

# Structural-contental definiteness of actualization of athletes' thinking types in the context of the system-activity approach

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Dr. Hab., Associate Professor **T.K. Kim**<sup>1, 2</sup>

**A.A. Pleshakov**<sup>2</sup>

Dr. Hab., Associate Professor **G.A. Kuzmenko**<sup>1</sup>

Dr. Hab., Professor **Ch.T. Ivankov**<sup>1</sup>

<sup>1</sup>Moscow Pedagogical State University, Moscow

<sup>2</sup>Moscow Polytechnic University, Moscow

Corresponding author: kuzmenkoga2010@yandex.ru

## Abstract

**Objective of the study** was to substantiate the conjugation of the types of thinking in the context of the structural-content components of the athlete's activity in the implementation of intellectual tasks in the process of learning motor actions.

**Methods and structure of the study.** In the course of scientific work, questioning and interviewing of coaches were carried out on the issues of updating the types of thinking in adolescent athletes in the structural components of activity. 34 sports coaches took part in the study.

**Results and conclusions.** Analysis of the results showed that the largest factorial weights in improving the technique of a sport are characterized by: to understand the significance of the process of improvement - strategic (0.897); for the implementation and adjustment of the program of behavior - situational / practical (0.843), prognostic (0.877), spatial (0.724), figurative (0.766), critical thinking (0.747). At the same time, it is noted that taking into account the peculiarities of the manifestation of the types of thinking in young athletes in the implementation of the intellectual tasks of sports activities will allow to identify the most problematic areas of the coordinated anticipatory involvement of the types of thinking in segments of the structural components of the activity and optimize the process of learning the technique of motor actions, as well as improve individual technical and tactical skills. athlete.

**Keywords:** *types of thinking, sports activity, motor actions technique, training, improvement.*

**Introduction.** The issues of development of types of thinking that are relevant in sports activities are extremely important for improving the training of a sports reserve and high-class athletes and are considered by a number of scientists. E.V. Bystritskaya and S.D. Neverkovich pay attention to "subject-target and problem-situational forms of thinking orientation..., the development of critical thinking aimed at oneself, the object and the situation...; development of adequate requirements for oneself on the basis of correlating social requirements, one's inclinations, needs, abilities, preferences and developing a set of acts of self-government... on the basis of abstract-logical and critical thinking" [2, p. 144]. S.V. Dmitriev, S.D. Neverkovich in "the structure of the ontodidactic process of training an athlete, there are: reproductive-performing, adaptive, project-performing, criteria-evaluative levels and

the level of self-building of the personality", associated with types of thinking. The activity-organized thinking and self-consciousness of an athlete determine the content of universal regulators of perception, thinking and activity, which allow solving motor problems" [3, p. 32]. Creative thinking, according to N.I. Chernetskaya is "both divergent, and lateral, and prognostic, and productive – the result of the integration of its individual types and forms. The essence of higher forms of thinking, including prognostic, according to A.V. Brushlinsky, is to create subjectively new results" [8, p. 73]. According to Yu.M. Orlov, an important context of thinking is its sanogenicity as a cognitive process of searching for resources or possible prospects in complex, critical situations of action or activity, ... a positive thinking style that allows a person to highlight positive components in any situation, to determine the possi-

bilities for further development” [7, p. 20]. A.A. Zvezdin and O.V. Nikolaeva consider the type of thinking as a determinant of behavior in extreme situations [4, p. 92] in sports.

It is obvious that all types of thinking are important given their situational relevance, but the question is how they combine, complement each other and what is the basis for their systemic mutual construction? In this regard, it is important to consider the types and

components of an athlete’s thinking in the context of the principle of systemogenesis (P.K. Anokhin’s theory of functional systems) [1], according to L.I. Kostyunina, which determine “the advanced development of functional systems that provide mental activity” [6, p. 26]. This leads to further research into the question of thinking in sports in terms of its correspondence to the structural components of activity in solving specific problems [5].

*The architectonics of conjugation of types of thinking in the structural components of sports activities, taking into account the adaptive behavioral act (P.K. Anokhin, 1968) at the stages of mental abilities realization (V.D. Shadrikov, 2007)*

