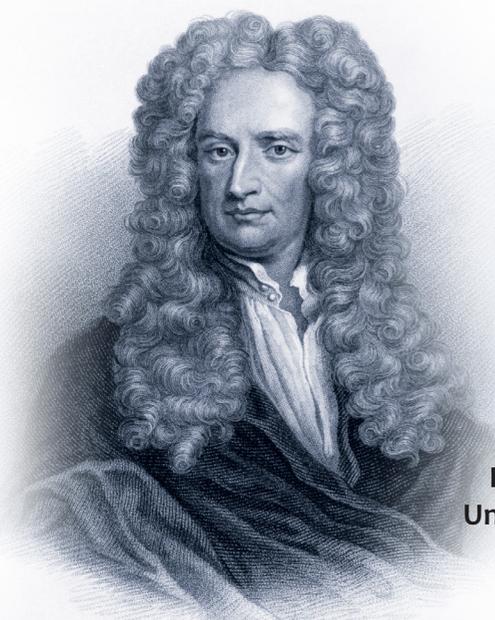




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**FEATURES OF EXEMPTION FROM CRIMINAL LIABILITY OF
INDIVIDUALS FOR TAX, FEES EVASION AND (OR) AN INDIVIDUAL
- A PAYER OF INSURANCE PREMIUMS FROM PAYING INSURANCE
PREMIUMS**

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Abstract. The article explores some features of exemption from criminal liability for tax crimes and insurance crimes. The reasons and conditions are specified under which criminal proceedings against citizens (individuals) are terminated in connection with active repentance for economic crimes.

Keywords: exemption from criminal liability, taxes and fees, insurance payments, insurance premiums, compensation for damages.

The federal legislation of the Russian Federation presented a short story regarding the grounds for exemption from criminal liability for certain elements of tax crimes (Art. 199 - 199.1 of the Criminal Code of the Russian Federation) [1]. It will be about compensation for damage to the budget system of the Russian Federation caused by unlawful actions of the guilty person [2, p. 98]. Thus, Art. 28.1, which provides for the termination of criminal prosecution in connection with active repentance. In addition, amendments have been made to other legislative acts. This applies, first of all, to clarifications of the mechanism for regulating the actions of the tax authority in case of revealing a violation of the legislation on taxes and fees, which may contain signs of the listed offenses. The changes were made to the Tax Code of the Russian Federation: "if the action (inaction) of the taxpayer (fee payer, payer of insurance premiums, tax agent) - an individual, which served as the basis for holding him liable for a tax offense,

became the basis for the conviction sentence in respect of this individual, the tax authority cancels the decision regarding the involvement of the taxpayer (payer of the fee, payer of insurance premiums, tax agent that) - an individual is liable for a tax offense" [3].

However, these changes are not without problems of legislative technology [4]. If you delve deeper into the essence of the new definition, then, according to some jurists, it simply provides an additional basis for active repentance [5]. Therefore, in my opinion, the need to isolate it as a separate rule determining the basis for the termination of criminal liability and criminal prosecution is highly doubtful.

It should be noted that this basis for exemption from criminal liability for tax crimes is more privileged compared to the general rule on active repentance (Part 1 of Article 75 of the Criminal Code of the Russian Federation). Its "privilege" lies in the fact that exemption from criminal liability in the commission of tax crimes is mandatory subject to all conditions and, most importantly, when committing crimes classified as serious (for example, part 2 of Art. 199, part 2 Art. 199.1 of the Criminal Code of the Russian Federation). The main feature is that the necessary and main condition will be the fact of compensation for harm without taking into account the public danger and other conditions for the release of a person from criminal liability for ordinary crimes.

In addition to tax crimes, the changes affected insurance crimes. So, it is necessary to single out Federal Law № 250-ФЗ "On Amendments to the Criminal Code of the Russian Federation and the Code of Criminal Procedure of the Russian Federation in connection with the improvement of the legal regulation of relations related to the payment of insurance premiums to state extra-budgetary funds" [6], as well as Federal Law № 272-ФЗ "On Amendments to the Federal Law "On Compulsory Social Insurance against Occupational Accidents and Occupational Diseases"[7] and Articles 12 and 13 of the Federal Law "On the police"[8].

So as an example of the termination of the criminal case under part 1 of Art. 198 of the Criminal Code I will give a decision to the Sabinsky District Court of the Republic of Tatarstan in respect of I.Z. Sharipov, operating as an individual entrepreneur and working as the director of <data expunged>, < data expunged>, previously not convicted, accused of committing a crime, provided for in paragraph 1 of Art.198 of the Criminal Code of the Russian Federation.

The body of the preliminary investigation I.Z. Sharipov is accused of being registered as an individual entrepreneur DD.MM.YYYY (OGRNIP №) during the period from DD.MM.YYYY up to DD.MM.YYYY, acting in-

tionally, realizing the public danger of his actions in the form of non-receipt money to the budget system of the Russian Federation and wishing for socially dangerous consequences to occur, in violation of Article 57 of the Constitution of the Russian Federation, Articles 8, 19, 23, 44, 45, 80, chapter 26.2 of the Tax Code of the Russian Federation, providing for the taxpayer to pay to review the legally established taxes, from the moment the obligations arising from the payment of tax established by the legislation on taxes and fees have arisen, have included deliberately false information in tax returns for tax paid in connection with the application of the simplified taxation system with the taxable item "Revenues" for 2017, and evaded tax in the amount of < data expunged > payable to the budget, which is 32.95% of the amount of taxes and fees payable by an individual entrepreneur I.Z. Sharipov within three financial years in a row, thereby causing damage to the budget system of the Russian Federation.

Actions of I.Z. Sharipov, the preliminary investigation body qualified in part 1 of article 198 of the Criminal Code of the Russian Federation - evading an individual from paying taxes by including knowingly false information on a large scale in the tax return (account).

According to the certificate attached to the indictment, I.Z. Sharipov, the tax debt payable in connection with the application of the simplified tax system for the imputed period, partially repaid, the arrears is < data expunged >.

In addition, I.Z. Sharipov tax levied by taxpayers, who chose the simplified taxation system as the object of taxation, in the amount of < data expunged > rubles paid DD.MM.YYYY, as evidenced by payment order №.

It was also established that the defendant by payment orders № and № from DD.MM.YYYY paid taxes and penalties in the total amount of < data expunged > rubles < data expunged > rubles - tax < data expunged > rubles - penalties).

A letter from the Interdistrict Inspectorate of the Federal Tax Service of Russia No. for the Republic of Tatarstan from DD.MM.YYYY № confirms the fact that the defendants were provided with an updated tax return on the simplified tax system for DD.MM.YYYY and payment of the corresponding tax and interest was made.

Thus, the defendants compensated for the damage caused to the budget system of the Russian Federation by paying in full arrears and penalties in the amount determined in accordance with the legislation of the Russian Federation on taxes and fees.

Taking into account the established circumstances, evidencing the payment of arrears, fines made after the court appointed the court session, the

court, guided by the provisions of Article 198 of the Criminal Code of the Russian Federation, as explained in paragraph 14 of the decision of the Plenum of the Supreme Court of the Russian Federation dated June 27, 2013 № 19 “On the application by the courts of the law, which regulates the grounds and procedure for exemption from criminal liability”, does not see the legal basis for the application of part 1 of article 76.1 of the Criminal Code of the Russian Federation and article 28.1 of the Criminal Procedure Code of the Russian Federation.

Based on the foregoing, guided by Articles 25.1, 254, 446.1 and 446.3 of the Code of Criminal Procedure, the court decided to terminate the criminal case against I.Z. Sharipov, accused of committing a crime under Part 1 of Article 198 of the Criminal Code of the Russian Federation, and to release him from criminal liability on the basis of Article 76.2 of the Criminal Code of the Russian Federation with the appointment of a criminal law measure in the form of a judicial fine in the amount of 30,000 (thirty thousand) rubles to the state.

The changes that were regulated in the adopted normative acts mainly related to the toughening of liability for evasion of insurance premiums to state extra-budgetary funds.

The need for amendments arose due to the fact that in 2010 insurance premiums were completely excluded from the subject of crimes provided for in Articles 198-199 of the Criminal Code of the Russian Federation. This fact got a place to be as a result of the abolition of the unified social tax in the same year. In 2017, the right to collect the majority of insurance premiums passed into the jurisdiction of tax officials. Based on this, it was decided to give insurance payments tax status with all the ensuing consequences. The innovation entailed a number of changes, one of which made it possible to prosecute for evasion of contributions to extrabudgetary funds (in particular, the insurance fund). Based on the position of the Supreme Court, evasion of contributions must be understood as intentional acts aimed at non-payment of contributions in large or especially large amounts.

The objective side of the crime is expressed in understating the base of the assessed contribution; in another obviously incorrect calculation of the amount of contributions payable; in the failure to submit the calculation of insurance premiums or other mandatory documents; inclusion of knowingly false information in such documents. As you can see, the list of actions is exhaustive. The law also determined that for an individual a non-payment will be considered a large amount, which for a three-year period will amount to nine hundred thousand rubles, if this amount is more

than ten percent of the amount payable, or non-payment in the amount of two million seven hundred thousand rubles or more. A particularly large amount, respectively, is four million five hundred thousand rubles, if this is more than twenty percent of the amount payable, or non-payment of more than thirteen million five hundred thousand rubles.

