

## Improving the health-preserving competence of physical education teachers using pancreatitis prevention knowledge

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### Abstract:

The article presents ways and methods of improving the health competence of a physical education teacher based on knowledge of pancreatitis prevention. The significance of this issue for the professional activity of a physical education teacher is revealed. The urgency of the problem is determined by the fact that acute pancreatitis is a life-threatening disorder that can be induced by physical exercise, smoking, use of anabolic steroids. In this pedagogical system, these issues are revealed through the use of the "Case-system of pancreatitis prevention", which consists of problems-situations, system of questions, methods of modeling the effects of enzyme activation within the pancreas, analysis of motor activity in relation to pancreatitis prevention, methods of performance monitoring, and also through the actualization and formation in the learning process of strategies for the pancreatitis prevention and pre-medical care. The purpose of covering the phenomenon of pancreatitis is to improve the components of health competence of a physical education teacher based on knowledge of pancreatitis prevention. The cognitive component is improved through the development of practical knowledge about the phenomenon of pancreatitis and through the actualization of health-preserving thinking. The activity-discursive component is developed through learning to apply activity-oriented prevention and care strategies. The personal-existential component is improved by anthropological-value comprehension of the life preservation problem, which is considered as an existential issue, as well as through the actualization of safe organization of physical activity values, safe and healthy nutrition. The use of these methods makes it possible to consider this problem of pancreatitis prevention in the educational process in a practical and value-oriented way. For optimization and concretization of knowledge and for their practical and problem-based orientation on the basis of consideration of tasks-situations and the system of questions the strategies for prevention and rendering of emergency care for acute pancreatitis are formed. An experimental study was conducted which determined the effectiveness of the implementation of the "Case-system of pancreatitis prevention" method. The application of these methods in the training programs of physical education teachers, coaches, instructors in certain sports and martial arts, military, rescuers, emergency services, firefighters can help improve their training in the field of life and health preservation.

**Key words:** physical education teacher, health-preserving competence, pancreatitis prevention, postgraduate education, health pedagogy, safe nutrition, physical culture, sports, health.

### Introduction

Traditionally, the health-preserving competence of a physical education teacher (Kaźmierczak, 2018; Hrytsai et al, 2020; Fedorets, 2018; Fedorets, 2019) is aimed at developing a healthy lifestyle through the organization of physical activity. Guided by the ideas of systemic and "panoramic" (Timokhov, 2016) understanding of the problems of students' health maintaining in the educational process, we highlight the need to consider practically significant pathological phenomena (Fedorets, 2017) that may occur in the professional activities of physical education teachers. Accordingly, a preventive approach is applied and the need for active use of knowledge about certain disorders that may be formed during physical exercise or be provoked by it is determined. Currently, much attention is paid to the formation of knowledge and life skills about healthy and safe nutrition. At the same time, not enough attention is paid to the prevention of the digestive system disorders that may occur during physical exercise, in particular in such a pressing problem as pancreatitis. This disease (pancreatitis), which occurs in children quite often can occur during physical exercise, on a camping trip, on

vacation or in other life situations. Number of discharges per 100,000 population with primary diagnosis 13-45 (Karakayali, 2014).

Three aspects are decisive in the actualization of this problem: 1) pancreatitis can be caused by physical exercise in combination with other factors, including excessive consumption of food and / or alcohol, smoking; 2) the specified disease, which is formed acutely (in the sense of “quickly”, “immediately”) can be severe and lead to death or become chronic; 3) complications of pancreatitis (both acute and chronic) that significantly reduce the quality of life are pancreatogenic diabetes mellitus and enzyme deficiency that lead to indigestion.

As an important aspect of the problem’s urgency, we consider the systemic prerequisites for pancreatitis, which in combination with exercise can increase the likelihood of its formation. Such prerequisites primarily include the problem of children's nutrition, namely: eating high-calorie foods with a high content of carbohydrates and fats; significant breaks between meals; one-time intake of a significant amount of food; eating foods that contain a significant amount of artificial and harmful substances, as well as those that significantly irritate the gastrointestinal tract. Important factors that contribute to the consideration of this issue are such socially and educationally significant “background” “phenomena-preconditions” of acute pancreatitis as smoking, use of salicylates (aspirin, etc.), anabolic steroids and alcohol, including low-alcohol beverages, and also stresses of different nature, “unusual”, “fashionable” and debilitating diets and diseases of the digestive system – cholecystitis, biliary dyskinesia, gastritis, duodenitis. The problem of pancreatitis, which can be caused by physical exercise is revealed in the studies by B. Breuer-Katschinski et al., (Breuer-Katschinski et al., 1996) and J. Touzios et al. (Touzios et al., 2005). The risks of alcohol-induced pancreatitis are represented by L. Kristiansen et al. (Kristiansen et al., 2008). In the works by P. Burton and E. Fenton (Burton and Fenton, 2007), A. Healey et al. (Healey et al., 2008), M. Shimoda et al. (Shimoda et al., 2009), K. Sharbidre, S. Galgano and D. Morgan (Sharbidre, et al. 2020) the problem of traumatic pancreatitis is represented. M. Edderkaoui and E. Thrower (Edderkaoui et al. 2013) and S. Barreto (Barreto, 2016) consider smoking (tobacco smoking) as a factor of acute pancreatitis formation. V. Kumar et al. (Kumar et al., 2019) analyze the role of anabolic steroids in the pancreatitis occurrence.

In the pedagogical scientific literature, the issue of improving the health competence of physical education teachers in postgraduate education based on the use of practical knowledge about the prevention of pancreatitis during the educational process is insufficiently covered. The effect of physical exercise on the formation of pancreatitis is not disclosed. Value understanding of the above aspects together with the importance of considering this problem for the preservation of life and health of students in the educational process during exercise define this study as relevant.

**Aim.** Improving the health-preserving competence of a physical education teacher in postgraduate education on the basis of practical knowledge of pancreatitis prevention in the educational process and the relative development of life-creation and strategies of healthy lifestyles formation, including skills of healthy and safe nutrition.

## Material & methods

The study used an anthropologically oriented methodological system represented by methods, approaches and concepts. Among the approaches and methods the main ones were: analysis of the scientific literature; competence; problematic; morphofunctional; phenomenological; axiological (Harashchenko, 2021; Fedorets, 2019); anthropological (Ushinsky, 2004; Aksonova V. end Sklovsky, 2019); epistemological; pathopedagogical (Fedorets, 2017); etiological (in health pedagogy) (Fedorets, 2017), propaedeutic (in health pedagogy) (Fedorets, 2018), preventive (Klochko et al., 2020; Fedorets, 2019; Fedorets, 2021), transdisciplinary, situational, androgynous and case method (Armour, 2014).

*Pedagogical and anthropological concepts were applied:* knowledge transfer (I. Nonaka, H. Takeuchi), anthropologization (Ushinsky, 2004; Aksonova V. end Sklovsky, 2019; Fedorets, 2019), humanization (Ignatovitch, 2016; Fedorets, 2019). The methodological and humanistic potential of ancient Greek concepts was used: care of oneself (ancient Greek  $\pi\mu\lambda\iota\alpha\ \alpha\nu\tau\omicron\nu$ ) (frenchepimelesthai sautou) (interpreted by M. Foucault) (Foucault, 2008), humannature (Greek  $\phi\acute{\upsilon}\sigma\iota\varsigma\ \tau\omicron\upsilon\ \acute{\alpha}\nu\theta\rho\omega\pi\omicron\upsilon$ ), observance of moderation (Greek  $\sigma\acute{\upsilon}\mu\mu\epsilon\tau\rho\nu\ \mu\acute{\epsilon}\tau\rho\iota\omicron\nu$ ), harmony (Greek  $\text{Ἀρμονία}$ ), healthy lifestyle. These ancient Greek concepts were considered in the modern interpretation in the system of "Paideia Pedagogy" (Roberts, 1998; Miller, 2007; Foucault, 2008) developed by M. Foucault and on the basis of his understanding of Hellenistic traditions, pedagogical and humanitarian ideas.

