

**Fundamentals of the Theory and Adaptation of Sports Training SE Pavlov**  
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The educational level of the coach today, can not limit Xia exclusively pedagogical knowledge, the more so because the object of his work is a man in his complex relationship with the environment. It should be understood that the only thing than can be based on the theory of sports training - this is the laws of physiology, which, like other human knowledge, are subject to evolution. The situation in sport pedagogy, is unique: an artificially created the theory flatly accepted practices and replicated, regardless of their results. However, changed the country's economic situation today is no longer allows the coach to "grind" a lot of "material" in the hope that some supertalant able to climb to the summit of Mount Olympus, not because of sport, but contrary to the applicable techniques of sports training. Policy implications radical transformation of theory and methodology of sports training on the basis of recent advances in biology, physiology, medicine - one of the real ways of returning our country lost leadership in sports. "In the coming years we can expect the establishment of a database of in-depth and comprehensive research into the processes of biological adaptation in the performance of physical activity in combination with other ergogenicheskimi means the special theory of sports" [6].

Life at all stages of its development - a constant in adapting to the conditions of existence ... "(Sechenov, 1863), that is life - never-ending process of adapting to constantly changing environmental conditions.

The term "adaptation" is commonly understood as a process or a fait accompli to adapt to anything [23], with a fait accompli to adapt the same author in his monograph zuet characterized as merely "quantitative effect of the accumulation of certain changes. In our opinion, for a finding of fait accompli PRINCIPLES FOR GOOD GOVERNANCE adapted to something more logical to use the terms "adapted", "level of adaptability, which allows to divide the notion of" process "and" result ".

Adaptation to constantly changing conditions Wednesday (external and internal) - non-stop the ongoing process of adaptation of organisms to these changes, designed to maintain homeostatic balance in it. "... Every organism is a dynamic combination of stability and variability, where variability is its adaptive reactions and, consequently, the protection of his hereditary constants" [1]. The physiological significance of adaptation to external and internal influences is precisely to maintain homeostasis and, consequently, the viability of the organism in almost any conditions to which it is able to react adequately.

The absolute adaptability of the organism to anything - on the functional state of instability, which can only be achieved with long-term [3] - over the period of adjustment - effect on him rather persistent and enduring standard stimulus, or the amount of stimuli [10, 11]. Adaptive changes (more or less pronounced) occur in the body in response to almost any change in its external and internal Wednesday. Sports training is actually changing the conditions of existence of an athlete's designed to make it specific characteristics of sport adaptive changes. Adaptive changes can be both negative or relatively negative, including in cases when it comes to sports. Thus, the increase in the percentage of slow fibers in the muscles of a sprinter as a result of excessive use of aerobic training load direction [24] may be regarded as a negative effect GOVERNMENTAL adaptive changes in response to the data load. On the redistribution of cell organism Commons (owing to hepatocytes) as a result of adaptive changes in response to years of training load mentions AN Vorob'ev [8]. Vorobyov [8].

Theory of adaptation is closely connected with the works of H. Selye [28], devoted to the study of nonspecific adaptive reactions to the excessive force of impact (he named the stress-response), and emerging with the functional changes (stress-Sin-Drome) and states (stress). The attractiveness of his proposed theory on the role of stress (reactions) in the process of adaptation [28-32] was so great that in the future, finally and fully adopted by a huge army of his followers, including those in sports science [4, 18, 23 and others]. Are typical expressed in their works of opinion that "the pressures to provide training effect, should have a stress influence ... and stress - a typical phenomenon in athletes during training and competitive pressures" [5].

However, even in the 60 years, some authors had observed that "not all stimuli evoke the same kind of standard hormonal response and desire all the non-specific changes that occur in ... body, interpreted as a manifestation of the stress response makes this concept extremely vague and uncertain "[12].

In this case the actual situation of the theory of adaptation (also based on the works of H. Selye [28] and developed later LH Harkavy et al. [10, 11] to characterize non-specific mechanisms of adaptation and to assess nespetsifiches Kie functional state of the human, resulting in response to the varying strength of impact, almost ignored by most sports teachers, it is absolutely unreasonable considering only the adaptive response of the organism (and hence its functional state) stress [23, 24, 27 and others].

