

Appendix B - Constructing a Training Plan

In 1988, Dr. Anatoliy Bondarchuk authored a two-part article for Track Technique magazine called, "Constructing a Training System."

CONSTRUCTING A TRAINING SYSTEM

by Anatoliy Bondarchuk, USSR

This is the first part of a two-part article which presents Bondarchuk's ideas on periodization. He is the hammer national coach in the Soviet Union, and coaches two-time Olympic champion and World Record holder Yuriy Syedikh. Bondarchuk himself is a former WR holder and the 1972 Olympic champion. Bondarchuk's thinking reflects the latest ideas on the a/I-important concept of periodization. It represents the evolution of the classical Matveyev concepts, which are now considered outdated by experts in the field of training theory (especially for preparation of the elite athlete). Matveyev's theories are just now beginning to gain wide acceptance in the United States; therefore, the concepts presented in this article could help coaches and athletes to incorporate the latest ideas in their training. It is important to point out that the principles relate directly only to the high-level athlete. For the developing athlete, the classical Matveyev model of periodization is still valid.

The systems approach is recognized in various areas of scholarship: philosophy, physics, mathematics, cybernetics, physiology, etc. In line with the existing understanding of the systems method, we must observe three basic principles in constructing a system:

- 1. uncovering system-forming factors.**
- 2. determining its structure; and,**
- 3. elucidating the result of its activity.**

As our experimental work has shown, laws of the development, retention and loss of sporting form may act as system-forming factors. Let us explain their essence and then move to examining the problem of constructing a training system.

Let us begin with laws governing the development of form. The results of experiments show that the development process of sporting form has a phasal character in which- in a particular sequence depending on the forms used for constructing annual training cycles and athlete's individual characteristics- phases of acquisition, retention, and temporary loss alternate, as L. P. Matveyev has shown.

In the event of simultaneous use of a certain set of general-preparatory, special-preparatory, and competitive exercises after the transitional period, the process of form development takes different forms. With one group of athletes initially there follows the phase of acquisition, then the phases of retention and temporary loss (Diagram 1). With another (Diagram 2), the temporary loss phase precedes the acquisition of form phase. With a third group the phase alternation is as follows: retention phase, temporary loss phase, acquisition phase, retention phase and temporary loss phase (Diagram 3).

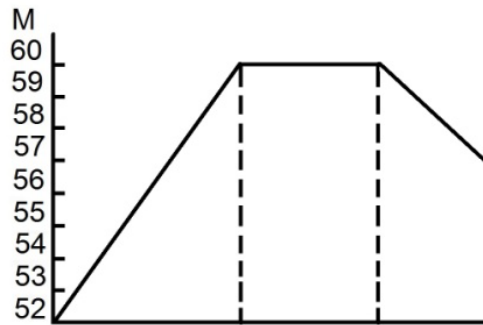


Diagram 1

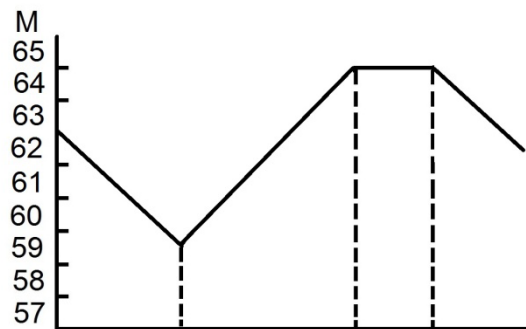


Diagram 2

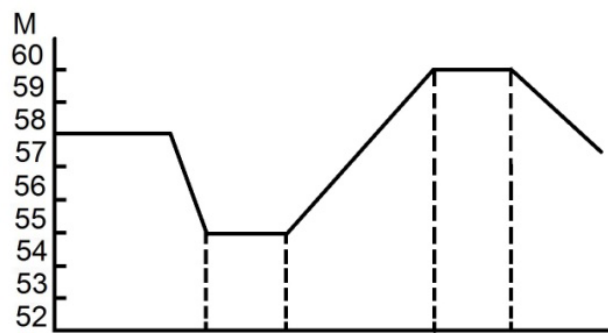


Diagram 3

Length of the cycle of form development, which ends with the retention phase following the acquisition phase, is very individual for all athletes- from two to eight months. But most athletes enter a state of sporting form within two to three months.

The length of the retention phases for all athletes, irrespective of the forms being used for constructing the annual training cycle which follows the acquisition phase, varies from 7-14 days. The duration of the phase of temporary loss that follows it depends on the use of the same set of training methods that has assisted entry into the given state. The periods increase as it is increased.

Length of the acquisition phases, as well as the preceding temporary loss and relative stabilization phases, is very individual for a group of athletes- from 2-3 weeks to several months.

If we use the above-mentioned form of constructing an annual training cycle, athletes enter a state of sporting form at the same time in the competitive exercise and into a state of optimum physical preparation in the exercises being performed.

