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Address: Marshala Tymoshenko str., 13-B, Kyiv, 04212, Ukraine.

Telephone: +38 (063) 289-9-289. E-mail: journal.sshh@gmail.com.

Web-site: sporthealth.kubg.edu.ua.



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STRUCTURE OF SCIENTIFIC KNOWLEDGE UPON PRECONDITIONS OF THE CONCEPT OF HEALTH-DEVELOPING TECHNOLOGIES IN THE COURSE OF ADAPTIVE PHYSICAL EDUCATION FOR SCHOOL-AGED CHILDREN WITH HEARING IMPAIRMENTS

Maslova Olena^(A,C,D,E,F)

National University of Ukraine on Physical Education and Sport, Kyiv, Ukraine

Author contribution: A – study concept and design; B – data collection; C – data analysis and interpretation; D – paper writing; E – paper editing; F – paper final adoption

Abstract

Introduction. Today the issue of health-developing among children and teenagers is considered comprehensively by the system of scientific knowledge constituting an independent, focused cognitive multilevel activity.

The *aim* is to determine and characterize the preconditions of developing the concept of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments within the aspect of scientific knowledge theory.

Material and methods: analysis and synthesis of the data from specialized research and methodological literature; monitoring of the Internet information resources; sociological methods (questionnaire); of method excerption (review and selection of materials from medical records); pedagogical methods (pedagogical testing, pedagogical experiment), and methods of mathematical statistics.

Results. According to the theory of scientific knowledge, based on theoretical and empirical levels as well as forms of its functioning we presented the structure of determination and scientific and evidential base of preconditions of the concept of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments having combined scientifically substantiated social and pedagogical, social and economic, biological and medical, biological and physiological, environmental, environmental and cultural, personal and motivational, and personal and operational statements.

Conclusions. Based on the cognitive theory, we have defined four categories of preconditions of the author's concept and hypothesis of its efficient realization requiring their direct account, namely including social, biological, environmental and personal principles in theoretical and methodological basis of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments.

Key words: scientific knowledge, preconditions, concept, health-developing, hearing impairments, schoolchildren, social, biological, environmental, personal, health.

Introduction. According to the valid law of Ukraine «On Higher Education», «the quality of higher education is a set of qualities of a person with higher education demonstrating their professional competence, system of values, and social orientation, and lead to the ability to satisfy both your spiritual and material needs as well as the needs of the society» [3, 13].

Exactly this thesis substantiates the statement of the aim of educational process in the system of physical education today, notably adaptive physical education where the idea of creating optimal conditions for developing the value-based goals for healthy and healthy lifestyle among the participants of this process is chief. It includes the readiness for acquiring theoretical knowledge, practical skills and abilities of organizing healthy living as well as raising health-developing competences – the significance of health as the highest human value and the main factor of getting success and welfare of a personality firmly figures out the definition of health-developing activity as a key competence in the current system of education [3, 13, 18].

The characteristic of considerable peculiarities of health-developing activity among the subjects of educational environment of an educational institution for creating conditions for providing physical, mental, and social welfare for the children with hearing impairments is tightly connected with the basic health factors and healthy lifestyle. So the issue of providing physical, mental, and social welfare for the representatives of this contingent of the population is

directly related to solving the objectives of forming, improving and preserving their health [16].

In pedagogical researches of the last decade, a complex approach to solving the issue of providing physical, mental, and social welfare among schoolchildren with established functional disorders in sensor systems' activity, notably with hearing impairments was underused. Even if such work is done, these are most frequently incidental events of physical education and mass sporting oriented ones [7, 17].

This one-sided approach will not be able to provide integrity, efficiency of health preservation and improvement among schoolchildren studying at specialized educational institutions as well as the ones studying at comprehensive educational institutions, so based on the presented information it requires organization and conducting scientific researches which was actually realized within the Composite scientific and research work plan in the sphere of physical education and sports for the years 2016-2020 approved by the Ministry of Education and Science of Ukraine developed in National University of Ukraine on Physical Education and Sport according to the topic 3.23: «Health-developing technologies in the course of adaptive physical education» (state registration number 0116U001620) [12].

The **aim of the paper** was to determine and characterize the preconditions of developing the concept of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments within the aspect of scientific knowledge theory.