Stages of realization of the intellectual and motor task in conjunction with the types of thinking	Structural components of sports activity through:		Actual types of thinking												
	the prism of an adaptive behavioral act, P.K. Anokhin [1]	the implementation of mental abilities, V.D. Shadrikov [9]													
1. Afferent synthesis: motivation (consciousness), situational afferentation (image: memory, sensation, perception), triggering afferentation as readiness for behavior  2. Decision-making stage (determines the type and direction of behavior), formation of a plan and program of behavior  3–4. Formation of the apparatus of the acceptor of the results of action (A), stage of the action program: efferent synthesis  5. Performing an action, behavior programs: effector excitation, volitional activity, purposeful behavior, formation of A  6. Result A  7–8. Result parameters (comparisons determine the construction of further behavior)  9. Reverse afferentation - assessment of the achieved result  10. Setting if results don't match action acceptor	1. Meaning, purpose, motive of activity	1. Conceptual, 0.690	Abstract-logical, 0.833	Visual-effective, 0.691		Theoretical conceptual, 0.831	Figurative, 0.801; 0.766	Spatial, 0.724		Creative/productive, 0.762		Tactical, 0.787		Strategic, -0.812; 0.897	
	2. Reflection of reality	2. Conceptual, 0.690		Visual-effective, 0.691				Spatial, 0.724		Creative/productive, 0.762		Tactical, 0.787		Strategic, -0.812; 0.897	
	3. Decision making	3. Conceptual, 0.690		Visual-effective, 0.691				Spatial, 0.724		Creative/productive, 0.762		Tactical, 0.787		Strategic, -0.812; 0.897	
	4. Formation of the program	4. Conceptual, 0.690		Visual-effective, 0.691				Spatial, 0.724		Creative/productive, 0.762		Tactical, 0.787		Strategic, -0.812; 0.897	
	5. Correction of the program of behavior	5. Conceptual, 0.690		Visual-effective, 0.691				Spatial, 0.724		Creative/productive, 0.762		Tactical, 0.787		Strategic, -0.812; 0.897	
	6. Reflection operation	6. Conceptual, 0.690		Visual-effective, 0.691				Spatial, 0.724		Creative/productive, 0.762		Tactical, 0.787		Strategic, -0.812; 0.897	
	7. Reflection of the result of the operation	7. Conceptual, 0.690		Visual-effective, 0.691				Spatial, 0.724		Creative/productive, 0.762		Tactical, 0.787		Strategic, -0.812; 0.897	
	8. Reflecting results parameters	8. Conceptual, 0.690		Visual-effective, 0.691				Spatial, 0.724		Creative/productive, 0.762		Tactical, 0.787		Strategic, -0.812; 0.897	
	9. Evaluation of the achieved result	9. Conceptual, 0.690		Visual-effective, 0.691				Spatial, 0.724		Creative/productive, 0.762		Tactical, 0.787		Strategic, -0.812; 0.897	
	10. Installation, enrichment of operational mechanisms	10. Conceptual, 0.690		Visual-effective, 0.691				Spatial, 0.724		Creative/productive, 0.762		Tactical, 0.787		Strategic, -0.812; 0.897	
Scales of motor: act, operation, action, segment of activity															
The scale of holistic motor activity															
The scale of motor activity															



*Tendencies of success in solving intellectual and motor tasks at the stages of training activity*

TD stages, according to V.D. Shadrikov [9]	% of coaches' elections	Accumulative (cumulative) effect of (not) corresponding to the intellectual and motor task modes of action and activity						
1.1. Meaning, purpose, 2. activity motive	8	±	«+» – correct formation of meaning, purpose, motive in the structure of sports activities; «-» – incorrect understanding of the essence of motor tasks in phases, in the purpose of motor action, in the motive of motor activity;					
3.2. Reflection 4. reality	11	±	±	«+» – correct cognitive processing of information; «-» – incorrect cognitive processing of information, lack of completeness of perceived parameters to create an image of a motor action;				
3. Decision-making 4. Formation of the program	24	±	±	±	«+» – situationally correct decision making; «-» – making an incorrect decision without regard to the conditions; «+» – the program of integral action is formed correctly; «-» – the program does not show the integrity, ergonomics, structural connection of the phases of motor action;			
5. Performing an action and program correction behavior (BP)	21	±	±	±	±	«+» – effective execution of the action; «-» – inefficient execution of the action;		
	19	±	±	±	±	«+» – situationally adequate correction of BP; «-» – implementation of an incorrectly chosen action, ineffective adjustment of the BP;		
6. Reflection operations	17	±	±	±	±	±	«+» – there is no need for adjustments, the actions are performed correctly, effectively; «-» – the intellectual and motor task was solved with (not) significant errors, all (part of) the stages (s) were performed (s) (not) in accordance with the goal	
Intellectual and motor task not solved		«-»				«+»		Intellectual and motor task solved
		In multiple choice conditions						

**Objective of the study** was to substantiate the coordination of types of thinking in the context of the structural and content components of an athlete's activity, taking into account the success of solving an intellectual problem in sports.

**Methods and structure of the study.** In the course of scientific work, questionnaires were conducted, interviews of trainers on the issues of updating the types of thinking in adolescent athletes in the structural components of activity; descriptive statistics; factor and cluster analysis. The study involved 34 coaches in sports (according to the classification of T.T. Dzhamgarova, A.Ts. Puni, 1979).