The process of developing sporting form with alternating use of the training methods being used after the transitional period (initially methods of general, then of special preparation), takes the same course as with the simultaneous. What we have in mind is not only the existence of three reactions of the organism systems in the form of a certain alternation of the above-mentioned phases, but also the individual length of the sporting form development cycle.

Differences exist only in that, initially, athletes enter a state of optimum physical preparation by means of general preparation, and then only into a state of sporting form in the competitive exercise (Diagram 4). Moreover, for both types of exercise we need the same time interval- from 2-8 months. A certain alternation, depending on which group the athletes belong to, of the acquisition, retention and temporary loss phases is repeated (Diagram 4).

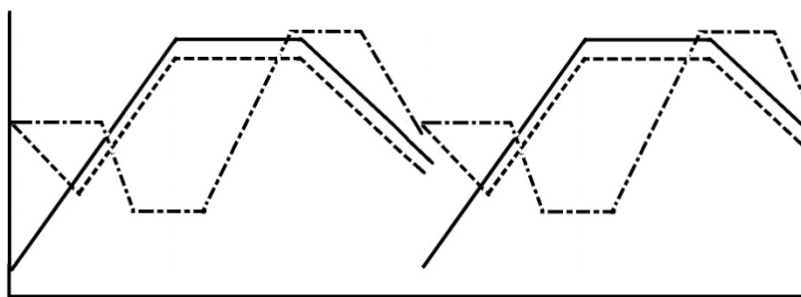


Diagram 4

The process of developing sporting form after changing from one set of training methods to another, because of the repeat entry into the given state, also bears a phasal character. The reaction of the organism systems changes with athletes of the first and second groups with a change of the form of constructing the annual training cycle. The cycle of development form begins with the retention phase which is followed by the phases of temporary loss, acquisition, retention, and temporary loss (Diagram 5). Athletes in the third group are the exception; for them, the reaction of the organism systems does not alter.

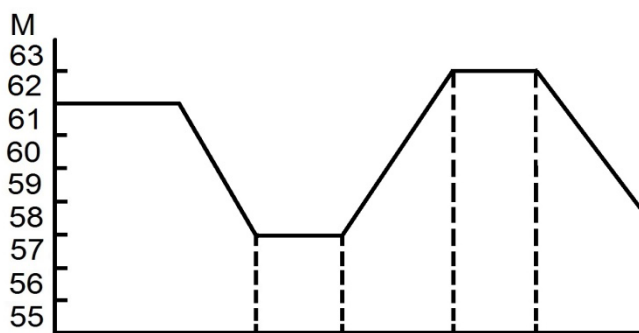


Diagram 5

For athletes of the first and second groups the periods of entry into the state of form also increase- by an average of two months. They remain the same for athletes of the third group.

This is all that concerns laws of development of sporting form. Laws of maintaining form were studied in a situation of regular change- every four weeks- of sets of training methods after

the athletes had entered a state of form. Such actions helped them to retain form over an extended period - up to seven months in our experimental conditions.

We also discovered that the process of retaining form is just as individual as the development process. We may classify all athletes into a group depending on the configuration of changes in their attainments over given intervals (four weeks).

So, with one of them over the first two weeks after changing the set of training methods, we noticed not merely retention of the existing level of attainments, but even a certain improvement- from 1-3%. In the following two weeks the results fell off somewhat but remained within the retention zone.

With another group of athletes over the first two weeks after the change-over, there was a certain fall in results, while among the remainder they slightly improved.

There are also athletes who show a fall in performance in the first and third weeks, and an improvement in the second and fourth.

Yet another group of athletes (the fourth) shows a fall in results over the second and fourth weeks and an improvement over the first and third; the observed fall in results varies from 1-3%.

We studied laws governing loss of form in a situation where we excluded the competitive exercise from training sessions of no less than four weeks during the preparatory, competitive, or transitional periods. At the end of the experiments, we found that such actions lead to a loss of form. Performance, depending on the individual peculiarities of the athletes, diminished by from 8-12%. Admittedly, after the transitional period it falls more than during the preparatory or the competitive periods, where the competitive exercise for one reason or another had been excluded from training sessions and in these intervals exercises have been used that were not close to each other in form and content (For example, the throwing of lighter or heavier hammers only slightly differing from the competitive by no more than 5-8%).

If after a break the athlete again introduces a competitive exercise into his training session and uses it for a long time, we get a repeat entry into form for those indicators that have been described earlier.

We have explained here the laws of passive loss of form. As far as active loss of form is concerned, we may assess the process by factual material where we have examined the laws of developing form. We have in mind onset of the temporary loss phases when various forms of constructing the annual training cycle are employed.

Results of our experiments, obtained when studying certain factors affecting the length of the cycle of developing form, show that the change in sets of training methods after the transitional period every four weeks considerably lengthens the periods of entry into the given state- by two or three times.

This evident relationship between training methods and corresponding adaptational reconstruction in the theory and methodology of physical education is the methodological basis which must be used when resolving many questions concerning sports improvement and which have a particular relationship with the system of preparing athletes in various sports classifications. Matveyev used it in 1965 when establishing his theory of training periodization. In this connection he wrote that there exists a relationship "between phases of developing

sporting form" and periods of training; they must not be ignored, thereby interrupting the normal course of sports improvement.

