

REFLECTING THE SYSTEM OF FUNDAMENTAL CONCEPTS IN MODELLING THE TRAINING PROCESS OF PERFORMANCE SWIMMERS IN DIFFERENT STAGES OF TRAINING

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Abstract: *The continuous improvement of the training system for performance athletes in the field of swimming aims to achieve the peak of sportsmanship during the competition. The computerization and application of computer programming in the sports training process becomes an indispensable requirement in the training system for third millennium swimmers. In recent years, in order to obtain special performances, along with traditional methods, modern computerized tracking and recording systems have been introduced in training planning. The development of sports activities requires a permanent increase in performance, which can be achieved through the scientific involvement and continuous transformation of sports training, in the sense of applying information technologies in this process.*

Key words: *performance swimmers, sports training, technologies, training.*

1. Introduction

Sports training, according to the authors Albu V. [3], Alexe N. [4], Bompă T. [6], Cârstea G. [8, 9], Dragnea A. [10], Epuran M. [12], Matveev L.P. [22] is a deliberate process, systematically designed, repeated in an organized framework, a long process, which involves physical, mental, intellectual demands, in order to form a behaviour to achieve maximum

performance in competition and personality development. Regarding swimming sports training, physical effort, through its action on the body, produces adaptive morphofunctional, mental and psychomotor changes, depending on the nature and intensity of the stimuli applied. The swimming training process is conditioned, to a large extent, by the application of non-traditional means of training (apparatus, equipment and

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methodical procedures), which allow both the detection of functional reserves and the overcoming of the level of manifestation of motor qualities.

2. Purpose

The purpose of the research consists in analyzing the system of fundamental concepts of the training process of performance swimmers.

3. Methodology

The research methodology lies in the analysis of the literature dealing with this subject, the observation method and the comparative method.

4. Results and Discussion

Performance is the result of an activity that exceeds the common level of manifestations, being superior to it. Some authors: Bulgakova N. Zh. [7], Vaiczekhovsky S.M. [27, 28], Ivanchenko E.I. [20] considers that the term designates the degree of success of a subject in a certain test (professional test); the level at which individual or collective values rise, in a specific field of activity. **Sports performance** is therefore a valuable result, individually or collectively obtained in a sports competition and is usually expressed in absolute numbers, according to the system of official places or by the place occupied in the ranking. However, sports performance cannot be seen only as a result, most often expressed in a single figure. In the long process of preparation, the consciousness of the individual is fully engaged at a high level of acuity to the limit of possibilities.

Sports performance is multiple determined and conditioned.

Sports performance can be considered as a value of a certain type, being a historical product, a victory of man over his human nature. Sports performance can be defined as a bio-psycho-social value achieved in official competitions, as a result of a multiple capacity determined and appreciated based on rigorously established criteria or scales.

Capacity refers both to actions, activities and objects under the aspect that interests the specialist. The term designates mainly the chances of success of individuals as tasks of exercising the profession [125, p.7]. The most frequent references are made on the learning possibilities on a specific aptitude background, evaluated in comparison with the previously established objectives.

Capacity is a multifactorial result determined by skills, personality maturity, learning and exercise. It can be educated, developed through exercise or "atrophied" by immobilization, which happens more often than the physiological diminution of age-related function. The appreciation of capacity is social, being praised or blamed, however in most cases it is supported by rewards (verbal, material or both) arousing the interest of the group in which it manifests itself [16, p.21]. It turns out that both notions are in an organic mutual relationship. Consequently, *“performance capacity can be considered the result of the operational interaction of some bio-psycho-educational systems, materialized in recognized and classified values based on elaborated social-historical criteria; it is the complex manifestation of the individual's availabilities, materialized in values or objectives in points, places,*

rankings, goals scored, kilograms lifted, rights won (promotions), etc." [16, p. 22].

Given the many components of performance capacity, its structure is complex, and to study the structure of performance capacity must take into account the factors involved.

