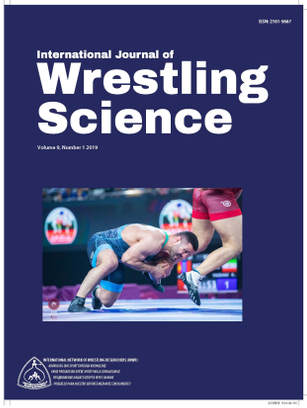

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A MODEL FOR THE FUNCTIONAL CONDITION OF WOMEN'S WRESTLERS

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ABSTRACT
The model of the athlete's state presented in this work provides for the possibility of controlling the training process and correcting the content of the training process. This model includes aerobic performance (endurance), body composition (muscle mass), explosive strength, anaerobic performance, reaction speed, vertical stability, attention and anticipation (anticipation) as the main characteristics ("rays"). The process of comparing the current state of the athlete with the desired model characteristics occurs as a result of a comprehensive monitoring of the condition of athletes at various stages of training. This model allows you to compare athletes with each other, highlight the system features of the team, track the dynamics of each athlete's performance after correcting the training plan, identify changes after competitions, home fees. The report considers possible options ("cases") of the application of this model in coaching.

BACKGROUND
The purpose of comprehensive monitoring is to optimize the preparation process and improve the results of competitive activity of athletes based on an objective assessment of various aspects of their preparedness and functional capabilities of the most important systems of the body at each stage of preparation, as well as the correction of the individual training program. In this case, a comprehensive monitoring of the athlete's condition, namely: collecting the necessary information, analyzing it and making managerial decisions on adjusting the training process, is the main means of managing athletes in modern sports.

The coach and the athlete interact through the training program, which is managed on the basis of data from scientific and methodological support, the main content of which is integrated control exercised by teachers, doctors, physiologists, psychologists, nutritionists and other specialists. Most of the materials published in journals are related to the study of local topics, individual indicators. However, from the point of view of using these indicators in the holistic process of training high-class athletes, they can work only when they are interconnected into a single space. Informational reflection of such an integration space in the sport of the highest achievements is the model of the athlete's state.

RESULTS
The model of the athlete's state presented in this paper provides for the possibility of controlling the training process and correcting the content of the training process. This model includes as the main characteristics (see Fig. 1) aerobic performance (endurance), muscle mass, explosive strength, anaerobic performance, reaction time, vertical stability, attention and anticipation (prediction). The process of comparing the current state of the athlete with the desired model characteristics (corresponding to the external 100% contour of the diagram) occurs as a result of stage-by-stage complex testing. Repeated testing allows you to track the dynamics of the athlete in accordance with the proposed model.

Adaptation of this model at scientific and practical seminars and conferences in Russia showed great interest of coaches, since it allows us to consider the dynamics of individual indicators as a criterion for the need to correct training processes. Thus, the model forces one to accumulate attention on real problems that are identified during the integrated monitoring of the athlete's condition.

An important condition for the effectiveness of the work of the trainer in this model is the need for regular comprehensive monitoring of the condition, i.e. support of an athlete at all stages of training with various methods. In this case, two directions of development of the model are possible. With a comprehensive survey, each characteristic ("beam") of a model is characterized by several parameters at once, and the specialist can, based on previous experience, form an integrative indicator.

The second option to improve the model may be more frequent measurements in one or several directions during the entire training event - in a sense, revealing a “fine structure” between the time-separated, step-by-step comprehensive examinations.