We came to a similar conclusion from our experiments in studying the laws governing the development, retention, and loss of form. True, we witnessed the relationship not only between phases of developing form and training periods, but also between processes of development, retention and loss of form which are independent phenomena, on the one hand, and training periods, on the other.

These differences may be explained by the fact that in contrast with the structure of single cycle and double cycle planning, we studied laws governing development of form when using simultaneous and alternating employment of training methods after the transitional period, as well as the replacement of one set of training methods by another for the sake of entry into a state of form.

The laws of retaining form were discovered with a regular change of training methods. Laws of loss of form were studied when we excluded the competitive exercise from the training sessions over extended periods of time- no less than one month. The laws of development, retention and loss of form are evident in strictly defined conditions of training process planning. We have in mind not only the beginning and end of employment of exercises after the transitional period and after replacing one set of training methods by another, but also the duration of their utilization.

Naturally, they must directly be adhered to in planning the training process if we are confronted with the task of governing the processes of development, retention and loss of form which are independent phenomena in the described situation.

The discovered causal relationship between processes of development, retention and loss of form, and certain forms of constructing an annual training cycle provides us with some idea of the structure of large (macro) cycles of training.

Here, as is accepted in the theory and methodology of physical education, the annual training cycle must consist of a certain number of training periods. Throughout their duration we shall resolve the tasks of developing, retaining, and losing form.

Strictly defined forms of constructing the annual training cycle conform to each of them. We have in mind not only the beginning and end of using exercises, but also the duration of their employment. Especially when an athlete is faced by the task of developing form this is of considerable importance. The length of this training period varies from 2-8 months. It is conditioned by individual periods of entry into the given state.

We have called periods during which we resolve the task of developing form "periods of developing form," and periods in which we retain form "retention periods." The third period is called the "rest period."

The name of the two first periods fully corresponds to their essence. We mean both definition of the words "development" and "retention," and the direction taken by adaptational changes, as well as clarifying the tasks set and the means of resolving them. These names do not prevent us from using the most diverse (within the permitted parameters) alternations of training periods given the existence of any competition schedule.

The name of the third period comes from the fact that it reveals the essence of the tasks set and the means of resolving them.

Now let us deal with the structure of the training system where we shall examine a possible alternation of periods of developing form, periods of retaining it and periods of rest depending on individual peculiarities of the athlete (length of periods of developing form), the competition schedule and the tasks set.

Admittedly, here we shall examine separately the possible alternation of training periods in the annual training cycle both in a situation of simultaneous and in one of alternating employment of training methods being used over the periods of developing form. This approach is necessitated both by the discovered differences in developing form in the above-mentioned conditions in planning the training process (we mean not only length of the period of developing form), and by the principle that exists in the theory and methodology of physical education of organizing the structure of preparatory periods consisting of general-preparatory and special-preparatory stages.

Thus, the system of sports training, given simultaneous use of the applied training methods throughout the preparatory periods, presupposes a different alternation of

1. **periods of developing form (PD),**
2. **periods of retaining form (PR) and**
3. **periods of rest (PRt).**

Its structural variety depends on the competition schedule, individual peculiarities of the athletes (length of the cycle of developing form) and the tasks confronting the athletes in an annual cycle. In some cases, **PD** alternates with **PRt**; in others **PD** and **PR**; in yet others, **PD**, **PR** and **PRt**; and in still other cases, only **PD**. **PRt** and **PD** may be followed by a certain number of **PR**, and so on.

This is all that can be said about the general scheme of period alternation. Now let us dwell on possible variants of the structural variety of the training system depending on length of the cycle of developing form- from 2-8 months.

Let us start with the group of athletes which enters a state of sporting form within two months:

1. PRt and PD alternate:
PRt (October),
PD (November-December),
PRt (January),
PD (February-March),
PRt (April),
PD (May-June),
PRt (July),
PD (August September).
2. A regular alternation takes place between PRt, PD and PR:
PRt (October),
PD (November-December),

PR (January),
PR (February),
PR (March),
PR (April),
PR (May),
PRt (June),
PD (July-August),
PR (September).

3. After PRt follow 2 PD, then PRt, PD and PR:

PRt (October),
PD (November-December),
PD (January April 1),
PRt (May),
PD (June-July),
PR (August),
PR (September).

4. After PRt and PD come PR, PD, PRt and PD:

PRt (October),
PD (November-December),
PR (January),
PR (February),
PR (March-June),
PRt (July),
PD (August September).

5. After PRt and PD, we can have 9 PRs :

PRt (October),
PD (November-December),
PR (January),
PR (February),
PR (March),
PR (April),
PR (May),
PR (June),
PR (July),
PR (August),
PR (September).

6. We may change the periods as follows: PRt, PD, PRt, PD, PR, PD:

PRt (October),
PD November-December),
PRt (January),
PD (February- March),

PR (April),
PD (May-August),
PR (September).

