's heyday, before the running boom, the sport revolved around one or two track seasons per year. With greater opportunities to race today, doing a large block of endurance work without any speed is not practical. Pfitzinger adds that by maintaining some faster running for most of the year, runners do not have as "low" a starting point as someone coming off weeks of strict endurance training. Having that higher starting point allows you to get into peak race shape more quickly, cutting down on the time necessary between important races.

Where the Lydiard system is practical is if your goal race requires more volume than you are used to, such as moving up to the marathon. "I continue to use [Lydiard's model] to ensure a big aerobic base first whenever a runner is substantially increasing training volume from one year to the next," says Pfitzinger.

For Simmons, though, mileage and intensity don't clash with each other; they progress hand in hand. So a goal race that requires more volume than you've previously done wouldn't require a different approach, just a longer period of time to allow appropriate progression from your current starting point.

CONSIDER TEMPERAMENT

Runners who quickly tire of long runs or intense interval sessions might be able to manage them better in a more balanced approach that mixes them throughout a training cycle, as Hudson suggests, rather than one that groups them into a single training phase, as in Lydiard's model. Pfitzinger and Sayenko agree that adding variety throughout training keeps runners engaged. Hudson's model "keeps the training more exciting, as all the training types are mixed together throughout the entire training cycle," Sayenko says.

Because neither Hudson nor Simmons believes in cutting out elements of training as the goal race approaches, that day-to-day variety continues throughout the training cycle. This allows you to approach a goal race having recently done workouts that play to your psychological strengths rather than focusing strictly on short, fast repeats that you may find difficult late in the training cycle.

PATIENTLY EXPERIMENT

Following the same system cycle after cycle can cause you to plateau, regardless of the training model. Lydiard revolutionized distance running because he wasn't afraid to experiment. That's good advice for your training, whether you choose to follow his model or not. Williams provides a parting caution: Be patient if you're looking to switch to a new system. Despite progressing slowly into Simmons' program, she found the first six months incredibly difficult. "I wouldn't say that I had a whole lot of success in those first few months," she says. "It's important to give your program a chance. Nothing happens overnight."