SOME INDICATORS OF SPORTS TRAINING WHICH CAN INFLUENCE ACHIEVING MORE EFFICIENT SPORTS RESULTS (REFERENCE TO ATHLETICS)

(Relational professional paper)

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Abstract

Some indicators which are an integral part of sports training and at the same time are significant for achieving better results in some sports are presented and defined. Special attention was devoted to middle distance running athletic disciplines. The following issues were dealt with special attention to: instruments of body exercises, methods of training load, speed of body movement and creation and maintenance of sports form. On the basis of these characteristics and definitions of some indicators of a function of training, it is possible to achieve better and greater sports results in some sports, as well as in middle distance athletic racing.

Keywords: anthropometric & functional indicators, methods of training load, periodization of sports training, middle distance runners, sports form, mobility endurance

Sports training is a complex issue. Its structure and application is defined by various indicators of organizational, financial, methodological, anthropological and other conditions. Among these indicators there are instruments (first of all of body exercises), methods and procedures which include methods of work load during the training, ways of measurement of anthropological characteristics and abilities of an athlete, such as the speed of body movements, periodization of sports training, creation and maintenance of sports form of athletes, definition of success in different sports disciplines, such as, for example different running disciplines in athletics, and many other similar indicators.

In this paper, only basic definitions of the above mentioned indicators for achieving more efficient sports results are presented. Actually, that is the basic goal of this survey.

Instruments of body exercises, as one of indicators for successful sports training, have more than one classification. One of these classifications is the following:

• Instruments of general (versatile) preparation. They are characterised by low level of index of transfer of acquired physical ability to the practiced sports branch.

• Instruments of oriented preparation. They are characterised by middle level of index of transfer of acquired physical ability to the practiced sports branch or discipline.

• Instruments of special preparation. They are characterised by higher level of index of transfer for acquired physical ability to the practiced sports branch.

Instruments of general preparation include exercises which influence the level of versatility and build the whole system of movement and its parts. The aim here is harmonious development of the whole body. Thus these exercises do not have to match any specialised criterion. It is even recommended, within the scope of versatile preparation for athletes who belong to the second sports grade, not to use the exercises which are, by their character, very close to the practiced sports branch or discipline.

Instruments of oriented preparation include various exercises which influence the whole group of muscles and particular muscles which bear basic and indirect load in practiced sports branch or discipline. Character of neuro-muscular activity in these exercises should be approximately the same as that which appears in specialisation or external structures of movement.

Instruments of special preparation include those exercises when internal and external structures of complete movement (specialization) or its main phase are retained while doing them.

Within a system of training of middle distance athletes, instruments of training have a significant role in improvement of training, tactics, respiration, physical and psychical components.
Body exercises include the exercises which an athlete should do in order to reach the planned sports form. Development of results depends on the right choice of exercises and their application.

There are several types of training load which are significant in the sports training process. Training load implies effects of specific training instruments, first of all on functional sports structure of the body of an athlete, which can be expressed as external and internal training load and in that way it implies influence of exercises during the training which are given in a sense of passing particular distance within a particular time, number of repetitions, etc.

In this context, internal load is characterised by the size of corresponding reaction of an organism, that is, by a degree of morphological, motorical, physiological and biomechanical, cognitive and conative features.

These two kinds of load are mutually conditioned. It means that the bigger external load, the bigger functional changes and vice versa (except exceptions when optimal load is necessary).

Load parameters are scope and intensity as well as a pause which enables the total quantity of exercises in training practice. Intensity is defined as a degree of effort put in a particular exercise, that is, the strength of load expressed by frequency within a unit of time, speed of movement, etc. The technique and tactics of communicating simple and complex movements, as well as a change of rhythm of doing some exercises, can influence the size of load.

The scope and intensity are inseparable, but there are some contradictions between them. Simultaneous increase of scope and intensity are possible to certain limit, whereas further increase of scope is connected with interruption of intensity increase, and then with its decrease.

