



**METHODOLOGICAL AND VALUABLE REFLECTION  
OF THE PHENOMENON OF BREATHING BASED  
ON THE INTEGRATIVE USE OF THE THEORY OF FUNCTIONAL  
SYSTEMS AND THE ANTHROPOLOGICAL APPROACH**

**МЕТОДОЛОГІЧНО-ЦІННІСНА РЕФЛЕКСІЯ ФЕНОМЕНУ ДИХАННЯ  
НА ОСНОВІ ІНТЕГРАТИВНОГО ВИКОРИСТАННЯ ТЕОРІЇ  
ФУНКЦІОНАЛЬНІ СИСТЕМИ ТА АНТРОПОЛОГІЧНОГО ПІДХОДУ**

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*In the article, based on the disclosure of the phenomenology of breathing, the improvement of the theory and practices of the development of the health-preserving competence of the physical education teacher in the conditions of postgraduate education is carried out. For this, pedagogical tasks, the theory of functional systems, ideas about the synchronous work of the cardiovascular and respiratory systems (cardio-respiratory synchrony), patho-pedagogy, humanistic and child-centered intentions of the "New Ukrainian School" and anthropological approaches are used integratively. The basis of the theoretical understanding of the breathing phenomenon is based on modern physiological knowledge, which to some extent does not correlate with the currently available understanding of the respiratory function as such, which seems to require conscious control and management. Among the theoretical provisions aimed at practical application, we can single out the following: the respiratory function is automatically (implemented reflexively) synchronized with the work of the cardiovascular system (cardio-respiratory synchrony) and, accordingly, these two systems of the first type whose regulation is internal (according to the theory of functional systems and physiological observations) function holistically and synergistically, therefore purposeful and conscious "external" synchronization with motor actions is presented as competitive and, accordingly, as such that can disrupt the specified harmonious interaction; the majority of motor actions and training regimes should be carried out without purposeful control over breathing, which is considered as a priority strategy for preserving the health of the respiratory organs and minimizing the risks of developing acute heart disease; the defining and system-organizing strategy of the teacher is to focus on maintaining the rhythm and automatism of breathing during physical activity; the breathing function, which is synchronized with blood circulation, automatically synchronizes and adapts to certain motor actions and modes and, accordingly, to the intensity and duration of physical exertion; at the same time, there are certain motor modes (swimming, shooting, etc.) and motor actions that require mandatory control over the function of breathing and its management, which includes synchronization with movements. The development of the health-preserving competence of the physical education teacher is carried out taking into account the phenomenology of breathing, which includes the application of pedagogical tasks, problematic issues and their analysis; analysis of pedagogical situations; ethical and dialogical practices; actualization of the teacher's health-preserving thinking.*

**Key words:** health pedagogy, objectification, breathing during physical exertion, correct breathing, methodology of physical culture and sports, sports physiology, health-preserving competence, physical education teacher, synchronization of the heart and respiratory systems (cardio-respiratory synchrony).

*У статті на основі розкриття феноменології дихання проводиться вдосконалення теорії та практик розвитку здоров'язберігаючої компетентності вчителя фізичної культури в умовах післядипломної освіти на основі. Для цього інтегративно використовуються педагогічні задачі, теорія функціональних систем, уявлення про синхронну роботу серцево-судинної і дихальної систем (серцево-дихальний синхронізм), патопедагогіка, гуманістичні та дитиноцентричні інтенції «Нової української школи» та антропологічний підходи. В основі теоретичного осмислення феномену дихання покладені сучасні фізіологічні знання, які певною мірою не співвідносяться з наявними натепер розуміннями дихальної функції як такої, яка начебто потребує свідомого контролю і управління. Серед теоретичних положень спрямованими на практичне застосування можемо виділити наступні: дихальна функція автоматично (реалізується рефлексивно) синхронізується з роботою серцево-судинної системи (серцево-дихальний синхронізм) і відповідно цих дві системи першого типу регуляція яких є внутрішньою (відповідно до теорії функціональних систем і фізіологічних спостережень) функціонують цілісно і синергійно, тому цілеспрямована і усвідомлена «зовнішня» синхронізація з руховими діями представляється як конкурентна і відповідно як така, що може порушити зазначену гармонійну взаємодію; переважна частина рухових дій і тренувальних режимів мають проводитися без цілеспрямованого контролю над диханням, що розглядається як пріоритетна стратегія збереження здоров'я органів дихання та мінімізації ризиків розвитку гострої серцевої патології; визначальною і системоорганізуючою стратегією вчителя є спрямування на підтримання ритму та автоматизму дихання під час фізичної активності; функція дихання, яка синхронізована з кровообігом автоматично синхронізується і адаптується до певних рухових дій і режимів і, відповідно, до інтенсивності і тривалості фізичного навантаження; водночас існують певні рухові режими (плавання, стрільба та ін.) і рухові дії які потребують обов'язкового контролю над функцією диханням і управління ним, що включає синхронізацію з рухами. Розвиток здоров'язберезувальної компетентності вчителя фізичної культури проводиться з врахуванням феноменології дихання що включає застосування педагогічних задач, проблемних питань та їх аналіз; аналіз педагогічних ситуацій; масетико-діалогічні практики; актуалізацію здоров'язберезувального мислення педагога.*