Methods and organization of the research. In the course of executing the research we used the following methods: analysis and synthesis of the data from specialized research and methodological literature; monitoring of the Internet information resources; sociological methods (questionnaire); of method excerption (review and selection of materials from medical records); pedagogical methods (pedagogical testing, pedagogical experiment), and methods of mathematical statistics.

The researches were held based on National University of Ukraine on Physical Education and Sport as well as Kyiv special comprehensive boarding school for the children with hearing impairments, Kyiv special comprehensive boarding school for the children with hearing impairments № 18, Kyiv municipal comprehensive educational institution of I-III degrees «Training and Rehabilitation Center №6» and Kyiv regional council municipal institution «Bila Tserkva Multidisciplinary Training and Rehabilitation Center».

236 students aged from 13 to 19 years old with various congenital or acquired hearing impairments took part in the researches.

Organization of the research included three stages:

- the first stage required the analysis of current literary sources of national and foreign authors aimed to evaluate the general state of the issue, determine the aim of the paper, figure out the program of the researches, and develop the methods of sociological research;

- the second stage included the organization and holding of ascertaining

experiment for gaining new theoretical and experimental data on determining the level of physical development, physical performance and theoretical competence among the children with hearing impairments;

- the third stage included theoretical and empirical learning and substantiation of preconditions of the concept of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments.

In the course of conducting mathematical analysis of data the statistical reliability was considered $P = 95\%$ (5% error probability, that means the significance level $p = 0.05$); the mathematical processing was conducted on the personal computer using program software MS Excel XP, Statistica 6.0, created by Microsoft, Statsoft (USA).

Experimental records were approved by the committee of ethics of National University of Ukraine on Physical Education and Sport. According to ethical norms, all participants gave voluntary written consent for participation in all stages of pedagogical experiment for further analysis and disclosing of their personal data while interpretation and publication of the study findings.

Results of the research and discussion. According to the theory of scientific knowledge, and to the forms of its functioning, we have determined the idea of our research as true knowledge on reality with a possible subjective aim to transform and record not only genuine statement but also appropriate one, and became the basis for systematization of the process of identifying preconditions of the concept of health-developing technologies in the

course of adaptive physical education for school-aged children with hearing impairments. (see fig. 1).

