



The synergy between the athlete's functional systems and their training regimen is essential for achieving peak athletic performance

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Dr. Hab., Professor **Sh.Z. Khubbiev**^{1, 2}
 PhD, Associate Professor **O.V. Kostromin**³
 PhD, Associate Professor **N.A. Zinovyev**⁴
N.D. Alekseeva⁴

¹Saint Petersburg State University, St. Petersburg

²The Military Institute of Physical Training, St. Petersburg

³Saint-Petersburg Mining University of Empress Catherine II, St. Petersburg

⁴Baltic State Technical University "VOENMEH" named after D.F. Ustinov, St. Petersburg

Corresponding author: khubbiev@gmail.com

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Abstract

Objective of the study was to recognize the holistic approach to sports training, viewing the athlete's body as a unified and interconnected system.

Methods and structure of the study. The study involved the examination and synthesis of scholarly and methodological sources. The research was conducted over the period of 2022 to 2024, employing a range of techniques, including literature analysis and synthesis, deductive reasoning, inductive reasoning, extrapolation, and content analysis.

Results and conclusions. It is clear that sports training is a pedagogical system that operates as a self-regulating and self-organizing mechanism, maintaining the athlete's body in a state of balance and enabling them to adapt to physical exertion. Sports training triggers a series of processes in the athlete's body: 1. Afferent synthesis: The athlete's body receives information about the current state and conditions. 2. Decision-making: Based on the information received, the athlete's body makes a decision about how to respond. 3. Formation of an acceptor of action results: The athlete's body creates a mental representation of the desired outcome. 4. Fitness as a result: The athlete's body performs the desired action. 5. Reverse afferentation: The athlete's body receives feedback about the outcome of the action. 6. Comparison and evaluation of the result in the acceptor of action results: The athlete's body compares the actual outcome with the desired outcome and evaluates the difference. 7. Correction: Based on the evaluation, the athlete's body adjusts their actions to achieve the desired outcome. 8. New result level of fitness: The athlete's body achieves the programmed adaptive result. The ultimate objective of all these processes is to achieve the programmed adaptive result.

Keywords: *functional system, integration, organismal level, sports training.*

Introduction. Sports training is designed to improve the athlete's body. Its effectiveness depends on how much it takes into account the complexity and functionality of the body. In accordance with the principle of W. Ashby in control systems, one of the main indicators of the complexity of the system is its diversity [9]. This principle determines the degree of coordination of various control parameters of the system to achieve the set goals in the conditions of possible changes in the system. In this regard, sports training should be considered as a system where obtaining a useful adaptive result - the expected training is based on the integrative interaction of factors creating the functional readiness of the body.

Objective of the study was to recognize the holistic approach to sports training, viewing the athlete's body as a unified and interconnected system.

Methods and structure of the study. An analysis and generalization of scientific and methodological literature was carried out. The study was conducted during 2022-2024 using the following methods: analysis and generalization of literature, deduction, induction, extrapolation, content analysis.

Results of the study and discussion. Based on the theory of the functional system of P.K. Anokhin [2], when constructing sports training as a complex functional system, it is necessary to create it as a complex of self-regulating, self-organizing, dynamic functional



subsystems. They are integrated in order to obtain a useful adaptive result. In this case, the interaction of selectively selected functions of organs and systems of the body acquires the character of mutual assistance to achieve such a result. Thus, sports training is a pedagogical functional system, it functions as a self-regulating and self-organizing mechanism for maintaining homeostasis in the athlete's body and ensuring its adaptation to physical activity. Functional subsystems that exhibit their activity at levels below the organismic level also act in the same way. The achievement of an adaptive useful result of a functional system is served by its architectonics. It includes a number of successive stages: afferent synthesis; decision-making; acceptor of the result of the action; assessment of the achieved result; efferent synthesis and reverse afferentation. Each functional system has an apparatus for assessing information - an acceptor of the result of an action, it forms information models and a response reaction of the required result based on the available experience [1]. These stages are closely related to the integration processes, their essence reflects the methods of working with diverse information. Information is generated during the activity of the organism as an integral functional system, as well as its organs and systems. Analyzers supply external information. Further, the integration processes are associated with the processing of this information in the organism, which triggers physiological processes that activate the functional system of the executive organs and systems of the organism. This is accordingly reflected in the training and competitive activity of the athlete. As a result, a programmed sports result is expected.