7. PRt, PD and PR alternate in the following sequence : PRt, PD, PR, PD and 4 PRs :

PRt (October),
PD (Nov-Dec),
PR (Jan),
PD (Feb-May),
PR (June),
PR (July),
PR (Aug),
PR (Sept).

The structural variety of the training system for athletes who enter sporting form in three months, is as follows:

1. PRt alternate with PD:

PRt (Oct),
PD (Nov-Jan),
PRt (Feb),
PD (March-May),
PRt (June),
PD (July-Sept).

2. After PRt come PD, PR, PD, PR:

PRt (Oct),
PD (Nov-Jan),
PR (Feb),
PD March-July,
PR (Aug),
PR (Sept).

3. We can have the following sequence of periods: PR, PD, PD, PR, PR, PR:

PRt (Oct),
PD (Nov-Jan),
PD (Feb-June),
PR (July),
PR Aug),
PR (Sept).

4. We can also accept an alternation when PRt and PD are followed by PD :

PRt (Oct),
PD (Nov-Jan),
PR (Feb),
PR (March),

PR (April),
PR (May),
PR (June),
PR (July),
PR (August),
PR (Sept).

5. A regular change may take place of PRt, PD and PR in the following order:

PRt (Oct),
PD (Nov-Jan),
PR (Feb),
PR (March),
PRt (May),
PD (June-August),
PR (Sept).

The most typical variants of alternation of various periods for athlete groups entering a state of form over 4 months are as follows:

1. PRt (Oct),
PD (Nov-Feb),
PRt (March),
PD (Apr-July),
PR (Aug),
PR (Sept).

2. PRt (Oct),
PD (Nov-Feb),
PR (March),
PRt (Apr),
PD (May-Aug),
PR (Sept).

3. PRt (Oct),
PD (Nov-Feb),
PR (March),
PR (Apr),
PR (May),
PR (June),
PR (July),
PR (Aug),
PR (Sept).

4. PRt (Oct),
PD (Nov-Feb),
PD (March-Aug),

PR (Sept).

We can also alternate PRt, PD and PR for the athlete group whose length of cycle of developing form constitutes 5 months.

1. PRt alternates with PD:

PRt (Oct),
PD (Nov-March),
PRt (Apr),
PD (May-Sept).

2. Following PRt and PD come 6 PR:

PRt (Oct),
PD (Nov-March),
PR (Apr),
PR (May),
PR (June),
PR (July),
PR (Aug),
PR (Sept).

The structure of the training system for athletes entering form in 6, 7 and 8 months is less varied: only PR follows PRt and PD.

We have described possible variants of structural variety for athletes whose period of developing form, following the period of rest, begins from the commencement stage (first group) or from the loss stage (second group). Now we shall comment on those athletes (third group) whose period of developing form both after the rest period and after changing over from one set of training loads to another, to again enter a state of sporting form, begins from the phase of its retention.

Let us recall that in various conditions of constructing the training process (after the rest period and exchange of one set of training loads for another) the length of the cycle of developing form is the same. In our experiments the smallest length of this period was 3 months, and the longest 8.

The structural variety of the system of training for the athlete group whose length of cycle of developing form constitutes 3 months is as follows:

1. PRt alternates with PD:

PRt (Oct),
PD (Nov-Jan),
PRt (Feb),
PD (March-May),
PRt (June),
PD (July-Sept).

2. PRt, 3 PD and 2 PR:

PRt (Oct),
PD (Nov-Jan),
PD (Feb-Apr),
PD (May-July),
PR (Aug),
PR (Sept).

3. PRt, 2 PD and 5 PR:

PRt (Oct),
PD (Nov-Jan),
PD (Feb-Apr),
PR (May),
PR (June),
PR (July),
PR (Aug),
PR (Sept).

4. PRt, PD, PRt, PT and 4 PR:

PRt (Oct),
PD (Nov-Jan),
PRt (Feb),
PD (Mar-May),
PR (June),
PR (July),
PR (Aug),
PR (Sept).

5. PRt, PD, PR, PRt, PD, PD:

PRt (Oct),
PD (Nov-Jan),
PR (Feb),
PRt (March),
PD (Apr-June),
PD (July-Sept).

6. PRt, PD, PR, PR, PR, PR, PR, PR:

PRt (Oct),
PD (Nov-Jan),
PR (Feb),
PR (March),
PR (Apr),
PR (May),
PR (June),
PR (July),
PR (Aug),

PR (Sept).

7. PRt, PD and PR alternate as follows:

PRt (Oct),
PD (Nov-Jan),
PR (Feb), PR (March),
PRt (Apr),
PD (May-July),
PR (Aug),
PR (Sept).

8. PRt, PD, PR, PR, PR, PR, PD :

PRt (Oct),
PD (Nov-Jan),
PR (Feb),
PR (March),
PR (Apr),
PR (May),
PR (June),
PD (July-Sept).