Later work demonstrated that stress as one of the adaptive reactions to the excessive exposure (in its classical sense) does not play a significant role in the mechanisms of adaptation to an athlete's training load [15, 19, 20], and the frequency of its occurrence even Mr. sorevnovatel period (at the peak of emotional and sufficiently intense physical activity) does not exceed, for example by swimmers of the highest qualification, 3.2% [21, 22]. Despite the abundance of work, confirming that the process of adaptation to physical exercise proceeds differently than described in the literature FZ Meerson et al. [18], and VN Meyerson et al. Of the theory of adaptation to physical loads, the proposed VN Platonova [23] and [12, 14, 15, 20 and others]. The provisions of the theory of adaptation to physical loads, the proposed VN Platonov [25] and, incidentally, is sufficiently free paraphrase the theoretical propositions put forward by FZ Platonov [25] and FZ Meerson [18], were picked up by researchers specializing in different fields of sports science. Indicative of an attempt to create synthetic theory of sports training on the basis of the above provisions, the provisions of the theory and methodology of sports training, pre-existing [16,17], and the conclusions on their own theoretical and practical studies [4, 6 and others]. Logically, the most popular among practitioners were working that combine the simplicity of perception and exclaim inadequately prepared for their critical evaluation of coaches [6].

However, ignorance or misunderstanding of the true physiological adaptation mechanisms leading ultimately to misunderstand the essence of the actual adaptive changes in response to various quality and strength of the impact load and consequently in sports - to use illogical methods of training.

At the core principles of modern sports training is the use of a training session, micro-, meso- and macrocycle different directions (obviously, also in order to avoid the adaptability to him), training loads, to ensure the growth of the trained qualities. In this case, the long-term

adaptation can only speak as a process of ever-changing vector, consisting of an infinite set of various adaptive reactions in training load and other load ("traces the phenomenon" which can be both positive and negative), but not in any case as a final adaptation. Obviously, it is the use of the above principles of building a sports training leads to an understanding that "... between the set by physical stress and achievable training effect no-one correspondence ...", "... the overall result of the administering of the coach will be ... . uncertain ", and " the coach should make every lesson a certain urgency and his former "effect that" he can not control "[6]. However, the effectiveness of the training process is determined by the reliability target system management training programs, whose ultimate goal is to achieve the best results in exactly on time "[13].

The results of our study indicate the low efficiency of educational programs used in training young swimmers [21]. The same conclusion led the authors' own long-term observations of the dynamics of athletic performance of students of the Moscow School of Olympic reserve. You can learn to talk about adaptation and adaptive changes in subcellular, cellular, tissue, organs and other levels, bearing in mind that the processes of adaptation does not even provided with separate bodies, and are organized and subordinate to each other systems [1,2,14] . Moreover, when it comes to adaptation to constantly changing (internal and external) conditions of its existence, understanding systemic mechanisms is absolutely necessary. "... It is the result of the system is the driving factor in the progress of all life ..." [1].

Quantitative and qualitative responses of the organism in response to changes Wednesday primarily depend on the initial state of the body, strength and specific qualities of the changes Wednesday (effects).

"Initial state" athlete is due but, on the one hand, his genetic potential, on the other - the realization of this potential, depending on previous conditions of his life (including the including the orientation of previously used training loads). In addition, the "original state" determined by the level and consistency of the systems of the body and respectively - the body as a whole is in constantly changing conditions in connection with which the term is fairly artificial, an abstraction, characterized by a state of the organism into a short, tending to zero time interval. This circumstance makes it necessary to assess "the source states" not only at the micro, meso or the macrocycle, but also before each training sessions and for him to assess the level and direction of changes in the training process and physiology. Sound planning and implementation subsequent training loads. It is important to the degree of informativeness of methods and indicators used to assess functional intermediate state of the organism.

Valid factor - external or internal effects on the body - always considered and evaluated in conjunction with the biological object (the body) and outside of this "interaction" independent "value" does not.