Now let us dwell on the issue of the grounds for exemption from criminal liability for insurance crimes. So, on the basis of the current legislation, the guilty person is not subject to criminal prosecution if the criminal act was committed for the first time, full payment of arrears of insurance premiums will also be a necessary condition; fully refunded interest; full amount paid fine.

To summarize what has been said, the following points can be distinguished. The Constitution of the Russian Federation obliges every employed citizen to pay legally established taxes and fees. Failure to comply with this constitutional obligation entails the punishment provided for by the relevant criminal and tax law.

At the same time, the state does not have an exclusively repressive goal in the mandatory application of punishment to a person who has committed a crime in the field of taxation or insurance. Therefore, in practice, the procedure for exemption from criminal liability is often applied in connection with the active repentance of a person who has committed an economic crime. Based on this and in accordance with paragraph 2 notes to Art. 198 of the Criminal Code of the Russian Federation, the investigator is obliged to exempt from criminal liability a person at any stage of pre-trial proceedings if all the conditions listed in the law are met.

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8. Federal Law of February 2, 2011№ 3-ФЗ (as amended on June 25, 2018) “On the Police” // Collection of legislation of the Russian Federation. - 2011. - №7. - P. 900; 2012. - №26. - P. 3446.

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10. Resolution № 1-17/2019 of May 8, 2019 in case № 1-17/2019 of the Sabinsky District Court (Republic of Tatarstan) regarding Sharipov I.Z.

THE RIGHTS OF NON-RESIDENTS OF THE EUROPEAN ECONOMIC AREA TO USE BANK ACCOUNTS IN EUROPEAN BANKS

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Abstract. The article discusses the decision of the Helsinki district court in a lawsuit filed by a Finnish citizen for using banking services in Finnish banks from the perspective of international law. The Helsinki County Court, by its decision of 13.1.2020, rejected the lawsuit of Boris Rotenberg against Svenska Handelsbanken AB, Nordea Bank Abp, Danske Bank and OP Yrityspankki Oyj. The court recognized the financial risks of Scandinavian banks as a U.S.-sanctioned Finnish citizen above international law and guarantees of a fair trial. Undoubtedly, this court decision will have further consequences in the proceedings of Western banks for foreigners who do not permanently reside in the European Economic Area (EEA), applying the law in other similar cases or to ensure the unity of the judicial practice of the EU countries. First of all, this applies to any foreigners who do not have the right of permanent residence in the EU countries, but who have real estate in the form of investments or for holidays. Earlier, the purchase of real estate in Europe was considered a reliable investment of foreigners and a guarantee of obtaining banking services in Western banks. Based on this judicial precedent, European courts can now recognize the risks of US secondary sanctions against any banks not only to Russians on the SDN sanctions list, but also on any suspicion of bank employees in money laundering. The court decision was based mainly on the testimony of the former OFAC leader, who stated that even before the adoption of the CAATSA provisions on secondary sanctions in 2017, the U.S. administration already had a legal instrument that allowed punishing foreign individuals and legal entities for interacting with Russians from the SDN sanctions list. While the US dollar is one of the main currencies in settlements between states, the US Treasury will not only control dollar transactions, but also the very principle of the functioning of the world banking system. This court decision may be the first judicial precedent for most European banks in countries where real estate is located for foreigners who do not reside in EEA countries, regardless of citizenship and residence permit.

Keywords: human rights, conflict between international and national law, sanctions list, judicial precedent.

The Helsinki County Court, by a decision of 13.1.2020, rejected the claim of Boris Rotenberg against Svenska Handelsbanken AB, Nordea Bank Abp, Danske Bank and OP Yrityspankki Oyj. The court recognized the financial risks of Scandinavian banks under U.S. sanctions of a citizen of Russia and Finland from the Specially Designated Nationals And Blocked Persons List (SDN), which banks refused to service payments in the period 2017-2018 due to U.S. sanctions.

Based on judicial precedent, European courts can now recognize the risks of US secondary sanctions against any banks not only to Russians from the sanctions list, but also on any suspicion of bank employees in money laundering. Every year, banks in Finland report more than 30,000 suspected money laundering to the National Bureau of Investigation. For the duration of the investigation, banks have the right to stop servicing and paying bank customer payments until the end of the investigation. The law does not determine the length of time for consideration of a case; only the definition “acceptable terms of investigation” is given.

For example, in a Helsinki court decision, those arrested by a court decision in August 2014 in the amount of more than 9.5 million euros were not released at present, although the court passed an acquittal on suspicion of money laundering in the amount of 135 million euros during the period March 24 - August 7, 2014¹.

In Boris Rotenberg's case, the court ruled that the Danish, Swedish, and Finnish banks should not serve a customer's account, including a Finnish citizen, from the U.S. Department of the Treasury's sanctioned list by the Office of Foreign Assets Control (OFAC). As a basis for the decision, the county court referred to the US sanctions imposed on a Finnish citizen included in the list of citizens of special categories and prohibited persons of the SDN list.

Handelsbanken advocacy stated in court that the US sanctions law alone does not directly oblige Finnish banks in Finland to comply with OFAC requirements, but this does not eliminate the risk of sanctions against banks. The bank argued that with the entry into force of the Countering America's Adversaries Through Sanctions Act² (CAATSA), Handelsbanken's risk was even higher than before.

¹Helsinki County Court Decision of 8.10.2019, R 18/6573.

²Countering America's Adversaries Through Sanctions Act. Public Law 115-44. August 2, 2017.

URL: <https://www.treasury.gov/resource-center/sanctions/Programs/Pages/caatsa.aspx>

The court, as well as the plaintiff, referred to the “Law on Credit Institutions” as amended on December 2014, in particular to chapter 15, section 6, the effect of which entered into force on December 9, 2016, that is, after the sanctions imposed on 20.3.2014 Handelsbanken Bank closed accounts for Boris Rotenberg on 10.4.2014.

The court also noted that after the closure of the account to Rotenberg in 2014, the Banking Council for Insurance and Financial Advice (FINE) in its decision of 08.22.2017 indicated that closing Rotenberg accounts is permissible only on good grounds that the bank did not provide, and recommended that the bank cancel the closure of the account, which the bank again opened on 4.10.2017.

That is, after more than three and a half years, when Rotenberg was already on the Office of Foreign Assets Control (OFAC) Specially Designated Nationals and Blocked Persons List (SDN) since 20.3.2014, there was no risk of secondary sanctions or excessive risks that threaten the financial situation for the continuation of its activities.

Law on execution of payments “The Bank (service provider) may refuse to execute a payment order only if the conditions for the execution of the payment order agreed in the contract are not fulfilled or are otherwise not provided for by law.”³.

The respondent bank Handelsbanken stated that section 9 of chapter 9 of the Credit Institutions Act provides, inter alia, that a credit institution should not operate in such a way as to entail a significant risk to the solvency or liquidity of the credit institution. Also, section 4 of chapter 18 of the Law on Credit Institutions states that a foreign credit institution should not be exposed to such a risk when carrying out its activities in Finland that this jeopardizes the interests of branch depositors.

In clause 1 6 § of section 15 of the Law on Credit Institutions, a client’s right to basic banking services is established as follows: a deposit bank, upon provision of a payment account, payment services and electronic identification services, must provide them equally and without discrimination for persons living legally in country of the European Economic Area (EEA). A bank providing payment services must provide an account for basic payments in Euros, payment services on it and electronic identification services to persons legally residing in a country of the European Economic Area, individuals, subject to this paragraph and paragraphs 6a and 6b. When providing an account for basic payments, related payment services and electronic identification services, a deposit bank must treat all customers equally and without discrimination. The client means in this paragraph

³Maksupalvelulaki, 30.4.2010/290. §41.

and paragraphs 6a and 6b an individual who acts mainly in a manner that does not apply to his entrepreneurial or professional activities. The above provision therefore applies when it comes to an individual residing legally in the country of the European Economic Area.

The court decided that Rotenberg could not prove that he lives in the EEA, so he cannot get guaranteed banking services of banks in Finland.

The court also referred to the Law on Credit Institutions, which prohibits local banks from taking excessive risks that pose a threat to their financial situation. According to the court, a possible disconnection of the bank from the US financial system and the dollar market as a punishment for Rotenberg's transactions is such a risk.

As a basis for the decision, the county court referred to the US sanctions imposed on a Finnish citizen included in the list of citizens of special categories and prohibited persons of the SDN list.

The court considered it highly probable that OFCA would not determine these payment transactions as significant in this case, since payments can be considered relatively small, and some of them can be characterized as regular payments for current expenses. The problem is that it is not possible to predict with any certainty how OFCA will interpret these factors, since they are designed to give OFCA the greatest discretion in establishing secondary sanctions.

Chapter 16 of the “Law on Credit Institutions”, which entered into force on December 9, 2016, contains provisions on the client’s right to basic banking services. The Bank may refuse to open a payment account with basic functions only for reasons arising from the Law on Prevention of Money Laundering and the Financing of Terrorism (444/2017) or the Act on the Fulfillment of Certain Obligations of Finland as a Member of the United Nations and the European Union (659/1967).⁴

According to the Act on the Fulfillment of Certain Obligations of Finland, as a member of the United Nations, signed in 1967 (Section 1) to fulfill the obligations arising from Finland’s membership in the United Nations and based on binding decisions of the Security Council, economic measures necessary for it can be defined in framework regulation.