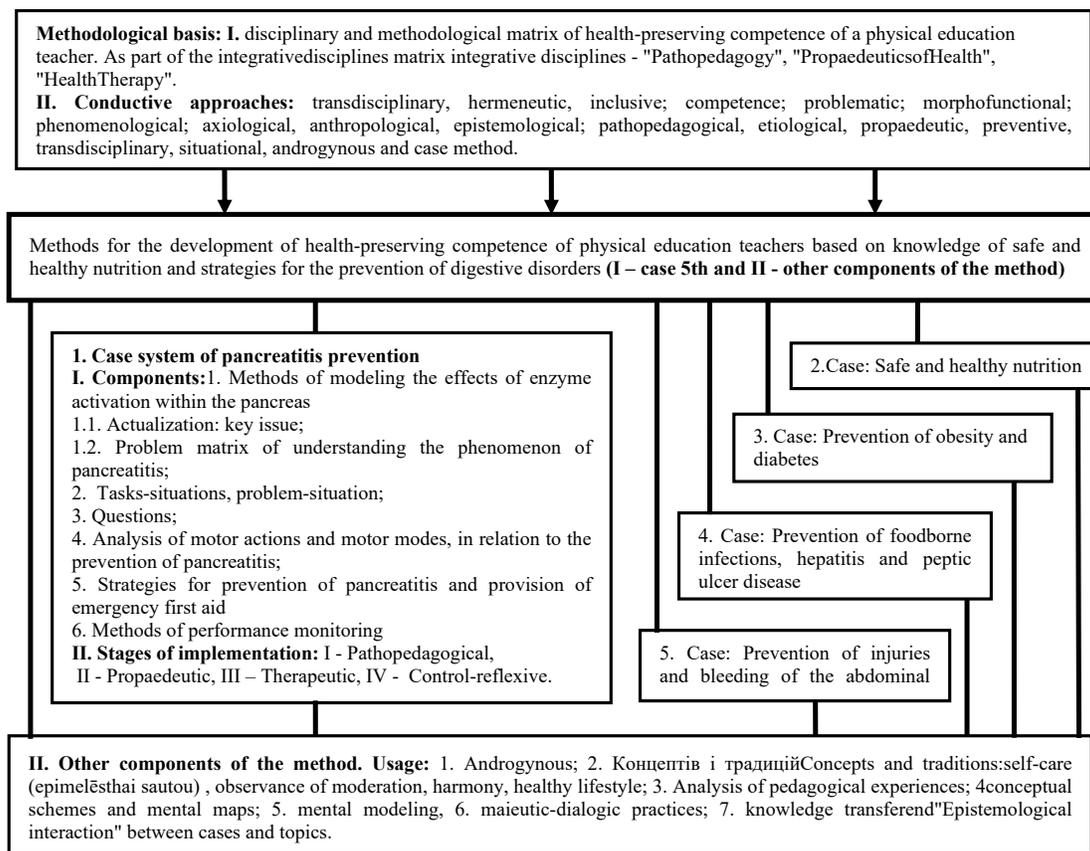
*Digital technologies.* Work with the Internet resources in particular augmented reality, virtual reality, cloud technologies was carried out.

*Use of own methodological developments.* The worked out "Methods for the development of health-preserving competence of physical education teachers based on knowledge of safe and healthy nutrition and strategies for the prevention of digestive disorders" (as shown in Fig. 1) were used. The methodological and conceptual basis of these methods is the "disciplinary and methodological matrix of health-preserving competence of a physical education teacher" which was developed by us. The developed "integrative" disciplines

(according to A. Subetto), "Pathopedagogy"(Fedorets, 2017; Fedorets, 2018), "Propaedeutics of Health" (Fedorets, 2018) and "Health Therapy" (Fedorets, 2018) are used in the conceptual-semantic framework of this matrix.

The purpose of these methods is to form the teacher's knowledge and skills to maintain the health of the digestive system. These methods are used to solve a significant specific problem – preserving the health of the pancreas. This is realized by forming in the teacher of physical culture mental and "mental-personal-communicative" and "mental-personal-activity" tools, which are part of his/her health competence. These "competency tools" include practically oriented knowledge, intellectual skills, algorithms of action, intentions, motivations, professional attitudes, reflections of experiences and technological values aimed at preventing pancreatitis and its complications both during and after physical activity. The technological basis of "Methods for the development of health-preserving competence of physical education teachers based on knowledge of safe and healthy nutrition and strategies for the prevention of digestive disorders" are case systems (or cases) in which issues of digestive health are systematized, specified and practically oriented. These are the following cases (case systems): "Safe and healthy nutrition", "Prevention of foodborne infections, hepatitis and peptic ulcer disease", "Prevention of pancreatitis", "Prevention of injuries and bleeding of the abdominal cavity", "Prevention of obesity and diabetes", as well as appropriate control methods, which are formed on the basis of questions used in case systems. All cases focus on the health-preserving of the digestive system, taking into account the effects of physical activity and the risks that may be associated with it.

**Figure 1.** Structural and logical scheme: "Methods for the development of health-preserving competence of physical education teachers based on knowledge of safe and healthy nutrition and strategies for the prevention of digestive disorders" and "Case-system of pancreatitis prevention", which is part of it.



The study represents a case system "Prevention of pancreatitis", consisting of problem-situations, question systems and "Methods for modeling the effects of enzyme activation within the pancreas" which reflect practically significant aspects of the problem. This methods use the analysis and investigation of pedagogical experiences of teachers, the hierarchization of health-preserving knowledge (Fedorets, 2021), the representation of practical recommendations and strategies for prevention and first aid. Problem learning and flipped classroom, maieutic-dialogical methods, demonstration of illustrations and drawings are used, as well as cognitive maps in which the specified problems are reflected. The use of transfer of anthropological and

medical-hygienic knowledge, the Hellenistic idea of "self-care" (Foucault, 2008), as well as androgynous and transdisciplinary approaches are significant in these methods.

The relevant aspect is the application of the hierarchization of health-preserving knowledge in the conceptual-semantic framework of which knowledge, cognitive attitudes, intentions, values and value orientations that are aimed at saving lives are primary and system-organizing. In relation to this problem, the idea of hierarchization of health knowledge is defining, cross-cutting and system-organizing. This is due to the fact that acute pancreatitis can develop quite quickly, as well as lead to such dangerous not only for health but also for life pathologies (in the sense of complications) as internal bleeding, painful shock, and acute abdomen. Accordingly, this pedagogical system is aimed at developing the ability of the physical culture teacher to respond quickly to problematic situations for life and health on the basis of special knowledge and strategies for prevention and emergency care in acute pancreatitis.

*The case system of pancreatitis prevention* is formed on the basis of consistent actualization in the process of learning four stages: I – pathopedagogical; II – propaedeutic; III – therapeutic; IV – control-reflexive.

I (the first) – "Pathopedagogical". Problemization, formation of interest in the problem is carried out and the leading pathogenetic mechanism of pancreatitis development is presented. The causes, complications and course of this pathology are revealed. This stage corresponds to the formed integrated discipline "Pathopedagogy". This stage is implemented by the "Methodology for modeling the effects of enzyme activation within the pancreas" and the relative consideration of issues № 1-6.

II (second) – "Propaedeutic". Systemic and general practice-oriented knowledge and understanding of pancreatitis problem are formed, first of all, the causes, conditions and typical situations of its occurrence, peculiarities of the course and general diagnostic provisions. This stage corresponds to the formed integrated discipline "Propaedeutics of Health". Problem-situation № 1 and questions № 7-11 are used.

III (third stage) – "Therapeutic".

At this stage, the danger of pancreatitis for life and health is revealed and clarified, its complications and diagnosis are considered on the basis of knowledge of typical health risk situations and preconditions, and ways of prevention and pre-medical care are covered. This stage corresponds to the formed integrated discipline "Health Therapy". It is aimed at identifying, understanding and concretizing the problem and the practical orientation of knowledge. That is, at this stage there is a transition from general knowledge about pancreatitis to specific, operational, "instrumental", situational ones which are practical, situational and personally oriented. An important area that is relevant at this stage is the analysis of certain motor actions (in the sense of exercises), their systems and motor modes in the context of pancreatitis prevention. At this stage, the pedagogical experiences of physical education teachers are updated and analyzed. Problems-situations № 2 and 3 as well as questions № 11-15 are applied. Strategies for pancreatitis prevention and premedical first aid are briefly and succinctly defined.

