

THE END OF “PERIODIZATION” IN THE TRAINING OF HIGH PERFORMANCE SPORT

By Yuri Verhoshansky

Russian sport science expert, Prof. Yuri Verhoshansky, questions the validity of Matveyev’s theory of periodization, considers it outdated and provides detailed criticism on why the concept is supposed to be unacceptable for contemporary training. The article appeared originally in Leistungssport, Germany, Vol. 28, No. 5, September 1998. This abbreviated translation is reprinted from SA Sports Institute’s documentation services. Re-printed here with permission from Modern Athlete and Coach.

“PERIODISATION” FACES CRITICISM

The methodical principles of contemporary training systems are frequently based on the work of Russian coaches in the early 1950’s when the former Soviet Union prepared for the first participation in the Helsinki Olympic Games (1952). The preparation followed the information collected by L.P. Matveyev at the Moscow Institute of Physical Culture, generalized, and published as a theoretical concept known as “periodization” in 1965. Matveyev’s concept attracted attention outside the Soviet Union, because training theories had at this stage not yet involved scientists and the successes of Soviet coaches and athletes on the world stage were exceptional.

The periodization concept became gradually a synonym for “planning of training”. Many specialists use even today this concept in progressive presentations of the organization of training. However, the majority has found in practice that the theory of periodization is not acceptable and it has been criticized at home, as well as internationally.

Many experts today consider that the theory of periodization does not meet the requirements of contemporary sport and can have a negative influence on performance development. It also appears that periodization does not present a model training system for elite athletes within the demands of modern competition calendars and other international development tendencies. Only some of the thesis of the periodization concepts can somehow be applied to the training phases of young athletes.

It has been stressed that a formal, mechanical division of a training year into periods and mesocycles is not practical. Further, the principles of periodization are not really reliable because they are based on a relatively short study and

from experiences assembled in the early days of the Soviet training system in the 1950's.

Many publications draw attention to the fact that the methodical recommendations in the concept of periodization are not sufficiently concrete and fail to meet the demands of contemporary high performance sports. This applies in particular to team games, endurance sports, speed events in track and field etc. Periodization also fails to provide acceptable methodical recommendations for the improvement of specific conditioning and final competition preparations.

Endurance sports experts are most critical about Matveyev's periodization theory. A very dynamic organization of training loads has been in these sports gradually eliminated. Coaches still following the outdated elements of periodization find it extremely difficult to keep their athletes in top form throughout the competition season. Attention should also be paid to the fact that the successes of African athletes (particularly Kenyans) can be explained not only because they live at altitude, but also because they have rejected the theory of periodization in the planning of training.

British coach, Frank Horwell, in an article titled "Periodization — Plausible or Piffle?" claims that the theory of periodization is unacceptable for modern running training. He also states that neither the former Soviet, nor the West European runners (male), have broken world records in middle distance running or won Olympic gold medals over the last 30 years.

Zanon of Italy, a well known expert of the Soviet Union's training doctrine from 1960 to 1980, has rejected Matveyev's periodization principles, because "when a training concept is not based on biological facts — as it happened in the Soviet theory — but on theoretical understandings without a correlation to realistic condition, it can be expected that the corresponding training programs will lead to a loss of sporting talent".

Tschiene (Germany), in an analysis of several training concepts (1985), comes to the conclusion that Matveyev's periodization theory has, since its publication in 1965 remained unchanged, although enormous changes have meanwhile taken place in high performance sport. He recommended that the theory of periodization of a yearly training cycle must be reformed and changed to a modern concept based on substantiated principles that take into consideration the role of the competition exercise and individualization.

The rejection of the periodization concept was even more categorical in Russia, where the former Vice-President of the State Committee of Sport, Kolessov, declared that participants in high performance sports "should not continue to follow the outdated system of Prof. Matveyev (Sovietsky Sport 1991)".

REASONS FOR THE BREAK-UP OF PERIODIZATION

It hardly makes much sense today to analyze the theoretical weaknesses and clearly senseless methodology of the periodization concept. We will therefore follow only the major scientific factors involved to avoid a repetition of similar attempts in the future.

Disregard of new biological understandings.

It is a grave mistake to overlook the biological knowledge and achievements of sport sciences. In these days it is not necessary to convince anybody about the value of the “biological components” in the theory of training (Verhoshansky 1993, 1996, 1998). However, Matveyev maintains that the biological laws do not determine the macro structure of training and the development of form is rather guided by other laws.

