

## Original Article

### Modern aspects of the ecological culture implementation in the physical education process of different population groups

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#### Abstract.

Purpose: analyzed the special scientific and methodological literature on the theory and practice of ecological education; studied the basic principles and methodological basis of ecological education for integration into the process of physical education of different population groups; devoted to the problem of correction of indicators of physical condition of schoolchildren with hearing impairments by means of tourist all-round with “Ecological tourism” module; substantiated, developed and tested the technology of correction of indicators of physical condition of students with hearing impairments by means of tourist all-round, with ecological focus lessons. Research methods were used: analysis and generalization of data of scientific-methodical literature and information sources of the Internet; study of documentary materials; method of copying; sociological research methods; pedagogical research methods; index method; psychological and pedagogical methods; methods of determining the level of physical capacity and preparedness; methods of mathematical statistics. Result. The presented results of the conducted researches testify that the reconstruction of the health-improving, educational-educational process in the sphere of physical culture with the help of its structural restructuring, differentiation and program-content maintenance, contributes to satisfaction of cognitive, motor and psycho-emotional needs of the personality and development of a set of abilities in the field of ability motor experience, developing individual health and leading a healthy lifestyle.

**Key words:** ecological culture, implementation physical education, children with hearing impairments, ecological games, students.

#### Introduction

The issue of harmonization of relations between people with the environment associated with the development of cultural identity (Andrieieva, 2017; Guichun, 2009). Promoting health in modern society with its inherent features of the socio-economic, scientific and technological development and taking into account the significant modifications of attitudes environmental content is the responsibility of the state (Head, 2010).

Understanding the relationship ecological and environmental problems caused by the desire of people to maintain their health conditions irresponsible destruction of the environment, reducing the availability of skilled care for almost all sectors of the population, increasing morbidity statistics, demographic trends negative state of low health culture (Ignatov, 2011).

Environmental degradation in the country, the desire for children and adults to extract immediate benefits without worrying about the effects of the applied nature and society, ignorance and failure to comply with legal rules understatement moral values, rising violence among children and young people who are victims of drug alcohol business is an indicator of the low level of general culture and their own ecological relationship with the environment (Asafova, 2003; Imas, Futorny, Tsyganenko, Yarmolyuk, 2018).

Physical fitness, physical education and ecological orientation are key components of physical cultural identity by which people can lead a healthy and socially active (Andryukhina, 2017). Sustainable motivation for physical activity and formation of health is considered today as one of the priority directions of humanization of education (Vu Minh Tam, 2006; Sutton M., 2013).

#### Materials and Methods.

Research objectives: to reveal the essence of ecological culture and theoretical bases of its realization in the process of physical education; to define pedagogical conditions of ecological and physical awareness formation in the process of physical education; to develop and propose to the introduction the technology of formation of ecological culture in programs of physical education of different population groups.

To achieve the objectives, the following research methods were used: analysis and generalization of data of scientific-methodical literature and information sources of the Internet; study of documentary materials;

method of copying; sociological research methods; pedagogical research methods; index method; psychological and pedagogical methods; methods of determining the level of physical capacity and preparedness; methods of mathematical statistics (statistical analysis of the data was calculated using Microsoft Excel 2010 data analysis tool).

Pedagogical experiment #1 was conducted to study the effectiveness of ecological games implementation into the physical education process: involved 34 students 8-9 years old with various congenital or acquired hearing; 11 members of the control system of specialized boarding schools for children with impaired hearing and; 16 teachers of physical education and rhythm instructors, working in specialized boarding schools for children with hearing impairments of Kyiv (Nos. 6, 9, 18) and Bila Tserkva (Imas, Futorny, Tsyganenko, Maslova, 2017).

Pedagogical experiment #2 was conducted to determine the effectiveness of technology of correction of indicators of physical condition of schoolchildren with hearing impairments by means of tourist all-round, with the inclusion in the program of physical education classes of the variant module "Tourist all-round", which contained practical classes on the theme block "Ecological tourism": at the first stage of the study, 72 schoolchildren from 13 to 15 years old with hearing impairments (35 boys and 37 girls) participated in the special boarding schools of Kyiv (Nos. 6, 9, 18) and Bila Tserkva. At the second stage, 26 schoolchildren (14 boys and 12 girls) aged 15 years, who were trained at a special boarding school for hearing impaired children, No. 18 in Kyiv, took part (Kashuba, Maslova, Rychok, 2018).

Pedagogical experiment #3 was conducted to establish development and introduction perspectives of ecological culture tools in the process of physical education of college students (as an example of plogging): involved 64 students 17-28 years old, attending of Kyiv College of Urban Economics V.I. Vernadsky Taurida National University.