**Results of the study and their discussion.** At the first stage of the study, the architectonics of conjugation of the types of thinking in the structural components of sports activity at the stages of training and improvement by young athletes of the technique of motor actions was revealed. The trainers were presented with a detailed description of the manifestations of each type of thinking and were given the task to determine their localization in the structural components of activities related to training and improvement of technical actions. In the process of questioning, the assessment of significant types of thinking was carried out according to the following criteria: 1 point - low, 2 points - medium, 3 points - high significance, which were distributed in the range ( $x_{av} \pm s$ ) -  $2.52 \pm 0.506$

-  $2.18 \pm 0.386$ . The subsequent generalization of the results made it possible to fix (see the figure) that the largest factor weights in teaching the technique of a sport are: for understanding the mode of action - abstract-logical (0.833), theoretical conceptual (0.831), figurative (0.801); to create a program of behavior - tactical (0.787), creative / productive (0.762), predictive (0.728); to comprehend the prospects - strategic thinking (-0.812).

The largest factor weights in the process of improving the technique of a sport have: to understand the significance of the process of improvement - strategic (0.897); for the implementation and adjustment of the program of behavior - situational/practical (0.843), prognostic (0.877), spatial (0.724), figurative (0.766), critical thinking (0.747).

At the subsequent stages of the study, the assumption was confirmed that the success of the activity components simplifies the structure of the actualized types of thinking, and the failure causes cognitive dissonance, actualizes critical and reflective thinking, complicates the structure of mental activity, taking into account the situationally important adjustment of sports activity (see table).

The above generalized characteristics of options for successful execution of an intellectual task without specifying its content allows us to note that any of the stages may contain selection or execution errors, and



each of the following stages can also optimize the current situation by timely correction of the parameters of intellectual and motor activity.

**Conclusions.** In the course of the study, high factor weights of all types of thinking were determined in solving particular problems of training and improving the technique of performing motor actions, and the architectonics of conjugation of types of thinking in the structural components of sports activity was revealed. The certainty of the basic clusters that trigger mental activity in the process of learning and improvement characterizes the specifics of solving intellectual problems in sports by teenagers. Insufficient development of one or another type of thinking hinders the successful solution of intellectual tasks by young athletes of a particular segment of sports activity and worsens its overall performance. Larger types of thinking include smaller types and a larger volume of structural components of sports activity, characterizing its completeness, integrity and completeness. Taking into account the peculiarities of the manifestation of the types of thinking in young athletes in the implementation of the intellectual tasks of sports activities will optimize the process of learning the technique of motor actions.

### References

1. Anokhin P.K. Ocherki po fiziologii funktsionalnykh sistem [Essays on the physiology of functional systems]. Moscow: Medicina publ., 1975. pp. 17-59.
2. Bystritskaya E.V., Neverkovich S.D. Igropedagogika: formirovaniye reflektivnoy i proyektnoy kultury [Game pedagogy: formation of reflexive and project culture]. Pedagogiko-psikhologicheskiye i mediko-biologicheskiye problemy fizicheskoy kultury i sporta. 2021. Vol. 16. No. 1. pp. 140-147.
3. Dmitriev S.V., Neverkovich S.D. Sfera samosoznaniya sportsmena - paradoksy, novyye ponyatiya, novyye realnosti ili TERRA INCOGNITA? [The sphere of the athlete's self-awareness - paradoxes, new concepts, new realities or TERRA INCOGNITA?]. Antropnyye obrazovatelnyye tekhnologii v sfere fizicheskoy kultury [Anthropic educational technologies in the field of physical culture]. Proceedings. K. Minin Nizhny Novgorod State University, 2020. pp. 32-61.
4. Zvezdina A.A., Nikolaeva O.V. Tip myshleniya kak determinanta povedeniya v ekstremalnykh situatsiyakh [Type of thinking as a determinant of behavior in extreme situations]. Problemy professionalnogo razvitiya sotrudnikov OVD [Problems of professional development of police officers]. Proceedings Interdepartmental Conference, 2019. pp. 92-96.
5. Kim T.K., Kuzmenko G.A., Rodkina I.I., Fedorov A.V. Strukturno-soderzhatelnaya organizatsiya ustanovok trenera v formirovaniy operativnogo myshleniya u yunyx sportsmenov [Structural and meaningful organization of trainer's attitudes in the formation of operational thinking among young athletes]. Teoriya i praktika fizicheskoy kultury. 2022. No. 6. pp. 46-48.
6. Kostyunina L.I., Timoshina I.N., Ilkin A.N. Obosnovaniye sistemoobrazuyushchego printsipa novoy paradigmy sportivnoy podgotovki [Substantiation of the backbone principle of the new paradigm of sports training]. Teoriya i praktika fizicheskoy kultury. 2022. No. 1. pp. 26-28.
7. Orlov Yu.M. Ozdoravlivayushcheye myshleniye [Healing thinking]. Moscow: Spaiding publ., 2006. 96 p.
8. Chernetskaya N.I. Issledovaniye soglasovanosti otdelnykh vidov myshleniya s tvorcheskim myshleniyem [Study of the consistency of certain types of thinking with creative thinking]. Diskussiya teoretikov i praktikov. - 2010. No. 3. pp. 73-75.
9. Shadrikov V.D. Psikhologiya deyatelnosti i sposobnosti cheloveka [Psychology of human activity and abilities]. Moscow: Logos publ., 1996. 239 p.