The strength (magnitude) the impact of any factor (the sum of factors) is determined purely personal reaction to it each subject, depending not only on the characteristics of the operative factor, but also on the adaptive capabilities of the entity and its functional (initial) state. Thus, the same dose (strength) effects even for one individual (depending on its state at different times) may be weak, medium in strength, strong or excessive. That is "one and the same exercise can cause a variety of athletes, or one and the same athlete at its different functional states of unequal reaction" [26].

Any acting factor bears both nonspecific and specific features. Moreover, the nonspecific and specific features in it literally intertwined, and separation properties of the active factor in the nonspecific and specific conditionally. "Specificity ... very often (if not always) detected in nonspecific reactions of the organism, which are influenced by various factors ... or states of the organism acquire their qualitative features" [12]. Nonspecific action of any factor is determined primarily by the magnitude and direction of changes in the functioning of the neuro-endocrine dimensional system of the organism, the amount and direction changes its bioenergy. In sports, the level of specificity factor (training effect, load) can be determined only by the ratio of its qualitative and quantitative to qualitative and quantitative main indicators of competitive pressure an athlete. The specificity of action of some factor determined by the specificity of biochemical and structural changes in the body in response to more or less prolonged action of this factor .

Much more difficult to assess the specificity of the sum of factors, especially if the fragmented WIDE actions of these factors on the organism causing multidirectional biochemical responses. While the actions of non-specific links countervailing factors simply added together, the level of specificity of their sum with an infinite increase in the number of such factors in a limited (eg, occupation trenirovoch nym) period of time may tend to zero or, in certain circumstances have a negative value. In addition, the predominance of the amount of non-specific factors affecting the links in itself may change the direction of the vector sum of their parts spetsifiches FIR (even in the case of unidirectional influence on specificity) with a significant excess of the first threshold . For example, use in training sessions of exercise-speed propulsion thrust to the total volume, reaching levels typical for aerobic work without vysokoeffek tive means of recovery (anabolic steroids, laser stimulation) did not lead to an increase in power-speed athletes. This provision should be considered when planning a specific training sessions and training in microcycle.

Non-specific adaptive responses - non-specific systemic response of the organism to the effect of different strength (weak, medium, strong, excessive) stimuli - are transformed, depending on the magnitude of the effect (and "source state") in various dyna Kie functional state of the organism is determined primarily by its Neuro gumoral nym status.

The specific adaptive responses - the body's response and its individual systems ( "the dominant system" [6, 18, 23]), the specificity factor, is expressed in changes in metabolism (motivated by the specificity of action) as in these systems, as well as in the body as a whole.

Nonspecific and specific reactions are interrelated and interdependent, as are the body's response to the various properties (quantitative and qualitative) of one stimulus. Expression of specific reactions of the organism is determined by the specific qualities of the impact and level of nonspecific reactions in response to this effect, ie, a nonspecific link adaptation reaction determines the value of a specific response of the organism to have any effect [12].

It is a complex of nonspecific and specific parts of the existing factor determines the functionality, while its multiple effects and structural adaptive changes in the body and its systems.

Adapted with this in mind - a complex of nonspecific and specific changes in the organism as a

result of prolonged, continuous or recurrent (within period of adjustment) of relatively constant in intensity and specificity of the stimulus, characterized by a fairly steady and dynamic state at the same time the maximum adaptability to the action of the stimulus of all body systems. You can talk about different levels of adaptability of the organism, depending on the multiplicity and duration of action relative to it but a standard, unchanging stimulus, and achieved as a result of this action of the organism. Based on the existing view that the "long-term adaptation" develops on the basis of multiple realization "urgent adaptation [6, 23], is to draw a conclusion about the impossibility of truly informed construction of the training process based on theories, does not take into account the almost daily changes in the state subject to which directed a training effect, and allowing the use of opposite directions (for the specific effects on the body) training loads. Reducing the level of specificity of the summation of action countervailing factors leads to an increase in the role of non-specific level of the stimulus (the force) in the process of adaptation, adapting to this level and raise the threshold values potency. That is, in this case, the condition for the adaptation to a greater degree of specificity is not determined the factors and the total force impact. In sports, the use of a single workout or microcycle countervailing pressures may reduce or negate their specificity and, accordingly, reduce the specificity of the response of the body, which leads to lower growth of sports results, or to their stabilization at a certain level. A further increase athletic performance in this case is possible or if a further increase in the total force of impact (under compromised adaptive systems) or in the case of high-performance tools for improving rabotospo IMD (pharmacological, physical therapists ethical [19, 20], significantly changing (in this case, the primary, - internal) conditions for the existence of the organism. In fact, the same principle is carried out Today, in most cases the construction of sports training, but rather, it meets the goals and objectives of physical education - create fully physically developed man, but not high-class athlete.