IV (fourth stage) – control-reflexive. This stage is in using one problem (№ 1) and five questions (№ 8, 9, 10, 12, 13) in a somewhat simplified format presented in a test form to control knowledge and value-reflexive comprehension and consolidation.

The methodological and conceptual basis of this case system is a disciplinary and methodological matrix (Fedorets, 2018) which consists of "integrative disciplines", "Pathopedagogy", "Propaedeutics of Health" and "Health Therapy". The epistemological, value and interpretive potentials of these "integrated disciplines" optimally and practically oriented can be disclosed in the application of the specified sequence: "pathopedagogy – propaedeutics – therapy". A similar approach exists in the medical tradition where it is prescribed from. This sequence of application is in essence an important and defining aspect and strategy of fundamentalization, methodologization and technologicalization of health-preserving knowledge and practices of life and health preservation. A teacher in the conceptual-semantic framework of "Pathopedagogy" first reveals the causes, mechanisms, patterns, complications of pancreatitis as a pathological phenomenon. Further, "Propaedeutics of Health" contributes to the formation of general knowledge about the prevention of pancreatitis, which includes understanding the nature of the disease and typical ways of its development, as well as pre-medical diagnosis, basic care strategies, behaviors and communication, echnological values and guidelines. Consideration of the problem of pancreatitis prevention in the system "Health Therapy" updates practical and specific knowledge about possible complications and risks to life and health, as well as strategies for providing pre-medical care in specific and typical risk situations and the ability to analyze motor activity in the context of this problem. Thus, in the process of learning with the use of disciplinary-methodical matrix there is a movement from general and conceptual ideas about pancreatitis to technological, personal and situational understandings and knowledge, strategies and algorithms of actions aimed at prevention and giving help, as well as analysis of motor actions and motor modes in relation to this problem.

*The structure of "Case system for the prevention of pancreatitis"*

I. Methods of modeling the effects of enzyme activation inside the pancreas (Stage I – pathopedagogical) (will be discussed in detail later in the "Results"). These methods are represented by the actualization and consideration of the key issue and analysis of "Problem matrix of understanding the phenomenon of pancreatitis", which consists of a system of interrelated and complementary issues.

II. System of tasks-situations (Used at II, III, IV stages):

1. Task-situation: "Induction of acute pathology of the digestive system by fatty and protein foods".
2. Task-situation: "Development of acute pathology of the digestive system due to the combined effects of starvation, smoking, infectious disease (influenza) and physical activity".
3. Task-situation: "Risks of acute pathology of the digestive system due to lifting heavy objects and use of certain medications".

III. System of questions (Questions) (Applicable at all four stages):

1. Present a conceptual and generalized understanding of the morphophysiology of the pancreas and its structural and functional connections with the organs of the digestive system.
2. In general, reveal the essence of the exocrine function of the pancreas and its participation in digestive processes.
3. What is the endocrine function of the pancreas and its participation in metabolism?
4. Identify the factors that may stimulate the activation of pancreatic enzymes in the pancreas itself and indicate how this may affect health.
5. How can pancreatitis affect the endocrine function of the pancreas?
6. How can pancreatitis affect the exocrine function of the pancreas and the digestive process?
7. Present the main diagnostic signs of acute pancreatitis.
8. What is the danger for the digestive system of a hit to the area between the navel and the costal arch?
9. What is the danger for the digestive system of eating a significant amount of fatty and protein (fatty meat) food after prolonged fasting?
10. What is the danger of smoking to the pancreas while eating small amounts of food?
11. What are the typical complications that can occur due to acute pancreatitis?
12. What is the danger of acute pancreatitis to life and health?
13. Introduce the main strategies of pre-medical care for acute pancreatitis.
14. Highlight the main strategies of pre-medical care for chronic pancreatitis.
15. Present the main strategies for the prevention of pancreatitis.

IV. Analysis of motor actions and motor modes, as well as pedagogical experiences of teachers in relation to the prevention of pancreatitis (conducted at all stages, mainly II and III).

V. Strategies for prevention of pancreatitis and provision of emergency first aid.

VI. Methods of performance monitoring (IV control-reflexive stage (Case-systems of pancreatitis prevention) (task № 1 and five questions – № 8, 9, 10, 12, 13).

*Methods of performance monitoring (control-reflexive stage).* The methodology is based on the use of one problem (№ 1) and five questions (№ 8, 9, 10, 12, 13). The purpose of the performance monitoring method is to determine the readiness of physical education teachers for health-preserving activities on the basis of practically oriented knowledge of pancreatitis prevention. Performance monitoring methods focus on identifying the knowledge, intellectual skills, algorithms, understandings, and technological values that are necessary to maintain health. This method of performance monitoring of "Case-system of pancreatitis prevention" is part of "Methods of developing health skills of physical education teachers based on knowledge of safe and healthy nutrition and strategies for the prevention of digestive disorders". The methods of monitoring are presented in the form of tests. To implement them, the subject (physical education teacher) needs to choose one correct answer out of four.

The statistical significance of the different levels of educational achievements of the students before and after the experiment confirmed via Wilcoxon's T-test (Sidorenko, 2003).

The Wilcoxon T-test is applied by comparing the results of a study in the same observational choice under two different experimental conditions. In our study, we consider the "typical" shift in the case of changes in the values of indicators of educational achievements of the students in the direction of increasing the studied feature.

We formulate hypotheses:

H0: The values of the levels of educational achievements of the students after the experiment exceed the values of the levels of their educational achievements before the experiment at the level of significance  $p < \alpha$ .

H1: The values of the levels of educational achievements of the students after the experiment are less than the values of the levels of their educational achievements before the experiment at the level of significance  $p < \alpha$ .

The calculation of the sum of the ranks of "atypical" shifts ( $T_e$ ) is carried out according to the formula

$$T_e = \sum_{i=1}^k r_i \quad (1)$$

where  $k$  is the number of atypical shifts,  $r_i$  is the rank of atypical shifts ( $i = 1 \dots k$ ).

$T_c$  is determined using a table for a given level of significance  $\alpha$  in accordance with the number of studied indicators  $n$ . According to the task, the level of statistical significance can be selected  $p < \alpha = 0,05$  or  $p < \alpha = 0,01$ . Hypothesis H0 is accepted if  $T_e \leq T_c$  is at the significance level  $p < \alpha$  (with a high probability the shift in the "typical" direction prevails). Hypothesis H1 is accepted if  $T_e > T_c$  at the level of significance  $p < \alpha$  (with a high probability the shift in the "atypical" direction prevails).

## Results

Let's consider features of application of "Methods of development of health-preserving competence of a teacher of physical culture on the basis of knowledge of safe and healthy food and strategies of digestive system disturbances prevention" (as shown in Fig. 1). To do this, we will reveal the content-semantic, practical-technological and control-reflexive aspects of the "Case system of pancreatitis prevention".

Initially, we update the issue of pancreatitis prevention, revealing its importance. Highlighting the urgency of the problem in the context of the organization of physical activity, we highlight the importance of the fact that acute pancreatitis is a life-threatening disease that can develop against the background of complete health and well-being, as well as during physical activity. That is, the determining factors in the actualization are two: the life-saving factor and the need to take into account the stochastic, unexpected nature of the problem. We also pay attention to the fact that the acute pancreatitis complications can include diabetes mellitus, chronic pancreatitis with enzymatic insufficiency and a range of disorders that occur in the digestive system.