The results of sports training as a functional system can be presented by separate indicators: the functional state of the athlete; the results of training sessions (levels of intellectual, physical, technical, tactical, psychological, spiritual and moral, integral preparedness). The result of the athlete's competitive activity can be presented by the corresponding indicators of the functioning of the athlete's body at different levels of his activity. All this can be calculated taking into account the cycles of sports training. The final adaptive result of sports training can be records of different levels, absolute results, places taken, victory in competitions, etc.

The body is a coordinated integration of many functional systems, some of which, through self-regulatory activity, provide homeostasis of internal envi-

ronment indicators, others - adaptation of the body to the conditions of the external environment, training, competition. Some functional systems are genetically determined, others are formed in ontogenesis during the interaction of the body with internal and external environmental factors, i.e. on the basis of training [5], i.e. sports training. Sports training forms the parameters of an adaptive useful result in the body. During training and competition, it is not individual muscles, organs, systems that function, but the whole organism as a functional megasystem, its components are a multitude of functional systems that ensure the implementation of tactical and technical techniques and actions as forms of manifestation of the athlete's physical abilities. Following P.K. Anokhin, we note that the inclusion of an adaptive result in the analysis of sports training changes the generally accepted understanding of the system in general and allows us to consider it in a new way. All the activity of the system and its changes must be presented in terms of the result. This further emphasizes its decisive role in the behavior of the system. This activity can be expressed in a number of questions reflecting the various stages of the formation of the system: What result should be obtained? When exactly should the result be obtained? What mechanisms should be used to obtain the result? How does the system verify the sufficiency of the result obtained? These questions express everything for which the system is formed [1].

The athlete's behavior is assessed taking into account a number of adaptive useful results: internal constants of the body, interconnected indicators of homeostasis that determine normal metabolism; results of adaptation to the external environment that allow satisfying internal biological needs and preserving life; results of group activities in order to satisfy biological needs; results of social activity [5].

According to the theory of the functional system of P.K. Anokhin, the body forms a new functional system to perform any activity. For complex systems, for example, sports training, complexes of functional systems are formed in the body, the final result of which determines in which direction and in what combinations private mechanisms of integrative activity will be integrated [2]. As a result, the athlete is ready to win the competition, set a record, take his rightful place. This is facilitated by the useful adaptive results achieved during sports training.

According to the theory of the functional system, behavior is a set of actions of the body that determine



the future result of behavior, and not a consequence of previous external and internal stimuli. The intracerebral organization of behavioral processes provides an advanced reflection of reality [6]. This provision underlies the athlete's sports training.

Sports activity is a set of motor actions of an athlete, they are aimed at the implementation of sports skills, abilities, and abilities of the highest level in the chosen sport and the achievement of a programmed sports result as the highest manifestation of the results of the athlete's training and competitive activity. From the standpoint of the theory of the functional system, the final results of sports activity are the products of the integration activity of all functional systems of the whole organism. The integration of the internal processes of the organism and environmental factors into the functional systems of the athlete's purposeful behavior occurs due to sports results, which form these systems. [8].

Conclusions. Sports training is a pedagogical functional system that functions as a self-regulating and self-organizing mechanism for maintaining homeostasis in the athlete's body and ensuring its adaptation to physical activity. Sports training launches in the athlete's body: afferent synthesis, decision-making, formation of an acceptor of action results, it is formed by: fitness as a result - reverse afferentation – comparison and evaluation of the result in the acceptor of action results – correction – new result, fitness level. The ultimate goal of all system processes is to achieve a programmed adaptive result.

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