

Knowing as transforming: training methods in distance running

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Abstract

Athletics training is a field of practices where different approaches developed over the years in various countries and cultural contexts come together, and are adopted, integrated with other approaches, or even substantially transformed in a pursuit to achieve better performances. Therefore, training methodologies are originated locally, and subsequently, through the successes achieved by the athletes who follow them, they gradually come to be used by other athletes all over the world as resources in their own training programmes. However, rather than diffusion, there is often transformation in this process of displacing. On the basis of the knowledge athletes and coaches develop over the years about their individual reactions to different training approaches, there is adaptation and transformation when training methods are displaced and enacted by different athletes. This paper analyses the evolution of training methods in distance running, and highlights knowing as a local enactment that involves a process of displacing and transformation.

Keywords: athletics; training methods; knowing; enactment.

Suggested track: G. Practice-based perspectives on knowledge and learning

Introduction

The traditional view of knowledge as a substance possessed by individuals, and located at a mental, intra-cranial level, has been challenged by practice-based approaches.

The practice turn in contemporary theory (e.g. de Certeau, 1984; Bourdieu, 1990; Turner, 1994; Schatzki et al., 2001) has had an impact on how to approach knowledge and learning. Rather than an individual possession acquired through particular cognitive capacities, which organizations then try to convert into an active of their own through some form of codification, practice-based studies of knowledge in work and organizational settings explain how knowing is achieved in the course of practice (e.g. Nicolini et al., 2003). Therefore, rather than knowledge as a noun or something that exists already 'out there' for people and organizations to acquire, it is knowing as a verb or an active process of engaging in practice, as 'the Other' of doing, that needs to be accounted for (Blackler, 1995).

This paper analyses the main developments in training methods in distance running (from 800 metres to the marathon, broadly speaking) up to the end of the 1960s, and highlights the extent to which the various methods that emerged over the years incorporate elements from other methods already known at the time. It also shows that knowledge about how to train develops gradually on the basis of what athletes and coaches experience in their daily training routines and the performances they manage to achieve. Therefore, the way athletes and coaches train builds not only on what is known about the various training approaches, but also on what they know about how they react, physically as well as mentally, to the training approaches they experiment.

Knowing in Practice

Practice-based studies of knowing have been developed through the lenses of different, heterogeneous approaches, each of them with distinct intellectual roots. Amongst the more prominent ones are the community of practice perspective, the interpretive-cultural approach, the cultural-historical activity theory, and the so-called actor-network perspective (Nicolini et al., 2003). Despite their intrinsic heterogeneity, these approaches converge on the emphasis they place on uncovering the organizing processes through which knowing is accomplished. Knowing (or, rather, knowing-doing), they suggest, is a mediated accomplishment: it is situated within a spatio-

temporal context, and the specific characteristics of settings in which practices take place play a crucial role in shaping the way knowing unfolds; it is distributed within a socio-technical system between people and artefacts, rather than a purely human achievement, therefore requiring to understand how people and technology co-implicate each other in the course of practice; and is collectively developed rather than a solo achievement. Moreover, these studies point out that the entire body (with senses and emotions) needs to be brought into the picture, rather than confining the analysis to detached brains. Finally, they highlight the provisional and contested nature of knowing, always subject to be reversed and reconstructed (Blackler, 1995).

Training Methods in Distance Running

The English writer and philosopher Thomas Carlisle ran 17,300 metres in one hour, in 1740. This is the first known record for one hour running. Later on, the Scottish captain Barclay Allardyce (1779-1854) won a 1,000 miles race in 41 days and 16 hours, and Foster Powell ran the 647 Km distance between London and York in 5 days and 18 hours. Athletics racing, at that time, was intimately associated with great, uncommon achievements – the equivalent, nowadays, to sailing around the globe, or expeditions to the Poles, for example. In the following years, races over shorter distances – the mile and its fractions (e.g. a quarter mile, half mile, two miles) – were introduced, and times started to be taken with chronometers, that is, in seconds and fractions of a second, rather than in days and hours. In 1833, the first known book on athletics was published in England, by Walter Tom. The importance of the cardio-vascular functions for the improvement of resistance was already highlighted, alongside the use of massage, breathing exercises, and appropriate diet – which was inherited (and adapted) from the Hellenic period. The first systematic approaches to training in this period included long, slow sessions of continuous running, on the road and off the road. The rationale was that those who were able to race over long distances would also be able to race over shorter distances. Before that, the athletes used to train once or twice a week, running the distance of the competition they were preparing for, at their best performance level. It was when they started thinking about training for long distances that the first important qualitative improvement was observed. This 'duration method' was dominant in the UK until the First World War.