To actualize the problem of pancreatitis prevention (in this case acute) and its professional and value comprehension, to develop interest and, accordingly, to form general ideas about it, the "Methods of modeling the effects of enzyme activation within the pancreas" are used. These methods are formed on the basis of actualization of methodological and hermeneutic potential of the integrative discipline "Pathopedagogy" (Fedorets, 2017; Fedorets, 2018) in the system of which two main system-organizing approaches are determined: pathogenetic and etiological. Pathogenetic approach, reveals the dynamics and mechanisms of development of a particular pathology or a problem. Simplified, this approach can be represented in the form of a question: "How does this happen?". The causal (etiological) approach is a study of the causes, risks and conditions of disease and / or problems formation. Simplified, the essence of this approach can be presented in the form of a question: "Why or due to what (for what reason) does it happen or has happened?". Through the application of these approaches, it is possible to design, model and predict probable dynamics and consequences. Here is a typical example of the implementation of "Methods for modeling the effects of enzymes activation inside the pancreas". An actual component of these methods is maieutic-dialogic practices. In these methods there is a key issue that holistically reflects the essence of pancreatitis as a problem and pathology. To reveal the essence of this question, we analyze the features of the digestive system by pre-actualizing 2-3 questions.

Consideration of the problem with the "neutral question" begins:

*Question 1.* What factors cause digestion of food in the gastrointestinal tract?

*Answer:* Due to gastric and intestinal juices, as well as the secretion of the pancreas and bile. In juices, in particular, the secretions of the pancreas contain enzymes that break down nutrients in the lumen of the small intestine.

*Question 2.* What factors in the lumen of the digestive tract activate enzymes?

*Answer:* Factors in the activation of pancreatic enzymes are substances that are part of the chyme, which is partially digested food, as well as bile. Do proteins, fats, carbohydrates and bile themselves activate pancreatic enzymes that are released into the digestive tract?

*Question 3.* What will happen if the enzymes of the pancreas are activated in it itself?

*Answer:* In this case, the "digestion" or destruction of the pancreas will begin under the influence of its own enzymes.

This question (№ 3) is key. It defines the specifics of problematization and typical ways of conceptualization and understanding of the pancreatitis problem, which is the phenomenon of probable self-destruction of the pancreas due to the activation of its own enzymes in the gland itself. This question reflects the defining link in the pathogenesis (pathological development) of pancreatitis. It corresponds to the direction of "Pathopedagogy".

Next, we propose to analyze the phenomenon of possible self-destruction of the pancreas by activating its own enzymes, presenting a teacher's own understanding of the probable consequences of this phenomenon. Accordingly, we propose to use the main problem areas of such "mental" modeling (Fig. 2). These areas are presented in the format of questions that are based on the "logic" (in understanding of etiology and pathogenesis) of pancreatitis development and are combined into a system. We call this system of questions "Problem matrix of understanding the phenomenon of pancreatitis". In the specified matrix the emphasis is made on development of mental skills directed on definition and statement of a problem in the conditions of limited time. It is important to develop interest, understanding and, above all, the ability to update and apply the teacher's knowledge of morphophysiology of the digestive system for mental and "dialogue-mental" modeling of pancreatitis development, its manifestations, consequences and possible ways or ideas of prevention. We will present the "Problem matrix of understanding the phenomenon of pancreatitis" (presented in the form of a Table 1 and Fig. 2) together with the answers formed succinctly and conceptually on the basis of the directions "Pathopedagogy" and "Propaedeutics of health". It is propaedeutic which is aimed at forming general and conceptual ideas and understandings of the problem.

**Table 1:** Problem matrix of understanding the phenomenon of pancreatitis

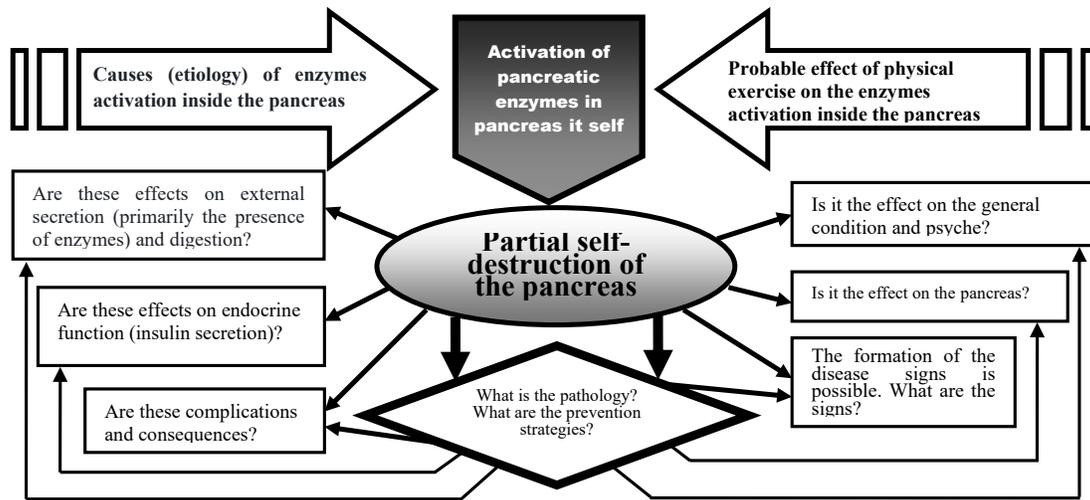
N	Question	Answer
1.1.	What changes will the activation of pancreatic enzymes in itself lead to? How will this affect:	To pathological changes of various structures and processes and formation of disorders – acute pancreatitis.
1.2.	– vessels;	Vascular erosion, which leads to internal bleeding. Danger of death.
1.3.	– nervous system and psyche;	Pain shock. Risks of death.
1.4.	– general condition and psyche;	Sharp deterioration of the general condition, weakness.
1.5.	– in general organism and mentality;	Formation of typical signs of the disease: weakness, intense pain in the area between the navel and the costal arch, girdle pain, nausea, vomiting.
1.6.	– external secretion and digestion;	Digestive disorders due to enzyme deficiency.
1.7.	– endocrine function.	Probable formation of diabetes mellitus due to destruction of insulin-producing cells.
2.	What are the threats and complications of activation of pancreatic enzymes in pancreas itself?	Acute complications: internal bleeding and painful shock, which can lead to death. Delayed complications: chronic pancreatitis and enzyme deficiency, diabetes mellitus.
3.	What can cause the activation of enzymes inside the gland?	Fatty and protein foods, smoking (risk factor), a strike to the area between the navel and the costal arch, a significant force load, medications.
4.	How does (and if does) exercise affect the activation of enzymes within the pancreatic enzymes?	Significant force load, martial arts with the possibility of striking the abdomen, a combination of relatively moderate load with a significant amount of food, smoking, anabolic steroids, salicylates (aspirin, etc.) are risky.
5.	What disorder can be formed due to the activation of enzymes inside the pancreas? Or present the understanding of the problem's nature. Represent strategies for prevention and pre-medical care for this disorder based on knowledge of the phenomenon of enzymes activation inside the pancreas.	This disease is called acute pancreatitis because it forms "acutely", quickly against the background of complete well-being. Pre-medical care: stop physical activity, put a patient in a sitting or lying position, put cold on the abdomen, do not give food, calm the patient, call a doctor.

We use "Methods for modeling the effects of enzyme activation within the pancreas" primarily to generate interest in the problem and create a problem field in which the formation of pancreatitis prevention will be formed as operational practice-oriented knowledge and as "mental activity" and prognostic abilities of a teacher, included in the composition of cognitive (intellectual-value) and activity-discursive components of health-preserving competence of a physical education teacher. In the process of problematization, the problem of pancreatitis is presented as a "drama", "as a catastrophe", as a danger that appears against the background of a prosperous existence and which is accordingly connected with the mystery of human existence, with the mystery of life. Thus, this problem concerns the existential foundations of personality. Therefore, the presence of interest and focus (health-intentional) on the problem and the teacher's understanding of the danger to life of acute pancreatitis are those cognitive-value components that in further consideration of this issue both in class and independently will help teachers of physical education to make the right decision or provide prevention. We use flipped classroom to solve the problem. We recommend the "Problem matrix of understanding the phenomenon of pancreatitis" to be analyzed by a physical education teacher first. Then turn to the analysis of the correct answers. A schematic representation of this matrix in the form of a mental map is also used (as described in Table. 1; as shown in Fig. 2), which presents the problem panoramically and in detail by revealing the causal and functional connections between the issues.