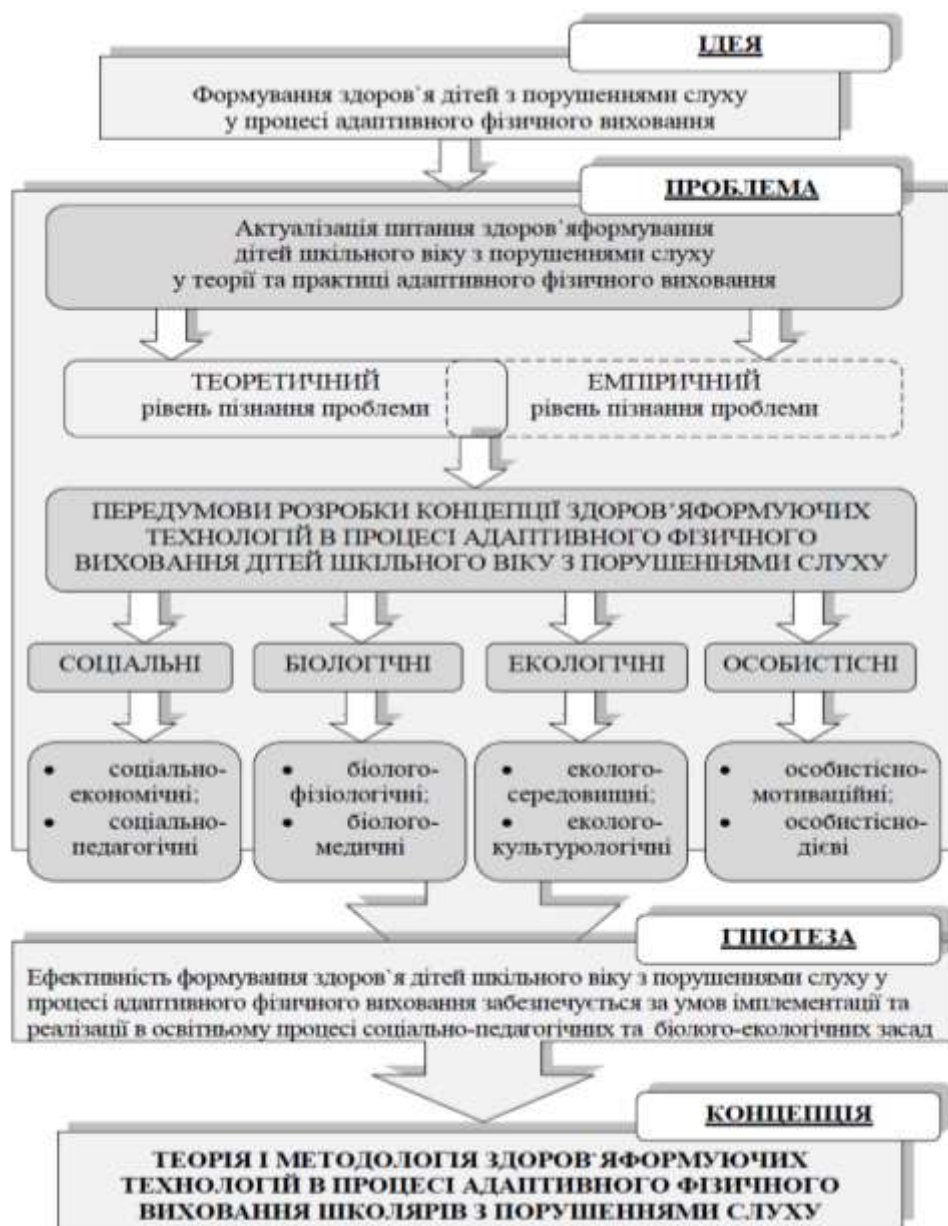


Figure 1. Structure of scientific knowledge on preconditions of the concept of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments

Stating the idea of our research was based on current conceptual principles and methodological approaches of children's, teenagers' and youth's health-developing in the course of physical education suggested and implemented in the works of: V. Bobrytska [1]; M. Dutchak [2]; V/ Zaitsev, S. Kramskyi, N. Oleinyk [4]; T. Krutsevych, H. Bezverkhnia [5]; S.

Futorny [11, 12]; L. Lubysheva [6]; V. Kashuba, N. Honcharova [15, 16, 18, 19].

The transition from the idea to the issue of the research has been accomplished by us after actualization of the studied question based on inherently interrelated and interdependent in theoretical and



empirical cognitive levels the integral structure of scientific knowledge.

Organization and conducting the research on theoretical level gave us an opportunity to distinguish the point of health-developing activity as an independent phenomenon and report on the key relations of the conditions of its implementation and accomplishment in the course of adaptive physical education for school-aged children with hearing impairments.

Competing the research on empirical level provided stating descriptive characteristic of these conditions, their transformation into preconditions of substantiating the problematics of recording the controversies between knowledge on motivation, needs, level of theoretical competence and practical skills among children with hearing impairments towards their own health-developing activity and ignorance of the ways and means of its realization in the course of adaptive physical education. That is why the defined issue combines two elements: awareness of ignorance and prevision of a possibility of discovery realized in the system of preconditions of the concept of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments.

Our suggested structure of scientific knowledge on preconditions of the concept of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments included four categories of preconditions: social, biological, environmental, and personal [14, 17].

The category of social preconditions included a sharp need of

modern society in physically harmonious and mentally developed personality as well as ability of an integrated member of society to successfully adapt and self-realize in social environment [8, 10]. Studying the content of social preconditions makes it possible for us to distinguish their focus:

- *social and pedagogical preconditions* are innovative changes in the system of inclusive education and reorientation towards the system of comprehensive institutions; increasing training workload via expanding informational supplies and implementation of distant component; growing attention to developing children's health in the system of education; actualization of health-developing and health-preserving educational environment; lack of scientifically substantiated and approbated technologies aimed to health-development in the course of physical education;

- *social and economic preconditions* are developing European outlook among Ukrainian society towards perception and equality of rights, freedoms and obligations for healthy people and people with disabilities; modernization and popularization of healthy lifestyle of a healthy citizen as a full member of successful and economically independent society; restoration of the term «civic health» and its content where individual health of a citizen and responsibility for it form a key component and integral part.