No obligations or temporary injunctions made in violation of this Law or any provision based on it or circumventing it are enforceable⁴.

International law contains sufficient grounds for invalidating unilateral measures. And Finland, as a UN Member State, must observe and support only those sanctions that are provided for by a decision of the UN Security

⁴Laki eräiden Suomelle Yhdistyneiden Kansakuntien jäsenenä kuuluvien velvoitusten täyttämisestä. 659/1967. URL: <https://www.finlex.fi/fi/laki/alkup/1967/19670659>.

Council in accordance with chapter VII of the UN Charter⁵.

The US Treasury Department for Foreign Assets Control rarely defines liability under secondary sanctions. Especially non-American banks, as a rule, observe punctually secondary US sanctions, since the consequences for their violation are very serious - this completely deprives them of the opportunity to use the services of correspondent banks of the United States, US dollars and generally a place on the United States market, which may cause the collapse of all banks subject to these sanctions. Such an end result would be disastrous for the bank, the country of its location and the economy of such a bank, as well as for its customers and employees.

Expert John Smith, appointed by Nordea Bank, was the former head of the US OFAC sanctioning regulator, who was in the leading position precisely in the period 2017-2018 when banks refused payments to Rotenberg.

Smith said that even before the adoption of the CAATSA provisions on secondary sanctions in 2017, the US administration already had a legal instrument that could punish foreign individuals and legal entities for interacting with Russians from the sanctions list. Since Rotenberg is on the OFAC list, all of his “property and property interests” that fall or will fall within the scope of United States law are frozen and cannot be transferred, paid, taken out, seized or used in any other way. According to Smith, these are the so-called freeze sanctions.

The court also referred to Decree № 13661 of ex-President Barack Obama, which allowed sanctions against any persons who “provided substantial assistance / support” to Russian individuals on the SDN sanctions list. According to Smith, Nordea could theoretically end up on the same sanctions list if OFAC wanted to qualify translations in Rotenberg’s interests as “substantial assistance.”

Recall also that under article 235 of the U.S. Sanctions Act H.R. 3364⁶, the U.S. President may recommend that all credit or payment transfers between financial institutions be prohibited, if the transfers are within the jurisdiction of the United States and involve a person who has been subjected to sanctions.

⁵UN Charter. Article 39 of Chapter VII. The Security Council determines the existence of any threat to peace, any violation of the peace or an act of aggression and makes recommendations or decides what measures should be taken in accordance with Articles 41 and 42 to maintain or restore international peace and security.

URL: <https://www.un.org/ru/sections/un-charter/chapter-vii/index.html>.

⁶Anti-Russian Influence in Europe and Eurasia Act 2017 ”(US Sanctions Act H.R. 3364) H.R.3364 - Countering America's Adversaries Through Sanctions Act. 115th Congress (2017-2018). URL: <https://www.congress.gov/bill/115th-congress/house-bill/3364/text>

That is, the President of a UN Member State can accept, as well as cancel the initial application of sanctions on a person, if this is in the area of the most important national security interests of the United States without a Security Council Decision in accordance with chapter VII of the UN Charter⁷.

The US Treasury Department for Foreign Assets Control determines, in rare cases, formally, liability under secondary sanctions, as it generally does not need to do so. Especially non-American banks generally comply punctually with secondary US sanctions, since the consequences for violating them are very serious - this completely deprives them of the ability to use the services of United States correspondent banks and US dollars in the United States market, which could lead to collapse all banks subject to these sanctions.

With reference to Smith's testimony, the court decided that it was reasonable to conclude that under the circumstances and in general OFAC would consider these transactions substantial in accordance with section 226 of the CAATSA. Smith said that Nordea could theoretically be on the same sanctions list if OFAC wanted to qualify transfers in Rotenberg's interests as "substantial assistance."

In the final decisions, the court stated that the conclusions of experts appointed by witnesses, due to the identical situation of banks, can mainly be generalized to all of these banks.

Representatives of the defendant banks John Smith⁸, Richard Nephew⁹, Aleksi Pursiainen in their conclusions presented the same risk assessment for banks if they would serve the sanctioned Rotenberg transactions.

From Smith's conclusion, it follows that well-known global banks, as a rule, strictly comply with the terms of the sanctions established by the U.S. Treasury Department for Foreign Assets Control and terminate client relations with the parties subject to the sanctions, as otherwise there may be

⁷UN Charter. Article 39 of Chapter VII. The Security Council determines the existence of any threat to peace, any violation of the peace or an act of aggression and makes recommendations or decides what measures should be taken in accordance with Articles 41 and 42 to maintain or restore international peace and security. URL: <https://www.un.org/ru/sections/un-charter/chapter-vii/index.html>.

⁸John E. Smith has been with OFAC for over 20 years, previously serving as Deputy Director and Assistant Director, and from February 2015 to April 30, 2018 was Director of the Office of Foreign Assets Control (OFAC). US Treasury Secretary Steven T. Mnuchin considers Smith an outstanding OFAC executive with invaluable experience in the internal workings of sanctions authorities.

⁹Richard Nephew is one of the leading US officials in the development and implementation of sanctions. The author of *The Art of Sanctions*. Richard Nephew joined the Center on Global Energy Policy February 1, 2015 directly from his role as Principal Deputy Coordinator for Sanctions Policy at the Department of State, a position he held since February 2013.

a risk of being among the objects of sanctions, which, in turn, can create a threat to the continuation of the bank activity. The consequences of a bank being deemed to have violated secondary sanctions can be serious. For example, for international financial institutions that require the ability to use the services of American banks and US dollars, depriving them of the ability to use the services of American correspondent banks, a place in the United States market and dollars would be a serious threat to their continued operations.

Note that the laws of Finland, Sweden and Denmark do not give national banks the right to unilaterally close an account or refuse to conduct operations due to the requirements of US law. But while transactions in dollars pass through the US banking system, the Ministry of Finance will control, block transactions and oblige banks to pay fines. European banks are not under US sanctions, but pay billions in fines every year, regardless of serving Russian customers on the SDN list.

The court did not take into account that Rotenberg's payments fell within the scope of the EU Council decision that entered into force on September 17, 2014 and was intended to: (a) be necessary to meet the basic needs of the persons listed in the Annex and their family members, including ... taxes, insurance premiums and utility bills; (b) solely for the payment of reasonable professional fees and reimbursement of expenses incurred in providing legal services"¹⁰.

And as a result, the Forbes oligarch cannot pay his own bills, mandatory taxes, utility bills, transportation fees, electricity, burglar alarms and garbage collection, as well as payments from collection companies, and, as a result, may lose creditworthiness in Finland. In case of a repeatedly unpaid account, debt collection takes place through a court decision requiring the forced sale of property to pay bills and court costs.

The court ordered Rotenberg to pay legal costs in the total amount of 530 528.64 euros. Will the bank be disconnected from the US financial system and the dollar market or will there be secondary sanctions for paying this bill, since reimbursement of legal costs is not included in the list of transactions with monetary funds of a person from the list?

The court found that Rotenberg has real estate in Monaco, France and Switzerland, and probably accounts with other foreign banks. Will the decision of this court affect the jurisdiction of foreign courts and the application of national laws?

¹⁰Council Decision 2014/145/CFSP of 17 March 2014. Concerning restrictive measures in respect of actions undermining or threatening the territorial integrity, sovereignty and independence of Ukraine. Official Journal of the European Union. L 78/16, 17.3.2014. Article 2.3, a), b).

The new version of the Constitution, which entered into force in 2000, enshrined the priority of the main law of Finland in the article “Rule of the Constitution” as a guarantee of the unconditional sovereignty of the state and its people.

The requirements of international law and treaties can only apply to the extent that they do not contradict the Constitution, and if, when considering a case by a court, applying the rule of law would be in clear contradiction with the Constitution, the court must give priority to the Constitution¹¹.

Earlier, the Finnish Supreme Court repeatedly appealed the supremacy of the Constitution and was guided by chapter 31 § 2 clause 3 of the Finnish Judicial Procedure Act, on appeal by the European Court of Human Rights on numerous occasions when considering appeals to quash decisions of national courts.

Similar complaints about the inclusion of the applicant in the sanctions list at the request of the United States have already been considered before. So, in 2016, the ECHR found a violation of Article 6 § 1 of the European Convention in the case of *Case of Al-Dulimi and Montana Management Inc. v. Switzerland*¹².

The European Court of Human Rights has previously recognized a violation of articles 13 and 8 of the Convention in the case of *Nada v. Switzerland* and awarded a payment of 30,000 euro¹³.

The Helsinki County Court acknowledged that striving to comply with OFAC sanctions should not be considered “as an acceptable goal” provided for in § 11 of the Equality Act with respect to anyone, let alone a person not on the EU sanctions list.

While the US dollar is one of the main currencies in settlements between states, the US Treasury will not only control dollar transactions, but also the very principle of the functioning of the world banking system. This court decision may become a judicial precedent for most European banks in countries where real estate is owned by foreigners who do not reside in EEA countries and regardless of citizenship and residence permit.