The methods of modeling the effects of enzyme activation within the pancreas are also used to reproduce and update knowledge of the morphophysiology of the digestive system. This knowledge is necessary to understand the pancreatitis prevention. That is, we do not propose to separately repeat the known material, but mention and "reproduce" it in the process of problematization in a new semantic context in the initial analysis of the problem and its formulation. This also stimulates the teacher's search activity, respectively, contributes to the renewal, refinement, deepening and expansion of existing knowledge and ideas about the digestive system.

At the next II (second) "Propaedeutic" stage the generalized knowledge and understanding of the problem of pancreatitis prevention, as well as understanding of the healthy pancreas as a special vital value are formed. The basis of this stage is the consideration of problem-situation № 1, related questions № 7-11. The questions help to reveal the essence of the problem, which is relevant in the problem-situation, as well as to clarify and expand them. In addition, comments and analysis of pedagogical experiences are used.

At this stage, it is important to prophylactically understand the etiological factors of pancreatitis as real risks to the health of the digestive system. In the process of analyzing problems-situations and issues, the actualization of ancient Greek concepts: care of oneself (ancient Greek *πιμλια αυτου*) (french *epimelesthai sautou*) (interpreted by M. Foucault) (Foucault, 2008), observance of moderation (Greek *σύμμετρον μέτρον*), harmony (Greek *Αρμονία*), a healthy lifestyle is significant and system-organizing. That is, it is necessary to eat and organize motor activity on the basis of ideas of moderation, harmoniously, moderately, taking into account the knowledge of the problems and characteristics. And the most important thing in eating and motor behavior should be taking care of oneself in order not to increase own worries and not to create worries for others. Thus, the pancreatitis prevention is considered in the humanitarian dimension – as an existential, as a cultural, as a motor, and as an anthropological and cultural-educational problem.



**Figure 2.** Mental map of the "Problem matrix of understanding the phenomenon of pancreatitis"

Let us present problem-situation № 1 which integratively reflects the pancreatitis prevention. This problem-situation is developed on the basis of the analysis of typical situations.

*Task-situation № 1. "Induction of acute pathology of the digestive system by fatty and protein foods".*

A problematic situation arose during the tourist trip. After a long walk and a fairly long break in eating, several teenagers were absent for a short period. During their absence before dinner, they drank a relatively small amount of horilka and quickly ate a large amount of fatty foods (smoked and fried meat and salo). Two hours after eating on the way home, one of the students, who had drunk horilka and fatty foods before lunch, became ill. His general condition deteriorated sharply, and general weakness and lethargy appeared. Intense abdominal pain quickly developed in the area between the navel and the costal arch, which later became girdling (spread circularly) and nausea appeared. The teenager had vomiting several times. After some rest and drinking water, the student's condition did not improve.

The participants of the camping were surprised that this student fell ill, being well physically prepared against the background of complete well-being without any apparent causes for it. It was suggested that he had got poisoned by eating separately or unknown berries and mushrooms. According to the teenager, he had not done that. In addition, the food eaten by all participants of the campaign met all sanitary and hygienic requirements and was fresh. The weather was not hot, but moderate and comfortable, so the food could not be unfit for consumption. The fatty meat that the teenager ate in addition to a small dose of horilka was also fresh.

Questions to discuss the problem-situation. Analyze the situation and answer the questions:

1. What is the most likely pathology which formed in the student?
2. Justify your opinion about the probable disturbance which was formed on the basis of the situation analysis and knowledge of morphophysiology of the digestive system.
3. Using the knowledge of morphophysiology and pathopedagogy in general, describe the causes and mechanisms of this pathology.
4. Present your understanding and plan of preventive measures and pre-medical care.

At the third stage – "Therapeutic" is the expansion and refinement of knowledge, as well as their practical direction. At this stage, problems-situations № 2 and 3, questions № 11-15 are analyzed. Of particular importance is the coverage of the impact of physical activity, which under certain conditions and situations can be considered as a risk factor for pancreatitis. In problems-situations № 2 and 3, this question is covered. In addition, motor actions and motor modes that may contribute to the development of acute pancreatitis in

combination with other factors are analyzed separately. It is important at this stage to consider the prevention of smoking, which is considered as one of the important factors in the pancreatitis formation. The issues of non-communicable diseases prevention are reviewed. First of all, this is the problem of pancreatogenic diabetes prevention caused by pancreatitis. In this paper we present problem-situation № 2 (as shown in Fig. 3) the consideration of which is important for the prevention of pancreatitis, diabetes, and smoking. This task also reveals such an urgent problem as the formation of physicality and bodily image through the use of physical culture. This counteracts the formation of adolescents' understanding of their body as a "life problem", which can be solved in an unnatural way in the form of total weight loss or weight gain through excessive exercise and eating large amounts of food. Therefore, the problem of body formation as a preventive strategy is actualized by us in addition to problem-situation № 2 in № 3, as well.

Problem-situation № 3 (it is not covered in this article) analyzes the problem of acute and chronic pancreatitis induction by significant force and "debilitating" exercise in combination with smoking and anabolic steroids and aspirin (salicylates). It is well known that anabolic steroids promote muscle development. These drugs are an effective means of both improving athletic performance and body formation. At the same time, according to the literature and our own clinical observations, the use of anabolic steroids as well as other drugs, including salicylates (aspirin, etc.) (Kumar et al., 2019) in combination with physical exercise creates certain risks of pancreatitis.

At the third stage there is a specification of approaches and strategies for the pancreatitis prevention. Accordingly, the factors of its formation are now considered in the format of certain typical situations or issues. This is done in accordance with the optimal strategies formation for pre-medical care and pancreatitis prevention (reviewed in the conclusions). Schematically, this can be represented in the form of practically oriented knowledge transformation "from knowledge of causes to understanding of situations-risks", "from general knowledge to strategies of pre-medical diagnostics and assistance", "from general knowledge to prevention strategies".

Let's move on to consider problem-situation № 2 (as shown in Figure 3) which is aimed at specifying the prevention of pancreatitis.

*Task-situation № 2. "Development of acute pathology of the digestive system due to the synergistic effect of starvation, smoking, infectious disease (influenza) and exercise" (Fig. 3). A teenage girl with a normal body weight and sufficiently physically developed, who a few weeks ago had an infectious disease (flu), smoked a cigarette before physical education. The girl has been doing this for several months in order to lose weight and, accordingly, to reduce the desire to eat. Before that, the student had fasted to lose weight. Under the influence of moderate-intensity physical activity in physical education classes the girl fell ill: weakness, nausea and acute girdle pain in the area between the navel and the costal arch appeared sharply. The student was put on a chair, calmed down, but no improvement was observed for 20 minutes.*

The analysis of problem-situation № 2 is carried out according to the same scheme which is added to problem № 1 (see above).

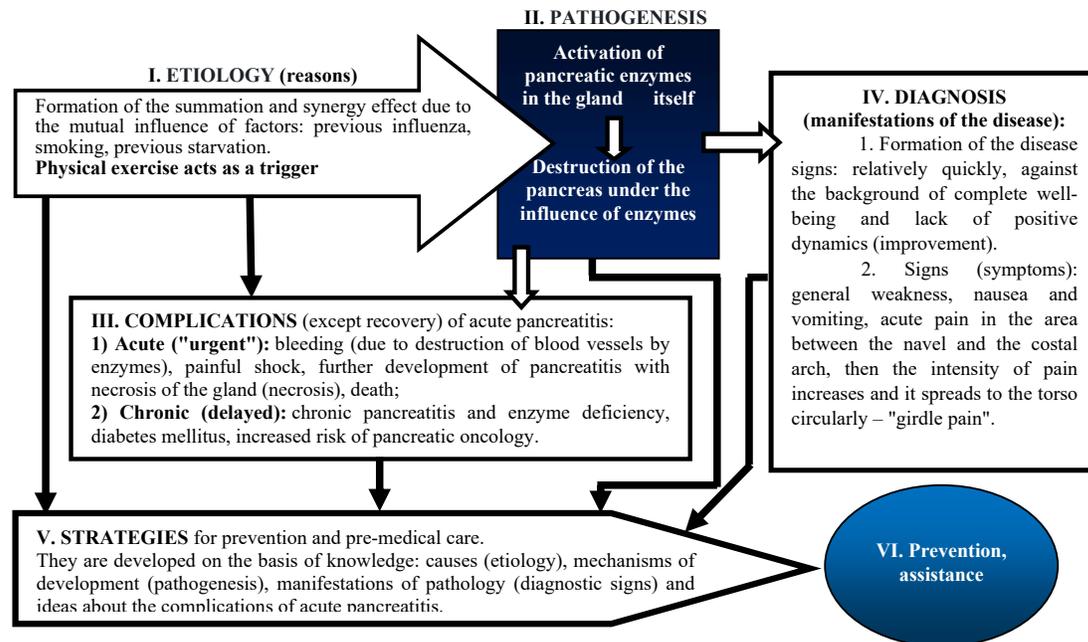
In all three tasks-situations, typical situations are considered and the emphasis is on prevention based on knowledge of the causes, pathogenesis, complications and pre-medical diagnosis of pancreatitis. In conceptual-semantic framework III – "Therapeutic stage" of the "Case-system of pancreatitis prevention" on the basis of discussion of problems-situations and issues the strategies for prevention, diagnosis and emergency care for pancreatitis (acute and chronic) are defined.

