



## CLUSTER-MODULAR METHOD OF IMPROVEMENT IN THE STRUCTURE OF A PHYSICAL EDUCATION LESSON FOR STUDENTS WITH DIFFERENT LEVELS OF PHYSICAL FITNESS

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**Abstract:** This article discusses the use of new technologies in physical education in higher educational institutions. The issues of applying the cluster-modular method in groups of students with different levels of physical fitness are considered.

**Key words:** Physical education, physical fitness, cluster analysis, cluster, cluster-module method, different levels, physical culture, physical condition, sample population, educational process.

## КЛАСТЕРНОЕ-МОДУЛЬНЫЙ МЕТОД СОВЕРШЕНСТВОВАНИЯ В СТРУКТУРЕ УРОКА ПО ФИЗИЧЕСКОЙ КУЛЬТУРЕ ДЛЯ СТУДЕНТОВ С РАЗЛИЧНЫМ УРОВНЕМ ФИЗИЧЕСКОЙ ПОДГОТОВЛЕННОСТИ

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**Анотация:** в данной статье рассматриваются вопросы применения новых технологий в физическом воспитании высших образовательных учреждениях. Рассматриваются вопросы применения кластерное-модульного метода в группах студентов с различным уровнем физической подготовленности.

**Ключевые слова:** физическое воспитание, физическая подготовленность, кластерный анализ, кластер, кластерное-модульный метод, различный уровень, физическая культура, физическое состояние, выборочная совокупность, образовательный процесс.



The relevance, timeliness, obviousness and even the necessity of modern clustering processes today are almost beyond doubt. It is curious that the actual scientific approach to clustering today has been relatively little developed and is rather fragmentarily reflected in the scientific literature; In addition, the term “cluster” has firmly entered the circle of not very clear, but clearly fashionable concepts, which, “clogging” the categorical scientific apparatus, often do not carry either semantic or, especially, practical significance. Meanwhile, the phenomenon of clustering was studied, although almost exclusively in the natural sciences, long before it became so fashionable. The etymology of the concept cluster (from the English Cluster, lit. - “bundle, swarm, accumulation”) is very controversial: the term, borrowed from the field of exact sciences, without having a purely economic nature, today is easily “rooted” in the humanitarian branches of scientific knowledge. Now this term is quite widely used in computer science and programming, in mathematics, physics, chemistry, economics, sociology, etc. We note, however, that there is not a single or even generally accepted understanding of a cluster and clustering as processes of the formation of social clusters in modern science, unfortunately, it didn't work out.. Taking into account the scope of the article, we will highlight the main characteristics, sociological and semantic indicators of the adopted cluster model.

A cluster cannot serve as a designation for an undeveloped system, including a social one, nor, even more so, as a designation for a single event or phenomenon. In this case, taking into account the classical dialectical models of Aristotle, W. Leibniz, G. Hegel, I. Kant, thinkers of the Vienna School and the positivist tradition in general, the concept of a cluster would be simply redundant in relation to the established categories of system and element; individual, special and general; norms and deviations, social dissipation, etc. The concept of a cluster, according to the authors, describes a specific state of a social community, including a description of not only this community itself, but also the processes of its formation, structuring and interaction with the social environment. For example, an emerging company of people who like to play volleyball on the beach on weekends contains, most often, a relatively small stable core with vaguely expressed situational leadership, as well as a noticeable “variable” composition.

According to the authors, up to the formation of a stable team itself, with almost constant composition and stable leadership, such a community can be called the simplest example of a social cluster. Thus, a cluster is a union of objects and subjects in which their specific and individual characteristics are equally powerful, that is, you want to be a member of a cluster no less than you want to “remain yourself,” to be lonely, and at the same time “tenacious” - competitive.

The cluster, therefore, does not express a discrete period of formation of the system, its genesis. Let us emphasize once again that a cluster does not describe every association of people, social fragments and groups. In our case, the cluster analysis procedure as a modern trend in improving the methods of health-improving and restorative nature is interpreted as a qualitatively special form of regulation of physical exercises, depending on the characteristics of the preparedness and physical development of those involved. In physical education, the cluster analysis procedure involves identifying groups of objects among the elements of the sample population. In this case, the units of analysis in a specific database can be judgments, statements based on survey data, features of physical fitness of those involved in particular, in borderline states between norm



and pathology and initial pathological states, groups of external environmental factors in accordance with the achievements of physical development and preparedness.