P. Techiene [26], T. Orlick [25] established three main types of performance factors: somatic type, motor skill capacity and mental capacity, to which they gave different weights, divided in turn into components, depending on peculiarities of sports. A.A. Guzhalovsky [18, p. 41] presents the capacity for work - *performance*, as given by the body constitution (somatic structure), health and training (its content, by factors). K-H. Bauersfeld, G. Schroter [5, p. 329] reduce

to some extent the number of factors that condition performance, but introduce others, such as environment, competition conditions and technical-material or training. J. Weineck [30] highlights as priorities other factors, among which the most important are coordination skills, skills and abilities acquired. He highlights the role of aptitude factors, which depend on the psycho-intellectual and psychomotor nature. M. Epuran [12, 13] considers performance capacity as determined by four synthetic global factors: *skills, attitudes, training, ambience* and defines performance capacity as a result of the interconditioning of the 4 factors (Figure 1).

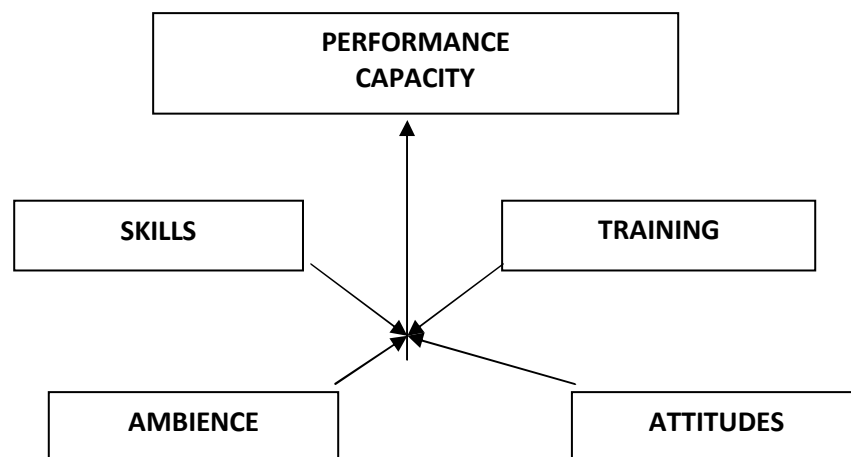


Fig. 1. *Determining performance capacity* [13]

Skills are systems of physical and mental processes originally organized to achieve high results in the activity. In the field of sports, certain specific skills can be detected early, such as those for

swimming, which involve good coordination, as a result of a faster maturation of the nervous system (Figure 2).