**Ключові слова:** педагогіка здоров'я; об'єктивізація; дихання під час фізичного навантаження; правильне дихання; методологія фізичної культури і спорту; спортивна фізіологія; здоров'язберезувальна компетентність; вчитель фізичної культури; синхронізація серцевої і дихальної систем (серцево-дихальний синхронізм).

All the principles of heaven and earth are living inside you.  
Life itself is truth, and this will never change.  
Everything in heaven and earth breathes.  
Breath is the thread that ties creation together.  
Morihei Ueshiba

**Statement of the problem in a general form and its connection with important scientific or practical tasks.** The phenomenon of respiration, despite its biological conditionality, universality and naturalness, is comprehended and interpreted by each culture in its own way, in accordance with its

worldview and practical attitudes and dominant values. In traditional and archaic cultures, breathing was mainly considered as a valuable phenomenon associated with a spiritual dimension. Accordingly, the words «Breath» and «Spirit» have the same root. Breathing in traditional cultures, therefore, was presented not only and not so much as a function and need, but, first of all, as a mystery and sacred action, and thus was comprehended ontologically (existentially), value-wise, sacred. In Jewish and Christian traditions, breathing is the most important act of the creation and existence of man, as stated in the Genesis book (2:7): «And the Lord God formed man from the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul». Thus, in traditional societies, the ontological understanding of breathing formed a value attitude towards it, which included an understanding of it as an existential mystery, truth, and as being itself. These ontological aspects of respiration underlie the use of breathing in spiritual, combat, movement and health anthropological practices, among which the bright cultural phenomena are the traditions of hesychasm that exists within the framework of Byzantine Christianity, Indian yoga, and Chinese qigong [13].

As the processes of secularization and acculturation spread in the conditions of modern global civilization, the phenomenon of respiration appears, first of all, as an «ordinary» and relatively «simple» physiological function to understand. There was a «secularization» of the phenomenon of breathing, as well as a simplification of the person as a whole, and its reduction to a function. This methodologically predetermined a simplified attitude to breathing according to the rule: «Everything is trained, including breathing.» Simplified ideas about a person, about his image, as a machine or a biological object, have led to the fact that in the practices and technologies of physical training, including partially physical culture, anthropological and cultural ideas about the phenomenon of breathing, as well as modern physiological knowledge are not used enough [11; 14; 17], in which its essence is objectified and holistically revealed.

There appeared among doctors and physical education teachers the belief that: «The more and deeper a person breathes, the more oxygen is in the blood and the more a person becomes healthy». The presence of these mythologized and at the same time simplified ideas about breathing determined the widespread active use of respiration exercises and health-preserving systems, most of which use deep respiration, which is often carried out without sufficient consideration of the preliminary and subsequent «respiration actions» (by analogy with motor actions) of physical activity.

The idea of «correct respiration» has arisen, which is presented mainly as deep and includes partial or constant conscious control over the respiratory function.

The specified unnatural and essentially non-physiological ideas about respiration, which are actively used in «folk physical culture», are often also used in educational practices (sometimes in theory), thereby creating certain risks for children's health. We consider the actualization of the modern presentation of respiration as an anthropocultural and physiological phenomenon, as a system-organizing cognitive and value-meaning factor of preserving children's health and minimizing risks to their lives during physical activity as a significant direction in health pedagogy. In this aspect, it is also important to reveal the phenomenology of systemic risks for respiratory health and life, which are formed as a result of the COVID-19 pandemic [11; 15]. Thus, understanding the practical value of technologically oriented modern integrative presentations about respiration as a physiological and anthropocultural phenomenon, we update the problem of using the specified knowledge about respiratory function to improve the health-preserving competence of physical education teachers in the conditions of postgraduate education. In the scientific pedagogical literature, the specified problem is not sufficiently disclosed, which, in relation to the importance of this issue for the preservation of the health and life of children in the conditions of the educational process, presents it as urgent.

