

# Special aspects and implementation of the system approach into trainer's professional activity

**Oleg Kamaev**

*Kharkiv State Academy of Physical Culture, Kharkiv, Ukraine*

**Purpose:** to determine the special aspects and implementation of the system approach into trainer's professional activity.

**Material & Methods:** the content of the systemic approach was considered. The following research methods were used: theoretical analysis and generalization of scientific and methodological information, structural and functional analysis, system analysis.

**Results:** defines the principles, the content of the system approach and the algorithm of its realization in practice of trainer.

**Conclusion:** the basis for the use of the system approach in practice is the expected sport outcome; a systematic approach in the work process should be implemented through coordination, subordination, hierarchical links, development links, backward and direct links.

**Keywords:** trainer, training system, system approach, links.

## Introduction

Modern sport of higher achievements requires many years of intense sports training, performance of training and competitive loads at the limit of the functional capabilities of the athlete's body. In connection with this, the champion's pedestal is reached only by a few out of many thousands of talented athletes. The large losses in the pursuit of the champion's achievement in most cases are associated with the performance of training and competitive loads exceeding the functional capabilities of the athlete's body [4; 6]. Especially it is dangerous, and categorically it is inadmissible, in youth and junior age, as the nature and laws of development of the growing, forming organism of young sportsmen [4; 5].

Considering that the paradigm of the unity of man and nature, based on the co-evolutionary strategy in human cognition and activity, is the basic attitude of mankind in the XXI century, there must be a prudent, scientifically grounded invasion of human nature [9; 10].

Often there is a contradiction in the practice of training an athlete between age and the tasks of the coach, between heavy loads and functional data of athlete, between the model characteristics and individual indicators and the abilities of the trainees can be removed in the process of sporting growth by means and techniques that are in systemic unity with the structural formations of the system of training and preparation of the athlete as a whole [1; 2; 8]. The methodological basis for achieving harmony between these contradictions is the consideration of the laws of the universal connection of development and the systemic representation of the changes occurring in the athlete's body, the regularities and principles of long-term sports training and the formation of a sports form [7; 11]. These recommendations can be implemented when considering the process of training an athlete as a system object and observing the principles of a systematic ap-

proach [3; 7; 8]. This possibility is explained by the fact that the system approach allows us to consider such a complex object (the process of training an athlete) as a set of interacting structural entities, and is aimed at identifying the features of the connection between the elements and the laws of bringing them into a single integrated system.

## **The relationship of research with scientific programs, plans, themes**

The research was carried out in accordance with the Consolidated Plan of Research Work in the Sphere of Physical Culture and Sports on the topic 2.6. "Teoretikal and methodical bases of perfection of training process and competitive activity in structure of long-term preparation of sportsmen (No. of the state registration 0111U001168).

## **The purpose of the research**

To determine the special aspects and implementation of the system approach into trainer's professional activity.

## Material and Methods of the research

**Research methods:** theoretical analysis and generalization of scientific and methodological information, structural and functional analysis, system analysis.

## Results of the research and their discussion

In the theory and practice of sports training in determining and developing an athlete's training program, one can not do without a general assessment of the conditions and the possibility of implementing plans, without a comparative analysis of previous indicators, without regard to the degree of influence of a complex of various factors and the systematization of the state of all components of the athlete's training struc-

ture. Thus, in the process of training the athlete, the following methods and approaches to solving the problem are used: descriptive, comparative, analytical, integrated and systemic approach.

The descriptive method is based on visual observation using qualitative criteria – more, less, closer, farther, lower, higher. For example, this method can be used to describe the technique of motor actions of an athlete.

Comparative method is based on comparison of indicators, characteristics of phenomena, process, object. For example, the indicators, parameters, and results of motor actions of athletes of different qualifications or readiness.

The analytical method is used in the study of complex objects, phenomena, processes, when these formations are artificially divided into parts and considered separately, in isolation. For example, an isolated examination of the level of each type of preparedness of athletes – technical, physical, psychological, functional and tactical.

The complex method is based on the method of considering complex objects, phenomena, processes on the basis of analysis and synthesis of knowledge from different disciplines with their subsequent summation and generalization. For this, an interdisciplinary approach is used, taking into account two or more factors, indicators that affect the effectiveness of the training and competitive activity of athletes. But it does not take into account the relationship between the constituent elements of the object, process or phenomenon.

The system approach is based on the method of considering complex objects, processes, phenomena as an integral system, as a set of interacting elements. At the same time, on the one hand, the structural formations of the whole system are revealed, the features of the connection and the interrelations between them, and also between the elements and the sys-

tem, features of the functioning of the system are examined, the characteristic properties of each element are determined, and on the other, the integrity of the complex system is revealed. Proceeding from this, it can be noted that the system approach allows us to consider complexly organized objects, phenomena, processes as a system consisting of structured and functionally organized elements.

