Sprint Training for Distance Runners
By Steve Magness

A topic that has come up a lot lately is sprint training for distance runners. A recent flotrack workout wednesday (here) and Jay Johnson's blog (here) are two recent video's showing distance athletes doing pure speed work. I thought I'd throw in my two cents.

Sprint training for distance runners is essential, but few coaches utlize it. The reason given is usually injury concerns, but, like almost everything, when done correctly the injury risk is relatively low. What are the actual benefits to sprint training for distance runners?

One of the most important is in terms of muscle fiber recruitment. Sprinting is one of the only ways in which a distance runner is going to recruit a very large amount of his harder to recruit FT fibers. Why is this important? Because in learning how to recruit these muscle fibers, you are increasing the recruitable fiber pool. Having those fibers available to jump in and do some of the work when those ST fibers are being overwhelmed will help an athlete sustain his pace for slightly longer. Secondly, it allows for the athlete to more easily recruit these fibers at the end of a race when it is time to kick. Lastly, a distance runner rarely stresses his CNS to such a high degree in such a short term. Since, everything begins and ends in the brain and CNS, doing some work to deal with a high stress on the CNS could help with central fatigue.

Besides the muscle recruitment aspects of sprinting, there are mechanical benefits too. Sprinting provides an excellent platform to work on and improve running mechanics. You will find few athletes who sprint while landing on their heel like many do during distance running, so translating the mechanics of sprinting while landing (more) correctly to distance running can be done. Also, sprint training can also improve the bodies elastic energy storage and return system. The body will become better at stiffening the lower leg upon impact, thus improving energy storage and return. In addition, sprinting can improve ground contact time for distance runners.

Lastly, when building a base we generally think only in terms of aerobic running. However, a base is the foundation on which we build more specific work on. An aerobic base allows a runner to complete workouts that are more directly connected to his race that he wouldn't be able to complete if he had no foundation. Running lots of easy runs builds the foundation for doing higher end aerobic workouts such as thresholds or 10k pace work. Similarly, it allows for a higher volume of running, in terms of miles per week, and during workouts (a runner can handle 6x800 at 3200 pace instead of 4x800 for example).

A mechanical or neuromuscular base is also needed. Pure speed work provides the foundation on which to build upwards towards race specificity. It provides a mechanical foundation in terms of good running mechanics, and a neuromuscular base in terms of the muscle recruitment mentioned above. With a base of pure speed work, you can then translate that into speed endurance, and then finally into anaerobic speed endurance. In terms of workouts, the 6x60m sprints you do now, allows for translation of that into 6x150m speed endurance session, which finally leads into some 300's at quick speeds that may serve as anaerobic speed endurance for an 800m or 1500m runner. Without that initial base of pure speed work, those 300's which are essential for the 800m or 1500m runner, won't be as effective.

After going over the why's on sprint training for distance runners, it's time to address the practical part, how to implement it. The most important part is probably to actually teach someone how to sprint. Correcting mistakes early and establishing a good foundation on sprinting mechanics early on will save a lot of trouble later, not to mention make for a quicker progression. I've talked about running mechanics on this blog a couple times, so if you need a refresher on my views, search the blog.

It goes beyond just correcting mistakes though. Distance runners need to learn how to truly sprint. It is our nature to try and push harder or increase the effort when we want to run faster. However, this does not work for sprinting. There's a point where trying to increase the effort does more harm than good.

When you see most distance runners sprint, they really try and bear down and force it. Compare this to the relatively relaxed sprinting of someone like Usain Bolt. Teaching the concept of relaxed sprinting is key. To do this, I suggest having runners do their initial sprint training at sub-maximum speeds. A good speed is usually around 400m pace. It is still fast, yet since it is only 100m, the athletes can still get the concept of relaxation while moving fast. As they grasp the concept, increase the speed while trying to get them to keep the same relaxation.

Ideally, this step of teaching relaxed sprinting or relaxed fast running is the first step. However, in many cases, such as when working with a large group of HS runners, this can't be done. It is not the end of the world if you skip this first step. Why? Because, with the progression I've outlined below, it is very easy for runners to kind of discover how to sprint with only minor coaching cues.

Progression of Sprint Training

The first step is Hill Sprints. These are becoming exceedingly popular for distance runners, thanks in large part to Renato Canova and later Brad Hudson. They are becoming popular because they work. It's funny how it almost seems like a trend or a fad to do hill sprints now. In reality distance runners, and even more so, sprinters have

been doing short hill sprints for a long time, it's just never been popularized as a key to training.