**Analysis of the latest studies and publications, which the author relies on, which consider this problem and approaches to its solution.** The problems of managing and taking into account the function of breathing are revealed in the works of many researchers.

Kornaga M. (2019) [5] investigates the effect of proper breathing on the somatic health of 10-11-year-old school students. Gancheva V. I., Yeryomenko E. A., Kolomoyets G. A. (2020) [1] analyze the peculiarities of the use of breathing exercises in the process of combat horting. Doroshenko M. M., Yeryomenko E. A., Vekhtev V. V. (2021) [2] reveals the features of using correct breathing for the training of young athletes in combat horting. Yeryomenko E. A. (2002) [3] represents ways of developing correct breathing for the purpose of conducting duels in martial arts. Lysenko L. L., Ogienko M. M., Vitchenko A. M. (2011) [6] analyze the implementation of the technology of improving the health of children of primary school age in the system of school physical education, which includes the active use of breathing exercises. The authors analyze various methods of breathing – paradoxical breathing, surface breathing according

to Buteyko K. They reveal the health-preserving aspects of liquid endogenous and deep breathing according to the system of yogis. Nekrasov H. G. (2015) [7] analyzes the peculiarities of the formation of proper breathing skills in the process of physical education. This includes learning to breathe fully at rest and while performing cyclic movements. The author notes that the rhythm of breathing can affect the pace of movements, which is primarily manifested in such types of motor activity as walking, running, swimming, and skiing. Tikhonov V. K., Tikhonova S. V., Kucheruk M. (2021) [10] reveal the phenomenology of breathing culture, considering it as the basis of physical and mental health of a person. Kyrychenko O. V., Horobey N. V., Teryokhina O. L. (2013) [4] represent ways of forming correct breathing in the process of physical education of students of a special medical department. Fedotenko S. I. (2021) [12] explores the problem of forming proper breathing skills for the prevention of diseases and the specifics of using breathing exercises for the rehabilitation of patients with COVID-19. Guided by the data of the scientific literature, the author updates the deep breathing techniques that, in his opinion, contribute to the optimal rehabilitation of patients with COVID-19. Polkovnyk-Markova V. S. (2013) [9] considers correct breathing as a means of therapeutic physical culture, which is important in the process of rehabilitation of children with bronchial asthma in sanatorium conditions. Petrov V. G., Bezyazichna O. V., Klitar O. V. (2016) [8] study the issue of using correct breathing and breathing exercises in the system of therapeutic physical culture in the bronchitic form of chronic obstructive pulmonary disease.

An important aspect of the problem of targeted influence on respiratory function during motor activity is a practically oriented analysis of the phenomenon of synchronization between the cardiovascular and respiratory systems (cardio-respiratory synchrony). The problem of cardiorespiratory synchrony is revealed in the works of many researchers, namely Gonschorek A. S. (2001) [16], Penttila J. (2001) [20], Stark R. (2000) [22], Williams C. A. (2002) [24], Novak V. (1993) [19], Torok T. (1998) [23]. The presence of cardio-respiratory synchrony, which is realized automatically, determines both at the level of theory and practice of physical culture the need to minimize targeted effects on the respiratory system and to understand the significance of the automaticity of the breathing function for preserving health and life.

**Highlighting previously unsolved parts of the general problem, to which the specified article is devoted.** The introduction into the educational process of the health-preserving and child-centered ideas of the «New Ukrainian School», as well as

the Eurocentric trend of professionalization, are systemic prerequisites that determine the need for a detailed analysis and critical study of currently available methods and technologies of health preservation with the aim of their objectification and improvement. An important aspect of problematization is the issue of prevention of acute disorders, including cardiac ones, which may arise as a result of motor activity in combination with the activation of various risk factors, among which the targeted impact on respiratory function is significant. The specified problem acquires special importance in connection with the prevention of sudden cardiac death, which includes the actualization of specific knowledge about the causes and mechanisms of its development, the application of which is necessary and, accordingly, decisive in the organization of motor activity. One of the risks of sudden cardiac death is desynchronization between the cardiovascular and respiratory systems, which can occur as a result of purposeful and total control over breathing.