Biological preconditions of the concept of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments

include the statements corresponding to the term of norms and pathology of functions of independent body systems with due regard for the impact of healthy lifestyle components:

- *biological and physiological preconditions* are hypodynamia and hypokinesia being the result of powerful and accessible technologization of life and reasons for deceleration of physiological activity of the body; depression of body's adaptation responses as a result of summation of congenital or acquired pathology and everyday workload (learning, household, psychological, etc.); decrease of immune reactivity of the body to rationality of lifestyle; weakening of independent body systems' functions and deterioration of locomotor apparatus activity, as a result; inobservance of physiological and hygienic demands to organization and realization of educational process;

- *biological and medical preconditions* are lack of maturity of medical culture and understanding the need to follow the rules of medical, hygienic, and sanitary safety; high level of sickness rate is caused not only by congenital or acquired pathology, but also related illnesses; emergence and spreading of new pathogenic factors of biological origin causing enhancement of an acquired pathology or chronic conditions; imperfect system of preventive treatment and medicine, medical support and control for health condition.

The research within an ascertaining experiment on the level of their somatic health according to L.H. Apanasenko's methods approved that high level of somatic health had been established only among two groups of

the examined schoolchildren and specific for 13% of the examined in each group, the average level accounted for 33%, and the others – almost 54% - together the level lower than average and low level [9].

In the category of environmental preconditions of implementing health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments current tendencies of developing environmental culture of a personality and society as part of balance development were analyzed:

- *environmental preconditions* are decreasing negative impact of the environment and its independent components on the body due to using a specific regimen and conditions of doing physical exercises; understanding the concepts of environmental purity and ecofriendliness in the course of educational process and beyond its limits; implementations of natural environmental conditions into educational process for its popularization; using the force of nature in the system of strengthening of the body and improving the quality of life;

- *environmental and cultural preconditions* are expanding environmental outlook and consciousness via education, namely physical education; promoting environmental behavior and activity towards creating the system of moral, material, and spiritual environmental and cultural values; integration of optimal norms and means of the society and environment's interaction into the system of education; developing the system of environmental knowledge and its combination with the system of subject knowledge.



Our conducted ecological evaluation of the environment at specialized boarding schools for children with hearing impairments approved unsatisfactory condition of it and some inconsistencies of these institutions with state building standards and norms of ecological evaluation of the environment. Thus, among four examined institutions two special comprehensive boarding schools for children with hearing impairments are located close to motorways of regional importance with petrol stations and complexes located within 100-500 m radius from them. All the examined institutions have no comprehensive green protective zone on the perimeter of the land plot. There are no open sites for giving PE lessons, and the condition of covered sites needs major maintenance and installation of corresponding equipment, notably, the windows of sleeping campuses look out on to the mentioned motorways. Also private dwellings with active housekeeping and domestic animals, etc., are located close to the educational institutions' land plots [9].

The characteristic of personal preconditions of the concept of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments make it possible for us to distinguish:

- *personal and motivational preconditions* being lack of comprehending the value of health and longing to follow all the rules and norms of healthy lifestyle; undeveloped conscious attitude towards their own health and the health of the people around, active outlook position towards healthy well-being; understatement of their own needs and wishes for

optimizing the health level, increasing the level of physical performance both in the course of physical education and independent organization of motor activity; priority of sedentary way of life and deviated perception of new types of addictions (gaming, substance abuse, gadget and Internet addiction);

- *personal behavioral preconditions* are undeveloped individual system of behavior aimed to reach full physical, mental and social welfare based on the categories like: style of life, working and resting regimen, culture of interpersonal communication, prevention of bad habits; low level of theoretical competence and practical skills towards accomplishing health-development; lack of personal experience of their own health-development and positive emotional support of health-developing activity.

The comparative characteristic of needs and interests among schoolchildren with hearing impairments towards doing PE lessons, notably in the course of their physical education, approved that among the examined contingent the biggest number of children cares exactly of their physical condition. The results of the questionnaire also demonstrated that almost 60% of the responders of the given nosology and age group were totally unsatisfied with their physical condition. Thus, almost 75% of the surveyed expressed their desire to correct their physical condition, and 80% of the children noted the ability to efficiently correct their physical condition provided that their interests in the regimens and types of motor activity included in the process of their physical education would be considered [3].

