Distance running: a new approach to training

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Introduction

The importance of injury

Almost all runners experience injury at some point. For *most* runners, injury is the primary limiting factor on performance. In high school and university teams, it is not uncommon to have up to half a team injured at any given time. Injury is such an ever-present factor of distance running that many runners take up quasi-superstitious routines to ensure its prevention, such as over-protocolozing warm-up and cooldown routines, stretching, etc.

Elite runners are different

Elite[1] runners are exceptional. While much of what sets them apart from "normal" runners has to do with the physiological components which lend themselves to speed and endurance (muscle fibers, heart, lungs, etc.), an often overlooked characteristic that most elite runners possess (and most normal runners do not) is an *abnormally low risk of injury*. Many runners are naturally good; the great ones become so because they are able to tolerate hard training without succombing to injury.

The limiting factor on many elites' performance is fatigue induced by overtraining. For normal runners, injury occurs long before overtraining fatigue is ever reached.

[1] "Elite" means able to run 1500 meters in 3:40 (men) / 4:00 (women), or the marathon in 2:15 (men) / 2:35 (women).

Elite runners should not be copied

Most training plans for normal runners are essentially copies of elite training plans, but with a slight reduction in volume and intensity. If elites build a "base" during the off-season with long, slow miles, then so should normal runners, right? And if elites run 20 kilometers on an "easy" day between workouts, then surely 10 kilometers is appropriate for a non-elite?

The if-the-elites-are-doing-it-so-should-I attitude has caused far more harm than good among distance runners. High school junior

varsity runners often don't make it to their first cross country meet because they are nursing an injury from running too much volumne during the "base". Talented college athletes often make it part way through a season of hard training before having to taper off due to the appearance of multiple semi-injuries. Adult runners often cycle in and out of phases of improvement, injury, and regression.

Normal runners are different from elite runners, and their training plans should be different too. Not just in volume and intensity, but *in concept*. Whereas an elite training plans aims to maximize speed and endurance, a non-elite training plan should aim, first and foremost, to minimize the risk of injury.

More bang for your buck

In this book, I outline the three core dimensions of training for distance running:

1. Volume
2. Intensity
3. Concentration

Each of these dimensions is closely related to an athlete's fitness as well as her risk of injury, but not in the same ways. By identifying and quantifying the relationship between each dimension and its effect on fitness ("benefit") and on risk of injury ("cost"), we devise a new framework for training distance runners, radically different from the orthodoxy.

Though it is not expressly written for working professionals, busy stuents or stressed out parents, and does not explicitly stive to reduce the amount of time dedicated to training, a pleasant side effect of its focus on low volume, high-intensity and concentraing workouts into fewer sessions is that it fits well into the schedules of those for whom finding the time to train is a chief obstacle in reaching their goals.

This framework, whose philosophy can be summed up simply as "getting the most bang for your buck", is laid out in the following pages. Enjoy

The 3 dimensions of training

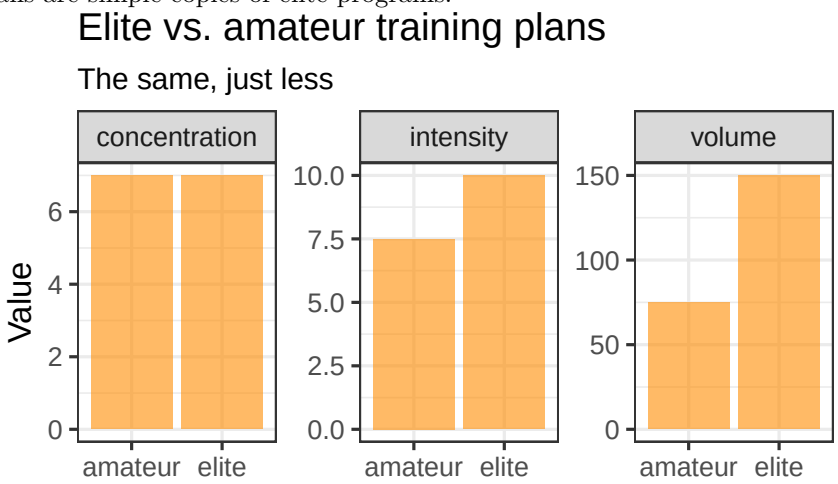
The effect that a training plan has on a runner is a function of the following 3 dimensions:

1. *Volume:* The total amount of running (measured in minutes, miles, kilometers, etc.)
2. *Intensity:* The speed of running (measured in pace)

3. *Concentration:* The ratio of total volume and intensity to number of sessions

An increase in any dimension makes a training plan "harder". And, in general, a "harder" plan leads to athletes who are both fitter and more injury prone.

Traditionally, in regards to our 3 dimensions, most amateur training plans are simple copies of elite programs.



For example, whereas an elite athlete marathoner might run 150 kilometers per week, a high school runner might cover 75 (volume). The elite may run perhaps 20% of their overall volumne at 5k pace or faster, and the high school runner will do identically. The elite will likely train 6 days a week, one session per day; and the high school runner - the exact same thing.

Most taditional training plans strive to identify the "sweet spot" - somewhere between nothing and 24 hours a day of intense training - where the risk of injury is acceptably low yet the training is sufficiently hard so as to induce adaptive response.