Meanwhile, the achievements of the British runners were echoed in the United States, where in 1850 professional athletes already used to race against each other. Often, the

winner was the athlete who managed to run a longer distance – a sign of the influence of the ‘duration method’. Later, a variation was introduced. Building on practices used for preparing racing horses, athletes started to run two or more fractions (usually half or a quarter) of the racing distance, with recovery periods between repetitions. The idea was to improve the racing rhythm, which was not possible through the ‘duration method’. It can be said that this fractioned training or ‘tempo-training’ (since it was monitored through the use of the chronometer) is at the basis of all sorts of interval training subsequently adopted, as discussed later on in this paper. However, this new method did not put duration training aside. Rather, they complemented each other, and the two were combined in the preparation of the champions in that period. Using this approach, the Americans dominated largely international distance running in the first decade of the twentieth century. For example, James Lightbody and Melvin Sheppard became Olympic champions over 800 and 1500 metres in 1904 and 1908, respectively. Literature advocating the approach gradually emerged in America, a remarkable one being a book published in 1913 by Mike Murphy, in which athletes were advised to train at least 8 to 10 weeks before entering into a competition. Middle and long distance runners were also advised to initiate training in winter, over cross-country, in order to prepare for competitions in spring and summer.

Meanwhile, athletics started to become an organized sport all over Europe – first in France, with the creation of the club Racing Club de France in 1882, and later on in Belgium, Germany, Switzerland, and Hungary. With the introduction of the Olympic games in the Modern Era, in 1896, the official competitive distances were established, the metric system replacing the mille system used initially by the British. At the same time, attempts were then made to create an International Federation for athletics, which was eventually established in 1913. It was then for the International Federation to validate the national records, which took place just before the war started. With the introduction of the record, a new era in athletics was born.

The American hegemony was later challenged by the Finnish. In 1912, Kolehmainen won the 5000 metres in the Olympics, and subsequently Paavo Nurmi dominated totally over middle and long distance running between 1920 and 1930, achieving four Olympic titles and all world records in distances between 1500 metres and 1 hour (that is, 1500 m, mile, 3000 m, 5000 m, 10000 m, and 1 hour). Nurmi’s coach, Lauri Pihkala systematised the approach like this: “training must be short but intensive. It is necessary to move from long, slow training to another which puts more demands on the articulations and the lungs”. Thus, this approach advocated breaking with the

previous methods, especially the British one, which was exclusively aerobic. By introducing much more intensive, 'quality training', there were substantially greater organic adaptations. Other innovations introduced by Pihkala included the notion that training should be uninterrupted (or with few interruptions) over the year; dividing the athletics season in four cycles - preparation, spring, summer, and recovery; dividing between general and specific training; the notion of alternation between effort and recovery – over the day, the week, and months; and the notion that volume training should precede intensity training. For all this, Pihkala can be regarded as the first great innovator in the history of athletics training. In fact, his approach was not restricted to a different emphasis on training, but comprised a conceptualisation of training beyond a training session. Also, it must be said that the above principles are nowadays still defended and applied all over the world.

In the 1930s and 1940s, the Finnish approach was at the basis of a new training method developed in Sweden. 'Fartlek' (meaning playing with speed) was initially created by Omer and subsequently developed by Olander, and consisted in combining – and alternating between - endurance, rhythm and speed in a same training session, in continuous running in the nature, and over varied paths. Like the Finnish approach, it stressed the importance of 'quality training', but simultaneously added the quantity dimension, and training sessions could last between 30 minutes and 2 hours. It suggested that the emphasis should alternate between quantity and quality, and that intensity should increase gradually in the faster parts of the sessions. Also like the Finnish approach, the new method involved much more than devising the contents of training sessions. In fact, 'fartlek' embodied a naturalist philosophy as it advocated that athletes should not make any pre-conceived efforts, but should rather follow their intuition and do what they were capable of at the moment. This prompted criticisms that it lacked the necessary systematisation, whereas its advocates claimed that, on the contrary, it was the ideal training method as it allowed athletes to develop an appropriate understanding of their own personal characteristics. 'Fartlek' became especially popular as a result of the achievements of Gunder Hagg and Arne Anderson between 1942 and 1945. Following the approach, the two Swedish rivals managed to break several times the world records in distances between 1500 and 5000 metres, challenging the notion of human physical resistance at the time. Hagg, in particular, had a remarkable achievement: in less than three months, between 1 July and 20 September 1942, he broke seven world records (1500 m, twice in the mile, twice in 2000 m, 3000, and 5000 metres). However, in the decade following their quitting of

athletics, their world records in those distances could not be improved by other athletes using the 'fartlek' method, and as a consequence it gradually started to be discredited.