9. PRt, PD, PR, PR, PD, PD:

PRt (Oct),
PD (Nov-Jan),
PR (Feb),
PR (March),
PD (Apr-June),
PD (July-Sept).

10. PRt, PD, PR, PD, PR, PD:

PRt (Oct),
PD (Nov-Jan),
PR (Feb),
PD (March-May),
PR (June),
PD (July-Sept).

A possible alternation of PRt, PD and PR for a group of athletes who enter a state of form in 4 months is as follows:

1. PRt, PD, PRt, PD, PR, PR:

PRt (Oct),
PD (Nov-Feb),
PRt (March),
PD (Apr-July),
PR (Aug),

- PR (Sept).
2. PRt, PD, PR, PR, PRt, PD:
PRt (Oct),
PD (Nov-Feb),
PR (March),
PR (April),
PR (May),
PD (June-Sept).
3. PRt, PD, PR, PR, PD, PR:
PRt (Oct),
PD (Nov-Feb),
PR (March),
PR (Apr),
PD (May-Aug),
PR (Sept).
4. PRt, PD, PR, PRt, PD, PR:
PRt (Oct),
PD (Nov-Feb),
PR (March),
PRt (Apr),
PD (May-Aug),
PR (Sept).
5. PRt, PD, PD, PR, PR, PR:
PRt (Oct),
PD (Nov-Feb),
PR (March),
PR (July),
PR (Aug),
PR (Sept).
6. PRt, PD 7 PR:
PRt (Oct),
PD (Nov-Feb),
PR (March),
PR (Apr),
PR (May),
PR (June),
PR (July),
PR (Aug),
PR (Sept).
7. PRt, PD, PR, PR, PR, PD:

PRt (Oct),
PD (Nov-Feb),
PR (Mar),
PR (Apr),
PR (May),
PD (June-Sept).

The structural variety of the training system for athletes whose length of cycle of form development consists of 5 months is as follows:

1. PRt, PD, PRt, PD:

PRt (Oct),
PD (Nov-March),
PRt (Apr),
PD (May-Sept).

2. PRt, PD, PR, PD:

PRt (Oct),
PD (Nov-March),
PR (Apr),
PD (May-Sept).

3. PRt, PD, PD, PR:

PRt (Oct),
PD (Nov-Mar),
PD (Apr-Aug),
PR (Sept).

4. PRt, PD and 6 PR:

PRt (Oct),
PD (Nov-March),
PR (Apr),
PR (May),
PR (June),
PR (July),
PR (Aug),
PR (Sept).

For athletes, whose length of cycle of form development is 6, 7 and 8 months, PRt and PD are followed by a certain number of PR. There are five in the first group, four in the second and three in the third.

The principles of constructing a system of training when we use training methods alternately over the periods of developing form are fully maintained. The only differences are that the periods of form development will consist of general preparatory and special preparatory stages.

With this approach the length of development periods of form will double for each group of athletes.

Thus, if with simultaneous use of training methods, the length of the period of form development was 2 months, then with alternate use it will be 4 months. This is because over the first 2 months the athlete must tackle the task of entry into a state of optimum physical condition by training methods employed during the general preparatory stage, and only then, once again in each section of time, to enter a state of form.

Let us look at the structural variety of sports training when we employ alternate training methods over the periods of form development. Let us start with the group which enters the above-mentioned state in 2 months.

1. PRt (Oct),
PD (Nov-Feb),
PRt (March),
PD (May-Aug),
PR (Sept).
2. PRt (Oct),
PD (Nov-Feb),
PR (Mar),
PD (Apr-July),
PR (Aug),
PR (Sept).
3. PRt (Oct),
PD (Nov-Feb),
PR (Mar),
PR (Apr),
PR (May),
PR (June),
PR (July),
PR (Aug),
PR (Sept).
4. PRt (Oct),
PD (Nov- Feb),
PD (March-June),
PR (July),
PR (Aug),
PR (Sept).

The alternation of periods for the group of athletes entering a state of form in 3 months is as follows.

PRt (Oct),

PD (Nov-Apr),
PR (May),
PR (June),
PR (July),
PR (Aug),
PR (Sept).

Alternation of periods for the group of athletes whose length of form development period is 5 months is as follows.

1. PRt (Oct), PD (Nov-Aug), PR (Sept).

It is not sensible to use this structure of form development period for those groups of athletes who enter a state of form in 6, 7 and 8 months, since over an annual training cycle they are not able to enter a state of form. We must produce their preparation, given this method of planning, over a cycle of 18 months, 2 years, etc.

We may also have a certain mixture of general preparatory and special preparatory states. In such circumstances the special preparatory stage will follow not after the end of the general preparatory stage, but in the first or second half of it or in the middle.

The principles of constructing a system of training also apply to situations where the first period of form development consists of two stages (general preparatory and special preparatory), while the training methods are employed simultaneously during the second. For example:

1. PRt (Oct), PD (Nov-Feb), PR (March-June), PR (July), PR (Aug), PR (Sept).

Let us recall that the first period of form development consists of two stages, while over the following stages, the training methods being used are employed simultaneously.