These strategies are laconic and practical. At the same time, for their understanding and effective application, a semantic context is needed, which is formed by considering the problems-situations and issues of the "Case-system of pancreatitis prevention". These strategies are a system of interconnected "cognitive-value-intentional-activity" algorithms, which are formed on the basis of analysis of problems-situations, consideration of a set of issues on the phenomenon of acute pancreatitis.

The following strategies (as shown in Fig. 4) are formed: life-saving, motor, food, medicinal, smoking prevention, taking into account synergistic effects, prognostic, body and physical development, axiological. The thesis will present the direction and meaning of "Motor Strategy" and "Strategy for the development of the body and corporeality". Motor strategy (Fig. 4) indicates the need to consider motor activity as a probable trigger which in certain cases and conditions may contribute to the development of acute pancreatitis or exacerbation of chronic. As part of this strategy, we propose to analyze the various motor actions and motor modes. The understanding that strength

**Figure 3.** Mental map of problem-situation № 2 "Development of acute pathology of the digestive system due to the synergistic effect of starvation, smoking, infectious disease (influenza) and exercise". The blocks of the mental map reflect the directions of the disciplinary-methodological matrix: I (Etiology), II (Pathogenesis) and

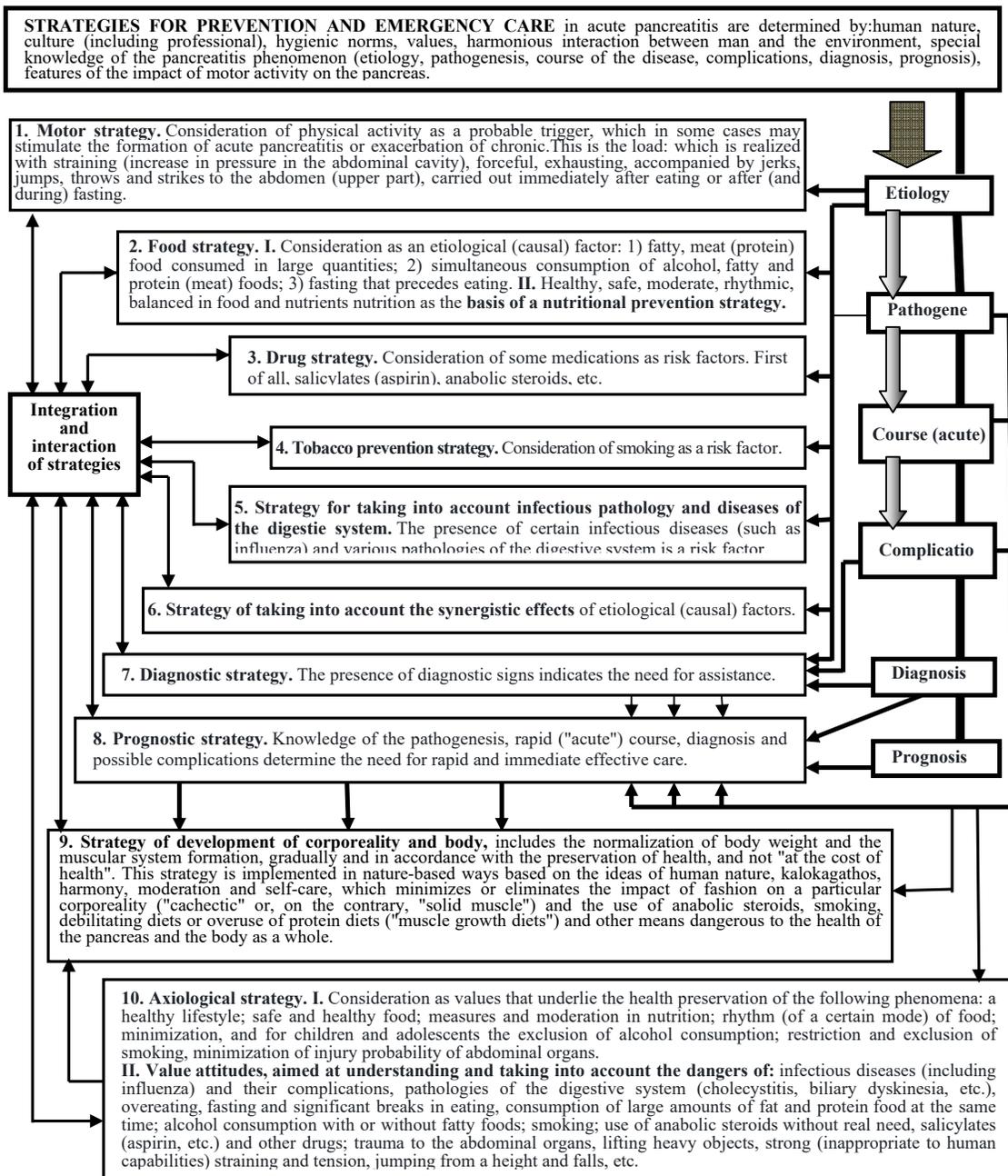
III (Complications) – "Pathopedagogy"; IV (Diagnosis) – "Propaedeutics of health"; V. (Strategies for prevention, diagnosis and pre-medical care) – "Health therapy" exercises accompanied by tension, increased pressure in the abdominal cavity in some cases may be risk factors for the pancreatitis formation is an important preventive aspect.



"Strategy for the development of corporeality and body" (Fig. 4) highlights the need for purposeful formation in students by means of physical culture and with the help of psychological and cultural-educational influences of a positive perception of their body, the development of bodily identity, bodily representation, bodily culture. This strategy aims to develop safe, life-giving health behaviors in the student, including the normalization of body weight and the formation of the muscular system, gradually and in proportion to maintaining health but not "at the cost of health". It is relevant to implement this strategy in nature-based ways on the basis of ideas of human nature (ancient Greek φύσις του ανθρώπου), bodily arete (ancient Greek ἀρετή – charity, perfection, superiority) (in the ancient Greek cultural and educational system of paideia there is a classic triad – health, strength, beauty), kalakogatia (ancient Greek καλοκαγαθία – a perfect combination of spiritual, intellectual and physical perfection), observance of moderation (ancient Greek σύμμετρον μέτρον), harmony (ancient Greek ἁρμονία) ancient Greek γνώση αντωνcare of oneself (ancient Greek πημλια αντων) (french epimelesthai sautou) (interpreted by M. Foucault) (Foucault, 2008). The development of critical thinking, the actualization of common sense, as well as minimizing or eliminating the impact of fashion on a certain type of corporeality, which is often achieved in an unnatural way are significant. Adolescents often use anabolic steroids, smoke, have exhausting diets or protein diets, and other ways to increase the likelihood of developing pancreatitis, diabetes, metabolic disorders, and overall health.

From a didactic and activity-technological standpoint, the presence of selected strategies determines the ability to represent the pancreatitis prevention and pre-medical care: systemic, detailed, visual, "instrumental", structured, teleological, intentional, concise, as well as problematic, axiological, anthropological and activity-oriented. The integrative-cognitive and epistemological significance of these strategies is determined by the fact that in their consideration and understanding there is an integration of knowledge between different cases and methods. In this aspect, strategies such as "Motor Strategy", "Axiological Strategy" and "Strategy for the development of corporeality and body" are cross-cutting. These strategies in various methods and cases reveal and practically transform those knowledges which are actual for understanding of the certain phenomena considered.