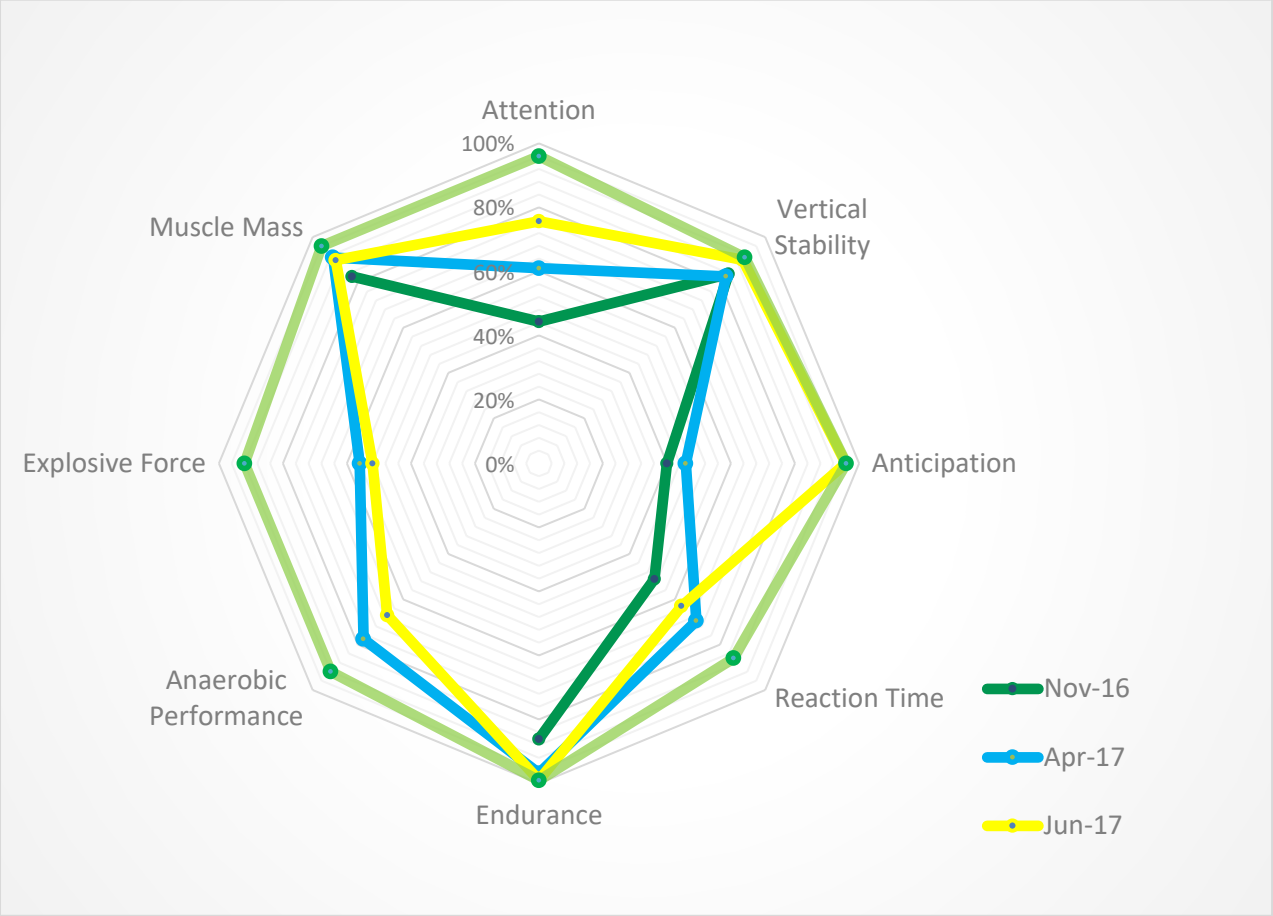

Fig. 1. Graphic representation of the high-class athlete's state model and the dynamics of changes in the characteristics of a fighter (data from three consecutive stage tests).

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The study used the following methods: Endurance: Functional test with gas analysis. Exercise testing was conducted on a treadmill. The level of physical performance is determined by the functionality of the cardiovascular and respiratory systems (ANSP, IPC, determined by the method of gas analysis).

Anaerobic performance: MAM test on the rowing ergometer. Allows you to determine the peak and average values of anaerobic capacity, the degree and nature, etc.

Vertical stability: Stabilometry. Gives the opportunity to quantitatively and qualitatively assess the sustainability of an athlete, and judge the leading system of maintaining balance (quality, important in the fight).

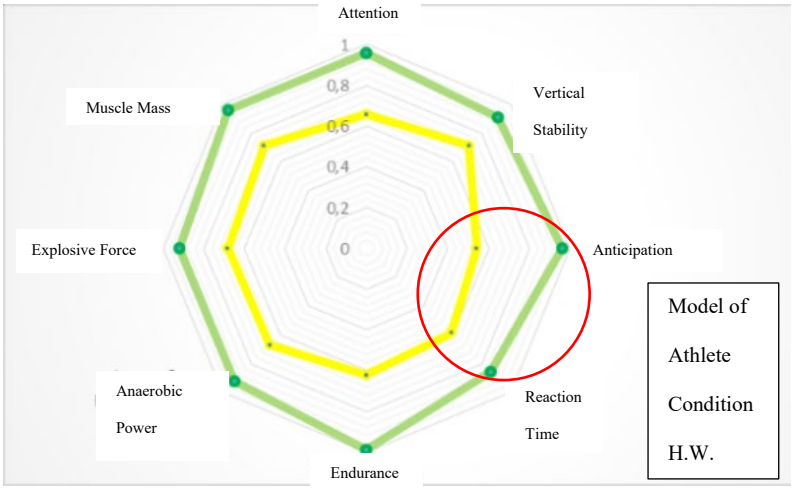
Attention: Landolt Rings test. Allows you to assess the concentration, accuracy, productivity and dynamics of visual attention.