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FORMATION TO TOLERANCE OF FUTURE TEACHERS

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The beginning of the new millennium was marked by new world scientific achievements of various sciences, technology, information processes and, at the same time, complications in the field of relations between individual states, which drag into confrontation almost the entire world community and, as a result, intolerance in human relations. Such complications are evidence of insufficient development of tolerance in the modern world community.

In the Declaration of Principles of Tolerance, tolerance is defined as value and a social norm, manifested in the right of everyone to differ from others, to exist harmoniously regardless of belonging to different faiths, political, ethnic and other social groups, as well as in respect for the diversity of cultures and peoples, in readiness to cooperation, acceptance and understanding of people around us, differing in appearance, worldview, life, beliefs [1].

Based on this definition, tolerance is the path to the survival of mankind and harmonious relations in society.

Tolerant relationships can be formed at the state and interstate level through the adoption of various domestic and interstate agreements, laws requiring respect and partnerships both within the state and from different states. But the main way of creating tolerance is seen through improving the education of the world community.

At all times, the main core in educational policy was the personality of the teacher, his ideological convictions and moral character. The success of preparing the young generation for life for a future life in society depends on the personality of the teacher, worldview positions, culture and education, pedagogical skill [4].

The Law of the Russian Federation "On Education" reflects the position in relation to the content of education, which is one of the factors of the

economic and social progress of society and should be focused on ensuring self-determination of the individual, creating conditions for self-realization, development of society, strengthening and improving the rule of law. In addition, the content of education should promote mutual understanding and cooperation between people regardless of ethnic, religious and social affiliations, and take into account the diversity of worldview approaches.

The current situation in the development of the education system in the country, the Professional standard of the teacher makes demands on the specialist in the field of education, focusing on the formation of tolerance as a personal quality and social norm.

One of the important conditions for the effectiveness and quality of pedagogical activity is a respectful attitude to the child, his acceptance and understanding, regardless of his developmental features, success or failure in the activity and his psychophysical state.

A modern teacher must have social, psychological and personal tolerance, which allows him to socially interact effectively with all participants in the educational process. Social tolerance is aimed at balancing the relationship between an adult and children, respecting the interests of the latter, and psychological tolerance requires understanding, cooperation in interaction with others, based on recognition and respect, preserving one's individuality. Personal tolerance is based on a stable position of the individual, universal values, which determine its real behavior. These behaviors are integrated into pedagogical tolerance.

The tolerance of the teacher organically combines the ability to interact with students, parents, and colleagues; have an active social position; comply with ethical pedagogical standards and requirements of behavior; to have an orientation to accepting and empathic understanding of another person, to open and confidential communication [2].

The professional activity of the teacher is the most difficult in the system of professions "person-person", as it is burdened with increased responsibility and duty for the upbringing and development of the younger generation, the creation of optimal conditions for their education, which is associated with increased emotional response, which leads the teacher to burnout and, as a result, levels its tolerance. The causes of emotional burnout can be either subjective or objective: workload of the working day, emotional stress, the complex contingent of students, individual personality traits, readiness for pedagogical activity, professional experience, etc. The difficulties of pedagogical work require a stable formation of tolerance.

To identify the general level of tolerance of students of a pedagogical university, the author's express questionnaire of G.U. Soldatova, O.A.

Kravtsova, O.E. Khukhlaeva, L.A. Shaigerova, reflecting the general attitude towards the world and people, social attitudes of the personality in various areas of interaction was used [3]. According to the diagnostic results of a group assessment, in which students from 1 to 4 years of a pedagogical university participated, 14% of respondents with a high level of tolerance were determined, which may indicate a specialist's readiness for professional pedagogical activity. It should be noted that the authors of this methodology warn of "blurring" the boundaries of tolerance, that is, for this category of specialists indifference and liberalism in various situations of interaction with children, parents, and colleagues may be characteristic. 82% of students have an average level of tolerance, they are characterized by a combination of both tolerant and intolerant personal qualities. On the one hand, this characterizes the future specialist in the field of education as insufficiently prepared for professional activity, since in one situation of interaction in the pedagogical process their behavior, attitude is tolerant, and in the other - intolerant. Especially the intolerance of the teacher is not acceptable with respect to students of educational institutions that are especially in a particular negative development situation (aggression, untidiness, failure in educational activities, social orphanhood, disability, etc.). On the other hand, the intolerance of the future specialist to certain negative social situations (parental alcoholism, drug addiction in the family, violence, rejection, etc.) in which the children find themselves is an acceptable, normal personal manifestation and will allow the teacher to determine the optimal ways of interaction, pedagogical assistance, as far as it will allow them to do this, acquired during the training at the university professional pedagogical experience.

Subsequently, the respondent students were differentiated into two groups: senior respondents with knowledge and initial practical experience in professional activities; respondents of junior courses who are at the familiarization stage with their future professional activities. An analysis of the results of this stage of the study allowed us to state the manifestation of a low level of social tolerance among junior students (19%). This category of students shows negativity with regard to various social groups: social minorities, people with disabilities, with various forms of deviant behavior, and others. A low level of manifestation of tolerance among senior students has not been identified, but a high level of tolerance is defined in a small number of senior students (fifteen %). We believe that this situation indicates a fairly high level of theoretical training of senior students and the lack of practical readiness. The content of higher education in accordance with the Federal State Educational Standard objectively contributes to the

formation of ideas about interaction strategies, behavior and relationships in the educational environment, the development of human tolerant contacts at various levels, initiates mutually beneficial interaction, cooperation, the development of universal communicative means of human communication, etc. P. The disciplines "Tolerance in the educational space", "Pedagogical psychology", "Conflictology", "Social pedagogy", "Professional ethics in psychological and pedagogical activity", and "Technologies for working with various categories of children and adolescents", "Communication with conflicting personality types", "Culture of pedagogical communication", "Training of pedagogical communication", etc. are aimed at this subject. Theoretical foundations allow students to stimulate independent mastery of variable strategies and methods of tolerant interaction at the level of testing. It is possible to test in various types of pedagogical practices. The development of variable strategies, methods of tolerant interaction and creativity in their repeated use is possible in independent pedagogical activity of a specialist in the field of education, or in the process of organizing psychological and pedagogical support of students.

As the study shows, that when forming the future teacher's tolerance as the highest value declared by pedagogical activity and projected onto all spheres of human activity, it is necessary to take into account a certain sequence in professional training: cognition, testing (application), development (training), creativity in the variability of strategies.

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THE ROLE OF VOLUNTEERISM IN THE PROFESSIONAL UPBRINGING OF STUDENTS

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Abstract. The article considers the importance of volunteering in the world, the urgent tasks set for the development of volunteering in Russia, provides statistics on the involvement of young people in volunteering. The experience of working with student volunteers is described and the conclusion is made about the high role of volunteering in the professional education of students - future teachers.

Keywords: volunteering, students, high school, professional education.

In 1985, at the 40th session, in a special resolution, the UN General Assembly invited governments to celebrate December 5th as “International Volunteer Day for Economic and Social Development”, urging them to take measures to encourage people in all fields to offer their services as volunteers (International Volunteer Day).

In his annual Volunteer Day messages, the UN Secretary-General praises the role and importance of volunteers no matter what specific activities they are involved in. The Secretary-General calls on governments to create more opportunities for volunteers in the name of development. [2]

New challenges for the development of volunteering in Russia are contained in the National “Education” Project (Decree of the President of the Russian Federation “On National Goals and Strategic Tasks of the Development of the Russian Federation until 2024” dated May 7, 2018). According to the indicators of the federal project “Social Activity” included in the National Project, the implementation of which is entrusted to Rosmolodezh, the number of students involved in the activities of volunteer associations should be at least 8.8 million people in the country as a whole by 2024, and the proportion of citizens involved in Volunteering should be at least 20% of the population in 2024. The share of students involved in the club student movement, of the total number of students in the country - 70%.

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Today we can talk about expanding the line of volunteering areas [3]:

- social volunteering, which includes assistance to socially vulnerable people who need special support (children without parental care, people with disabilities, sick, lonely and elderly people);

- event volunteering. This is the work of volunteers at large-scale events - sports, cultural, etc. Event volunteers help with navigation at such events, provide advisory assistance;

- environmental volunteering, which is divided into two types - environmental education (classes on the separate collection of garbage, distributing flyers, disseminating information on social networks), as well as direct assistance in nature conservation (community work days, planting forests, sorting garbage);

- donation, which can also be divided into two types - direct blood donation and educational activities (why donate blood, why is it not dangerous, how does it help other people, etc.);

- media volunteering - a direction related to the development of social networks and the media. This includes volunteers from among journalists, photographers and representatives of other creative professions who provide services at no cost. Here we are talking about helping not beneficiaries and wards directly, but about helping volunteers - volunteer centers, charitable foundations, etc. They can also engage in popularizing volunteer activities;

- medical volunteering is a help to medical personnel, promotion of a healthy lifestyle, disease prevention, patient support. Young people are involved in this area who want to gain skills and experience in this field. It is important to understand that professional medical assistance is not always required from a volunteer in medical institutions. This may be, for example, the work of hospital clowns in the children's ward, etc.