According to the indicated aspects of problematization, the existing principles, approaches and traditions of breathing practices as components of health and movement systems need to be analyzed and revised on the basis of modern knowledge of physiology and pathology. For now, ideas about the phenomenon of breathing as a component of motor activity are sufficiently mythologized both in everyday life and in the professional sphere. Central to this mythologizing is the idea of the need to control breathing, as well as the idea of the need for mandatory synchronization with motor activity. From the point of view of physiology, these ideas are quite questionable, especially against the background of modern knowledge that the function of breathing is primarily synchronized with the work of the cardiovascular system. This phenomenon has been known for a long time and is defined as cardio-respiratory synchrony, the essence of which is revealed in the works of Gonschorek A. S. (2001) [16], Penttila J. (2001) [20], Stark R. (2000) [22], Williams C. A. (2002) [24], Novak V. (1993) [19], Torok T. (1998) [23]. And other researchers. In addition, the rhythm, frequency and depth of breathing are mainly formed automatically based on the physiological requests of the body in the corresponding subcortical centers, so external regulation should be limited.

Accordingly, purposeful and conscious intervention in the work of subtle physiological mechanisms of breathing, especially during motor activity, can significantly increase the risks of desynchronization of the respiratory and cardiovascular systems, which can be a prerequisite for the development of acute cardiac pathology. In this pedagogical system, the indicated physiological

ideas about the relative autonomy of the respiratory function and its synchronization with the work of the cardiovascular system are revealed in the process of improvement of physical culture teachers, first of all, in the format of practically oriented tasks and questions. Since this issue is debatable, we suggest that teachers reveal and understand it in the process of practical activities, as well as take into account the specifics of the traditional practices of organizing proper breathing, which is mostly non-physiological and, accordingly, such that it increases the risks of desynchronization of the cardiovascular and respiratory systems.

**Formulation of the goals of the article (statement of the task).** The purpose of the study was to improve the theory and practice of the development of health-preserving competence of physical education teachers in the conditions of postgraduate education based on the disclosure of the phenomenology of breathing by the integrative use of pedagogical tasks, the theory of functional systems, and an anthropological approach.

**Methods.** In this study, we used a system of approaches, among which system-organizing approaches are: competence, phenomenological, hermeneutic (pedagogical hermeneutics), axiological, ontological, reflexive, existential, systemic, target, acmeological, innovative, anthropological, cultural, problematic, transdisciplinary, synergetic.

We used the following concepts: «New Ukrainian school», pedagogical integration, knowledge transfer (N. Nonaka, H. Takeuchi), body technique (French Techniques du corps) (M. Moss) [17], functional systems [11]; pathopedagogy (V. Fedorets) [11]. The specified approaches and concepts are also actively used by us in the process of improving the qualifications of physical education teachers with the aim of forming the methodological potential, professional outlook, thinking and axiosphere of the teacher, which is considered as a relevant and system-organizing aspect of the integrative and interdependent development of health-preserving and professional competences.

**Presentation of the main research material.** In the process of advanced training, we consider the phenomenon of respiration from various positions, among which the following are the defining ones: the study of functional systems and the anthropological approach. We will briefly present the specified directions.

The use of modern physiological is presented. Actualizing acmeological aspirations and guided by the hermeneutic and epistemological potentials of learning about functional systems, we will present ideas and phenomena that determine the orientation, technological values, and structure of the health-preserving activity of a physical education

teacher, as well as a naturalistic and humanistically oriented understanding of it. Based on the specified knowledge and meaning of learning about functional systems [11] and modern physiological systems presented [11; 14; 17], we will present the defining strategies and tactics of the teacher, practically oriented ideas, revealing them in the format of a system of approved comments.

1. In accordance with the experimentally confirmed theory of functional systems, the function of respiration is mainly realized by a functional system that belongs to type I. The regulator in this system of the first type is the internal environment of the body. At the same time, respiration is partially regulated by the factors of the external environment and the conscious purposeful influence of a person.

