

Building a strong base is the key to achieving optimum running fitness

by Andrew Hamilton in Base endurance training

Specialist running journalist Andy Barber talks to top endurance coach Nick Anderson

Our understanding of the physiology of running is increasing all the time. Participation in running and large road races in the UK has risen, but winning times are not significantly improving. This implies that improved training knowledge and understanding is not reaching the training routines of most runners.

Nick Anderson is a British coach who has guided athletes to medals at the European Cross County Championships. He has also coached eight women to complete marathons in less than 2hr 40min. Nick also works with recreational and club athletes through his coaching services company (www.fullpotential.co.uk) and all but one of these athletes who ran this year's London Marathon clocked a personal best.

Runners can become too obsessed with steady running and faster sessions

Nick says that successful endurance coaching – and therefore producing successful athletes – is all about the application of fundamental principles. Unfortunately, these principles often seem not to be applied. He believes that runners can become too obsessed by steady running and fast sessions, as he says, “They spend a lot of time going out of the door and just running how they feel, then calling that ‘steady running’”. He went on to explain that distance runners often do sessions that are at race pace or quicker than race pace. He believes what they should actually be doing is building a base of long, slow distance work first. He also believes that many runners never allow themselves to recover from harder sessions.

The importance of threshold training

Nick believes that runners don't understand the need for threshold running and don't spend enough time running at threshold – this is running at 80-85% of maximum heart rate (HRMax). Instead the coach believes that they spend a lot of less productive time running at 70-75% HRMax. And he sees too much high end anaerobic training done – quicker than 85% and up above 90% of HRMax.

Nick says the impact of these training flaws are obvious on the runners' performance, "They are always tiring in the second half of their races, they are never fully recovered from their harder sessions, they can't glue together interval after interval and they can't run quick races"

Maximise your threshold

So what does Nick recommend? The coach has a strong belief in the need for running at 'threshold' (or the lactate turn point), the pace around which blood lactate levels go from being relatively stable to accumulating rapidly. "I believe the athletes should be doing blocks of threshold training that incorporate sessions of continuous running at threshold every week (this is because) ... at threshold you don't have such high lactate levels and the damage to the muscles is less, as the contractions are not as hard, so you can do it more regularly. If you increase the volume of work at this pace you are able to run faster for longer."

Kenyan, Moses Kiptanui broke world records at 3k flat, 3k steeplechase and 5k, as well as winning a world junior title at 1500m. Nick noted what Moses had to say about his preparation, "Moses Kiptanui said that no matter what distance he was racing he always wanted to be in personal best shape for 10 miles and we know that 10-mile race pace is very similar to threshold pace." Effectively Kiptanui always aimed to be in shape to run very well at around lactic threshold.

Nick illustrated the principle with the example of preparing for a 10k, "The elite runner faces the same dilemma as the beginner 'How do I run 10 x 1k without recovery at my target pace?' The minimum they need to be able to do is 30-40min at threshold. If at the start they can only run 20min at threshold, then we need to come up with some solutions, to enable them to do so for longer. We can start with 2 x 10min, then 5 x 5min at threshold, then 3 x 10min, then 20min, plus 10min and before you know it we will have arrived at 30min at threshold. We are able to visit this once a week. As we get nearer to the race that work will probably stay the same."

The importance of building a base

To begin with, though, a simple base of endurance is required, “After a few weeks of relaxed running (at the start of the training year) we will build the volume with some steady running and recovery running. After a few weeks we start to incorporate threshold work. It might be 1 x 20min or 4 or 5 x 5min workouts and we gradually build on these.”

Another Kenyan influence on Nick’s endurance training approach is that of ‘continuous hills’. This work is not done on a steep gradient, but on an incline that requires little alteration to running technique, whilst the threshold effort is maintained up and down the hill. “The hill run takes 60sec to 90sec to complete. We do blocks of 5min to 10min and look to build up to 30min of continuous running. Kenyan superstars Moses Kiptanui, Paul Tergat and Daniel Komen have thrived on this type of running. They would do anything from 30min to 60min throughout the winter.”

In terms of running technique, Nick explained that, “...the runner should lean forward and flow down the hill. You must not dig your heels in. If you have to alter your running style dramatically then the hill is too steep.”