- patriotic volunteering is assistance to veterans, improvement of military monuments and burials, assistance in organizing Victory parades, perpetuating the memory of victims of repression, searching for the remains of soldiers who died in World War II, conducting thematic quests and actions;

- corporate volunteering associated with organizations that want to take part in volunteer activities, attracting their employees after hours. This helps to popularize the volunteer movement and support charitable foundations among non-core institutions;

- volunteering for public safety and in emergency situations. This direction became known after natural disasters, as well as in situations of collecting, sorting and sending humanitarian aid. In this area, it is important that volunteers have the necessary competencies, as this may be unsafe

for themselves. Today, there are special training programs for volunteers in this area;

- search and rescue volunteering is an area related to the search and rescue of lost or missing people. As in the previous direction, search engines are trained, and they must also be selected for health reasons, as they often have to act in difficult conditions. Those volunteers who do not have appropriate health are engaged in informational and educational activities;

- Online volunteering is volunteering using distance information technologies. This is a direction that people with disabilities or people living in remote places can deal with. Also, residents of large cities can share information. This direction is very broad - from creating sites and updating web pages to maintaining pages on social networks and translating materials into other languages.

In recent years, there has been a steady increase in the number of citizens and organizations participating in volunteer activities, and the scale of their programs and projects is expanding. According to the Concept for the Development of Volunteering in the Russian Federation until 2025 (hereinafter referred to as the Concept), 15% of adult Russian citizens surveyed currently confirm their participation in volunteer activities. At the same time, according to opinion polls, 50% of respondents declared their willingness to work on a voluntary basis.

Thus, there remains a significant gap between the number of citizens who declare their potential willingness to participate in voluntary activities, and the number of citizens who actually do it. This is due, in particular, to a lack of information on the activities of volunteer organizations and volunteers, the underdevelopment of the infrastructure to support volunteer activities, the weakness of intersectoral and interagency cooperation on the development of volunteering, as well as the general instability of many Russian non-profit organizations, which limits their ability to organize volunteer activities [1].

According to a survey among students of the Institute of Education of the Immanuel Kant Baltic Federal University (Kaliningrad), such a gap also exists for the following reasons: inconsistency in the direction of volunteer activity of the profession received, weak justification of the motivational component, coincidence of volunteering time and training time, consistency and continuity of volunteer work.

So, future teachers are reluctant to accept offers to volunteer “not according to the profile” of their training area. They are interested in event and social volunteering and partly on-line and media volunteering. Some

young people are also willing to work as animators at a children's hospital. They rarely choose other areas of volunteer activity.

Also, among the obstacles to volunteering, young people note the difficulties associated with the fact that volunteer activity is often necessary when students are studying.

As a problem, the question was raised that volunteers want to work on an ongoing basis, to belong to a team, to have a support group for reflection after difficult work.

Thus, we see that for the development of volunteering among students it is necessary to observe a number of conditions:

- organization of a group of like-minded people and the desire to ensure a friendly climate in the team of volunteers;
- the presence of a team, support for a youth group, taking into account the specifics of its motivation in relation to participation in volunteer activities;
- actions aimed at increasing the prestige of this type of activity, not only among students, but also among teachers and employees of higher education.

An important observation here is the fact that volunteer activities should not be replaced by the term "social activity", which means any useful activity for the good of society. Volunteer activities are primarily aimed at helping people in need who are not able to help themselves.

Foreign scientists also note that it is necessary to distinguish the associations of all volunteers from the associations of paid personnel, where "one must distinguish all volunteer associations from paid-staff associations, where the latter involve one or more paid-staff individuals" [5].

To create the necessary conditions at the Institute of Education of the Immanuel Kant Baltic Federal University, there is a unit of the socio-pedagogical project laboratory "Project Incubator" (hereinafter referred to as the Laboratory), which oversees the volunteer movement among students - future teachers and psychologists.

The main goals of the development of volunteering in the Laboratory are consistent with the Concept and are reduced to expanding opportunities for self-realization of young people, the formation and dissemination of volunteer practices, increasing the role of volunteering in professional education, as well as to leveling out the factors that impede volunteering.

To do this, at the Institute of Education of the Immanuel Kant Baltic Federal University (Kaliningrad), training in the field of volunteering has been implemented since 2018 through the introduction of the discipline "Fundamentals of Social Design and Volunteering" in the curriculum for the preparation

of bachelors in pedagogical areas. The discipline takes 72 academic hours (2 credits) and includes both lecture and practical classes. At the same time, lecture classes are used to prepare for volunteer activities, and practical ones are used directly for volunteering itself, thus removing such an obstacle as the coincidence of volunteering time and training time. Initially, students are offered a list of options for volunteering in organizations collaborating with the Laboratory in order to remove the fears of young people regarding the fear of failure and choice. Then, after the end of the discipline, they themselves have the right to choose whether to continue volunteering or to stop, and if they continue, then in the same direction or in another. It is very important to note here that volunteering often goes into professional activity when young people are invited to work after successful volunteering. In addition, the achievements of volunteers are taken into account in the rewards that are awarded annually to the best students in the form of additional scholarships for achievements in social activities. As a result of mastering this discipline, students have the opportunity not only to obtain the skills necessary in further professional activity, but also a number of other prospects, which, undoubtedly, is the basis of professional education.

Thus, professional education of a student is a purposeful process of his involvement in professional activity, which ensures his understanding of life values, personal and professional goals, as a result of which the image of a professional future is built [4].

In conclusion, we note that the participation of students in volunteering can play an important role in the formation of personality, its professional development. Volunteering, which usually begins with the elementary performance of labor duties, becomes an essential tool for the development of a person's personality as a future professional. Participation in volunteering allows students not only to learn various professional skills, but also to develop the necessary competencies for further successful study at the university.

Further research in this area will be related to the study of how many young people remain in volunteering after the completion of our proposed activities, as well as to the identification of other factors affecting their professional upbringing.

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ADVANCED INDUSTRY TECHNOLOGIES: THEORY AND PRACTICE OF IMPLEMENTATION IN VOCATIONAL EDUCATION

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Abstract. The article discusses the problems of practice-oriented learning, especially the theory and practice of implementing advanced industry technologies in the educational process of the university. The theoretical issues under consideration are based on studies of pedagogical problems of incorporating real technological processes used in the professional environment into the educational activities of students. The conditions created at the university are created for students who study at the university and must use these technologies in their professional activities. The article also describes the practice of using the considered pedagogical methods for incorporating advanced industry technologies in educational activities.

Keywords: advanced industry technologies, practice-oriented training, simulation, cybernetic approach

Currently, in accordance with the need to implement national projects of the Russian Federation, by changing the requirements for professional training, taking into account the Federal State Educational Standards (FSES), professional standards, and the conditions for implementing national educational projects, the requirement of employers and the general social and professional space for practical oriented study at the university.

The most important goal of studying at a university is to satisfy the social order of society, as well as the individual needs of students. The social order in Russia is currently aimed at strengthening the training of teachers in the field of preparation "Vocational education (by industry)." Training of teachers for colleges is not just the task of teaching university students pedagogical technologies, methods, forms and means of interacting with students, but also giving students the opportunity to master the profession

that they will teach students in secondary vocational education. And in this case, one cannot do without the possibility of mastering advanced industry technologies in educational activities [1].

Based on the state demand and the socio-professional order for training in the direction of “Vocational education (by industry)”, we decided that we will consider further consideration of the theory and practice of strengthening practice-oriented training and the inclusion of advanced industry technologies in the educational process in the framework of this Directions of study, which is one of the leading areas of student training at Shukshin Altai State Humanities Pedagogical University (Shukshin ASHPU).

In the context of our article, the conceptual and terminological limitation of the issues under consideration is important.

Currently, advanced industry technologies in the scientific and professional space are understood as technologies and technological processes (including equipment necessary for their implementation), controlled by a computer or based on microelectronics and used in the design, production or processing of products (goods and services) [2].

Typical applications of advanced industry technologies include computer-aided design and engineering, flexible manufacturing centers, robots, automatically controlled vehicles, and automated storage and retrieval systems. All of them can be connected by communication systems (local industrial networks) into a single flexible production system, and, ultimately, into a single automated enterprise (organization, company) or an integrated computer production system [2].

The content of vocational education teacher training includes pedagogical and industry training [3]. In our opinion, industry training should include advanced industry technologies, which are an essential element in preparation in the field of training “Vocational education (by industry),” however, the content of such training is not reflected in the FSES, which makes it difficult for students to select it.

At the same time, there is no doubt that the problem of choosing pedagogical options for incorporating advanced industry technologies is relevant and significant in the practice of vocational education and is currently insufficiently studied in pedagogy of the XXI century [4].

The most difficult task in the educational activities of the university is the transformation of advanced industry technology into its educational counterpart. To turn an advanced industry technology into its educational counterpart, it is necessary that the teacher, having carefully studied the industry technology, checking its effectiveness in real practice, create an educational version of its reproduction for at least the following professional training functions:

1. Educational, aimed at the formation of vocational knowledge, skills; increasing professional competence, as well as the experience of qualified performance of professional activities.

2. Disciplinary, aimed at the formation of the professional orientation of the student's personality, such as: the need for professional work, sustainable positive motives of work, inclination and interest in professional activities. Education of professionally important personality traits: independence, ability to make decisions, creative approach to any task, ability to constantly learn, ability to cooperate, social and professional responsibility.