We present a mental map that represents strategies for the prevention of acute pancreatitis and the provision of emergency pre-medical care (in this paper, we do not specify the algorithm or detailed tactics of emergency care).



**Figure 4.** Mental map: "Strategies for prevention and first aid in case of acute pancreatitis"

The experimental study was conducted on the basis of performance control methods. These methods correspond to the IV – control-reflexive stage of "Case-system of pancreatitis prevention". To clarify we should note that this case system is part of the "Methods for developing the health competence of physical education teachers based on knowledge of safe and healthy nutrition and strategies for digestive disorders prevention" (as shown in Fig. 1). The methods of performance control are formed on the basis of using one task (№ 1) and five questions (№ 8, 9, 10, 12, 13) (tab. № 1) represented in the form of test tasks. Physical education teachers chose one correct answer out of five.

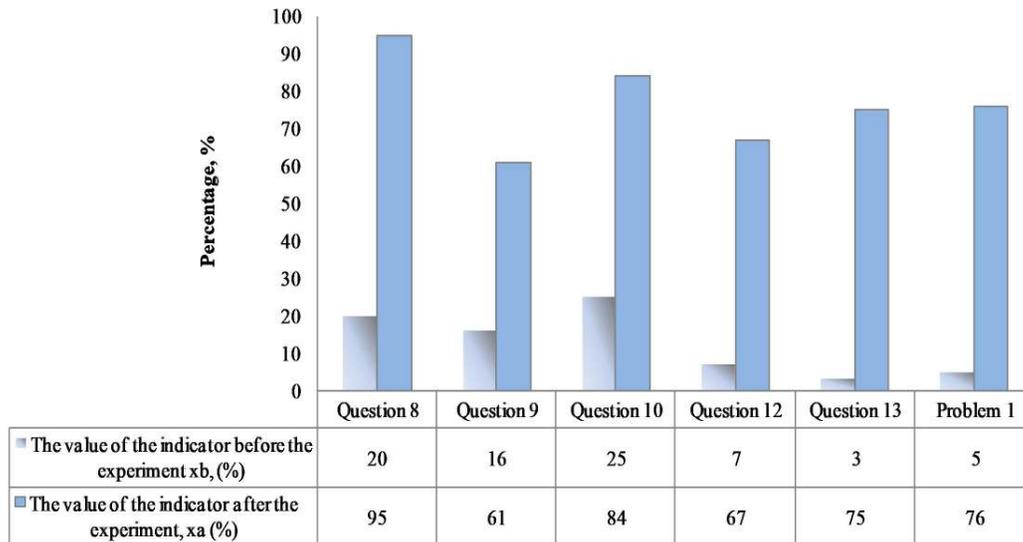
The experimental study involved 816 physical education teachers. In the experimental group there were 411 persons. The experimental study was conducted in Ukraine 9 institutions of higher education were involved: Lviv Regional Institute of Postgraduate Pedagogical Education, Drohobych Ivan Franko State Pedagogical University, Kherson Academy of Continuing Education, Sumy Regional Institute of Postgraduate Pedagogical Education, Mykolaiv Regional Institute for Postgraduate Pedagogical Education, Zaporizhzhia

Regional Institute of Continuing Pedagogical Education, Donetsk Regional Institute of Postgraduate Teacher Education, Chernihiv Regional Institute of Postgraduate Pedagogical Education named after K. D. Ushinsky, Zhytomyr Regional Institute of Postgraduate Pedagogical Education.

We prove the statistical significance of a significant increase of the values of indicators of student achievement after the experiment over the values of the corresponding indicators before the experiment using Wilcoxon's T-test. (Sidorenko, 2003) (as described in Table 2; as shown in Fig. 5)

**Table 2.** The values of the indicators of the results of solving the control tasks of Physical Education Teacher before and after the experimental study, the difference between the values of these indicators and their ranks

Control task number, n	The value of the indicator before the experiment xb, (%)	The value of the indicator after the experiment, xa (%)	The value of the differences in the indicators, xa-xb, (%)	The absolute value of the differences in indicators  xa-xb , (%)	Ranks of absolute values of differences in indicators, ri
Question 8	20	95	75	75	6
Question 9	16	61	45	45	1
Question 10	25	84	59	59	2
Question 12	7	67	60	60	3
Question 13	3	75	72	72	4
Problem 1	5	76	71	71	5
Sum	-	-	-	-	21



**Figure 5.** The indicators of the results of solving the control tasks of Physical Education Teacher before and after the experimental study, the difference between the values of these indicators and their ranks

The obtained absolute values of the differences in the values of the indicators of the studied feature after and before the experiment are ranked in ascending order of absolute differences using the average ranks.

Calculate by formula (1) the sum of the ranks of "atypical" shifts  $T_e$ .  $T_e=0$ .

Determine, using statistical data, (Sidorenko, E.) the critical value of Wilcoxon's T-test for the  $n=6$  and  $p<0,05$   $T_c=2$ .

The empirical value of  $T_e=0<T_c=2$  at the level of significance  $p<0,05$ . Namely, we accept hypothesis  $H_0$ : The values of the levels of educational achievements of the students after the experiment exceed the values of the levels of their educational achievements before the experiment at the level of significance  $p<0,05$ .

## Dicussion

The idea of preserving the health of students and their relative physical, intellectual and spiritual development based on physical activity in physical education classes is defining and system-organizing in our research. Accordingly, we update the need to take into account the specifics of health and level of child development in the organization of physical activity in physical education classes, as well as the development and implementation of various motor and health systems, technologies based on active approaches. In this aspect, the developments by T. Reyes-Amigo, J. Molina et al. (Reyes-Amigo, et al., 2021) and the ideas of M. Wazir and A. Ramli (Wazir et al., 2021) which reveal the impact of high and medium intensity physical education on the daily level of children's physical activity are relevant. These studies highlight the possibilities of optimizing learning and physical training based on anthropometric growth profiles of children which reflect their uneven (heterochronous) development (Yevtuch, Fedorets, Klochko 2020). For health-preserving issues, in particular the pancreatitis prevention, this study is relevant because it highlights the specifics of uneven (heterochronous) development of the child's body. Guided by the idea of the heterochronic nature of a child's body development, including the uneven formation of the digestive system, we can talk about the increased sensitivity of this system to damage factors. Therefore, heterochrony is a natural ontogenetic factor that must be considered in the pancreatitis prevention. According to M. Ryaguzov (Ryaguzov, 2016) up to 1/3 of panretitis in children is idiopathic, which indicates the determination of internal causes. Among such reasons, in our opinion, the heterochronous development of the digestive system is relevant.

For the practically oriented comprehension and realization in the educational process of ideas, principles and strategies of digestive system disorders prevention, in particular pancreatitis, the professional interaction of physical education teachers is important. Purposeful development of professional discourse in the teaching staff in the system which considers and clarifies these strategies and ideas is aimed at updating the professional interaction of physical education teachers based on technological attitudes and values of saving the lives and health of students. This is one of the main ways to professionalize, axiologize, and technologize the health-preserving activities of the teacher and create a safe and healthy educational environment. In implementing this approach, we rely on the ideas and experiences presented by F. Gil-Espinosa (Gil-Espinosa, 2021). The defining value-oriented aspect revealed by this author is the direction of professional pedagogical communication on the formation of well-being of all participants in the educational process, which correlates with the ancient idea of good (ancient Greek - τὸ ἀγαθόν) and the classical H. Sigerist's "health-well-being" concept, which focuses on the social aspect of health (Sigerist, 1941),

For effective pre-medical diagnosis and, accordingly, for the prevention of possible risks and disorders of the pancreas and other threats to the health of children during physical exercise, it is important to develop in the teacher of physical culture empathy, compassion and disclosure of his/her existence. These behavioral and characterological qualities, which are aimed at maintaining the health of children, are considered by us as a significant component of the personal-existential component of the health-preserving competence of a physical education teacher. The development of empathy and compassion as well as the professional discourse formation with the understanding of strategies for maintaining the health of the pancreas is carried out in the process of analyzing the tasks, issues and the pedagogical experiences analysis. Accordingly, this approach is consistent with the ideas of G. Altavilla, A. Manna and M. Lipoma (Altavilla, et al. 2021), which emphasize the importance of the empathic approach and the ability to empathize as a mandatory component of pedagogical competence of the teacher.