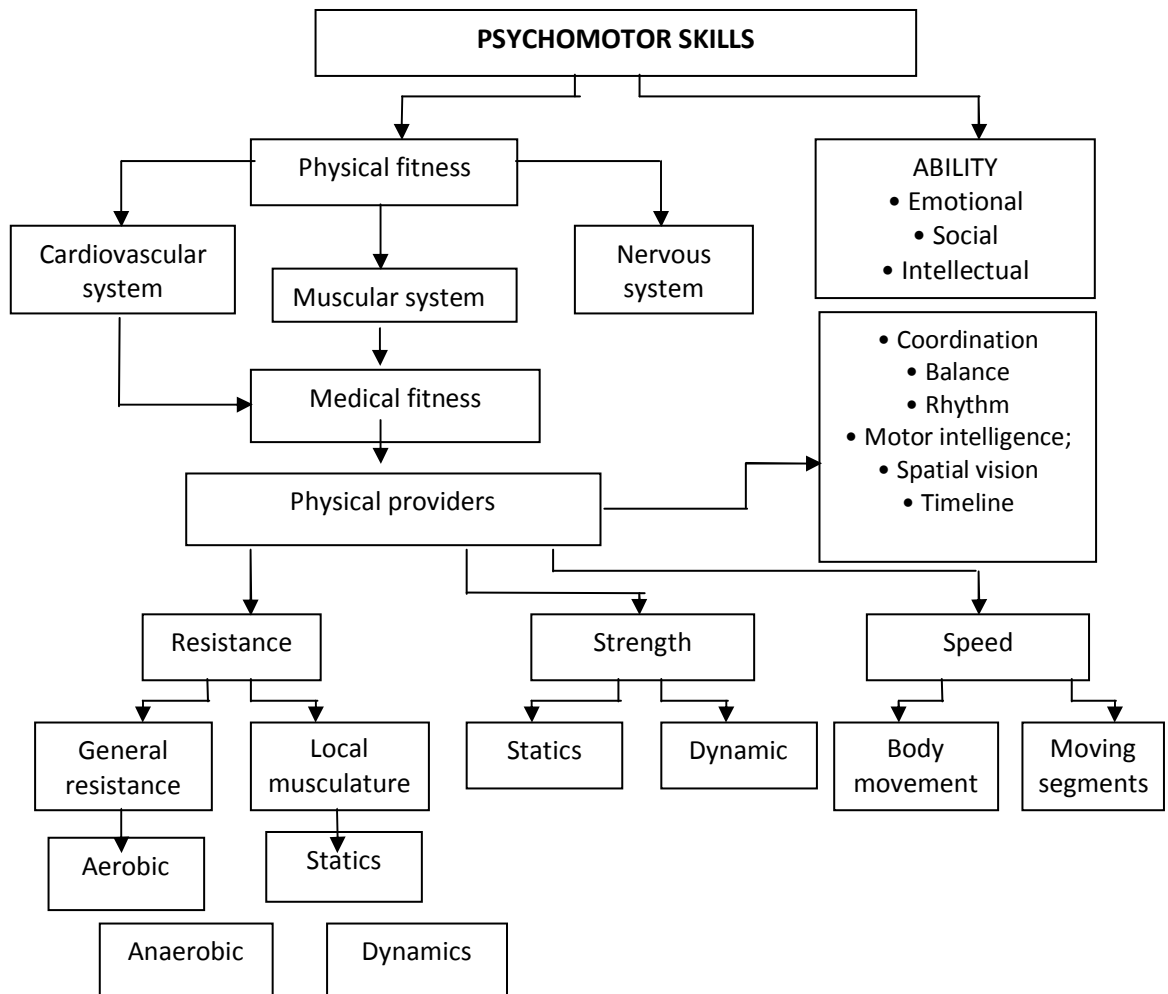


Fig. 2. Scheme of component processes in the formation of psychomotor skills [14, p.79]

Simple physical maturation does not result in the appearance or development of skills. The skills appear as a result of the interaction of the hereditary predispositions with the educational conditions of their formation and with those of the subject's activity. In the literature [14, p.79] there are two categories of skills:

- *general* (intelligence, memory, attention, observation, etc., useful for practicing any activity);

- *specific* for very precise fields (sports, music, mathematics, technique, etc.).

Sports skills are considered special, being in turn:

- general skills characteristic of any physical education and sports activity: sense of direction, balance, competitive spirit, coordination, perception of movements, etc.
- specific skills for practicing a sport.

It turns out that the main skills that need to be developed in performance athletes

(swimmers) are reference physical qualities - strength and speed.

Attitudes are expressed in preference to certain activities: decisions are determined by external beliefs or influences that characterize the personality. Several types of attitudes are described in the literature [13]:

- **body posture**, as a preparatory position of the body or as a significant expression;
- **opinion** as a way of understanding and expressing an idea;
- **characteristics of voluntary performance of a role** or involuntary excitation of the role in given situations (conscientious, tense, relaxed, tolerant-severe, etc.);
- **general predisposition** to adopt a certain position or a certain judgment;
- **deep personal** structures as an expression of individual feelings, of one's own experience of great importance in swimming, as an individual performance sport.

Detailing, in swimming the attitudes are manifested in specific forms:

- *cognitive attitudes* are manifested as states of expectation and foresight (the characteristics of opponents are known and there is the preparation to perceive them); they are the foundation of tactical thinking;

- *evolutionary attitudes* also include cognitive aspects: the athlete self-evaluates, evaluates teammates, referees, the public, etc., the determining role in the formation of attitudes and behaviours belongs to education, which has a prophylactic and corrective function;

- *attitudes as an expression of character* structure are manifested as attitudes towards training, opponents, self, etc.

(they have an orientation component and an exercise component);

- *the attitudes of effective-operational type* are presented as predispositions or preferences to react to different situations and different stimuli, being dependent on the athlete's experience;

- *pre-competitive skills* in the form of training, they are anticipatory and evolutionary.

The ambience. Sports performance is included in a model of interactions determined by environmental conditions, which is a complex of stimuli with positive and negative values, and the athlete intervenes continuously to counteract the action of external factors. The social environment is the factor with the greatest influence on the development of the athlete. It consists of all social relations, creating an environment with complex content that includes institutions and group organizations (clubs, associations, and federations), historical and cultural factors, social values, etc.