3. Design-oriented for the creative development of students, the formation of general and professional competencies, professional and social mobility.

4. Intellectual development aimed at the formation of a socially-professionally demanded personality, the development of intellectual and emotional-psychological potential, the formation of universal professional technologies of professional competencies, forecasting professional growth [5].

All these basic functions of the pedagogical process are closely related and interdependent. The formation of a worldview, the development of cognitive and creative forces and creative abilities are possible only on the basis of the assimilation of knowledge, skills, gaining and creative application of experience. At the same time, the higher the level of education, the more effective the training, the higher the quality of training. Modern professional work is complex and multifaceted. For its successful implementation, deep knowledge of technology, techniques and methods of its application, solid practical skills and abilities, as well as developed intellectual, volitional, physical and other qualities of a person are required [5, p. 213].

We can distinguish the following stages of the inclusion of advanced industry technologies in the educational activities of the university:

- Creation of a simulator or analog of advanced industry technologies based on modern digital and (or) robotic environments [4, p.305];
- Innovative support for the formation of the cognitive interests of university students on the basis of an analogue of advanced industry technologies [6];
- Providing creative search and research activities of the subjects of the educational process based on advanced industry technologies;
- Development and implementation of innovative projects by teachers and students to improve advanced industry technologies on the instructions of employers;
- Organization of control and evaluation of all stages of the educational process with the use of advanced industry technologies;

- Ensuring independent work, self-education [6].

Next, we will analyze each of the above stages from the point of view of the theoretical foundations, methodological support and practice of implementing advanced industry technologies in training in the direction of training "Vocational training (by industry)" Shukshin ASHPU:

We believe that the most difficult in theoretical, organizational and technical terms is the stage of creating a simulator or analogue of any of the advanced industry technologies based on modern digital and (or) robotic environment [4]. In the educational activities of Shukshin ASHPU, at least two options for creating analogues of advanced industry technologies are used:

- A cybernetic approach for creating and (or) adapting intelligent robots to specific industry technologies and forming a special educational environment for their implementation;
- Simulation pedagogical modeling to create a simulation model, which, when filled with the appropriate structural elements, becomes an educational environment for students.

The cybernetic approach involves the analysis of the structure of advanced industry technology, a management system that ensures its effectiveness, the identification of direct and feedback, the establishment of information flows, etc.

Information and cybernetic modeling is the use of cybernetic methods in modeling information-rich, complex systems for management, which are, without exception, educational and self-educational pedagogical systems that create analogues and prototypes of advanced industry technologies. Based on the analysis, we use either the existing intelligent robots with reprogramming their functions, or by the efforts of specialists we create a specially designed intelligent robot that reproduces this technology.

Simulation pedagogical modeling is a research method and implementation practice, based on replacement of studied advanced industry technology by an imitation. With a simulating system, the teacher conducts experiments (without resorting to experiments on a real object). The method allows you to simulate, for example, the work of business process models in the way that these processes would actually occur, taking into account the schedules of working time and employment of temporary resources and the availability of the necessary amount of material resources. As a result, you can immerse the student in advanced educational technology and provide him with its study [7]. In parallel with the creation of an analogue or model of advanced industry technology, methodological support is created for teachers, organizers of educational activities, methodologists, technologists and students, and the individualization of the educational process is ensured [8].

In working with Shukshin ASHPU students, we tested options using robotic web technologies and simulation for studying advanced industry technologies in educational activities, as well as introducing elements of cybernetic pedagogy into the educational process that reproduce advanced industry technologies in the preparation of teachers of vocational education in profiles "Transport", "Economics and Management", "Landscape Design", etc.

The following stages are the stages of the implementation of educational activities on advanced industry technology and its direct inclusion in the educational activities of the university. At the second stage, we use pedagogical techniques, methods and tools for innovative support for the formation of the cognitive interests of university students on the basis of an analogue of advanced industry technologies [6].

For these purposes, we use, as a rule:

1. Simulation training, which involves the development of certain specialized skills and abilities to work with various technical means and devices. In this case, the situation is simulated, the situation of professional activity, and the advanced educational technology in a robotic version or in the form of a simulation model acts as a studied object. Professional content here is recreated both with the help of the subject of activity (real technical means), and by simulating the conditions for its use [7].

2. An internship with the performance of an official role, which is an active training of a context type in which reality itself acts as a "model", and imitation mainly affects the fulfillment of a role (position), which is necessary for the development of advanced industry technology. The main condition of the internship is the fulfillment of certain actions under the control of its organizer by simulating real production conditions using an analog or model of the technology being studied. By the method of organizing the work of a student, an internship with the performance of an official role refers to individual teaching methods. It provides the most complete approximation of the learning process to production [8].

The next stage in the implementation of an analogue or model of advanced industry technology is the stage of providing creative search and research activities of the subjects of the educational process based on advanced industry technologies. To implement this stage, the following innovative educational technologies are used at Shukshin ASHPU, adapted to enhance students' activities in the study of advanced industry technology:

1. The technology for the development of critical thinking, which is aimed at developing the mental skills that students need both at the stage of mastering advanced industry technologies and in their future profes-

sional activities. Using the example of working with an analog or model of technology, students develop the ability to make informed decisions, work with information, highlight the main and secondary, and analyze various aspects a phenomena. The technology for the development of critical thinking consists of three stages: the stage of challenge, the stage of reflection and the stage of reflection [1].

2. The method of specific situations, which is also called the case method, the case method, the method of situational analysis. This training technique uses a description of real economic, social and business situations related to the implementation of advanced industry technology. Students should investigate the situation, understand the essence of the problems, propose possible solutions and choose the best of them. Cases, in our educational practice, are based on real factual material obtained in the production use of advanced industry technology, and are as close as possible to the real situation.

3. We use brainstorming as a method of stimulating students' creative activity. Brainstorming ensures the rapid inclusion of all students in the study of advanced industry technology based on the free expression of their thoughts on the subject. In addition, this method provides a comfortable learning environment. Students feel their success, their intellectual viability, which makes both the learning process and the process of mastering activities within the framework of the industry technology studied productive.

The next stage in the development of advanced industry technology, which we believe cannot be excluded, is the development and implementation of innovative projects by teachers and students to improve advanced industry technologies according to the instructions of employers. To implement this stage, we use the well-established design method. The design method of teaching is aimed at developing creative and cognitive processes, critical thinking, the ability to independently acquire knowledge and apply it in practical activities, to navigate the information space. At the same time, we, together with employers, are developing the topic of research projects that are aimed at finding various options for implementing advanced industry technologies, as well as ways to improve them. This method is especially important for the study of advanced industry technologies since it is focused on the independent activity of students. It is also important that students work individually, in pairs, in groups. We believe that the implementation of any project should be limited to a specific time period and achieve the result that ensures the maximum effectiveness of this type of activity.

With the inclusion of advanced industry technologies in the theory and practice of the implementation of vocational education, it is impossible to do without the stage of organizing the monitoring and evaluation of all stages of the educational process using advanced industry technologies. We, of course, use traditional assessment methods such as surveys, testing, creative work, tests and examinations, but we believe that the most effective method of this type of educational activity is the Portfolio-analysis method. Analysis by the student, teacher, and partners in the study of advanced industry technology Potfolio is an effective and evaluative and motivational option for the organization of control and evaluation. Portfolio analysis is one of the most common strategic analysis methods. Analysis of the portfolio of achievements helps in the allocation of resources, the evaluation of activities and results, planning the next steps for both the student and the teacher.

In our understanding, the implementation of educational activities for the development of advanced industry technologies is impossible without ensuring independent work and self-education of students [4]. Here, we have also developed guidelines for students and a package of theoretical and practice-oriented material using block-modular presentation of educational information. In addition, in methodological support, we propose the use by students of self-education and self-study methods using Fishbone technology. The use of this methodological technique allows the student to establish a causal relationship between the object of analysis and the factors influencing it, make an informed choice of theoretical and practical material, and build structural logical schemes for studying advanced industry technology. Additionally, this method allows you to develop skills in working with information and the ability to pose and solve problems.

Thus, only the use of a complex of steps from creating a robotic or imitation analogue to the phased implementation of the introduction of this analogue will ensure the effective implementation of advanced industry technologies and their high-quality mastering by university students.

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FEATURES OF VOCATIONAL TRAINING IN THE MODERNIZATION OF TEACHER EDUCATION

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Abstract. The article discusses the current areas of professional training of future teachers in the modernization of teacher education. The article reveals the organizational and pedagogical conditions for the implementation of the activity approach in the conditions of professional training in the direction of training "Pedagogical Education". The characteristic of the modular principle of building a basic professional educational program, a productive approach in theoretical training and organizing the practice of future teachers is described. A project is described that aims to create conditions for the modernization of teacher education by testing an innovative basic professional educational program in terms of education master's degree profile "Head of an educational organization". The analysis and interpretation of the qualitative results obtained by the conclusion of the project are presented. The research results expand the theoretical and practical aspects of the problem of developing professional competence of future teachers.

Keywords: modernization of teacher education, vocational training, activity approach, educational module.