2. The leading aspect of the regulation and manifestation of respiration is its automaticity and, accordingly, the rhythm, which is mainly formed automatically. Let us present the practical application of the above two basic, systemic, and defining concepts presented about the phenomenon of breathing as a functional system:

- in addition to a fairly limited number of motor actions and modes, the priority strategy for preserving respiratory health and minimizing the risks of acute cardiac pathology is to minimize conscious, targeted and controlling intervention in the breathing process, as well as active attempts to control with “translation” of breathing into “deep correct (controlled) breathing «;

- the teacher's actual and central practical strategy is to maintain the rhythm and automaticity of breathing during physical activity;

- targeted intervention in the breathing process and its control is necessary and possible only when performing special motor actions and modes (swimming, shooting, etc.), which must be nature-appropriate, physiological - that is, relatively insignificant, “local”, targeted and not disturbing the general “automatic» and «unconscious» breathing pattern;

- from an existential point of view, breath must be “given” to “Be”;

- in health-improving and motor systems, which primarily consist of cyclic repetitive movements, where their authors initially predetermined and set constant control over the respiratory function, it is necessary to transform the conscious, targeted regulation of breathing into an unconscious one, with minimal interference in it. Breathing is automatically synchronized and adapted to certain motor actions and modes and, accordingly, to the intensity and duration of physical activity.

In the process of improving the qualifications of physical education teachers, we actively use pedagogical tasks [14], comments to them and dialogues. Using modern physiological concepts

of respiratory function, let us consider one of the problems about the phenomenon of breathing.

Task. Condition of the problem. Indicate which of the recommendations aimed at synchronizing steps when running with breathing is “more” physiological: “It is recommended to inhale for two steps and exhale for three or vice versa (inhale for three steps and exhale for two).” Another answer is possible. Comment on your answer using modern physiological and psychophysiological concepts.

Answer. The most physiological is the almost complete absence of purposeful synchronization of breathing and running. The synchronization process occurs automatically. This is due to the fact that when running, the respiratory function is secondary in its semantic significance in relation to motor activity. That is, running is not formed based on breathing goals. At the same time, breathing is the primary functional system of the first type that provides running, which, based on innate internal automatic mechanisms, adapts to motor activity “on its own.” Conscious control of breathing and attempts to synchronize with movement will disrupt the entire structure of running, turning it into a “breathing-running” exercise. The runner will think and tune in to how to “correctly” “breathe” or “finish” the distance, rather than run it.

Using anthropology. We consider breathing integratively and systematically - as a physiological, anthropological and cultural phenomenon, as well as in the context of the phenomenology of physicality, sociocultural stereotypes of behavior and traditions, including educational, health and spiritual. In this aspect, we update the concept of body techniques (French Techniques du corps) [18] by the French anthropologist Marcel Mauss. The meaning of this concept is that the same movements (labor, combat, etc.) are produced differently in different cultures, thus reflecting its specificity and features of understanding corporeality and reality. Breathing is a function that provides motor actions. At the same time, breathing, being a stable and

relatively autonomous biological phenomenon, will hardly change under the influence of cultural specifics, compared to movements. But cultural differences will be presented at the level of health and martial systems, examples of which are yoga and qigong [13]. Thus, for optimal preservation of respiratory health through the use of health-improving systems, it is also necessary to take into account their cultural and biomechanical specificity and goals, which integratively can have a certain impact on the physiology of breathing.

**Conclusions from this study and prospects for further research in this direction.** 1. When forming the content of a curriculum aimed at developing the health-preserving competence of physical education teachers in postgraduate education, the integrative use of acmeological, anthropological and innovative approaches, the transfer of physiological and medical-hygienic knowledge, and pedagogical integration are effective. Based on the application of these approaches, the problems of breathing are updated and revealed.

2. The phenomenology of breathing within the content-semantic framework of our curriculum is revealed through the use of modern physiological concepts, in particular, the doctrine of functional systems; pathopedagogy; anthropology; humanistic and anthropocentric intentions of the “New Ukrainian School”.

3. The main practical and technological components of the development of health-preserving competence of a physical education teacher based on the disclosure of the phenomenology of breathing are: the use of pedagogical tasks, problematic issues and their analysis; analysis of pedagogical situations; maeutic-dialogical practices; transformation (“deciphering”) of fundamental knowledge about man and the phenomenon of breathing and, accordingly, “translation” (operationalization) of them into a practical and technologically oriented format; updating the teacher’s health-saving thinking.

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