Hill Sprints work as a great introduction to sprinting because it is almost impossible to get hurt doing them. In addition, it's almost impossible to sprint wrong while doing them too. They really emphasize hip extension and it's very hard to land on your heel while sprinting up a hill.

The slope of the hill depends on the purpose. A steeper slope for more strength and a more gradual slope for speed. Since these are acting as an introductory for pure speed work, I tend to suggest a moderate hill initially and progressing to a more gradual one as time goes by. For the above reasons, I tend to suggest a more gradual hill than the one that most people have seen in some of Brad Hudson's group training videos. Why? Once again, because I'm trying to use this as a transition for pure speed (in this context) and not necessarily as a stand alone workout in itself.

Start out with only a handful (4-5) of sprints that take 8sec or so. FULL RECOVERY in between is essentially. That means at least 2min, probably more. To keep myself and athletes I've worked with from doing these with too little recovery, we used to play a rousing game of throw the rock at a pole to see who could hit the pole the most times during the entire hill sprint session. It seems kind of stupid, but it served it's purpose of keeping recovery long enough. The sprints are initially so short that most runners don't feel fatigued after the first couple, so they rush the recovery. So, to keep them from doing this, throwing rocks at a pole served it's purpose.

These hill sprints start during the base period and (for HS kids) are done once a week. Each week, the number of hill sprints is increased until I get to about 10. Sometimes the length is also slightly increased (from 8 sec to 10 sec).

After several weeks of hill sprints, the transition then shifts to flat sprints.

Flat Sprints

The Hill sprints serve to prepare athletes for flat sprints. These are, preferably, done on the track. For HS kids, I generally tell them to keep these at just below 100%. This prevents kids from "forcing" the speed and overstraining to run fast.

To start with, the length of these sprints are generally 60m. Once again, full rest is needed, even more than with hill sprints. After building up to 8-10 hill sprints, I normally start off athletes with 4 or so flat sprints.

Like with everything I recommend, there is a gradual progression. To begin with, athletes will alternate between doing hill sprints and flat sprints. After a period of time, I might shift to where one is more emphasized, but it depends on the season and the athlete. For example, before track season if we are really focusing on improving pure

speed, we might do flat sprints every week for a short period and drop the hill sprints all together.

Similarly, there is progression within the sprints themselves. The number increases from 4 up to 6 or so, and then the distance increases from 60m to 80m and finally 100m.

Putting it together: Speed Endurance

After several weeks (once again, depending on the season and the emphasis) we start a transition to speed endurance. What this means is that we add one or two speed endurance reps at the end of a pure speed session.

These speed endurance reps can be done after both hill sprints and flat sprints. It depends on the training emphasis, goal, and time of the year to which kind of sprints we will use. The general principles in adding speed endurance is the same for both types of sprints. I cut back on the pure sprints and initially add one rep of speed endurance at the end. For HS, I generally cut back from 10 to 5 or 6, and add in one 15-20sec sprint uphill at the end. For flat sprints, we cut back from maybe 5x100m to 3x60-80m with one 150m full sprint at the end.

The progression for speed endurance is similar to the other sprints. I will add one or maybe two more reps (seldom beyond that, unless speed endurance is the emphasis), and will slightly increase the length of the reps (from 150m to 200m, and maybe 250m).

What does this all look like?

I've mentioned many times that what you do in terms of speed and speed endurance training is dependent on other factors, so it is impossible to give a generic answer to how it should look for every athlete. The real answer is that it depends on the athlete and what you are trying to accomplish with that athlete. That determines how much you do, how long you do it, and when you do it.

Below is a generalized progression for an athlete before track season. This is done to show how things kind of blend together and progress. These are done once a week (in my training schedules, there done as the midweek, wed., workout most of the time, and done either following most of a distance run, or with a long warm-up/cool down.). Also note, this is a LONG build up, for HS kids, I use a shorter build up most of the time.

6x8sec HS
8x8sec HS
10x8sec HS
4x60m flat sprints
8x10sec HS
5x80m flat sprints

10x10sec HS
2x60m, 2x80m, 2x100m
8x10sec HS + 1x20sec
4x60m, 1x150m
8x10sec HS +2x25sec
2x60, 2x80m,100m, 150m, 200m
4x100m, 150m, 200m
Maintenance- Every 2-5wks (depends on athlete/season)- depends on if it's more speed or speed endurance, but an example: 3-5x60-80m sprints, 2x150m OR 2x60m, 100m, 150m, 200m.