In the process of studying and analyzing such a complex, multi-structure object, as an athlete's training system, on the basis of a systematic approach, one should know such basic principles:

- a) process should be viewed as an integral entity consisting of relatively independent subsystems, structural entities, elements that closely interact with each other;
- b) when considering the structural elements of a system, the focus should be on the degree of interaction and the relationship between them;
- c) in the study of the structural entities of the system need to be considered and subordinate hierarchy (subordination, sequence, relationship and order relationship) between the elements;
- d) process of training an athlete is a dynamic (changing) and evolving process;
- e) dynamic objects are mainly considered as a set of control and controlled subsystems;
- f) control and correction of the process of the functioning of the system is provided by a "control loop" (based on feedback and direct communication);
- g) for the training system of the athlete is characterized by a multiplicity of models, in the analysis of elements and the sys-

## Comparative analysis of complex and systemic approaches in the process of training athletes

| Characteristics of the approach | Integrated approach  | System approach   |
|---------------------------------|--|---|
| 1. Purpose                      |  | Achievement of the highest sport result   |
| 2. Ways of realization          | Interdisciplinary approach based on knowledge of different disciplines   | Training athlete on the basis of new knowledge, which have a system-forming character   |
| 3. Object                       | The condition of the athlete, the level of different types of his preparedness   | A holistic system consisting of regularly structured subsystems and systems   |
| 4. Method                       | Comprehensive method taking into account two or more factors or indicators affecting the effectiveness of the training process | A systematic approach focused on a specific time frame for preparation for major competitions, taking into account all the indicators affecting the effectiveness of training   |
| 5. Principle                    | Manageability, controllability, the relationship between training and competitive activities, the variability of the loads     | Integrity, structure, hierarchy; subordination, plurality of models, patterns of functioning of the elements of the system and the formation of the system, its development and feedback, communication with the external environment |
| 6. General characteristics      | Purposefulness, versatility, approximation, interdependence  | Purposefulness, organization, orderliness, interconnectedness, interaction  |
| 7. Development                  | Within the existing knowledge of a number of disciplines, acting separately  | Within the framework of systemology at the level of knowledge of system-creating characteristics  |
| 8. Theory                       | Theory of sports training  | Theory of system, functional systems, management, operations  |
| 9. Characteristics              | Limited coverage of the problem, related to the determinism of the problem   | Widespread coverage of the problem, but under the conditions of probability   |

tem as a whole, you can use a number of models: anthropomorphological, functional, competitive activities, types of preparedness and other.

Comparative analysis of complex and systemic approaches to the process of training athletes allows us to determine that in a complex approach, various aspects of the athlete's preparedness are analyzed and based on knowledge of interdisciplinary summarizes these data and systematic approach, on the one hand, is aimed at establishing a whole structural entities, their content and to determine the characteristics of their operation and communication between, on the other hand, defines a mechanism functioning as a system integrity (Table).

Thus, it can be noted that an integrated approach is used for a comprehensive review of the object and is a particular requirement, and in the system approach, integrity is the main methodological principle. At the same time, the systemic nature consists in the desire to consider the object comprehensively (it can be said that it is complex). But taking into account the different types of connections between structural elements, subsystems, between them and the whole system, as well as the connection between the system and its components, with external factors.

From the results of comparing these approaches to the athlete's training system, it should be noted that these methods of studying the object can not be contrasted, since they complement and enrich the training methodology of the athlete. But at the same time it should be emphasized that a systematic approach is characterized by a certain rigor and orderliness, which in a complex approach is not. The systems approach is based on the objective laws of development of the theory of adaptation, operations, management, functional systems and the systematic and comprehensive – on the laws of particular disciplines (theory of sports training, sports physiology, biochemistry and other sports.)

Systemic approach in the activity of the trainer is realized as follows:

1. In the basis of the construction of the training system for the athlete, training group, sports team, the expected result of the competitive activity at the main competitions.
2. The athlete, group, the teams should be perceived as an organic structural element of the complete system of training the athlete.
3. Training system of an athlete should be considered as a purposeful, complex structure, functionally organized on the principles of hierarchy and subordination, but has a probabilistic character.
4. Probabilistic nature of the system assumes certain deviations from the planned loads and, as a result of the competitive activity.
5. Structural formations of the system are considered as relatively independent elements, which have a close interconnection, interact with each other and the system as a whole.
6. Structure of the training process should correspond to its content, forms of organization and methodological requirements.

7. The system approach involves the use of advanced forms of organization and conduct of the training process, taking into account the resource capabilities of the athlete's body, the degree of his giftedness, genotypic predisposition, internal and external limitations, age, gender and individual characteristics of the athlete.

8. In the process of training the athlete it is necessary to use the achievements accompanying sports training, scientific disciplines – the psychology of sports, social psychology, sports biochemistry and sports physiology.

