Historical Perspectives:

Foundations of training periodization
Part I: historical outline

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Soon after the publishing of my three articles on training periodization, [Updated acquisitions about training periodization. NSCA Journal 4(5); 4(6); 5(2)] I became convinced that more information was needed, and letters from readers confirmed this thought. The complete understanding of periodization - a relatively new matter for strength training in the United States - needs an even if schematical spreading of the foundations. This article and those following should help provide better foundations.

The idea of organizing training according to periods isn't new at all; in fact, the matter was brought up by the ancient Greeks. We also know that during the height of the ancient Olympic Games, competitors were subjected to a period of training of at least ten months, so that tests and preparatory games followed for one month under the supervision of experts (Schurakowskij, 1940; Petrov, 1938; Lewden, 1957).

Obviously, this conduct wasn't the result of a methodological knowledge but rather of pressures derived from social customs. Still, this means that not only the importance of a sufficiently prolonged preparation was recognized, but also that this preparation could rely on an even if rough organization.

Only in the very recent past have specific studies on training periodization have been developed. The reason is that, at the origin of theory and practice of sports, this problem had a secondary importance. As long as one trained only occasionally, there wasn't any need for the development of a periodization of any type. But starting from the last decennia, when more and more athletes began to train the year long, a periodization of training has become more important.

In the manuals on sport methodology published at the beginning of this century, the authors generally advocated a period of training for competitions of two to three weeks.

For example, in a book about rowing, in fashion those days, the author persists with the idea that 15 to 20 days were enough for bringing athletes to their top form: "... we already have tried to prolong preparation up to 5 or 6 weeks, but always we have noticed that athletes instead of becoming versed, grow weak." (Butowskij, 1910)

One of the first specialists, the most renowned Murphy, wrote in his book published in 1913: "Almost in all sports events, the athlete has to devote 8 to 10 weeks to training. Nobody should train hard for a longer period." Speaking of some events (middle and long distance running) Murphy admitted an "alternative" training in cross-country. He also recommended athletes to use some specific preparatory exercises during the winter months.

In time, experts recognized that irregular and short training wasn't enough for assuring sports performances of high level. So sports specific literature quickly began to espouse the idea of training for longer periods of time. With regard to this, the book by Kotov, published in 1916-17 and entitled Olympic Sport is very important, since the author strode over the current opinions of his time, in spite of the sports backwardness of pre-revolutionary Russia.

Kotov was one of the first in favor of an uninterrupted and differentiated training. He divided training into three main states: general, preparatory and specific.

General training aimed to develop the respiratory system and strengthen the muscles (we don't have any precise information about the duration). Preparatory training (six to eight weeks or more) should, develop strength and endurance by means of differentiated exercises. Specific training was intended for the preparation of the chosen sports event, and was divided into two parts - initial training (about four weeks) and main training (in the majority of cases, four weeks or more). As you can see, we cannot yet talk of clearly defined cycles. General training doesn't represent a cycle, but a starting base for the beginner who wants to devote himself to sports.

Kotov, according to the theoretical and practical possibilities of his time, found a solution to the problem of an uninterrupted training. Therefore, he was in favor of a sporting polivalence, with refusing at all the idea of specialization. Under the present point of view it is no longer possible to support such a thesis. However, for that time, the fact of claiming an alternative between all-round and specific training was really positive.

Evolution of Periodization

During the 1920s and '30s sport theory and practice changed considerably, so much so that the problems of training periodization--especially those concerning athletes--were, for the first time, treated in
an exhaustive manner by the European authors. The ideas that reflect the opinions of that time on this problem have been reported in excellent way in the manual "Athletism" published in 1930. Lauri Pihkala of Finland enunciates, a series of principles which should be applied either to sport activity in its broad sense, meaning a time span of many years, or to the planning of a daily workout.

1) The training process should present a clear alternating of work and rest. Pihkala speaks of an undulatory rhythm of the sporting work during training, meant as a period of one day, one week, one month or one year.

2) The real work should gradually decrease in quantity the amount that it will gain in intensity, passing from a long duration, to a shorter, but "dogged" training period.

3) It is equally necessary to base each specific training period lying on a widely generalized base. With his year-round training planning, Pihkala emphasizes four stages: Preparation Phase - Spring Phase - Summer Phase and Rest Phase in fall and winter (this planning is directed to adult and advanced athletes). The preparation phase above all helps for developing the "internal systems" (muscular, cardiovascular and respiratory systems). At the same time some exercises typical for the chosen event are included.

The main task of the second training phase is learning the technique of the particular event. To this, participation in competitions is joined. The best way for preventing overtraining is, for Pihkala, an undulatory rhythm of training, so that work and rest is alternated. The fall-winter period, according to the author, can hardly be defined as a training period. It will rather be an active rest period, lasting three or four months. The complete rest period will last from four to six weeks. During this period, the athlete is involved in "alternative" physical activities.

So with Pihkala's theories, the training cycle isn't completely concluded. The fact is that the author was still under the influence of the traditionalist idea of a seasonal training. However, we can notice the beginning of new trends: the time for the competition season lengthens and is divided into two main phases, initial generalized preparation and specific preparation.