Matveyev agrees in the reference to the theory of adaptation that “adaptive processes play a certain role in the reconstruction of the organism through sporting activities,” but claims that “adaptation is only one aspect in the improvement of performances”. The priority in the interpretation of the processes involved in the perfection of sporting performances and the related phenomena should not be regarded as the theory of adaptation but the theory of development” (Matveyev 1991).

Missing Legalities in Training Concepts

The methodological and scientific untenabilities of periodization become obvious in the terminological chaos of scientific legalities, principles, directions, principle thesis, etc. This chaos occurred from a strange and uncompromising search for legalities in the concept of Matveyev’s theory of periodization.

Matveyev claims that periodization principles “express the biological legalities of adaptation in training” (Matveyev/Meerson 1984). This was a strange declaration because it is known that training processes have so far been based on subjective concepts of their contents, structure and temporal sequence. There are no “legalities”. At the best we can only talk about methodical rules in training, which are formulated according to empirical data.

The logically speculative presentation of training and competition without an objective evaluation led the concept of periodization to an “inseparable correlation between general and specific preparation of an athlete” (Matveyev 1991). To this were added other similar “legalities”, such as the “cyclic character of training, a wave-like formation of training” etc. At this time it was already known that progress in international high performance sports was tied to more far reaching and complex factors than in the periodization theory. (Jakovlev 1976,

1993; Kassil et al 1978; Sergeyev 1980; Verhoshansky 1988; Viru 1994; Booth 1988).

Disregard of Biological Adaptation Processes

Matveyev's speculative conception was based on a phasic development of top form. A dynamic development of sporting form was introduced by Letunov (1950) and Prokop (1959). They were the first sports medicine specialists who formulated ideas that the improvement of the training state of an athlete is based on the biological laws responsible for the development of adaptation processes in training. They arranged these processes into three phases:

1. Ascent of the training state;
2. Sporting form;
3. Drop in the training state (according to Letunov).

Or

1. Adaptation;
2. The highest practical performance capacity;
3. Re-adaptation (according to Prokop).

However, it appears that Matveyev failed to understand the biological ideas of Letunov and Prokop. This appears to be the reason for his primitive "pedagogical" interpretation of the nature of training. Matveyev merely changed the nature of training phases and maintained that his phasic development of form is the natural assumption for the periodization of training. It is easy to recognize that this concept of training gives from the viewpoint of the "dynamics of the sporting form" only a superficial picture and is today regarded as naive.

Lack of Scientism

Matveyev's methods in "The Concept of Periodization", as well as in "The Foundation of Training in Sport", are rather primitive. They cover the so called pedagogical observations and aged analytical-synthetical principles. In an attempt to counteract the lack of scientific principles in these methods, Matveyev presented in 1991 a careful analysis to support his concepts. The analysis showed a lower limit of 1.5 of 2% in the range of top performances. Deviations from personal best performances were calculated to be 3 to 5% in cyclic speed-strength events. Athletes were regarded to be out of form under these limits.

The calculations followed a simple graph of performances (fixed by points) which was based on a percent time system. The absolute personal best performances

were set at 100%. By the way, from this developed his concept of a “wave-like format” of sporting form. Somehow Matveyev failed to take notice that a large part of the top form performances were below his critical range (see Fig. 1).

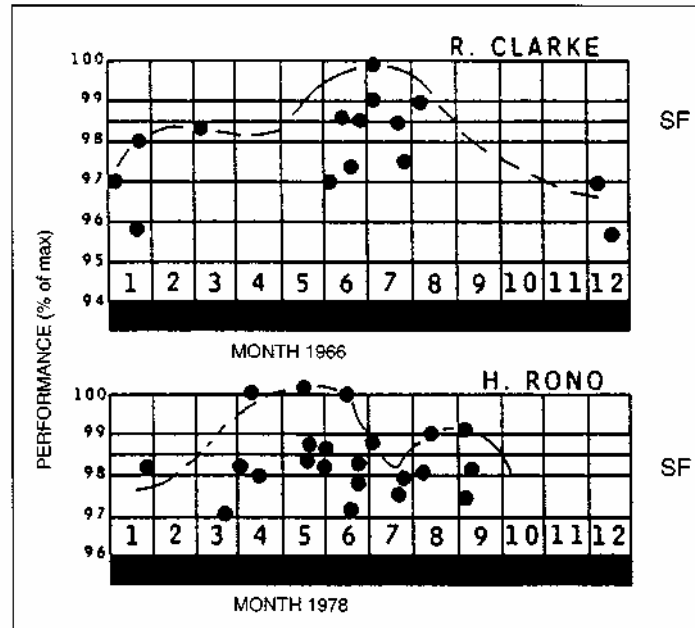


FIG. 1: Examples of “exact analytical calculations” of the “dynamics of sporting form” (SF) according to the method of Matveyev (1991)

PERIODISATION LACKS REALITY

The first obvious criticism by specialists and practitioners concerns the essence of periodization in the formal and mechanical formation of the training processes into subjectively formed parts, cycles, phases, periods etc.). This, according to Matveyev, is the essence of periodization. His argument is very simple in that the development of performance can't be acquired and maintained outside these, nor can optimal training processes be constructed for development of form. Any other approach would contradict the objectiveness of the construction of training. (Matveyev 1971).