9. In the athlete's training system, it is necessary to allocate and actively use system-forming factors – coordination and subordination links (interaction links) between structural formations of the system, allowing to ensure the consistency of the action between the coach and the athlete, between the athletes, between the athlete and the environment, and determine the optimal ratio between training loads and recovery tools.

Noting the positive aspects of the use of the system approach in the training of an athlete, it should be noted that this method is limited in the consideration of systemic formations:

1. Systematicity provides certainty, and the environment, including the athlete's training system itself, is largely undefined. Sports achievement due to objective, subjective reasons is uncertain. Uncertainty is essentially present in human relations – between the coach and the athlete, between the coach and the team.

2. Systematicity prefers consistency, and in the athlete's training system, controversial situations often arise, for example: in value orientations between the coach and the athlete; between the coach and the team; in management decisions; between the load and the capabilities of the athlete, between the model indicators and the individual characteristics of athletes.

Despite this, it should be noted that in general, the systemic approach allows you to organize and streamline a person's thinking, to find the best ways to solve the problem.

## Conclusions

1. In the basis of the use of the system approach in the practical activity of the coach, the expected sporting result at the main competitions.
2. Due to the fact that the athlete training system is a complex structured, functionally organized, evolving and dynamic system, systemic approach should be implemented through coordination, hierarchical, subordinate links between the elements of the system, the links of development, feedback and direct communication.
3. Thus, the methodological approach to the process of training an athlete based on the theory of systemic and systemic approach will allow us to identify possible ways of solving the problem and choose the optimal solution for solving it.

**Further research** will be aimed at determining the features of the system approach in the management of the training process of athletes.

**Conflict of interests.** The author declares that there is no conflict of interests.  
**Financing sources.** This article didn't get the financial support from the state, public or commercial organization.

## References

---

1. Zhmarev, N.V. (1986), *Upravlencheskaya i organizatorskaya deyatel'nost trenera* [Managerial and Organizational Activities of the Coach], Zdorovia, Kyiv. (in Russ.)
2. Kamaev, O.I. (2002), "Features of the system approach in the process of training athletes", *Slobozans'kij naukovy-sportivnij visnik*, No. 3, pp. 115-118. (in Russ.)
3. Kamaev, O.I. (2017), "Structural features and characteristics of the process of training an athlete as a system object", *Slobozans'kij naukovy-sportivnij visnik*, No. 1(57), pp. 41-48. (in Russ.)
4. Kulikov, L.M. (1996), *Upravlenie sportivnoy trenirovkoj: sistemnost, adaptatsiya, zdorove: avtoref. diss. na soiskanie uchenoy stepeni d-ra ped. nauk: spets. 13.00.04 «Teoriya i metodika fizvospitaniya, sportivnoy trenirovki i ozdorovitel'noy fiz. kultury»* [Management of sports training: systemic, adaptation, health: the author's abstract. diss. of Dr. ped. Sciences], Moscow, 48 p. (in Russ.)
5. Meerson, F.Z. & Pshennikova, M. G. (1988), *Adaptatsiya k stressornym situatsiyam i fizicheskim nagruzkam* [Adaptation to stressful situations and physical stress], Meditsina, Moscow. (in Russ.)
6. Platonov, V.N. (1988), *Adaptatsiya v sporte* [Adaptation in Sport], Zdorovia, Kyiv. (in Russ.)
7. Platonov, V.N. (2015), *Sistema podgotovki v olimpiyskom sporte. Obshchaya teoriya i ee prakticheskie prilozheniya: uchebnyk (dlya trenerov): v 2 kn.* [The system of training in the Olympic sport. General theory and its practical applications: a textbook (for trainers): in 2 books], Books 1, Olimp. lit., Kiev. (in Russ.)
8. Platonov, V.N. (2013), *Periodizatsiya sportivnoy trenirovki. Obshchaya teoriya i ee prakticheskoe primenenie* [Periodization of sports training. General theory and its practical application], Olimp. lit., Kiev. (in Russ.)
9. Ryabokon, N.V. (2009), *Filosofiya* [Philosophy], MIU, Minsk.
10. Sadvovskiy, Yu.N. (2003), "System Thinking and the Systems Approach: Sources and Prerequisites of Social Informatics", *Sotsial'naya informatika: osnovanie, metody, perspektivy*, pp. 14-27. (in Russ.)
11. Suslov, F.P. (1995), "Competitive preparation and calendar of competitions", *Sovremennaya sistema podgotovki*, pp. 73-79. (in Russ.)

Received: 05.05.2017.

Published: 30.06.2017.

## Information about the Authors

---

**Oleg Kamaev:** Doctor of Science (Physical Education and Sport), Professor; Kharkiv State Academy of Physical Culture: Klochkivska 99, Kharkiv, 61058, Ukraine.

**ORCID.ORG/0000-0003-4358-888X**

**E-mail:** oips-hdafk@ukr.net