The desire to avoid long pauses between the main periods of training is a clear trend with many authors at the end of the 'thirties (V. Hult, 1925; L. Mang, 1982; J. Waizter, 1936). L. Mang surpassed even Pihkala with the idea of uninterrupted and specific training.

The fall-winter period of training, according to Mang, includes all the exercises aimed at improving generalized physical capacities, and also the technical acquisition. Furthermore, the spring-summer period isn't simply devoted to the specialization of training, but also to the development of all-round capacities, even if to a lesser extent.

With Mang we notice a new didactical perspective that addresses the different training tasks of the athlete (physical and technical preparation - generalized and specific) in a parallel way rather than one after the other. Mang gives detailed examples of training programs for every month and claims (it was a very bold statement for that age) that the high level athlete should compete 20 to 30 times in a year.

But these ideas of an uninterrupted training during the whole year did not spread until the 'forties and 'fifties (and only in part). In those years, this principle was specially spread by West German coaches G. Holmer and W. Gerschler, and promoted by their famous pupils Hagg and Harbig, among others.

It was not before the end of the 'forties that in England this exigence of a year-round and specific training has been really felt (Newton, 1947). In France, one had to wait until 1955-56 (Lewden, 1956). However, in England, the situation was destined to change. In 1946 Dyson published his book New System of Training in which he elaborated different European and American experiences. Dyson advocated the following periodizations of training:

1) Period without competitions (September-March) during which the preparatory work is composed of cross-country, physical drills in the gym and so on.

2) Pre-competition period (March) beginning of the specific preparation.

3) Initial competition period. Training intensity begins to lower; the athlete acquires his top form (May-First half of June)

4) Main-competition period (second half of June-July)

5) Post-competition period (second half of July-August)

During the following years, in England soon appeared some specialized treatises that considered the training process as a year-round affair were published in England. This yearly cycle was divided into three or four periods; the majority suggested, for certain periods, a daily workout or even a two-a-day training (F. Stampfl, 1957; S. Duncan & K. Brown, 1959; J. Peters, 1960).

American authors (Bleshahan-Tuttle, 1947; Doherty, 1958) and foreign authors who studied the American training system (T. Nett, 1951) point out that in the States, periodization of training had not attracted the attention of US experts. Although in practice, training was already extended for the whole year, the American authors didn't allot more than three to six months to specific preparation.

For instance, Bleshahan and Tuttle recommend the following periodization for track and field athletes:

1) Pre-season from March 15 to April 1 (the lapse of time is variable, this case is applicable to the central and western zones of the States)

2) In-season: from April 2 to April 15

3) Main-season: from April 16 to May 15

4) End of the season: from May 16 to June 17

The remainder of the year is devoted to active rest, during which, in the majority of cases, the athlete trains in complementary events and in sporting games.

In America, the idea of a "double cycle" has been utilized with more and more preference. This corresponds to the two training seasons in
the year: the winter-spring season in the gym (indoor) and the summer season outdoors. These seasons are evident in track and field (Ford, 1850) and swimming (Kiphuth, 1940) training.

But the theoretical foundations of training periodization are not treated with enough scientific rigor. The most important problem—to know what are the factors and induce the periodical changes of training—is not solved and even not set.

Some authors believe that the change of training is to be inputted to the physiological endogenous rhythms of the organism (Mang, Pikhalka). But this doesn’t authorize us to talk of any elaborated theory on training periodization. One exception is a book published in 1959 by Austrian authors Prokop and Rossner in which the rhythmical variations of training loads are explained through the adaptation theory by Selye.

Evolution of Periodization in Soviet Union

The great development of sport in the Soviet Union after the fundamental social changes brought about by the revolution in 1917, as well as the general revival of the Soviet science, have created favorable conditions for the evolution of training theory. Beginning from the very first year of the establishment of the Soviet school of sports, many researchers appeared. For their level, they were equal to the best studies accomplished in the foreign countries and, from the theoretical point of view, even exceeded them. This evolution in the theory and methodology of training is connected with the names of X.W. Gorinewskij and G.K. Birsin.

The book Scientific Foundations of Training written by Gorinewskij in 1922-23 has been of fundamental importance for the new idea of training meant as a pedagogical process that has specific laws to be respected. Gorinewskij is against multilateral training. In sport, he wrote, the athlete cannot be “polyvalent,” i.e., he can’t practice every sport without making any choices. Such an attitude is typical of beginners and doesn’t lead to any perfecting.

In Birsin’s book The Basis of Training published in 1925, the idea of training according to the laws that govern the physiological development of the athlete’s organism, like in Gorinewskij, is clearly evident. Birsin speaks of the necessity to increase the training loads according to the principle of “optimal stimulation” and under this perspective, he refuses the widespread concept of his age, that fatigue is a “harmful” symptom from the physiological point of view.