Anticipation: test "Reaction to a moving object." An assessment is made of a person's ability to adequately perceive changes in space-time events, as well as to diagnose the nervous system according to the degree of balance in the processes of arousal and inhibition.

Reaction time: test "Speed of a simple auditory-motor reaction." Allows you to determine the speed of the nervous processes and the stability of reactions.

Muscle mass: Bioimpedancemetry. Analysis of body composition, allows to determine parameters such as: body weight; lean mass; muscle mass; fat mass and body mass index.

This model allows you to compare athletes with each other, highlight the system features of the team, track the dynamics of each athlete after correction of the training plan, identify changes after the competition, home fees. Consider the possible options ("cases") of the use of this model in coaching work.



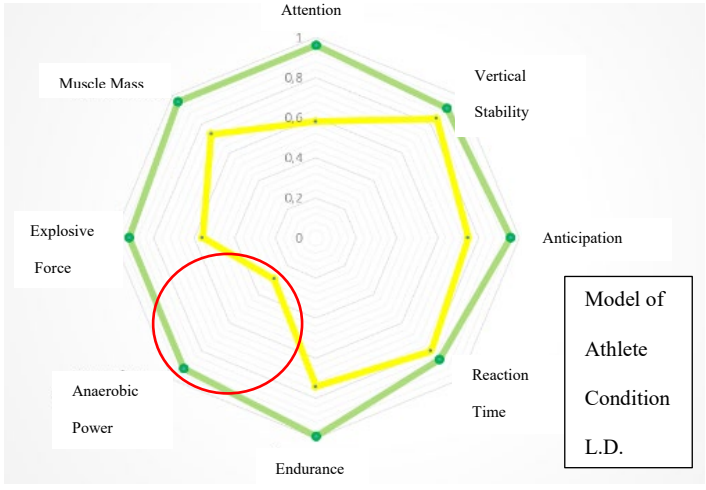


Fig 2 & 3 "Pair Comparison of Model and Performance."

The test scores can be compared with the results of the control competition to see how the physical and physiological qualities manifest themselves during the competition. The figures show the current status of two athletes before qualifying control bouts.

During the bouts it was noted that athlete H.W. showed a slow reaction rate, and not succeeding in defensive actions, and athlete LD conducted many attacking actions, but could not complete them successfully. We associate such results during competition with a low reaction time and anticipation in H.W. and low anaerobic performance in L.D.

Knowing the data on the current status of the athletes, the coaching staff was able to give more accurate recommendations on tactical and technical training.

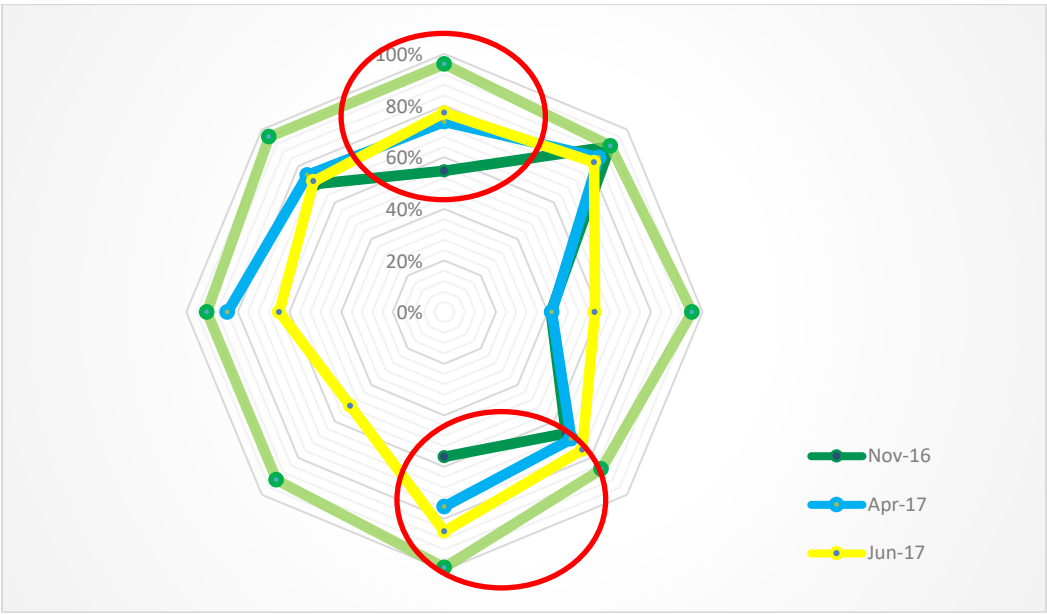


Fig 4. Case 2 "Dynamics of change."