The central problem in this study is the pancreatitis prevention during physical exercise. In the analysis of scientific pedagogical literature the specified problems are not defined. Accordingly, we cover this issue by revealing the related issues of sports injuries prevention and other health problems. Analyzing the importance of this problem for the preservation of life and health of students, we update the reception and transfer of the necessary knowledge about pancreatitis, primarily from the medical field and on the basis of our own experiences (pedagogical and medical). For practically oriented and anthropological-value comprehension of the importance of pancreatitis prevention, the following studies are relevant: B. Breuer-Katschinski et al., (Breuer-Katschinski et al., 1996) in which the author points to a significant association between high levels of physical activity and the risk of developing chronic pancreatitis, which is also dependent on social status; J. Touzios et al. (Touzios et al., 2005) where the researcher reveals the problems of exercise-induced pancreatitis; L. Kristiansen et al. (Kristiansen et al., 2008) presents population aspects of the risk of alcohol-induced pancreatitis; P. Burton and E. Fenton (Burton and Fenton, 2007), A. Healey et al. (Healey et al, 2008), M. Shimoda et al. (Shimoda et al., 2009), K. Sharbidre, S. Galgano, and D. Morgan (Sharbidre, et al. 2020) consider traumatic pancreatitis in both children and adults, including sports trauma; M. Ibrahim (Ibrahim et al., 2011) analyzes the features of acute pancreatitis in children; M. Ryaguzov (Ryaguzov, 2016) considers the causes (etiology) of acute pancreatitis, drawing attention to the importance of traumatic (up to 36.6%), infectious (influenza, hepatitis A and B, measles, etc.), medicinal (antibiotics – tetracycline, erythromycin, anti-inflammatory drugs, glucocorticoids, etc.), helminthic (parasitic), idiopathic (up to 30%) factors. Significant in this direction are the works by: M. Edderkaoui and E. Thrower (Edderkaoui et al. 2013) and Barreto S. (Barreto, 2016) which reveal the effect of smoking (tobacco smoking) in the development of pancreatic diseases in particular acute

pancreatitis; V. Kumar et al. (Kumar et al., 2019) who consider anabolic steroids (trenbolone acetate) as a risk factor for pancreatitis. From the didactic point of view, D. Diamond's analysis (Diamond, 1989) of the abdomen sports injury problem is important. The author's idea is valuable of the need for the practical knowledge formation about the organs of the abdominal cavity, including ideas about their appearance in order to prevent injuries. Most of these authors' researches results on the issue of pancreatitis are correlated with our understanding of this problem and, accordingly, are taken into account in the development of the "Case-system of pancreatitis prevention".

In improving the health-preserving competence of a physical education teacher based on the knowledge of pancreatitis prevention, an important issue is the formation of corporeality and physical development by means of physical culture in relation to human nature and its individuality, authenticity and physical identity. The problem of corporeality is one of the central ones. As mentioned above, if corporeality is understood by a teenage girl as a special or excessive thinness, as reduced body weight and as a constant process that forms and maintains these states, it becomes a "specific" personal and psychological prerequisite for "total change of self and body" and appropriate motivation and value. These values, personality and psychological phenomena underlie questionable "self-improvement" through the use of unhealthy diets and fasting. In adolescents, the problem of corporeality is also often reduced and "unambiguously" as an increase in "muscle mass", which is accordingly considered by a teenager as a special value. According to this "value", the teenager tries to "build" his/her body through excessive training. In some cases, anabolic steroids are used to build the body, primarily to increase muscle volume. Studies in this direction are relevant: M. Kolokoltsev, A. Vorozheikin et al. (Kolokoltsev et al., 2021) which reveal the need to take into account the somatypes of girls in the organization of motor activity, which we also interpret as a strategy for identifying health risks during physical exercise; C. Cockburn and G. Clarke (Cockburn, et al. 2002) analyze the ambiguous (in the negative sense, too) attitude of girls to physical culture in the context of their understanding of the femininity "deficit" in modern socio-cultural conditions; C.-L. Dai, M. Sharma et al. (Dai, et al. 2020), that indicate the importance of physical exercise for improving body image in adolescent girls and the formation of gender equality; V. Bonavolontà, S. Cataldi and F. Fischetti (Bonavolontà, et al. 2021), who represent the possibilities of forming a positive image of their body in adolescents and self-acceptance through the use of physical education. The ideas of these authors are aimed at understanding the adolescents of their corporeality, physical identity, self-acceptance, they are relevant and close to our practice-oriented developments, which in particular are revealed when considering problem № 2 and № 3 (see section "Material & methods") and in general are cross-cutting and covered in all topics of the course.

## Conclusions

The tendencies of professionalization and axiologization of the health-preserving activity of a physical education teacher as system-organizing in his/her postgraduate training determine the need for practically oriented disclosure of the pancreatitis prevention problems.

This problem is revealed in the pedagogical system through the use of "Case-system of pancreatitis prevention". "Case-system of pancreatitis prevention" is a part of "Methods of health-preserving competence development of a physical education teacher on the basis of safe and healthy food knowledge and strategies of digestive system disorders prevention" together with other cases which together form integral and system understanding of ways of health preservation of the digestive system and prevention of disorders. The case system consists of: problems-situations, a questions system, methods for modeling the effects of enzyme activation within the pancreas, analysis of motor activity in relation to the pancreatitis prevention, updating strategies for pancreatitis prevention and provision of pre-medical care and methods of performance monitoring.

The basis of these methods, as well as of the case system, is a disciplinary-methodological matrix of a physical education teacher's competence with the existing "integrated disciplines" in its composition: "Pathopedagogy", "Health Propaedeutics", "Health Therapy". The case system is formed on the basis of the idea of integrative application of fundamental and practical-technological knowledge, values and experiences. In total, this is aimed at the development of health-preserving thinking, the formation of optimal strategies and algorithms of action, as well as for processual, intellectualized, conceptual, activity understanding of pancreatitis prevention, rather than "prescription" in the form of ready-made recommendations. It also contributes to the fact that knowing the basic provisions, essence and "logic" of pancreatitis phenomenon, the teacher, if necessary, can repeat or "reproduce" the necessary knowledge and apply it in practice. Practically oriented disclosure of the pancreatitis phenomenon is aimed at improving the components of health-preserving competence of a physical education teacher. The system of cognitive (intellectual-value) component actualizes knowledge about the phenomenon and develops healthy thinking. The activity-discursive component is improved through the use of activity-oriented prevention and giving help strategies. Within the framework of the personal-existential component, the problem of life-saving as existential and value is represented and formulated, and the safe organization values of motor activity and safe nutrition are highlighted. The use of these methods, including the case system, flipped classroom and problem-based learning makes it possible to consider this problem of pancreatitis prevention, which includes primarily the actualization of the teacher's existing knowledge, reflections and experiences.

In order to optimize and concretize knowledge, as well as for their concise representation, practical and problem-based orientation on the basis of problems-situations consideration and the system of questions the strategies for prevention and emergency care were formed: life-saving, motor, food, medication, tobacco prevention, taking into account synergistic effects, prognostic, body and corporeal development, axiological.

Using Wilcoxon's T-test, the statistical significance of the effectiveness of the "Case-system of pancreatitis prevention" was proved, i.e. the positive dynamics of the results of Physical Education Teacher's academic achievements in studying this topic were confirmed.

The inclusion of our current issues of pancreatitis prevention in physical activity in the training programs of physical education teachers, instructors and experts in certain sports and martial arts, military, rescuers, emergency workers, firefighters can help improve their training in the field of life and health safety. For this purpose the tested "Case system of pancreatitis prevention" can be applied.

In the future, we plan to improve this pedagogical system, as well as to conduct research on the impact of various motor modes and motor actions on the health of the pancreas.

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