VERKHOSHANSKY

SPORT STRENGTH TRAINING METHODOLOGY©

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THE BLOCK TRAINING SYSTEM

IN ENDURANCE RUNNING

On the cover

The picture on the left (from www.olympic.org, credit: Getty Images-Tony Duffy)
Moscow, 1 August 1980. Men's athletics: Mirtus YIFTER of Ethiopia brushes shoulders with Aleksandr FEDOTKIN of the Soviet Union on his way to victory in the 5000m at the Games of the XXII Olympiad.

The picture on the right (from www.olympic.org, credit: Getty Images)
Steve OVETT (279) and Sebastian COE (254), both of Great Britain, trail Jurgen STRAUB (338) of East Germany part way through the men's 1500m final at the 1980 Olympic Games in Moscow. OVETT eventually finished third behind COE and STRAUB.

The Block Training System in endurance running

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PREFACE

The photos on the cover of this book were not chosen randomly; they were specifically selected in order to recall events that inspired the research and experimentation that founded the training system presented in this book.

The sport events, to which we refer, are the three well-known final rushes at the Moscow Olympics in 1980: Sebastian Coe's rush in the 1500 meters run (on the right) and Miruts Yifter's rushes in the 5000 e 10000 meters run (on the left).

The most striking rush among these was surely in the final in the 10000 meters.
All of the fans of the legendary Finnish athlete Lasse Viren, who won four gold medals at the previous Olympics, hoped he would win his fifth gold medal at his third consecutive Olympics.

In the final of the 10000 meters- Viren winning the gold seemed to be a distinct possibility: Lasse Viren was always among the first four runners.

In the last lap, when the front runners began increasing their speed, Viren, who in that moment was in second place, moved forward toward the first position. The whole "Luzniki" stadium had put their hands up to applaud the great Viren. All of a sudden, something unbelievable happened: Miruts Yifter, who was running behind Viren, unexpectedly increased his speed and began outdistancing himself from the leading group as if he were an athlete who had just begun a 400 meters competition.

When Yifter crossed the finish line the others were almost 20 meters behind him.
The most striking thing was not so much the fact that Yifter had been able to increase his speed at the end of such a very hard distance; but the way in which he had done it. It seemed as if he had "changed gear".

Thinking this event over, some Soviet scientists, who had made studies of and carried out research into the physiology of endurance sports, couldn't help wondering- what were the characteristics of an athlete's organism that allowed him to accelerate so rapidly over the final distance.

Until then, training methodology in endurance running had been based on maximal oxygen consumption development and on glycolytic capacity development.

The traditional metabolic model of middle-distance and long-distance running foresaw that the athlete had to run by resisting a high level of acidosis at the end of distance.

Nevertheless, Sebastian Coe's final "flights" and especially Miruts Yifter's "gear changes" were so striking that they raised an essential question: how can the athlete execute these final accelerations if his muscles are full of lactic acid?

At the beginning of 1980s, research on the role of the different energetic mechanisms in physical activity showed that when the intensity of prolonged physical activity increases, the change from the aerobic metabolism to the anaerobic one (that is, the crossing of the so-called "anaerobic threshold") is equivalent to a "gear change". It was postulated that this physiological event takes place via the recruitment of the muscle fibers not involved in the aerobic phase of work.

Starting from this hypothesis, it was possible to suppose that in order to win, thanks to a final rush like Yifter's, an athlete had to run the entire distance in the aerobic regime (that is, below the anaerobic threshold) by using only slow muscle fibers such that the working effort does not cause lactate accumulation.

Only at the end of the distance the fast muscle fibers, which previously hadn't been subjected to lactate accumulation, had to be "triggered" and, thus, were able to execute contractions that could assure high-speed running.

Yet, in order to develop this model it was necessary to identify means, methods (exercises), and forms of their temporal organization in the preparatory cycle, different from those used until then in the training methodology of endurance sport disciplines.

The first problem to solve was: how could an athlete increase their running speed at the anaerobic threshold?

The main problem was not so much rooted in how to increase the anaerobic threshold (expressed as a percentage of VO2max); but rather, how to increase the speed at which athlete reaches the anaerobic threshold (in other words, to increase the slow muscle fibers capacity to work in a prolonged regime with higher power).

To solve this problem it was necessary to identify the exercises which could increase the oxidative and contractile capacity in slow muscle fibers.

To increase the oxygen capacity in slow muscle fibers, it was necessary to force them "to breathe more" and to more rapidly *oxidize lactate. In order to accomplish this, a rather well-known training method was used: prolonged running at anaerobic threshold speed and Aerobic Fartlek (by inserting brief accelerations during prolonged running).*

The hardest problem to solve was: how to increase the contractile power of the slow muscle fibers?

In this case, the use of resistance (strength) exercises proved to be beneficial. Yet, the traditionally used strength training methods caused the involvement of fast muscle fibers and the increase in anaerobic glycolysis.

In 1981 Y. Verkhoshansky found a very original way to solve this problem: the enforcement of the CP mechanism of energy production that serves the universal role (as a universal energy transporter) in supplying energy for intensive muscular activity. He conceived the Local Muscular Endurance Method (resistance exercises executed in an interval regime) *which assures the increase in both the contractile capacity and the oxidative capacity of muscles involved in endurance running and the decrease of lactate accumulation.*

The studies made on the temporal organization of these new means and methods, and their temporal integration with other specific training methods in the preparatory cycle of high-level athletes, showed that another invention made by Y. Verkhoshansky could be useful: the Block Training System (BTS).

In the 50 pages of this book you will learn the theoretical and practical principles upon which the Block Training System for endurance running has been developed, the results of its experimentation, and how has been build the training model with the description of each training means and the training programs used.

However, these principles can also be applied to develop a BTS for other endurance sport disciplines. The author, using the basis of this model, has developed other models for different endurance sport disciplines: rowing, skating and skiing.

More than 20 years have passed since the beginning of the experimentation on this training model; however, it is still a "winning model" as demonstrated by the results of its application in recent years.

One of most successful applications has been developed by Prof. Y. Verkhoshansky and Oreste Perri, Italian Rowing National Team coach (canoe, kayak).

The Italian National team, via the integration of the BTS, won ten Olympic medals (four gold): five in Atlanta 1996, three in Sydney 2000 and two in Athens 2004.

Natalia Verkhoshansky

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