Getting the long run right

The next fundamental is getting the long run right. As Nick says, “Sometimes these should be slow because the runner has had a hard week and the run is just being used to accumulate more ‘time on their feet’ to improve muscle capillarisation, energy transfer and muscular endurance.” (Repeated endurance training will increase the number of muscle capillaries – capillaries are like oxygen-carrying highways, the more miles you have of them, the greater the amount of oxygen that will be transported to and used by your endurance muscles.)

Discussing faster paces Nick explains, “At other times, especially for athletes preparing for a full or half marathon, we want to put things into the long run such as efforts at threshold and blocks at marathon pace. That could be a 2hr 30min run where people do the last hour at marathon pace. Or a 90min run with the last 30min at threshold. You have got to take some time to get to that level of training, but you have got to aspire to do that.” In terms of physiological justification, Nick believes that the reason for doing this within long runs is that in the half and full

marathon events there are glycogen storage issues. Physiologically the runner is switching from trans-fatty acids (fat fuel) to carbohydrate as the race progresses. Their body then has to 'learn' to use the former fuel source preferentially and become more 'fat fuel efficient'. Carbohydrate – in the form of glycogen – can only be stored in the body in limited amounts (approximately 375g) and can be used up quickly, especially if too fast a pace is attempted. As indicated, training is designed to maximise the contribution of all the body's fuel sources and thus extend the runner's endurance potential.

Nick also noted the importance of being able to maintain good running form when the going gets tough. "There is also the issue of being able to maintain form and pace in the latter stages of a marathon, for example, when you get to 20 miles and are feeling sorry for yourself you have to have been there and know what to do."

Incorporating faster running within the threshold-based sessions

Rather than constantly include high-intensity interval sessions, Nick incorporates faster running within threshold-based sessions. The coach gave an example of a session performed by British internationals Andy Vernon and Keith Gerrard, "People worry about losing leg speed by doing running economy work. But Andy and Keith will do 30min at threshold, take just 2 minutes' recovery and then hit the track to do six laps where they run 200m in 30sec and then 200m in 45sec. They stay in touch with leg speed when fatigue is in the legs. Andy has always got a kick at the end of a race. It is because he is used to running economically and then switching it on at the end."

Introducing race pace and VO2max work

Once a good level of threshold work has been achieved, race pace and VO2max work can be introduced (VO2max refers to the maximum aerobic capacity of the athlete). The stage at which this is incorporated varies according to its relative importance and the other elements it needs to be incorporated alongside. For example, it is likely to begin six to eight weeks before a marathon, four weeks before a 10k and from late April or May if the target is the track season. As Nick explains, "Using our 10k example we will want to do efforts at target 10k pace. A

typical session is 8-10 x 1k, but we could start with 6 x 1k, so we start at target race pace. We want to get familiarity with race pace and to work on VO2max. VO2max work is quicker than race pace in the final phase. For the faster sessions we might do 5k race pace work. We can't do 10k of volume at 5k race pace. We're looking to do 6k of volume."

These sessions might be 4 x a mile, 3 x 1500m or 6 x 1k, or 12 x 400m starting from a 100m jog, but the exact session and recovery will depend on the ability of the athlete to work at the relevant pace. Throughout this period the threshold sessions are maintained once a week and the need for recovery running is emphasised: "After a session of faster running we have a recovery run, whether that is on the same day or the morning after. That would be at about 65% maximum heart rate. Twenty-four to 36 hours after the session you are ready for steady state work again. Two or three days afterwards you are ready for another more intense session."

Getting to the start line...

It is this later stage of training that adds the final dimension of fitness. The athlete is ready to ease down and race at a high level, but what is critically important is that the underlying base of fitness has been patiently and systematically built up to allow this stage of training to be completed effectively. The need for recovery between more demanding sessions, including the long run, has to be recognised. This means recovery running has to have its appropriate place. When this has been achieved, the athlete can line up to race knowing an appropriate mix of training has been put undertaken, that they have optimum running fitness and can be confident of a good performance.



About Andrew Hamilton

Andrew Hamilton BSc Hons, MRSC, ACSM, is a sports science writer and researcher specialising in sports nutrition. A lifelong endurance athlete himself he has worked in the field of fitness and sports performance for over 30 years helping athletes to reach their true potential.