The training system does not preclude a slightly different structure of periods of form development. Thus, over the first period the training methods being used will be employed simultaneously, while the following periods of development will consist of two stages general preparatory and special preparatory.

As an example, let's examine the group of athletes who enter a state of form in 2 months. Here PRt, PD and PR alternate as follows:

1. PRt (Oct),
PD (Nov-Dec),
PD (Jan-Apr),
PR (May),
PR (June),
PR (Aug),
PR (Sept).

This alternation of periods of development, retention of form and periods of rest, depending on individual peculiarities of the competitive schedule and the tasks facing the athlete refer to the level of the macrostructure of the training system. A general condition of the structure of

periods of form development, periods of its retention and periods of rest is the change of methods at the start of each period. With a structure of a period of form development consisting of general preparatory and special preparatory stages, the changeover occurs twice- at the start of the stages.

There is lengthy use of a certain set of training methods over periods of form development. By these actions we are establishing beneficial conditions for short-term and long-term adaptation through which the athlete enters a state of form. If we wish to extend the length of the cycle of form development, we must change the training methods after a certain interval of time.

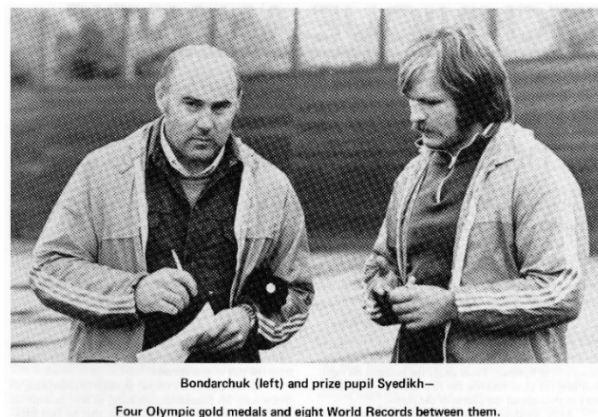


Figure Appendix H.1: Anatoliy Bondarchuk and Yuriy Sedykh

What we mean are periods of form development that follow the rest periods. Periods of form development end before the onset of the phase of temporary loss following the phase of development and relative stabilization.

These laws governing the development, retention and loss of form help us to plan a certain dynamic of sporting achievements throughout the annual cycles of training. Its configuration depends on the athlete's individual abilities {length of the period of developing form, their structure, which group he/she belongs to among those we have conditionally established, the competition schedule and the tasks facing the athlete}.

As an example, let us take the structure of a training system where there are alternate periods of form development and a rest period, given the simultaneous use of training methods. Thus, with athletes in the first group (Diagram 1), throughout the period of form development initially we shall have a fluctuating increase in performance, and then relative stabilization.

Members of the second group (Diagram 2) will have a different dynamic. Here at the start of the period of form development there will be a drop in performance, and then there will follow a varying improvement followed by a phase of relative stabilization. Athletes of the third group (Diagram 3) will have a certain stabilization of results at the start of the period of form development, then comes a drop. Following that, performance will begin to drop off right up to the beginning of the phase (second) of relative stabilization.

This is how we also plan the dynamic of performance over periods of retention of form. Here too we consider the individual reaction of each athlete separately to the change in training methods at the start of the competitive periods. Thus, with the first group of athletes over the

first 2 weeks there will be even a slight rise in the level of performance (sometimes by a few percentage points), and then a small drop off.

With the second group, performance in the first half of the period (first and second weeks) falls slightly, and then in the second half improves. With the third group, over the first and third weeks, performance somewhat rises, while in the other weeks it tends to fall off. For athletes in the fourth group, the dynamic of performance is: first and third weeks, rise in performance; second and fourth, fall.

When we write of a fall in performance, we must understand that it falls by comparison with the "waves" of races that occur before and after. As far as the overall dynamic of performance over the periods of form retention, by comparison with the level of performance existing earlier, the performance is in the retention zone. Throughout the rest periods performance falls by 8-12%.

The overall strategy for employment of training methods over periods of developing form boils down to the fact that in each successive period we employ more and more new exercises. The system of training presupposes a planned increase in the volume and intensity of training loads (aggregate indicators) from one period of form development to the other.

For example, if in the first period of form development the overall volume of training load is 100 units, then in the second period we need to increase the volume of training load to 110 units, in the third to 120, and so on. In the same way we increase the intensity of training loads.

By adhering to this strategy of changing training methods, means of distributing load and intensity, the increase from one period of form development to the next, and the quantity and quality of training loads, we shall encourage a situation where performance will improve at each stage of sporting development. (End of Part One.)

Constructing a Training System, Part II

by Anatoliy Bondarchuk, USSR

This is the concluding part of a two-part article which presents Bondarchuk's ideas on periodization. The first part appeared in Track Technique 702.

To establish an effective cycle of periodization, a coach first must consider the laws governing the development of form.

