

## 200's: A Central Building Block in Training

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There is a central building-block function for 200 meter sections in training. The basis for this is both physiological and practical, as will become clear. There is also nothing new about this. Lasse Viren, gold medalist in both 5000m and 10,000m in Munich and Montreal, used 200m sessions well already in the 70's, both as building blocks and as time trials to check speed and fitness by heart rates at speed. My interest is in finding a training form which provides a reliable training stimulus to developing racing speed at a low enough metabolic cost to still allow for the high training hours required of any serious developing young skier.

You may be familiar with 200s in other forms already. 30 seconds gets you close to 200m, and various arrangements of 30 second workouts are widely used: 30/1+, 30/30s, 30/15s. In track it is easy to monitor the 200m sections, but in cross-country running and skiing, whether roller skiing or skiing on snow, measuring the ground is more cumbersome. As a result, the measuring is almost never done, and that omission, in my view, amounts to the biggest single hole in Americans' training execution. Despite sessions of 30/30s, say, the skier measures effort but never really knows his or her real speed.

That is like putting \$30 on the counter and then closing your eyes to what you are getting for it.

In skiing the gap in race pace between Americans and Europeans has not really improved much over the years, noble efforts and intelligence notwithstanding. With a few exceptions, it has remained between 9 and 12 seconds per kilometer. The main solution seems to have been to either go harder or longer and hope that would yield the desired race speeds. It hasn't, nor has a diet of occasional sprints or more hill work.

Let's also be clear about the connection between running and skiing. The top xc skiers are also very fast runners. Steira of Norway is women's track champion in 5000m, in 16:01. Therese Johaug has run 3000m in 9:35. Anders Aukland won the track 5000m. In the low 14s. Stephanie Boehler of Germany ran a very hilly 5km nordic team time trial course in Oberhof in 18:13, and the men of a number of countries are routinely in the 14s. Franz Göring of the German team is a former European Junior cross-country running champion. Jochen Behle, Head German coach, believes cross-country running results are a better indicator of fitness level even than roller ski trials.

My purpose here is to address that gap in our training approach. We need to be training for the speed we want and not have to settle for whatever speed we get. Above all, that will take some patience and restraint.

An example might best present the problem. I have a field which is essentially flat but with very mild undulations along a mowed track around its periphery. I have made the track 1 kilometer and staked every 200 meters. It is mowed for secure footing. A girl who has run 5 km in the high 19s would like to race the championships 6 weeks later closer to 19 flat. So we set that as her goal pace for the 200s: 19:00 divided by 5 = 3:48(228 secs)/km, divided by 5 again = :45.6 secs/200m.

Well warmed up she begins. I can time from the center of the field. She runs beautifully through 3 200s, jogging the 200 in between. "How were those?" I ask. "Felt nice," she replies. "Good," I go on, "your times were 38, 40, 39 so far. Could you run a race that fast?" "I'd like to," she says. So we look at

the implications of her speed. She is running 6 +/- seconds faster than goal speed (already faster than her best 5km to date). Multiply that 6 seconds by 5 200s, and she is attempting to practice a pace which is 30secs/km faster than even her goal pace. She might run one of those, but she'll never run two, and certainly not five. If we were to continue this way, her training session would be simply a frivolous waste of time, an arrow shot randomly into the woods nowhere near the target.

Her task is to slow down, learn what the goal pace feels like, then do, say 18-25 within a second +/- of that speed/200m. Several sessions of that approach, scheduled into base work and very short sprint work (8-12 secs), and her 5km times will begin to creep downward.

What's wrong with 400s, 800s, or miles? The first problem is practical: the distance/duration is too long for it to be possible to identify at what points in the run speed might have lagged slightly or been too fast (usually too fast in the beginning, too slow at the end). The speedometer needle never gets the chance to settle, where the engine runs most efficiently. And in the constant variation the athlete never really gets the chance to really feel what "on it" actually is.

The second problem with 400s and up is that the effort per run is great enough that it generally moves too far into anaerobic in the first place. Even with significant rest the athlete cannot accumulate enough time at the desired pace to have it establish itself comfortably in his/her neuromuscular responses as a "gear." Imagine those 6 seconds/200m too fast and double it. A single 400m 12-15 seconds too fast essentially terminates the workout, not to mention what an 800m or mile would do. (There is a place for such longer intervals, but only if the pace justifies them, not the effort, and can be sustained at the level of speed which is your goal.)

I have watched in pain to see some high school running workouts in which so many 400s or 800s were done, at full speed, that after the first 2 or 3 the times/pace dropped by 10-15%. Even 200s run too fast are counterproductive. In other words, the net effect of the workout was to tire everybody out and actually teach their bodies to go slower just to survive the training regime. Coaches were asking for PR's in training intervals, under the mistaken assumption that would train you better. Not surprisingly, kids submitted to that will improve for 3-4 weeks, then fade through the remainder of the season, get sick or injure themselves.