The protocols of experiments were approved by the ethics commission of the National University of Ukraine on Physical Education and Sport. According to ethical standards, all participants voluntarily provided written informed consent for participation in all stages of the pedagogical experiment, for further analysis and disclosure of their personal data during interpretation and publication of the results of the study.

## Results

Important socio-pedagogical conditions for the implementation of ecological focus on physical education are:

1. Building a program of ecological approach to a holistic pedagogical process based on the health priorities of all participants of the educational process, namely the creation of a health-forming environment; the process of ecological awareness formation; organization of physical education of ecological orientation.

2. Personally-oriented teacher orientation to strengthen his own attitude to health-forming education, understanding of the main regularities of the physical-fitness process, mastering certain skills in the field of physical culture and ecology.

3. Creating a developing object-motor environment based on the principle of needs free satisfaction of the individual in physical self-development.

Under these conditions, we defined the main principles of teaching physical education formation of the individual in terms of ecological orientation physical education:

1. Availability of a physical education program based on the principles of: integrative; nature; rational combination of educational and motor training; creativity.

2. Implementation of specialized ecological classes that ensure meaningful integration of knowledge about a person and their health, about human interaction with the environment, within the framework of the unity of cognitive and practical physical activity.

3. Ensuring that the cognitive material is consistent with the age characteristics and cognitive needs of the individual in knowing himself and the world around him.

4. The focus of theoretical training and practical physical activity on the acquisition of ecological knowledge and skills, as well as the development of behavioral skills, focused on self-healing, correction of behavior and well-being.

Following certain conditions and according to the plan of research work of the National University of Ukraine on Physical Education and Sport on the theme 3.23 "we have conducted a series of studies aimed at the development and introduction of ecological process in adaptive physical education for children with hearing impairments" (Number of state registration: 0116U001620), we have conducted a series of studies aimed at the development and introduction of ecological aids in the process of adaptive physical education for children with hearing impairments.

Pedagogical experiment # 1 involved the development and implementation into the process of adaptive physical education of primary school children the moving games with environmental focus. The proposed games were conducted by teachers at physical education lessons for students of 3<sup>rd</sup> and 4<sup>th</sup> classes Special boarding schools for children with impaired hearing in Kyiv. During the lessons, pedagogical monitoring of students' reaction to participation in the proposed ecological games was carried out. After the lessons, conducted

interviews with students and questionnaire with physical education teacher's to determine the need and possibility to include ecological games into the process of physical education for children with hearing impairments.

The results of the interviews with the students after the lesson, allowed us to first of all confirm the high level of students' interest for ecological games, the possibility of their constant use at physical education lessons and during the independent leisure organization with friends or parents.

The study of attitude and concern to the proposed ecological moving games of physical culture teachers', who works directly with the presented contingent, showed a positive position as a means of adaptive physical education and reasonably confirmed the possibility of use at physical education lessons for children with hearing impairments (Tabl.1).

Table 1. Results of questionnaire survey of teachers of physical education (n = 16),%

Question	Percentage of answers	
	«YES»	«NO»
1. Do you think it possible to expand the content of the adaptive education to include principles of ecological education for children with hearing impairments?	100.00	0
2. Do you think it possible to always use means of ecological education in the system of physical education for children with hearing problems?	81.25	18.75
3. Do you think that the proposed principles of ecological education will be effective in the physical education of children with hearing impairments?	81.25	18.75
4. Do you think it possible to integrate environmental education into the system of adaptive physical education for children with disabilities established by other systems?	87.50	12.50

Also, the majority of teachers expressed its belief that ecological games can have a positive impact to be proposed for the practice of physical education not only students with hearing impairments.

The study results peer' review of ecological games implementation during physical education of children with hearing impairments, carried out among heads of educational institutions represented contingent allowed to make reassuring conclusions about the effectiveness of our proposed development (Tabl.2).

Table 2. Expert evaluation results (n = 11),%

Question	Percentage of answers	
	«YES»	«NO»
1. Do you think it possible to increase the level of physical culture through the introduction of ecological education?	87.50	12.50
2. Do you think it possible to increase the level of ecological culture through the introduction to the system of physical education, including adaptive physical education, ecological education principles?	81.25	18.75
3. Do you think it possible to enhance the health of children with hearing problems by including principles of ecological education?	87.00	12.50
4. Would you consider the process of integrating ecological education principles into a physical education system as innovative?	100.00	0
5. Do you support the implementation of ecological education principles to the system of adaptive physical education?	87.50	12.50

Peer review showed that most of heads supports the implementation of ecological games in physical education of children with hearing and consider them potentially promising innovative means of improving health, physical and ecological culture of this group representatives.