Results of various experiments show that the development of form has a "phase character" in which in a particular sequence, depending on the forms of annual training cycles being used and on the athlete's individual characteristics-there are alternating phases of acquiring, retaining and temporarily losing form. L.P. Matveyev has written about such cycles.

Development of form varies depending on the simultaneous use of a certain set of general preparatory, special preparatory and competitive exercises after the transitional period.

In one group of athletes there initially follows a phase of acquisition, then a phase of retention and temporary loss (Diagram 1). In another phase (Diagram 2), the phase of temporary loss precedes the phase of acquiring form. With the third group of athletes, alternation of phases takes the following form: retention phase, temporary loss phase, acquisition phase, retention phase, temporary loss phase (Diagram 3).

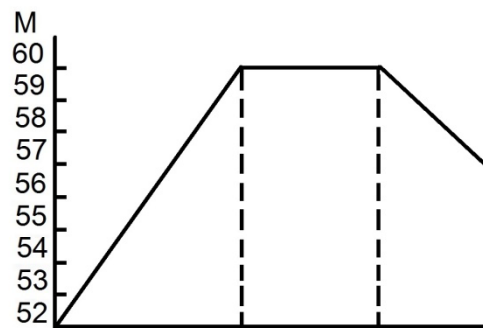


Diagram 1

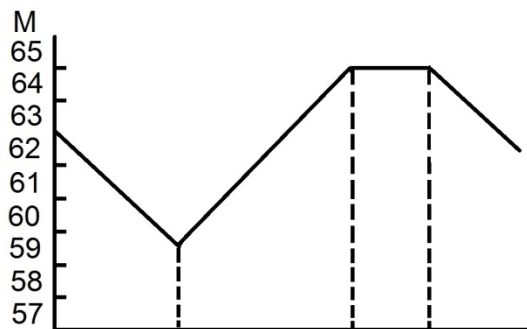


Diagram 2

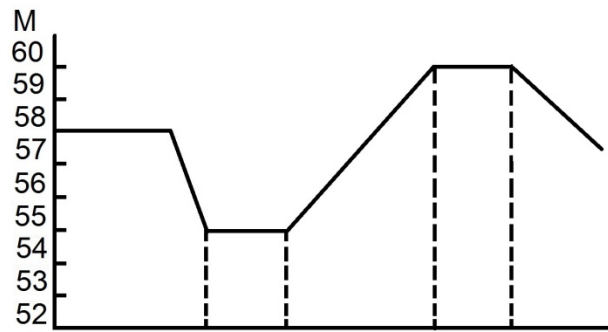


Diagram 3

The length of the cycle of form development, which ends for all athletes with the retention phase following the acquisition phase, is extremely individual from two to eight months. However, most athletes enter a state of form in two or three months.

The length of the retention phase for all athletes, irrespective of the forms of the annual training cycle being used, varies from 7-14 days. The length of the temporary loss phase that follows it depends on the time of using the same set of training influences which has helped the athlete to reach the given state. The periods increase when it is increased.

The length of the acquisition phase, as well as the preceding phases of temporary loss and relative stabilization in various groups of athletes, is also extremely individual- from 2-3 weeks up to several months.

When the above-mentioned form of annual training cycle is used, athletes enter a state of sporting form in the competitive exercise and a state of optimum physical preparation in the exercises being used at the same time.

Development of form with alternate use of the training methods being used after the transitional period (initially methods of general and then of special preparation) occurs in the same way as with the simultaneous. What we mean is not only the presence of three reactions of the organism systems in the form of a certain alternation of the above-mentioned phases, but also individual length of the cycle of form development.

Differences are observed only in that initially athletes enter a state of optimum physical preparedness through means of general preparation, and then only into a state of form in the competitive exercise (Diagram 4).

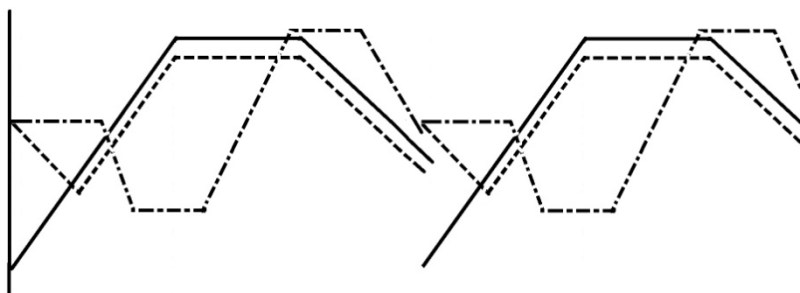


Diagram 4

Moreover, for both types of exercise, we need the same time interval- from 2-8 months. They also repeat a certain alternation of phases of acquisition, retention, and temporary loss, depending on which group the athlete belongs to (Diagram 4).

Development of form after a change from one set of training effects to another, and for the sake of a repeat entry into a given state, also has a phase character. With athletes of the first and second groups the reaction of organism systems alters with a change in the form of the annual training cycle. The cycle of form development begins with the retention phase after which follows, the phases of temporary loss, acquisition, retention, and temporary loss (Diagram 5). The exceptions to this are athletes in the third group; the reaction of their organism systems does not change.