The use of micro-and mesocycle different directions (at the physiological and energy criteria) training loads in sport at odds with the main goal of sports training and more under the law of conservation of energy. "In order to expand in one direction, nature had to scrimp in other" (Goethe)"If the juices replenished in excess of one body, they are rarely replenished, at least in excess, to another" (Charles Darwin) and later: "it is difficult to ensure that the cow gave plenty of milk and at the same time have grown fat."

According to the concept of PK Anokhin [1], the most fully developed the theory of functional systems, the components involved in the construction of a system, necessarily limited degree of freedom for their participation in the other. This restriction, along with the formation of brain structures ("command post") model of the final result (meaning no mental, and functional intrastructural formation), which "compares" the interim results, is one of the prerequisites sistemoobrazovaniya. "... The system seeks to" get a result and programmed for this can go on the largest perturbations in the interactions of its components "[1]. "... Formation of the system is accompanied by the involvement of an increasing number of the necessary energy and structural components (M. A. Angle [25] calls this the price to pay for an important positive effect) and weeding eating "redundant" components (energy and structural). Ultimately, this leads to the formation of the maximum (under the given conditions) of the productive system.

These provisions are crucial because, consciously mapping out ways to create a functional system, fully and clearly aimed at the result, and providing for the formation of the model results it can be achieved automatically using the system for new energy reserves and the structural body in accordance with the main motives for its functioning. These provisions are

crucial because, consciously mapping out ways to create a functional system, fully and clearly aimed at the result, and providing for the formation of the model results it can be achieved automatically using the system for new energy reserves and the structural body in accordance with the main motives for its functioning.

A functional system - a complex of various structures and functions of the organism associated together to solve common problems. For example, the decision of a motor task involves the appearance of excitation in the central nervous system, its holding on the nerve trunks, neuromuscular transmission, muscle contraction, accompanied by a hormonal release and increased microcirculation in the working muscles, etc.

Emerging functional system operates in a sort of continuum of intermediate results. Once it reaches a certain sub-goal, she began her "Trouble launching State" with a view to achieving the next. This system is the selection of precisely those degrees of freedom of its components, which define at their integration in the future receive the final result.

Final formation of functional dimensional system in response to a set of standard, relatively constant in strength and spetsifichnos ty effects (training load) is directly related to the absolute adaptability of the organism to them and provided a sufficient level of specificity of this complex (loads) relative to the standard effects (competitive load ) leads to the true achievement of peak fitness. Length of forming a functional system, subject to specified conditions above limits Xia individual adaptation period. Length of forming a functional system, subject to specified conditions above limits Xia individual adaptation period. The need to achieve higher levels of sports trenirovannosti in the future every time dictates the change of dominants and the formation of new functional systems based on the newly achieved level trenirovannosti..

Thus, the coach should build in the Athlete's single objective functions nuyu system consciously leveraging its ensemble of all its required internal and external components, which might otherwise be diverted to other functional systems. All efforts should be designed to achieve a specific result, because the tools and techniques, chosen on the basis of the structure of a specific sporting activities, have greater the efficacy in comparison with the universal methods that search in terms of theories of adaptation and functional systems, futile.

Using the postulates of the system of physiology and medicine in addressing the many challenges facing the sport educators, physiologists, doctors can give to almost jewelry management training process, the processes of recovery after training and competitive pressures, improve athletic performance, which ultimately will inevitably lead to achieving athlete high sport results.

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