In parallel with 'fartlek', a new training method started to emerge in Germany just before the Second World War. Developed by Waldemar Gerschler, it was based on both the Finnish approach and 'fartlek' (i.e. emphasis on 'quality training', and alternation between quality / intensity and quantity / slow, so as to allow the body to recover between intensive efforts), and brought the athlete back to the track, therefore differentiating from the naturalist philosophy of 'fartlek'. The new method started to fascinate the world of athletics mainly through the achievements of the German athlete Rudolf Harbig, who, training under the supervisor of Gerschler, broke the world records for the 400 m, 800 m, and 1000 m, between 1939 and 1941, thereby challenging the hegemony of the American athletes in those shorter distances. Athletes from all over the world started to follow with increasing interest the new German 'school of training', based in Friburg. Initially, Gerschler recommended repetitions (usually between 8 and 12 in a session) over 100, 250, 300 and 500 metres for sprinters and middle-distance runners, and over 300, 600 and 1200 metres for long-distance runners. He also defended that winter training should not be very different from spring and summer training, that is, the athlete should train at a competitive rhythm in winter as well. These two principles caused perplexity at the time, as there wasn't a differentiation between preparation and competition phases during the season, and because it was hard to believe that repetitions over so short distances could in fact improve an athlete's resistance.

With the War (in which Harbig himself was killed in Malta in 1944), sports in general took a 'back seat', and Gerschler's method was temporarily 'forgotten'. However, the achievements of the Czech athlete Emil Zatopek, between 1947 and 1953, led to important new developments in the method. Zatopek had been influenced by a pre-War German magazine in which Gerschler's method was outlined, and applied to his long-distance running what Harbig had done for the shorter distances. However, instead of simply copying Harbig's training, Zatopek adapted it: he reduced the distances for the repetitions (200 and 400 m were the standard distances used for that), and increased the number of repetitions (40 times 400 m – and even 60 repetitions sometimes -, ran with moderate intensity, in a single session, with a short recovery interval between repetitions, was common in his training). It should be noted that his adaptation of the Gerschler's method was based on his own personal experience only, rather than influenced by any sort of scientific evidence. The results Zatopek achieved were

astonishing – 18 world records in distances from 5000 to 30000 metres; Olympic champion in the 5000 m, 10000, and the marathon in 1952 Games in Helsinki (a treble which was never repeated by any athlete since), after a previous Olympic title in the 10000 m in 1948.

Influenced by Zatopek's experience and what he managed to achieve through adapting his method, Gerschler later improved his own initial version. Working together with the physiologist Herber Reindell, he introduced several modifications (although maintaining the general idea behind the method): shorter distances for the repetitions; a rigorous control of intervals between repetitions; the pulse rate; the intensity of repetitions; and the number of repetitions. Through their joint research, Gerschler and Reindell concluded that the main effects of 'interval-training' were produced during the interval between repetitions rather than during repetitions. Hence the term 'interval-training' adopted to designate the (modified) method, intervals between efforts being called 'active pauses' or 'profitable pauses'. After a long research period in Friburg, during which thousand of athletes from several countries were monitored, the basic 'toolkit' of 'interval-training' was then established: distance for repetitions (100 m and 200 m; 400 m only occasionally in order to break monotony); interval (30" to 60" for 100 m, and 70" to 90" for 200 and 400 m); time to cover the distance in each repetition; number of repetitions (up to a maximum of 40x100 m, or 30x200 m, or 25x400 m); and action during intervals (always 'active intervals'). For the first time science entered into the field of athletics training – a link ever present since.