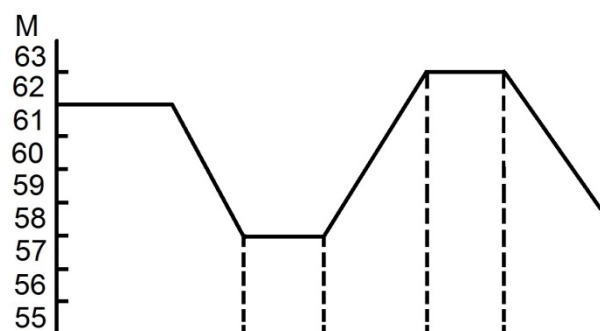


Diagram 5

With athletes of the first and second groups the periods of entering a state of form also increase by two months on the average. They remain as before with athletes of the third group.

That is all that concerns laws of development of form. We studied laws of maintaining form in a situation of regular exchange-every four weeks-of sets of training effects after the athletes had entered a state of form. These actions helped them to maintain form over a lengthy period-up to seven months in our experimental conditions.

We studied the laws of loss of form through excluding the competitive exercise from the training sessions by a period of no less than four weeks for the duration of the preparatory, competitive, or transitional periods. When we completed our experimental investigations, it turned out that such actions lead to a loss of form. Sports achievements diminish by between 8-12% depending on the individual characteristics of the athlete.

If after a break the athlete again introduces a competitive exercise into the training sessions and uses it for a long time, we observe a repeat entry into a state of form by the same signs that had been described earlier.

The laws of development, retention and loss of form that we discovered enable us both theoretically and practically to augment the existing periodization of training with account for new ideas that have developed in the theory and practice concerning the various questions of constructing such a periodization: the individual characteristics of form development (see A.P. Bondarchuk, 1978-1985), the presence of "varying" (A.N. Vorobyov, 1977) and "stable" (Bondarchuk, 1978- 1985) means of distributing the volume and intensity of training load as well as the "alternating" (N.G. Ozolin 1960; L.P. Matveyev, 1964-1978; Yu.V. Verkhoshansky, 1985, et

al) and the "simultaneous" (Bondarchuk, 1978) use of means of general and special preparation for the duration of the preparatory periods and the periods of form development, etc.

First, the experimental data concerning individual length of the cycle of form development (from 2-8 months) testify to a need in some cases to increase, and in others to reduce the length of preparatory periods and their stages. By that we mean each of them should end now of entry into a state of optimum physical preparedness (general preparation stages) or into a state of form (preparatory periods).

Additionally, with the traditional structure of preparatory periods ("alternating"), which are subdivided into stages of general and special preparation, their duration should be twice as great as with the "simultaneous" structure. The last remark concerns those cases when the general and special preparation stages coincide. We mean that the general-preparatory, special-preparatory, and competitive exercises are used simultaneously.

Second, once again the individual characteristics of form development (cycle length), and the existence of two means of structuring the preparatory periods ("simultaneous" and "alternating") presuppose a structured variety of training periodization.

The accompanying diagrams present a structural variety of training periodization while accounting for individual characteristics of form development (cycle duration) when we use general and special preparation methods. Thus, the group of athletes that enters a state of form over two months may employ seven different variants of an annual training cycle (Diagrams 6-12).

With an increase in the length of the cycle of form development, the structural variety of training periodization diminished somewhat. Diagrams 13-23 show variants of structural variety of training periodization for athletes who enter a state of form over three (Diagram 13-16), four (Diagram 17-19), five (Diagram 20), six (Diagram 21), seven (Diagram 22) and eight months (Diagram 23).

As far as retention of preparatory periods is concerned, one may alternate throughout their duration depending on the power of impact and use both the varying and stable methods of distributing volume and intensity of training loads. What we mean is that during, for example, the first preparatory period we use a fluctuating method; in the second, a varying; in the third, a stable method.

Exchange of sets of training effects also takes place in the same way. As an example, let us take the training of throwers. Let us say that they have in their arsenal 100 different exercises (there are far more). Over many years of improvement, they may be distributed as follows: throughout the first preparatory period we use 1st-10th exercises; in the second, 11th-20th; in the third, 1st-30th; etc.

Improvement in attainments throughout each successive stage of improvement may be assured by deliberately increasing the power of training effects from one preparatory period to the next. This is primarily the novelty of ways and means of training effects, a somewhat greater volume and intensity of training loads, more effective means of their distribution, etc.

At the start of each period of training and of their stages, there should be a change of sets of training effects that are being employed. During the competitive periods, the change of training methods takes place every four weeks as far as such actions help the athlete to retain form.

Diagrams 6, 7, 10, 17 and 19 subdivide the preparatory periods into general and special preparation stages. The remainder do not subdivide the preparatory periods into stages since throughout them the means of general and special preparation are applied simultaneously in a correlation.