The vast majority of heads polled support the implementation of ecological games in the process of adaptive physical education for children with hearing impairments, and agrees with the possibility of integration into the educational process subordinate institutions.

An important addition to our research were the results of teacher observation, according to which during the lessons, all students are fully involved in the game conduct, set deliberately performed all tasks during the game at a high motor and emotional level participated.

Pedagogical experiment # 2 included the development and testing of technology of correction of indicators of physical condition of schoolchildren with hearing impairments by means of tourist all-round, with the inclusion in the program of physical education classes of the variant module "Tourist all-round", which contained practical classes on the theme block "Ecological tourism".

The results of the experiment revealed: reduction of morbidity and change its structure, the number of requests for medical care decreased from 3.78 per year to 1.17 per year on average per student; among students with hearing impairments were set positive changes in the duration of course of illness, the boys figure fell from 9.7 to 17.50 the day and girls from 8.60 to 26.40 the day.

The effectiveness of the proposed technology showed quantitative changes in the index mean calculation of morphofunctional state of students 15 years with hearing problems ( $p < 0.05$ ) (Tabl.3).

Table 3. Comparative characteristics of the calculated index indicators of the morphofunctional status of 15-year-old students with hearing impairments (n = 26)

Index	Boys (n=14)				Girls (n=12)			
	before the study		after the study		before the study		after the study	
	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
Kettle Index, g·cm <sup>-1</sup>	321.60	2.35	292.50*	2.76	330.80	2.75	305.40*	2.55
Robinson Index, conv. units	86.01	4.53	82.15	4.76	95.33*	7.61	89.37*	3.40
Life Index, ml·kg <sup>-1</sup>	39.01	6.53	52.45*	8.49	32.29	6.77	46.37*	5.26
Power Index, %	23.80	5.02	34.10*	6.22	21.60	4.82	28.50*	4.55

Note: \* the difference between the results of the experiment, statistically significant at the level of  $p < 0.05$ .

Comparative analysis of the Harvard step test among students 15 years with hearing problems before and after converting the experiment demonstrated positive changes in the level of manifestation of physical performance and overall endurance. None of the surveyed students was not low, but rather took students with a high level of physical performance - 7.14% of boys and 8.33% of girls ( $p < 0.05$ ).

The most pronounced dynamics was the positive changes in the index of the Ruffier index: it significantly decreased, to be more exact, the number of schoolchildren and schoolgirls with a grade of "bad" completely disappeared.

With a grade of "satisfactory" the number of students decreased from boys from 57.14% to 14.29%, and among girls - from 58.33% to 8.33%, students who received a grade of "excellent", although before the experiment of such students was not observed at all.

When comparing the results of physical fitness before and after the experiment in boys, a significant improvement in the manifestation of the trunk and back muscles strength from  $31.00 \pm 2.71$  to  $35.00 \pm 3.23$  trunk lifting at one minute; an explosive force from  $182.20 \pm 2.51$  to  $190.40 \pm 3.49$  cm; spine flexibility from  $12.80 \pm 0.47$  to  $15.80 \pm 1.03$  cm; total endurance from 64.29% to 100.00% of the total group size; spatial orientation from  $70.80 \pm 1.58$  to  $62.40 \pm 2.71$  cm; static equilibrium with closed eyes from  $18.50 \pm 0.44$  to  $21.30 \pm 0.36$  s, static equilibrium with open eyes from  $31.30 \pm 2.28$  to  $34.60 \pm 2.16$  sec. ( $p < 0.05$ ). In girls, statistically significant changes occurred at the level of manifestation of the trunk and back muscles strength from  $26.00 \pm 1.55$  to  $34.00 \pm 4.51$  trunk lifting at one minute; the explosive force from  $157.10 \pm 3.37$  to  $167.60 \pm 4.24$  cm; spine flexibility from  $7.20 \pm 0.82$  to  $10.50 \pm 0.54$  cm; total endurance from 58.33% to 91.67% of the total group size; spatial orientation from  $72,80 \pm 3.08$ , up to  $67.30 \pm 3.93$  cm, static equilibrium with closed eyes from  $17.60 \pm 0.52$  to  $21.50 \pm 0.26$  sec.; static equilibrium with open eyes from  $30.10 \pm 1.76$  to  $34.70 \pm 0.84$  sec. ( $p < 0.05$ ). Significantly increased the level of theoretical knowledge of students with hearing impairments, especially in a survey on the topic of the "Ecology" module, which showed striking changes in the level of theoretical knowledge of boys and girls as compared to their previous responses; stressing their readiness to implement practical of health-forming activities.