Within the *ambience* factor, there are many determining elements such as: the family (it has a decisive role in terms of sports career - by the fact that it can stimulate or curb interest); school (the main factor of intellectual, affective, volitional and physical formation); the sports environment (team, group, club), which determines the psychosocial behaviours of the young person, of a sporting or cultural nature. The sports environment is a special world governed by written and unwritten laws, which appears or sanctions the behaviours of those who are under their incidence. The sports environment can favour or slow down the establishment of performances.

Sports training are defined as a pedagogical process carried out

systematically in order to obtain the body's adaptation to intense physical effort in competitions. It becomes more and more complex through organization, direction, content and forms of development, in which, together with the specialist coach, the doctor, the psychologist, etc. participate, offering the image of a special interdisciplinarity [22, p. 14].

Specialists in the field of swimming consider that the maintenance and subsequent increase of the level of special training of swimmers are the basic objectives of the pre-competition training stage, in order to achieve a maximum level in important competitions. The authors mention the need to organize the training process in accordance with the competition schedule and the objectives set. The main ways to achieve the stage of pre-competitive training of swimmers consist in the rational selection of the means corresponding to the general and special training, as well as in the optimization of the forms of active rest. T.M. Absalyamov [1, p. 8], mentioning that the main goal of pre-competition training and the basic criterion of achievement is the sports result, recommends dividing the training process into several stages. The first stage has a character of attraction, instigation, being one of multilateral training. The subsequent steps have the character of stabilizing the level of preparation obtained.

Analyzing the diversity of the variants of the structure of the stages of the pre-competitive trainings of the best swimmers, in a certain stage, V.B. Gilyazova [15, p. 55] established that most opt for a six-week cycle, which in turn consists of two mesocycles lasting three weeks. The first mesocycle takes place in conditions of moderate altitude, and the

second models the activity of the swimmer, in conditions of competitions. The main objective of the first mesocycle is to maximize the level of training, using volume and intensity efforts, and the basic goal of the competitive mesocycle, says the author, is to maximize technical efficiency and save the body's functional capabilities. The author argues that such a restructuring of competitive training ensures the achievement of the planned results in subsequent competitions.

The same principle is found in the theories issued by E.W. Hines [19], who argues that the period of preparation of swimmers for the competition can be 6-12 weeks, with high-intensity training, recommending about a week to improve technique and 6 weeks to develop endurance, each week being 6 training sessions (one day off). After every 3 weeks, it is mandatory to check the training results to establish progress. A new 6-week period with speed development training can be added.

Given that swimming is similar to cyclic sports; it was considered necessary to summarize some aspects of pre-competition training in some of them. Thus, the specialists in the field of sports games carry out an intense activity in order to optimize the pre-competitive training of athletes in basketball, volleyball, tennis. Extensive recommendations are presented by Yu.D. Zheleznyak [31], who considers that pre-competition training is an independent bloc, in which the regime of basic competitions is modeled more deeply. It allows the maximum adaptation of the athletes to the concrete conditions of the competitions and the creation of the conditions for the realization of the possibilities. The author considers that the

pre-competition block should include shock cycles, which shape the basic activity of subsequent competitions, which often exceed the volume and intensity of the competitive effort. Such shock cycles must alternate with specially prepared, generalization and rehabilitation microcycles. The author emphasizes the need to prepare for the basic competitions, taking into account the climatic and geographical conditions, as well as the composition of the team to participate in those competitions. Intermediate competitions are a component part of alternative microcycles and are, in fact, a specific form of competitive training.

The content and structure of the stage of direct training in the field of gymnastics are treated in the same way. Thus, N.N. Kuzmin, F.G. Kotelnikov [21, p.68] mentions that the preparation stage for each competition includes microcycles of 2-3 weeks, and the specificity of the material and the orientation of the training tasks in these microcycles are determined by the volume and scheduling of subsequent competitions, as well as the daily activity of the athlete. The authors consider that the weekly effort for the gymnasts - students must correspond to the average effort of the gymnasts in the country. This is enough to ensure the planned sports performances within the competition calendar, characteristic of gymnasts-students. O.V. nerobeeva [23, p. 51], studying the peculiarities of making the effort at the gymnasts from the combined sports tests during the direct training stage, established the tendency to increase the parameters of the alternative effort. The author considers that this effort allows the timely direction of the training of gymnasts in the pre-

competition stage and increases the efficiency of the activity during the competition period.