If you and your coach don't know what you're getting, every interval, for your money down, you're training in the dark. You're trivializing your body and its efforts and guaranteeing disappointment.

### **How to set up for 200m sessions.**

First: Remember the cardinal rule for speed training. **You don't start by just going fast.** You need to prepare pace work with 5-8 weeks of specific preparation of the type I describe in my article "Understanding Speed Training." This period of multi-paced and very short runs can easily be done in the spring and gets your legs and body attuned to comfort at speed.

When you begin the pace work, it will take a couple of sessions for you to settle on your initial goal speeds. They will start off by seeming comparatively slow. Don't worry. After a session of experimenting to see what your skier can do for 15-20 200s, establish a goal pace for the full 25 x 200m. Let's say it's initially (summer) :36 for classic, :34 for skating (5km in 15:00 and 14:10). You

should only need 1-1.5 secs for account for the slight ups and downs. For foot running the times per 200m will be slower. Use the same system: a little slower than best 5km time to start with.

Once a goal pace can be sustained through 25 repetitions (5km), with the skier/runner jogging the alternate 200s, you can progress in three different ways, depending on the point in the training year.

1. Go .5sec/200m faster. This may not seem like much but has distinct neuromuscular challenges. The main point is to make certain that the new pace holds. Above all, don't be in a hurry. Improvement will come from your base endurance hours and your coordination work as well. Preparing well for them is also a task for pure speed work, which I will address later. For the moment I would only note that adequate base speed means, with a flying start, :11-:12.5sec/100m for boys, :14-:15.5sec/100m for girls.
2. Shorten the rest by 5-10 secs by not slowing quite as much in between.
3. After 5-7 200s, try a 400 to see if you can double your 200 pace time, or come within a second or 2. If it does, go back to several 200s and try a 400 again. At some point you might try a 600m, but always go back to the 200s to make certain your speed stays alive. After a couple of months, try a kilometer in the midst of the 200s just to see how you're doing. It will be slower, but maybe not as much as you'd think. It's also a way to take another measure of you fitness. Whatever your ultimate combinations, make sure they accumulate to at least 5km.

How much accumulated distance/time at threshold is enough? That varies with age and training years, but if you're older and plan on seriously racing 30 km, it's logical to assume that in your training you would have done at least that far at threshold a good number of times. More of how you accomplish that with longer intervals (10 min+) in a later discussion, and with much higher base hours.

What have you accomplished? You have run/skied 5km at a goal pace in the summer already! And because the effort is so short, the cumulative metabolic load is never allowed to exceed anaerobic threshold. Race pace within aerobic limits, that is progress. That is why the Germans call this "speed endurance" and in the "development zone," "base endurance II." The Finns call it "vauhti-pace endurance."

You have been exercising now to habituate yourself, very gradually, to faster race speeds *throughout the entire training year*, with the associated development of the fast-twitch oxidative muscle fibers and aerobic enzyme activity.

You have also been developing the neuromuscular adaptations necessary to go at race pace at all. It is true that in order to go fast, you have to go fast; but in order to do that without compromising the hours you need overall is the key to any training program. And in order to truly appreciate the value of being able to go this fast, this much in normal aerobic training, you have to understand that sustainable speed is not just a matter of metabolism and power, muscle contraction. It is also matter of coordination at those higher speeds, which is not simply an extension of the movement mechanics of slower speeds, that is, the same techniques with just faster turnover. No, the coordination at those higher speeds varies, subtly but qualitatively, from slower speeds. That is hard to observe, but it is there, in every sport.

Because of the resistance of water, swimmers learned this in particular. Relative pressure gradients from head to foot change with higher speed such that swimmer alter their positions and stroke attitudes to gain and sustain speed. Before the 1984 Games in Atlanta, trainers for Amy Van Dyken built a drag in the pool to pull her faster forward than she was able to do herself. She learned the needed subtle alterations of coordination and ultimately was able to also subtract two breaths in her 50m race, and won gold. Closer to home, I towed a willing skier behind the snow mobile on a flat 600 meter track around school playing fields. He was skating behind the towed groomer, so his surface was perfect. With me supplying all the necessary power, but slightly more than his accustomed speed, by the end of the 600 meters his heart rate was nearly at maximum. He was an extremely fit, young man, and an excellent technician, but he became relatively inefficient once his zone of coordination was exceeded. This is what has happened to many Americans in international races: if the pace is slower, because of snow conditions or mass start race tactics, we have placed better. If we want to succeed in faster situations, the case with most races, then we have to become efficient and comfortable at the higher velocities. How to do that within the framework of the advancing yearly training hours one needs is the key to success. Really knowing how fast you are moving is also the prerequisite for doing 30/30s on skis in varied terrain without having to measure the sections. The 200m system can be a productive and enjoyable part of that plan.