In the modern economy, the problem of the formation of human resources, capable of not only resisting all the negative changes taking place in society, but also, in the long term, take on the management of socio-economic processes, is becoming the general line of the education system. The priority task of educational policy is the preparation of teachers who are capable of continuous self-improvement, self-education and dynamic creative activity.

The problem of modernization of teacher education was developed in the studies of Bolotov V.A., Kalashnikov S.P., Kasprzhak A.G., Margolis A.A., Rubtsova V.V., Safronova M.A., Frumina I.D. et al. [1].

The main goal of the modernization of teacher education subprograms is to ensure the training of teachers in accordance with the professional standard of the teacher and the federal state educational standards of general education [2, p. 15].

The implementation of the activity approach in the conditions of professional training of future teachers at the university involves:

- transition to the modular principle of building a basic professional educational program;
- a change in the reproductive approach in the theoretical training of teachers;
- an active approach to the organization of practice.

Let us dwell on a brief description of these conditions [5, p. 112].

1. Transition to the modular principle of building a basic professional educational program.

The aim of modernization of teacher education is the transition to the formation of complex labor functions, professional actions and skills, presented in the professional standard "Teacher". The generalized labor functions described in this document suggest the organization of a continuous, systemic and consistent educational process aimed at the formation of a knowledge system, universal, general professional, professional competencies. Therefore, the main unit of professional training of future teachers is the educational module, which allows you to determine the content of education, namely the selection of the content of academic disciplines and their sections.

The transition to the educational module as the main structural unit of the formation of labor functions, professional actions and skills, which the entire educational program of teacher training is aimed at, cannot be implemented, confining itself to combining various theoretical disciplines into one module.

It is impossible to master the labor function, professional actions and skills within the framework of the educational module only within the framework of theoretical training in the context of classroom studies. It should be noted that the educational module should be filled with practical training, moreover, not only to demonstrate theoretical principles, but to form and develop professional action in a specially organized environment, for example, at a basic school or at a basic department.

The implementation of the educational module includes the following steps:

1. The study and further formation of professional actions and skills in the context of educational (familiarization) practice.

This stage involves the implementation of professional student tests and the formulation of a list of theoretical questions and pedagogical problems, the solution of which is necessary for the successful implementation of the formed professional action and labor function.

2. The solution of the pedagogical problems.

Students master the theoretical content presented in various academic disciplines and sections. The study of the theoretical part of the module should be carried out with the most active independent work of the students themselves, both in individual and group form. The knowledge acquired by students is personally significant, since the theoretical sections of the educational module are studied as part of the search for answers to the questions formulated at the first stage in the process of training (familiarization) practice. This is carried out in the form of solutions to specific pedagogical problems, difficulties and tasks formulated at its completion.

3. The development of forms, methods, techniques, technologies and specific ways of implementing the mastered professional actions and skills in a specially organized educational and laboratory environment of the university (workshop, training laboratory).

The third stage is aimed at the initial formation of professional action and skills, i.e. its study and development in a model and (or) game situation. The leading role in this period is played not only by the content of education, but also by the organization of the educational process. Teachers of higher education in the learning process must necessarily use interactive forms, techniques, methods and technologies.

4. Testing of mastered professional action in the conditions of industrial practice in educational organizations.

The purpose of this stage is the formation and development of professional actions and skills of students in a real educational environment, monitoring the correctness of their implementation and assessing the level of their formation.

5. Organization of psychological and pedagogical research aimed at analyzing the causes and problems in the implementation of professional actions [5, p. 114].

II. Changing the reproductive approach in the theoretical training of teachers.

In the process of theoretical preparation of students, it is necessary to change the ratio of reproductive and productive (creative) teaching methods and their use in the educational process. The teacher of a pedagogical

university in the design of the educational process should not only increase the practical part of the program, but also restructure the organization of its theoretical part. The implementation of the activity approach presupposes such an organization of the educational process when the student shows the maximum educational and cognitive activity through individual and group independent work.

One of the productive forms of active educational activity of students of a pedagogical university is project activity. Pedagogical projects imply the involvement of all students of an academic group in a joint (usually group) activity. Thus, forming the subjective (activity) position of the future teacher. Technology project activities involves a reflective phase. The teacher can use the “case-study” technology for reflection of projects developed by students [3, 4].

Also, one of the effective technologies for implementing the activity-based approach to teaching, organizing active and interactive educational activities of students is theatrical pedagogy [8]. Theatricalization gives a creative style to the study of program material. Dramatization of the training increases the cognitive activity of students, creates a positive emotional background of any activity. Theatricalization is one of the forms of organization of students' interaction, contributes to the development of their creative abilities and creativity. Theatrical pedagogy has great potential from the point of view of the formation of students' value system and target behavior. In addition, theatrical activity acts as an effective didactic tool. In the system of professional training of future teachers, one can use a rich arsenal of forms, means and techniques of theatrical pedagogy: writing and fairy-tale creation, etudes and pantomime, theater exercises, games, etc.

A teacher at a pedagogical university should not only use modern educational technologies (design technology, debate, TRMCHP, problem dialogue, case studies, ICT technologies, group work, etc.), introduce students to them, but also teach them to actively use these technologies in the organization of the pedagogical process in the framework of their own professional activities [5].

III. Active approach to the organization of training and production practices.

Training and production practices should be aimed at the formation of pedagogical experiences for the development of professional thinking, the ability to make decisions in new non-standard situations using specially organized reflection.

The purpose of the practice is the formation of a professional worldview, thinking, as well as universal, general professional, professional competencies that allow to act effectively in the new conditions of uncertainty.

Practice should be built as a solution to pedagogical problems (tasks) aimed at finding a common way of professional action, from which you can get a variety of unique and specific for different conditions of professional actions.

When designing practice programs, graduate departments collaborate with partner schools. Therefore, the organization of practice is possible only in the conditions of network interaction with educational organizations. Based on this, the following requirements are imposed on educational organizations as network partners for the implementation of teacher education programs:

- high personnel potential of the educational organization: the presence of basic education, qualification categories, the length of pedagogical activity, involvement in continuing education and retraining programs, participation in innovative activities, personal qualities of teachers, high motivation for professional activity and the desire to learn new pedagogical positions (network teacher, tutor), etc.) [6].
- quality of educational services and their effectiveness: the degree to which the real educational results achieved are in line with regulatory requirements, social and personal expectations;
- flexibility of the educational organization: the ability to adapt to changing conditions in connection with the implementation of network interaction with the university.

A theoretical analysis of the priority tasks of educational policy, the concept of modernization of teacher education allowed us to implement innovative projects at Shukshin Altai State Humanities Pedagogical University. Let us dwell on the characteristic of one of them. The university tested the innovative core professional educational program in terms of education master's profile training "Head of the educational organization." This project was implemented in collaboration with the Higher School of Economics.

Purpose of the project: creation of conditions for the modernization of teacher education by testing the innovative basic professional educational program in terms of education master's profile training "Head of the educational organization."

Project objectives:

1. Testing and distribution of educational programs and program modules in accordance with the objectives of the Modernization of higher education.
2. Creation and dissemination of structural and technological innovations in higher education in accordance with the Federal Target Program for the Development of Education for 2016-2020.

The main idea of the project is that in the educational process the conditions were created for introducing a competency-based approach when developing and testing the main professional educational program of higher education at the UGSN “Education and Pedagogical Sciences” (level of education, master's degree, profile “Head of educational organization”). ”

The implementation of this project suggested that as the tested modules we selected the “Problemization” module for first-year undergraduates, which included the M2H1 disciplines: Scientific seminar; M2H2: Research Practice.

Testing of the innovative basic professional educational program involved the implementation of an active approach in training. It provides for the widespread use in the educational process of active and interactive forms of conducting classes (interactive seminars, discussions, computer simulations, business and role-playing games, analysis of specific situations, psychological and other trainings, group discussions, the results of student research groups, university and interuniversity newsgroups) in combination with extracurricular activities with the aim of forming and developing students' professional skills.

One of the main active forms of training in professional competencies associated with the conduct of the type (types) of activity for which the master is preparing (pedagogical, research, managerial, design, methodological and cultural-educational) for the OPOP magistracy is a seminar that continues at regular a basis of at least two semesters, the work of which involves leading researchers and practitioners, which is the basis for adjusting the individual curriculum of masters.

In the educational process, various interactive educational technologies were used: group interaction organization technology, information technology, case technology, project activity technology, educational process dramatization technology, etc.

The main results of the project include:

- increase in the share of specialists capable of applying (using) modern methods of analysis and planning in the field of state and municipal administration;
- increase in the percentage of teachers implementing innovative educational technologies;
- increase in the share of teachers participating in scientific research [7, p. 116].

Thus, the transition to the modular principle of constructing a basic professional educational program, a change in the reproductive approach in the theoretical training of teachers and an active approach to organizing practice contribute to the successful training of future teachers.

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THE EDUCATIONAL ENVIRONMENT OF THE COLLEGE AS THE BASIS FOR THE FORMATION OF A CULTURE OF SAFE LIFE OF STUDENTS

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Annotation. The article discusses the possibilities of the educational environment of the college in the formation of a culture of safe life of students. The authors recognize forecasting the dynamics of the pedagogical capabilities of the environment, the use of strategies that can give the environment a comfortable value for personal development as important conditions for the formation of a culture of safe life of students. An important area is the use of educational resources that can enhance the development of a culture of safe life of students.