Specialists in other cyclical sports - skiing - have experimentally established the optimal structure of training microcycles in the direct pre-competition stage. Thus, V.I. Akimov, S.N. Kilimbayev, A.V. Fedotov [2, p. 8], mentioning the dependence of obtaining sports results on the optimal level of training, checked the efficiency of the final four-week mesocycle in order to prepare the cross-country skiers for the main competitions. This mesocycle comprises four microcycles: ordinary, shock, rehabilitation and generalization. The first three microcycles took place at altitude. Such a planning of the pre-competitive training allowed the increase of the functional capacities of the skiers, fact that determined the increase of the sports performances.

L.I. Orekhov, P.A. Delver, N.A. Gutsel [24, p. 112], mentioning the importance of modeling in the pre-competitive training of skiers, tried to optimize this training by developing a mesocycle with an original structure and content. Such a mesocycle comprises two stages of 18 days each, with participation in competitions after each stage. From a methodological point of view, in terms of planning the training of skiers at altitude in the pre-competition period, the above-mentioned authors managed to establish the efficiency of the application of the developed mesocycle.

5. Conclusion

Important attempts in order to increase the efficiency of the training process, at the stage of pre-competitive training, were performed by specialists in water sports, who set out the principles of

organizing the pre-competitive training stage of performance kayakers. In their view, this stage lasts 18-24 days. The selection of specialized training means is carried out in accordance with the principle of increasing the specific character of the effort made by modelling the competitive regime, within the trainings. According to the authors, this organization is of decisive importance in the training of athletes. V.I. Grigoriev [17], examining the peculiarities of applying the competitive method at the stage of direct pre-competitive training of oarsmen, highlighted the high efficiency of this method, which was manifested by the considerable increase of indices characteristic of the structure of competitive sports activity. Thus, the performances increased considerably in the basic competitions of the rowers.

Regarding the training of cyclists on the road, it can be mentioned that the essence of the method consists in combining the following microcycles characteristic for the competitive period: the interrupted competitive microcycle; the microcycle with two competitions per week; the pre-competition microcycle, at the end of which the cyclists participate in one of the basic competitions of the season.

Thus, it can be considered that road cyclists, in fact, do not have a pre-competitive mesocycle in its traditional conception, and the preparation for the main seasonal competitions takes place in starts and control series. It is concluded, thus, that in the specific trainings of cyclic sports a pre-competitive (preparatory) period and a competitive one are differentiated.

References

1. Absalyamov, T.M.: *On further training of swimmers of the highest class*. In: *Swimming*. Moscow: Physical Culture and Sport, 1986, p.8-11.
2. Akimov, V.I.: *Optimization of the training process based on the study of the relationship of special physical training with the training process of skiers-racers* / Akimov V.I., Kilimbayev S.N., Fedotov A.V. In: *Optimization of the structure of the training process of qualified athletes*. Alma-Ata, 1991, p. 7-12.
3. Albu, V.: *Teoria Educației Fizice și Sportului (Theory of Physical Education and Sports)*. Constanța, Editura Universitatea „Ovidius”, 1990, p.124-225.
4. Alexe, N.: *Antrenamentul sportiv modern (Modern sports training)*. București, Editura Editis, 1993, p.310-391.
5. Bauersfeld, K-H., Schroter, G.: *Grundlagen der Leichtathletik*. Berlin, 1986, p. 329-345.
6. Bompa, T.: *Teoria și metodologia antrenamentului – Periodizarea. (Theory and methodology of training – Periodization)*. București, ExPonto, 2002, p. 4-45.
7. Bulgakova, N.Zh., Shichanin, V.S.: *Organization and swimming of training of sports reserve in CYSS swimming: Study. Allowance*. Moskva, GCOPOLIFK, 1985. 40 p.
8. Cârstea, Gh.: *Metodica educației fizice școlare (Methodology of physical school education)*. București:, Editura Universul, 1993, p. 18-70.
9. Cârstea, Gh.: *Teoria și metoda educației fizice și sportului (Theory and methodology of physical education*