The diffusion of the 'toolkit' and basic rules of 'interval training' then achieved such a level that, until the end of the 1950s, any non-controlled and non-measured (in terms of pulse rate, duration of efforts, intensity and number of repetitions) training session was dismissed as 'outdated' and 'non-scientific'. Other sports too (e.g. cycling and swimming) gradually started to adopt it. However, this euphoria was followed later on by important criticisms. It was argued that 'interval-training' produced a mechanisation (biologically as well as mentally) of athletes, and that training around the track all the time was unbearably tedious. The romanticism of athletics, which was arguably present in the previous methods, was lost, and the practical results produced did not justify such 'un-human, monotonous' training, the critics said.

Meanwhile, several athletics coaches who had been influenced by the initial version of the 'interval-training' method had gradually started to introduce some adaptations themselves. It was the case of the Hungarian Mihaly Igloi, who integrated 'interval-

training' and the Swedish 'fartlek' for 'quality training', and complemented it with a high volume of training (more than 200 Km per week sometimes). He also divided daily training into two sessions, and designed training sessions according to the individual characteristics of each athlete. Furthermore, Igloi also controlled the private life of his athletes with regards to what to eat and drink, and ensured that they followed his indications regarding sleep. Following Igloi's approach, Ilharos, Tabori and Rozsavolgi broke several world records in distances ranging from 1000 to 10000 metres between 1955 and 1956. At the time of the 'Hungarian revolution', in 1956, Igloi migrated to the United States. Soon after, he started to influence the traditional American coaches, thereby contributing to substantially improve the results achieved by American distance runners. A visible effect of that influence was the victory in the 5000 m in the Olympics in 1964 by Bob Schull. In other countries, too, various new methods were developed on the basis of 'interval-training', namely in the then Soviet Union, Vladimir Kutz being its most emblematic athlete by winning both the 5000 and 10000 m in the 1956 Olympics, and breaking the world records in both distances.

Meanwhile, athletics – distance running, in particular - gradually becomes a global sport, extending far beyond Europe and the United States. In 1960 and 1964, the Ethiop Abebe Bikila wins the marathon race in the Olympics, thus becoming the first African distance runner to succeed at that level. In Oceania, too, important developments started to emerge. The early 1960s saw the beginning of a new era in the field of distance running through the transformations introduced by both the Australian and New Zealand 'schools of training'. The two advocated a 'return to nature', like 'fartlek' previously, but, in opposition to the latter, placed a strong emphasis on systematic planning, alongside the increase of 'quality training'. The Australian school, through the charismatic and eccentric coach Percy Cerutti, had as its main features high volume training (around 150 Km per week, over highly varied paths) in the preparation season, leaving fractioned training (i.e. variations of 'interval-training') to the competition season. A particularly distinctive feature was the emphasis placed on increasing intensity – as soon as the athlete became comfortable with a given training workload, Cerutti immediately demanded an increase in the intensity level. The popularity of the Australian approach was particularly enhanced by the performances of athletes like Herb Elliot and Ron Clark, including several world records each, and a victory in the 1500 m in the Olympics by Elliot. The New Zealand approach that followed was strongly influenced by the Australian one, and essentially combined what was regarded as its positive aspects and the previous insights from the Finnish,

Swedish and German approaches. That is, it represented an attempt to assemble in a same training approach the 'positive' elements from all contributions. Arthur Lydiard's methodology included a training volume even higher than proposed by the Australian one, but added to that the 'psychological attractiveness' of 'fartlek' in order to make athletes run more than 20 km a day. The initial long preparation stage, which emphasised high volume of training in the nature, was then followed by intensity training (through variations of 'interval-training' like the Australians used to do) on the track. Following Lydiard's methodology, Peter Snell became Olympic champion over 800 (twice) and 1500 metres in 1960 and 1964. Like before, his successes then prompted many coaches and athletes all over the world to adopt this training methodology. In sum, the Australian and New Zealand methodologies can be said to recuperate the old, empirically based training over long distances, and to combine it with the scientifically informed 'interval-training'.

Knowing as Transforming

[This section will develop by analysing the developments in training approaches described in the previous section through the vocabulary of practice-based approaches to knowing. Training approaches will be discussed as enactments of a multitude of other practices originated elsewhere, and the characteristics of those enactments will be highlighted. It will be emphasised that training approaches, rather than simply diffused and adopted, have been transformed in the course of practice as athletes and coaches engage with them. This discussion will also be embedded in the previous section as the various approaches (and the transitions between them) are introduced.

The earlier section 'knowing in practice' will also be significantly expanded.]

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