Toward the end of the ‘twenties and the beginning of the ‘thirties, the first prolonged training program for the whole year was introduced in Russia. According to Osolin, the athletes themselves were the first who promoted this practice, even before coaches and training specialists. This had a stimulating effect on the studies on periodization (Tiwanovergin, 1932; Sergejev, 1938; Osolin, 1938 and others). The results obtained were generalized from the theoretical point of view by K.C. Grantyn in 1939. His work entitled Contents and General Foundations of Training Preparation is really outstanding, because it tries to define the essential traits of training periodization, apart from the particular sports events. Grantyn divides the year-round training cycle into three periods: preparation period, main period and transitional period. The essential point of the first period is to create the favorable conditions for specialization in the chosen event, thanks to the mastering of the basic technique, to a basis of generalized physical preparation and to some elements of tactics. The content of the second period is absolutely specific. Here we have three stages:

1. acquisition and perfecting of the individual technique so that a growing increase in the efficiency of the organism is connected.
2. use of training loads typical of the particular event; the athlete attains his top form.
3. maintenance of the form by means of competing.

Speaking of the transitional period, we have two stages: gradual passage to rest, then active rest meant as training of generalized physical preparation (reduced amount of work) or training in complementary events. Between these two stages there are 12 to 30 days of complete rest. During these days gymnastics and jogging are recommended to the athlete. Grantyn doesn’t give any precise indication on the duration of each period, since he believes that this is related with the given event, with the individual characteristics of the athlete and with other factors. We notice with Grantyn’s theories a complete cycle of training; the pause is reduced to a minimum.

Another new and important step toward the solution of the problem was taken by N.G. Osolin with his book Training the Athlete published in 1949. Osolin believes that the transitional period is devoted to an active rest, to the maintenance and even improvement of training level in the main event. This way, training is understood as a form of specialization for the whole year, on the basis of the generalized physical preparation. Since Osolin’s book concerned track and field (a sport that includes a great number of different events) this increases its meaning and importance, from the methodological viewpoint.

During the ‘thirties and ‘forties, manuals for almost all the most practiced events appeared. Here the problem of periodization, according to the principles of the uninterrupted training and of the relationship between generalized and specific preparation were treated. The most updated training programs for the different periods of training concerned track and field (W Sovov, 1938; Osolin, 1949), skiing (Bergman, 1938) and swimming (Schuwalov, 1940).
While specialists were trying to solve the general problems of periodization, the particular characteristics of each sporting event were becoming more and more urgent to solve. Track athletes, skiers and swimmers understood the year-round training, divided into three periods (preparation, main, transitional). Gymnasts (Korjakowski, 1938) boxers (Gradopolov, 1938) and wrestlers (Wassilieff, 1946) used shorter cycles of training, even if their training could still be considered uninterrupted. This reflected the wish to respect the particular nature of each sports event on the basis of general laws on periodization.

In spite of the great results obtained by following this method of treating the problem, the fundamental question wasn’t addressed until the end of the ’forties: what are the rules that govern training periodization?

There were still too many specialists who believed that periodization was a part of the global elaboration of training. In other words, a complete theory of periodization, based on the objective study of the physiological needs, didn’t exist yet.

With regard to this point, important progress was made at the beginning of the ’fifties, especially by S.P. Letunow, with his work Reflections of the Systematic Formulation of Training (1950).

Letunow believed that the system of training established as a consequence of competition calendar is wrong, since it gives more importance to climatic conditions than to the individual characteristic of the athlete. Letunow bases his system on the progressive levels of training obtained by the athlete. He distinguishes the acquisition of a high level of generalized preparation first and then specific. Then there is the competition form, and last, a decrease of the training form. So for Letunow, the periods of training are subordinated to the progression of the physical form. It is by following the individual characteristics of athletes, their level of training and other factors (and not by following the season-competition calendar) that the duration of the various periods can be varied. For the first period Letunow allot from four to six months, for the second from four to five months.

Letunow’s theory represents a great step forward since, for the first time, the training periods are clearly understood not only as depending on the seasonal conditions and on similar factors, but also-and above all-as changes that respect some laws of the training process. These changes have been defined by following the level of training obtained by the athlete.

In spite of all the positive meanings of this theory, there is a debatable point. Letunow considers the training periods as simple stages of the training process, that is, he considers these stages as phases of the biological process without pointing out that these stages are exactly the result of the periodical changes in the structure and contents of training, and that also these changes depend on several external conditions. In other words, Letunow believes that the reason for dividing the year-round training cycle into periods depends is exclusively on biological phenomena, but he fails in understanding that those biological phenomena are induced and modified by the particular structure and content of training. This concept is surely open to criticism, since it simply is satisfied with taking into account one momentary character of the reached training level (without considering the relationships between this level and the previous and successive one) and because it disregards the connections between a given biological process and the structure of training that can induce it.

Osolin replies that is impossible to establish a training periodization without taking into account the competition calendar and the climatic conditions. But trying to solve this problem, Osolin errs in the opposite direction. In fact, for him, the competition calendar is the “guiding thread” that led the sub-

division of the year-round training cycle into periods.

So, speaking of the fundamental problem about periodization, we are hence faced with two opinions that still show themselves in literature today.

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