The mechanical formation of training processes and their later reunification to some adaptive entirety has, first of all, nothing in common with a realistic organization of training in most sports. Secondly, this formation neglects objective adaptation processes. It simply does not even replace training control through different trial and error methods because periodization offers no objective confirmation for the choice of an optimal variation.

A formal observation of the so called “laws of the development of sporting form” was responsible for an incorrect introduction of preparation and competition periods. This linear logic of first training and then competitions simply failed to

compile with objective realities. The preparation period served for “the construction of sporting form” through exhaustive preparation work, while the competition period was expected to “stabilize” and “maintain” form by using corresponding mesocycles for the realization of form without any further development. Such a primitive understanding of the periodization of training absolutely fails to correspond to reality.

In several cyclic events the achieved training state must not only be maintained but also further developed. Following the theory of adaptation, the main task during the competition period is to improve long term adaptation of the organism in order to bring it to a new stable level of specific functional capacity

It should be noted that in contemporary sport the competition period, with an increased number of important (international) competitions, has been considerably extended. This means that the preparation period is not sufficiently long for a “fundamental preparation” and the development of sporting form must take place mainly within the long competition period. A formal demarcation of preparation and competition periods is therefore unacceptable.

Arbitrary Division of Training Processes

The poorest part in the concept of periodization appears to be the construction of training. According to Matveyev, periodization is based on a simple sequence of single training units in the training processes. The basic structural unit is the microcycle. Different direction microcycles in turn make up a larger unit in the training process in mesocycles and finally the mesocycles are combined into a macrocycle.

Matveyev (1971 and 1977) recommends in the realization of such a linear principle the use of different direction mesocycles, such as familiarization, basic, preparation, control, competition, maintenance, restoration etc. Each mesocycle is made up from three to six microcycles. It is unknown how this is substantiated and how the speculative recommendations in periodization can be applied to practical training.

Adaptation Principles are ignored

Another considerable fault in the concept of periodization is the intensity and volume of the training loads. This was the reason (overlooking the naive ideas of wave-like total volume of the load) for a massive increase of load volumes to increase the training effect during the years when the principle of periodization was followed (Tschiene 1990 and 1991).

The most important peculiarity of adaptation, the conversion of qualitative characteristics from external developments into internal characteristics of the organism was not taken into consideration in the theory of periodization

(Jakovlev 1976; Verhoshansky 1988; Verhoshansky/Viru 1990; Viru 1994). The ignorance, or misunderstanding, of the specific character of adaptive changes in the organism was responsible for Matveyev's (1991) explanation in claiming the so called "transfer" of performance capacities. This phenomenon exists, but not in high performance sport.

For example, it is today not acceptable to state that "there are several cyclic locomotor exercises that clearly differ in their form (running, swimming, cross-country skiing, cycling etc), but are still close as far as their endurance and other physical qualities are concerned". (Matveyev 1971).

This concept of Matveyev's is unacceptable because the specific nature of adaptational reactions of the organism depend on the type of training involved. This fact has been known for some time and is accepted as a very important criterion in the choice and organization of training loads. Load volumes have presently reached reasonable limits and the possibilities to develop new specific conditioning exercises have diminished. The so called "transfers" and the importance of large volumes of conditioning exercises in the preparation period belong to the 1950's.

Ignorance of the numerous statements available on the physiological mechanisms on specific training influences is yet another fault in the concept of periodization. This is unfortunately responsible for an enormous time and energy expenditure in a less effective training volume.

IN SUMMARY

Four cardinal errors have robbed the concept of periodization of training from its theoretical and practical significance:

1. A poor understanding of sporting activities and technology of the preparation of elite athletes and the professional know-how of the coaches.
2. A primitive evaluation of the methodological concept which is only theoretical and without an objective foundation, purely speculative and lacks of objectively confirmed practical recommendations.
3. Ignorance of the biological knowledge.
4. Limited acceptance of allied sciences and experimental results on training principles.