The situation is similar with the intensity. What can be noticed is an attempt to keep the scope of load, when only the intensity is increased, what causes great efforts of athletes, but a great effects are achieved. All these refer to both individual work in a training and to micro, meso and macro cycles. What can be concluded is that the scope of load represents foundation and intensity is a factor which stimulates increase of sports results.

- Preparation of athletes represents continuous process of motor habits improvement. State of preparation or training when an athlete can express all his/her technical and tactical habits, physical and technical qualities in the most efficient way and when an athlete achieves the best results in a sports competition it is considered to be the best sports form.

State of training and sports form are developed on the basis of objective laws. A trainer’s task is to know these laws and to know how to use them on the basis of theoretical knowledge and experience. However, numerous innovations have been introduced in a training process lately. They enable faster and more efficient realisation of an athlete’s plan and programme.

Homenkov (1981) claims that in the period of load for middle distance athletes, uninterrupted running or running with a change of rhythm is predominant. Running of different length 20-25km is done periodically with accessible speed. In winter period, an optimal dose implies slow running from 90 – 120 minutes. Optimal annual kilometrage for middle distance athletes is from 1500 – 3000km. Maximum annual scope of running for some of top foreign middle distance athletes is about 3500-4000km or even more. There are some examples that athletes achieve high results with smaller but more intensive scopes of running.

Harre (1973) states that a concept of intensity refers only to strength of particular contents, that is to work done within a time unit in one stimulus series. Relation between the effective load and complete duration of training is expressed by a concept of stimulus density. Proportional relation of scope of high intensity stimulus load (as a rule it is specific competition intensity to maximum intensity) and complete load is marked as relative intensity. Relative intensity is calculated in load categorisation in longer phases of a training (monthly, annual).

Intensity of running in preparatory period should not be especially high. At the end of preparatory period (the beginning of April) when conditions are favourable for good running period, middle distance athletes start increasing intensity of running while slightly decreasing scope of running.

In contemporary training of middle distance athletes, the issue of training load intensity has a special position. Training process can be managed well only if units of measurement of intensity and speed of running are defined correctly. Speed of movement and percentage of exercises which are done in specific speed can be used as indicators of measurement of intensity of running.

Three ways of measuring speed of running are applied in training practice:

a) In relation to average competition speed of a planned sports result. There are three variants of speed here: 1. slower than competition speed, 2. competition speed and 3. faster than competition speed.

b) In relation to critical speed, that is speed when oxygen production is equal to its consumption. There are also three variants of speed: 1. above critical, 2. critical and 3. subcritical.

Critical speed running as a rule happens when the oxygen consumption reaches its maximum. In relation to the best annual result and personal record on a given section (which is taken in proportion of 100%), three variants of speed which are 80 %, 85 %, 90 % and 95 % of this result, can be distinguished. For example, personal record in running on 400m is 50 seconds taken in proportion of 100%. Speed which corresponds to this result is 8m/sec; 90% of this speed is 7.2 m/sec or 55.5 seconds on 400m, 80% of this speed is 6.4 m/sec or 62.8 seconds on 400m. In this way every runner can make his/her own table of speed on all sections.

In training practice, the first way of measuring speed is used most, although it has a lot of shortcomings.
because the speed of an athlete is taken into account regardless of the length of a section.

The other way of measuring (critical speed) is most often applied when speed of long lasting continuous running and running on long sections (more than 1000m) is chosen.

Critical speed of top male athletes is approximately 3 min. ± 10 seconds on 1000 m. It is used in running on long sections in preparatory period (BSK 1 170 - 190 ud/ min.). When running above critical speed, a significant oxygen lack is created, so that longlasting continuous work is possible only with subcritical speed.

The most efficient speed for development of functional abilities of top athletes is 1000 m for 3,33 min. and faster (BSK 150 - 175 ud/min.). The best results for development of cardiovascular and respiratory systems of middle distance athletes are created in a diapason of subcritical speed.