- and sport). București, Editura Anda, 2000, p. 90-132.
10. Dragnea, A.: *Antrenamentul sportiv. (Sports training)*. București: Editura Didactică și Pedagogică, 1996, p.344.
 11. Epuran, M.: *Compendiu de psihologie pentru antrenori (Compendium of Psychology for Coaches)*. București, Editura Sport-Turism, 1985, 270 p.
 12. Epuran, M.: *Metodologia cercetării activităților corporale (Methodology of body activities research)*. Second edition. București, Editura FEST, 2005. 438 p.
 13. Epuran, M.: *Modelarea conduitei sportive (Modelling sports conduct)*. București, Editura Sport-Turism, 1990, 198 p.
 14. Epuran, M., Holdevici, I.: *Compendiu de psihologie pentru antrenori (Compendium of Psychology for Coaches)*. București, Editura Sport-Turism, 1980, p.79-91.
 15. Gilyazova, V.B.: *Construction of training in the annual cycle in cyclic sports with a predominant manifestation of endurance / Gilyazova, V.B., Suslov F.P., Shustin B.N.* In: Construction and content of the training process of highly qualified athletes at various stages of one-year training: Collection of scientific works. Moscow, 1988, p. 55-71.
 16. Golu, P.: *Învățare și dezvoltare. (Learning and development)*. București, Științifică și Enciclopedică, 1985, p. 21-22.
 17. Grigoriev, V.I.: *Physical culture and pedagogical technology of development of endurance of students: theoretical and methodological aspects: studies*. Sankt-Peterburg, SPbGUEF, 1998. 148p.
 18. Guzhalovsky, A.A.: *Nomogramnyi method of assessing the physical condition of a young swimmer*. In: Theory and Practice of Physical Culture, 1975, No.1, pp.41-43.
 19. Hines, E.W. : *Natation – 60 exercises et programmes*. Paris, Edit. Vigot, 2000, 185 p.
 20. Ivanchenko, E.I.: *Theoretical and methodological foundations of training and "bringing" swimmers to the main competitions of the season at the stage of higher sportsmanship: Method. allowance*. Minsk, 1990. 54 p.
 21. Kuzmin, N.N., Kotelnikov, F.G.: *Experience of preparation of masters of high class in sports acrobatics*. In: Issues of physical education of students. L., 1983. Vol. 15, pp. 68-70.
 22. Matveev, L.P.: *Teoria și metodică educației fizice (Theory and methodology of physical education)*. București, Editura Sport-Turism, 1980, p.14, 136, 412-429, 550-551.
 23. Nerobeeva, O.V.: *Training load of gymnasts at the stage of direct pre-competition training / Nerobeeva O.V., Petrashev L.N.* In: Problems of selection and preparation of promising young athletes: Tez. dokl. 12 All-Union. scientific-practical conf. (Yaroslavl, 10-13 Oct. 1989). Moscow, 1989. Ch. 1, sect. 1, pp. 51-52.
 24. Orekhov, L.I., Delver, P.A., Gutsel, N.A.: *Modelling of competitive activity at the stage of preparation for competitions in alpine skiing*. In: Modelling in Sports: Sat. Scientific. Articles. Alma-Ata: Kaz. IFK, 1988, p. 111 - 114.
 25. Orlick, T.: *In pursuit of excellence*. Illinois, Leisure Press Champaign, 1990. 245p.

26. Techiene, P.: *Die neue "Theorie des Trainings" und ihre Interpretation für das Nachwuchstraining* / In: *Leistungssport*, nr.4, 1989, p. 76.
27. Vaiczekhovskiy, S.M.: *System of sports training of swimmers for the Olympic Games (Theory, methodology, practice)*: Autoref. Dis. Cand. Ped. Sciences. Moscow, 1985, p.52.
28. Vaiczekhovskiy, S.M.: *Training of the strongest swimmers in the world*. Moscow, *Fizkultura i sport*, 1972. 160 p.
29. Vorontsov, A.R., Popov, O.I., Chupakhin, B.N.: *Additional thrust force in the hydraulic channel as a criterion for special power training of swimmers*. In: *Theory and Practice of Physical Culture*, 1982, No. 9, pp. 7-9.
30. Weineck, J.: *Biologie du sport*. Paris, Vigot, 1992. 86 p.
31. Zheleznyak, Yu.D.: *Improvement of the system of preparation of sports reserves in game sports*: Avtoref. dis... Doctor of Pedagogical Sciences. Moscow, 1981. 48 p.