At pedagogical experiment # 3 our study aimed at identifying opportunities to increase the level of ecological culture in physical education, particularly college students. The results of online survey of students of 1-2 courses towards studying the level of their ecological consciousness showed a mediocre level of their theoretical knowledge and practical skills, in particular students do not fully possess information about the influence of heavy metals on the human body, are constantly used for household plastic needs and bathed in open water reservoirs of the city. Characteristics of motives and needs in the direction of prevention and protection against the impact on the body of environmental factors, showed a high percentage of interest in improving their own level of ecological culture and expanding the range of environmental knowledge. However, the assessment of the likely risks of eco-dependent pathology has shown a rather high degree of negative impact of both external and internal pathological factors.

## Discussion

We have determined that the ecological orientation of physical education contributes to the determination of the physical culture formation by the level of ecological and physical education of the individual, and is a determining factor in the implementation of environmental approach to a holistic pedagogical process. Ecological culture is the direction of human activity and thinking, on which the natural existence of modern civilization. Its sustainable development, depend significantly - a set of certain actions, technologies of nature human development, which ensure equilibrium in the system "man-environment" (Imas, Futorny, Tsyganenko, Maslova, 2017).

A healthy lifestyle is a way of life, genetically predetermined by the typological characteristics of a person, specific living conditions and aims at the formation, preservation and promotion of health and the full identification of a person's socio-biological functions (Futorny, Tsyganenko, Pershehuba, Sklyarova, Oksamytna, 2017). At the reason of healthy lifestyle forming is a individual motivational setting of a person to embody their social, physical, intellectual and mental abilities. Healthy living is the most effective means and method of ensuring health, primary prevention of diseases and meeting the vital need for health (Futorny, 2014).

A comprehensive program of ecological culture and healthy lifestyles is aimed at the formation of knowledge, attitudes, personal orientations and norms of behavior that ensure the preservation and enhancement of physical and psychological health of children as one of the valuable components that contribute to the cognitive and emotional development, achievement of planned results of development basic educational program (Vu Minh Tam, 2006).

The aim of program is to create conditions for the formation of the educational process for participants with installation in a responsible and active attitude towards their health by organizing purposeful activity aimed at formation of ecological culture, healthy and safe lifestyle based on health-forming technologies (Xiaoxiang Z., 2006, Imas, Futorny, Tsyganenko, Yarmolyuk, 2018).

The objectives of the program are: strengthening of the health component of activity at the educational institutions, creation of conditions for health correction, rehabilitation and health improvement for youth; work continuation and expansion on maintenance of health formation orientation of educational process: the organization of motive mode of pupils at lessons, physical and health work; creating conditions for raising the level of healthy lifestyle culture; increasing the level of competence of school teachers for organizing their activities to formation of ecological culture, healthy and safe way of life for students; expanding the school's social partnership to create a health-forming environment (Futorny, Tsyganenko, Pershehuba, Sklyarova, Oksamytna, 2017).

The criteria for the formation of ecological culture are responsible attitude to nature, ability to describe ecological cause and effect relationships in the surrounding world, to analyze them, to explain them; identify hazards to the environment and human health; ways to prevent them; rules for an environmentally sound, healthy and safe way of life; give examples of links between human health and the health nature, the health of nature and human behavior, taking into account the diversity of the world and the world of people (Imas, Futorny, Tsyganenko, Maslova, 2017).

## Conclusion

Illations for the pedagogical experiment #1 are: for the first time were considered the issue of integration of the basic principles of ecological education in the process of adaptive physical education of children with hearing impairments; for the first time were identified and analyzed the principles of ecological education and the main components for the possibility of implementation into the system of adaptive physical education; for the first time is substantiated the possibility of introducing the principles and competences of ecological education into the system of adaptive physical education of children with hearing impairment; were supplemented and systematized the scientific data of substantiation of psychological-pedagogical and medical-biological use of ecological games, especially mobile games in the practice of adaptive physical education as a means of correction of psychophysical development of children with hearing impairments.

The developed technology from pedagogical experiment #2 helped to increase the level of functionality of the cardiovascular and respiratory system; normalization of indicators of physical development; improvement of development of small motility; optimization of the level of general physical capacity and preparedness; stabilization of the immune system; balance of psycho-emotional state.

Results of the pedagogical experiment #3: have been expanded and supplemented the basic theoretical data on the formation of ecological culture of children and young people in the process of physical education; has been identified for the first time the possibility of implementing environmental culture into the physical education of college students; have been substantiated for the first time the prospects for the development and implementation of ecological culture in the process of physical education of college students.

**Conflict of interest.** The authors declare no conflict of interest.

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