The third way (above critical speed) in percentage of the best result is successfully applied in training of athletes of Bulgaria, Germany, Russia and other countries.

Sports training periodization implies periodical changes of structure and content of a training in a particular sports cycle. On the basis of research of a sports training structure, it is well known that it can be divided in four parts:

1. Microstructure – structure of one training and small cycles (microcycles)
2. Microstructure – structure of middle cycles and trainings (mesocycles)
3. Microstructure – structure of big cycles (mesocycles), such as semiannual and annual types of cycles and trainings
4. Polymicrostructure – structure of training cycles lasting several years.

Sports form is a reflection of unity of optimal preparedness of physical, psychical, technical and tactical qualities of an athlete. It is a particular state of organism when factors comprising that form are in such harmonious entirety that their resultant enables a working ability level.

Factors which comprise a form do not have the same value in each sports branch, even not in every discipline within particular sports branches. A phase of preparedness prevails in some sports branches, and technical or tactical in the others, but somewhere a high level of phycical preparedness occupies a primary position. Therefore, it is very difficult to assess the value of sports form. There are various methods which are used to define the value of the form (pedagogical methods, medical-physiological, psychological, etc.), but validity of those methods has not been examined yet. A case where all elements of evaluation point to an athlete of a high value, but however he/she does not achieve good results, is not rare. The easiest way of following and evaluating sports form is in those branches where results are measured by a method, a stopwatch, kilogram, etc. because in that case we can suppose that a result is a reflection of a sports form.

There are three phases in the process of sports form development:

- I phase of entering sports form
- II phase of relative ability and keeping sports form
- III phase of temporary fall of sports form

Practice showed that older and better prepared athletes can be in top form twice or three times a year. Level of their form achieved in this way has a more uniform and more permanent character. Analysis of the best sports results points to a fact that athletes can maintain a high level of their form even for a few months within one training cycle.

Some method procedures can be used in order to reach sports form, such as: methods of work - variations; method of continuous work; method of alternate work; Fartlek method; methods of repetition (8-15 min of long-term repetitions, 2-4 min middle duration repetitions, 15 sek. - 2min short-term repetitions; variations - permutations (intensity: constant, alternating , % max. Vo2, % max. speed of work); length of recovery: (section, time, % max. working speed); recovery activities: (passive, walking, slow running, other activities); number of repetitions: (maximum, until quality decreases, series); terrain: (tartan, clay, wood, sand, snow); methods of testing and competition - variations; sections: (shorter than racing section, equal to the racing section); speed: (faster than racing, acceleration, constant, slower than racing speed, change of speed, maximum possible speed).

Apart from this, with the aim of sports form maintenance, different planned running sections for development and maintenance of basic types of a runner’s body endurance can be applied systematically: for short-term endurance (100m, 200m, 400m); for middle length endurance (800m, 1500m, 3000m steeple chase), for long – term endurance (5000m, 10000m, 20km walking, marathon).

Running speed of 0,8 - 7,5 m/s is a characteristics of 400m - 800m tracks, but also with certain exceptions, up to 1000m. Increase of distance to 1500 m will cause decrease of average speed to 7,20 - 6,80 m/s and move energy supply to the level of 50%/50%. The time necessary for running this track ranges from 3.30 min to 3.50 min.

CONCLUSIONS

In order to achieve better results by training, it is absolutely necessary to know and apply as many indicators as possible, which integrate its structure and function, and especially indicators of anthropological status of an athelete. These indicators can be determined by functional diagnostics. On the basis of this diagnostics, it is necessary to follow, control and improve anthropological characteristics of athletes. The same importance belongs to constant improvement of organizational, methodological, material and spatial conditions for training, processes of selection of potential
top athletes, continuous professional development of coach and training staff, sports managers and marketing conditions, as well as other similar indicators which are in positive correlation with achieving better results in particular sports disciplines, and in that way in running athletic disciplines, too.

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