Consequently, clusters can be formed from any components of the sample population, the composition of which, of course, depends on the specifics and scale of a particular sociological study. The use of the cluster analysis procedure in the author's logical research (especially in monitoring) has repeatedly shown that clusters are unstable and easily changeable, like everything in the modern dynamic world. Let us note, finally, that the interpretation of clustering itself in the educational process, in particular in the process of physical education, as a process that describes not only the sequence of cluster formation, but also the very logic, dynamics and scale of clustering, is very complex, since we are talking specifically about segments of the educational process in conjunction with the characteristics of practiced criteria and standards of an individual's physical condition as indicators of physical fitness, health, and not about the fantasies of a sociologist who combines heterogeneous groups of data on arbitrary grounds. Currently, physical education teachers are little familiar with cluster analysis, since it is used more in sociology and economic disciplines and is still poorly adapted to the structure of physical education, but a rational combination of general profiling and selective health-improving areas of physical education in different age periods of ontogenesis and in different living conditions, provides modern ways and conditions for motivating physical activity, specifically oriented in the aspect of preserving and strengthening the health and physical fitness of student youth.

In general, the introduction of general didactic and specialized concepts and approaches into the theory and teaching methods, especially computerization and the expanded use of technical teaching aids, ensures that students master the theoretical and practical sections in a relatively short period of time, and the teacher quickly surveys the group and identifies insufficiently mastered material and thereby frees him from routine work.

All this indicates an effective didactic approach to teaching and monitoring knowledge using information technology. The computer is directly integrated into educational information technology and becomes such a desirable element of the educational system that in its absence a certain discomfort arises for both the student and the teacher. A feature of the use of information technologies in physical culture and sports is the organization of management of biological objects that are difficult to formalize. From this point of view, issues of objective-subjective relations between teacher and student are considered, taking into account their biological properties. Thus, for practical use in physical education, we can select accessible and informative indicators of physical condition that can be measured and assessed. These can be: somatometric, somatoscopic and physiometric indicators, physical fitness, physical activity, morbidity.

When choosing the measured signs of physical condition, it is necessary to take into account the ease of their measurement, methods of assessment and motivation of those involved. The use of the cluster-modular method for the development of individual health programs, the correct assessment of the functional and physical state is of great importance, as it allows not only to study the effect of physical exercise on the body, but also helps to diagnose a sometimes hidden disease, establish adaptability to physical activity, and determine its optimality, etc. The module can be presented as an educational element in the form of a standardized booklet consisting of the following components: - a precisely formulated educational goal; - list of necessary equipment and materials;





- list of related educational elements;
- the educational material itself in the form of a short, specific text, accompanied by detailed illustrations;
- practical exercises to practice motor skills;

Currently, there is an urgent question about the development in physical education of scientific foundations for systematization and analysis of new teaching technologies, which can solve a wide variety of problems: communication of knowledge, monitoring the progress of their assimilation, demonstration of illustrative material, and the development of physical fitness. Solovyova E. B. (1996) considers the most important problem in organizing the process of physical education to be the search for a teaching system that makes it possible to control in the process of educational activities the degree to which students assimilate the loads received during classes, which makes it possible to individualize the physical development of the individual.

Get to know your body, learn to stimulate its actions, be able to relieve neuromuscular tension and psycho-emotional fatigue. This has been confirmed in various studies, which have statistically proven a decrease in morbidity in students, an increase in physical performance and intellectual capabilities in those who purposefully (during all 4-5 years of study) used a system of rehabilitation measures. Modeling serves as a method of “indirect practical or theoretical operation of an object, in which it is not the object itself that interests us that is directly studied, but an auxiliary artificial or natural system (“quasi-object”) is used, located in a certain objective correspondence with the cognizable object, capable of replacing it at certain stages of cognition and, during its study, ultimately providing information about the modeled object itself.”

The activities of the teacher should be considered not only as providing each student with structured, targeted and motivated information about the conceptual and methodological content, methods of activity in the areas of using knowledge from various sections of physical education, but also as direct and indirect management by the teacher of the physical activity of students in mastering skills and abilities in accordance with the set educational goals. The use of computers in medicine and physical education provides great opportunities. To summarize, it should be noted that individualization of physical education lessons means the development of dynamic observation (monitoring) systems for physical education and the student’s health status. This can be done with the help of modern information technologies, using the cluster-modular teaching method, which is practically not used in the physical education of students with poor health,

All of the above indicates the need to search for new forms of assessing the quality of knowledge and skills for students with serious health problems. However, despite the high potential of modern information technologies, they have not yet found wide application in the system of higher physical education. In connection with the above, the introduction of modern information technologies into the educational process of physical education of students with different levels of physical fitness seems very relevant today.

The cluster-modular method is a completely new modern trend in the methodology for developing coordination abilities, endurance and other physical and psychomotor abilities of students with different levels, in the general area of directed influence on their development.

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