The results of studying self-esteem of the level of practical skills and abilities' development by schoolchildren with hearing impairments approved that more than 67% of schoolchildren regardless of the age and degree of hearing impairment belong to unconfident (indifferent) level. Almost 27% of the children and teenagers evaluate their practical skills on the initial level, and only 6% of the schoolchildren consider their development level of practical skills and abilities to accomplish health-developing activity corresponds to sufficient level.

The analysis of the answers among schoolchildren with hearing impairments makes it possible for us to define the most complex abilities for them among which there were the ones related to the organization of optimal motion regimen (83.5%), to self-dependent completing of the physical education and recreational program (91.3%), to using the knowledge on the specificity of some exercises' impact on the body (84.9%), and to committing control for physical workloads at the lessons (95.5%).

The obtained results of the pedagogical observation demonstrated the ignorance among almost 77% of the students in the questions on drawing up personal programs for physical education and recreational lessons; development of the complexes of morning hygienic gymnastics; substantiation of dietary regimens; and recommendations on using the means against traumatism throughout doing physical education and sports.

We have found that almost 83% of the schoolchildren are not aware of the basis of motion regimen organization,

characteristics of exercises and selecting the forms of exercises depending on the peculiarities of personal educational activity, general state and health indicators; the basis of safety rules and prevention of traumatism at the PE lessons; the basic knowledge on providing first medical help; the basis of organization and holding mass sporting events or competitions in sports; the specificity of some physical exercises' impact on the human body, etc.

Therefore, the theoretical and empirical determination of preconditions of implementation of health-developing technologies in the course of adaptive physical education for school-aged children with hearing impairments defined the hypothesis of our research where one of the possible options of solving the mentioned issue was figured out, and its truth requires scientific proof.

Discussion. According to the definition of World Health Organization, the education for health requires consciously formulated abilities for gaining knowledge, notably a particular form of communication aimed to improve the awareness of the issues of health and its preservation, improvement of knowledge and development of life skills and abilities promoting health support among individual people and community's society [1, 10, 15].

The education for health requires also development, motivation improvement, confidence (in their own efficiency), being important for the activity towards health improvement includes informing related to fundamental social as well as economic



and environmental factors influencing on health.

The education for health has to be aimed at increasing the people's capacity to make the right choice, enhance control over their health, and develop skills and abilities to direct their efforts at their own welfare as well as at creating healthy environment. Currently, most researchers are equally of the opinion that whatever perfect the legislation on health, funding, health protection system, material welfare, the most important factor for health is a person's own position on it, and their responsible treatment [3, 13].

In the National Doctrine of Education Development it is mentioned that education has to be aimed at «raising a person in the spirit of responsible treatment of their own health and the health of the people around as the highest individual and social value» [18].

In current researches, the scientists accent the fact that only having introduced the humanistic principles into the basis of educational process it is possible to build health-developing educational environment [4, 10].

The scientists' researches also proved that in developed society the health level is highly related to the level of education. The higher the educational level of a particular social environment is, the better there are the general health indicators. Of course, treating your own and social health is impossible without being aware of why it is important and how to do it exactly. Moreover, it is worth understanding the definition of education as this part not only as recreation-oriented one but wider – as education as a whole. The wider the awareness of the main natural,

philosophic, and humanitarian statements is, the more opportunities there are to create a system idea on health problem in general among the society. Moreover, the definition of education has to be understood complexly: both as providing information and teaching methods, ways and skills of healthy lifestyle, and as raising in the spirit of absolute priority of individual and social health's values in all its manifestations, spheres and levels.

Conclusions. The results of the research substantiated the problematic situation with health state, level of awareness and practical skills towards leading healthy lifestyle among the school-aged children with hearing impairments and manifested possible ways to overcome this situation via implementing health-developing technologies.

The development, implementation and realization of the concept of health-developing technologies in the course of adaptive physical education for children with hearing impairments requires intensification of scientific knowledge according to the suggested structure and taking the preconditions of its development into account. Thus, we have substantiated the following categories: social, biological, environmental and personal.

Prospects for further research can be development and implementation of health-developing technologies in the course of adaptive physical education for children with hearing impairments into educational process of specialized institutions and their practical approbation for determining the efficiency of the author's concept.

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Authors' information:

Olena MASLOVA,

candidate of sciences in physical education and sport, assistant professor

National University of Ukraine on Physical Education and Sport, Kyiv, Ukraine

ORCID: 0000-0003-4926-7681

E-mail: 0205@ukr.net

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