The figure shows the dynamics of the athlete's state during the training season. It is possible to note the growth of endurance, as well as indicators of the nervous system, including attention, which clearly shows the dynamics of the athlete's condition. Knowing the data on the dynamics of the athlete's state, the coaching staff was able to evaluate the effectiveness of the training program and its contribution to various indicators and properties of the athlete.

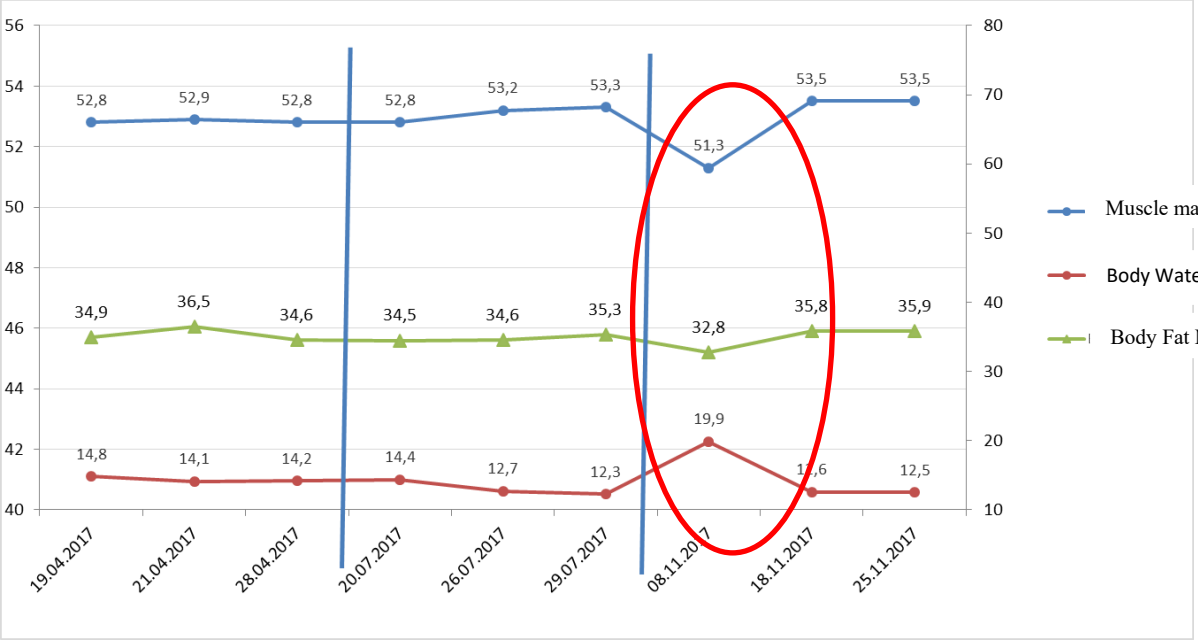


Fig 5. Case 3 Changes in body composition between training and correction of the training process.

The figure shows the dynamics of body composition measurement during training camps. Measured parameters are the composition of muscle, fat mass and water volume. You can note the change in body composition, which occurred between the training camp. Weight of the athletes remained the same, but decreased muscle mass and increased fat mass. Knowing the data on the dynamics of body composition, the coaching staff was able to adjust the training program, evaluate the work carried out outside the camp.

Table 1. Case 4 "Model and competitive activity"

Athlete	The total number of attacking actions	The attack interval, sec	Effectiveness of attacking actions, %	The total number of defensive actions	Effectiveness of defensive actions, %
Д.М.	19	47.4	52.6	12	50
О.С.	18	45.3	83.3	9	67
Т.И.	20	54.0	55.0	13	61
К.М.	5	144.0	60.0	11	55

The indicators of the model are compared with the main tactical and technical characteristics of the fighter during the competition: the number and success of attacking and defensive actions. The analysis included an assessment of the following indicators:- attack interval - the average time between the estimated techniques and attempts in the aggregate; attack effectiveness - the ratio of the number of evaluated techniques to the total number of attempts.

We compared the obtained data with the results of the examination of sportswomen within the framework of stage control, which characterize the level of development of special endurance in sportswomen. A comparative analysis of competitive activity and data on the level of the IPC of athletes, as one of the important characteristics of special endurance in wrestling, showed that there is a linear relationship between the average number of attacking actions in one fight and the level of the IPC. The value of the Pearson correlation coefficient is 0.71. It follows from this analysis. In order to ensure an advantage in the fight, the level of technical and tactical preparedness is of great importance, as well as speed-strength training as the most important factors of effectiveness in conducting technical methods in the struggle against an actively resisting opponent.

CONCLUSIONS

The model is dynamic, it allows, as new approaches and methods emerge, to add, change to the survey program. And to use them both for the development of target indicators, and for direct control and correction of the training process.

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