Keywords: culture, safe life, personality, educational environment.

The problem of a person's safe interaction with the environment, his personal safety seems relevant, since a safe existence in the environment becomes an important indicator of successful life and one of the criteria for the effectiveness of educational institutions, as their activities are aimed at establishing sustainable personal development, self-development of students, social mobility. In addition to the development of professional competencies and personal qualities necessary for future professional activities, future college specialists also need to form the foundations of a culture of safe life [4]. Such an approach is aimed at developing the ability to find a solution in non-standard situations, independently and creatively think, adapt to changing environmental conditions, evaluate and prevent those risks that may arise in the process of life.

An important sign of the culture of safe living of students is the level of their protection from the effects of negative environmental factors.

Secondary vocational educational institutions have a good basis for the formation of the culture of safe life of students. At the same time, it is important that measures to prevent injuries and risks are taken by all participants in the educational process: students, parents and teachers, are in demand by them, and are reflected in their behavior and activities. In this regard, there is a need to teach safe behavior through the formation of an internal need to follow them. The directions for the formation of culture of safe living include: teaching students the skills to behave safely when exposed to threats and risks; their spiritual, moral, psychological and patriotic education.

The issue of the safe development of personality, as well as the formation of the culture of a safe lifestyle, was considered by N. A. Berdyaev, V.I. Vernadsky, L.N. Gumilev, N.V. Kuzmina, V.G. Mikhailovsky and others.

In the research of V.V. Anisimova, E.V. Burmistrovov, O.G. Grokholsky, A.F. Gusev, V.N. Moshkina, L.N. Gorina, L.A. Mikhailova, V.V. Popadeykina, Yu.V. Repin, A.M. Yakupova, S.V. Petrova, Yu.L. Vorobyev, V.V. Gafner and others the theoretical foundations of a personal safety culture are considered.

The authors consider the achievement of such a state when ensuring the life safety of an individual becomes a basic internal need as the main goal of the formation of culture of safe living, and the necessary conditions exist for the realization of this need.

To achieve the above-mentioned goal of forming a culture of life safety in an educational institution, it is important to solve the following problems:

- the development of knowledge about standards of behavior in the field of life safety, the formation of an internal target setting to ensure life safety;
- increasing the role and importance of educational work in the system of ensuring the life safety of modern youth;
- development of a scientific, theoretical, regulatory and methodological framework for the functioning of educational work with students;
- increasing the level of professional training of specialists involved in the problems of life safety of students;
- introduction of modern means of ensuring safety into the educational process;
- convincing all participants in the educational process of the need for safety and labor protection measures
- creating healthy and safe working and learning conditions.

The basics of a healthy and safe lifestyle that have developed in the process of educational and extracurricular activities of students in educational institutions of secondary vocational education will allow us to assess and prevent the risks that may arise during the life of the students, as well as in the process of their future professional activity.

Security can be considered as a state of protection of the vital interests of the individual, society and the state from internal and external threats [3].

In Russia, for the first time at the legislative level, the concept of “security” was established in 1992 by “the Russian Federation Security act”. The law consolidated the legal foundations for the security of individuals, society and the state, defined the security system and its functions, established the procedure for organizing and financing security agencies, as well as monitoring and supervising the legality of their activities [1]. Modern legislation in the field of education pays special attention to the importance of the problem of forming a safety culture among students. Article 48 of “the Russian Federation Education act” refers to the importance of creating a healthy and safe lifestyle for students [2].

The standard of secondary vocational education in the specialty 40.02.01 “Law and organization of social security” as part of the development of the life safety course provides for the development of students’ ideas about the culture of life safety. In the course of mastering the course, students develop the ability to organize and carry out activities to protect the population from the negative effects of emergency situations, take preventive measures to reduce the level of hazards of various types in professional activity and everyday life, use primary fire extinguishing means, master the methods of conflict-free communication and self-regulation in everyday activities and extreme conditions, provide first aid to victims. Students mastering the Life Safety course learn about principles for predicting events and assessing consequences when man-made emergencies and natural disasters, including in the context of countering terrorism, the main types of potential dangerously styles and their consequences in professional activities and everyday life, rules for safe behavior in case of fires; the procedure and rules for providing first aid to victims.

Students form competencies to make decisions in standard and non-standard situations and bear responsibility for them; comply with the basics of a healthy lifestyle, labor protection requirements, etc.

The main structural components of the development of a safety culture are:

- motivational value component. Its purpose is to develop the need and positive motivation for safe life, to foster a value attitude to a healthy lifestyle;
- the cognitive component includes the assimilation by students of knowledge of basic concepts, definitions and terms on the course of life safety, the establishment of optimal options for overcoming possible emergencies;

- the behavioral (activity) component is aimed at the formation of conscious adherence to a healthy lifestyle, practical skills in overcoming difficult life situations, skills in safe life, knowledge of health-saving technologies.

As a result, students develop such qualities as independence, self-discipline, the ability to navigate in difficult situations, make decisions and bear responsibility for them.

In connection with the growing understanding of the need to teach students the basics of life safety, the question of the effective use of teaching methods arises. Interactive methods are becoming more widespread, since they are the ones that stimulate educational and cognitive motivation, develop analytical and critical thinking, communication skills, and independence. Among the interactive methods, educational group discussion, workshops, analysis of situational tasks and exercises, simulation, business, didactic games, trainings, disputes, game design, information labyrinth, etc. have been spread. These methods allow to plunge deeper into the learning environment, activate cognitive activity, develop the ability to anticipate the danger and allow to develop an algorithm of actions aimed at its neutralization [4].

To intensify the cognitive activity of students, one should more deeply consider the causes and methods of action in the face of dangers, teach to predict possible dangers and find ways out of them.

The main conditions for the formation of a safety culture for students in educational institutions include:

- the development and implementation of new methods and advanced information educational technologies for the formation of personality traits of a safe type;

- improving the pedagogical skills of teachers in matters of safety and health of students;

- Development of educational and upbringing programs for students to form a stable stereotype of a healthy lifestyle;

- Improving educational standards, curricula and plans.

It should be borne in mind that individual spontaneous measures are not able to reduce the danger in the educational environment. Ensuring the safety of the educational process requires an integrated approach [2].

Summarizing the above, attention should be paid to the importance of forming the culture of safe living for future specialists, since their development will help to increase the level of development of behavioral motives and qualities of a safe type of person, the ability to make safe decisions in everyday life and in professional activity, will contribute to the development of moral and psychological stability in dangerous and emergency situations, will strengthen cohesion in front of various dangers.

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**FORMATION OF LOGICAL SKILLS OF YOUNGER STUDENTS
WITH MENTAL RETARDATION IN TEACHING MATHEMATICS:
THEORETICAL AND PRACTICAL ASPECTS**

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Abstract. The article discusses the problem of the formation of logical skills in elementary school students with mental retardation in teaching mathematics, identifies the main contradictions, principles and pedagogical conditions that a teacher should take into account when organizing work. When characterizing the program for the formation of logical skills, the authors reveal a brief summary of its modules, as well as give examples of its practical implementation.

Keywords: younger schoolchild, disabilities, mental retardation, logical skills, developmental work program.

A modern primary school student must be able to complete tasks related to the use of scientific methods of observation, logical techniques of mental actions (comparison, classification, etc.), formulating hypotheses and conclusions, planning and conducting research, interpreting data, which is possible if the student has logical skills. The implementation of the Federal State Educational Standards for Children with Disabilities allows you to build a primary education system regardless of the characteristics of the psychophysical development and health status of the student. The search for ways of the effectiveness of correctional development work in mathematics made it possible to actualize the problem of the formation of the logical skills of elementary school students with disabilities. This problem acquires particular importance in working with students with mental

retardation (MR), the number of which, according to various sources, is more than 50% of the total number of children with disabilities involved in inclusive practice.

Logical skills are skills necessary in any intellectual activity. According to N.V. Fetisova “basic general logical skills include mastery of the actions of distinguishing features of mathematical objects, comparison, classification, definition of concepts, conclusions (inductive, deductive, by analogy)” [1].

In our opinion, special purposeful work on the formation of the logical skills of elementary schoolchildren with MR will help to improve the quality of their mathematical education.

In the practice of teaching younger students with MR there is a contradiction between the need to form logical skills in this category of students in teaching mathematics and the insufficient development of the methodological foundations of this process in practice.

For their optimal overcoming of this contradiction, teachers must set and solve the following tasks:

- identify the psychological and pedagogical conditions for the formation of logical skills of primary schoolchildren with MR in teaching mathematics;
- develop and introduce into the educational process a program for the formation of logical skills of elementary schoolchildren with MR in teaching mathematics.

The organization of the teacher's activities in this direction is based on the following principles: systematic and focused work on the formation of logical skills of younger students with a mental retardation in the process of teaching mathematics; unity of diagnostic and correctional development work; integration of the efforts of the immediate social environment in the process of correctional and developmental work, which allows us to achieve that each generated logical action is brought up to the level of consistency in the consciousness of students. This becomes possible only by identifying the current level of formation of the logical skills of each student, determining what difficulties in teaching mathematics are based on the deficiency of specific logical skills and designing, on this basis, a program of correctional development work carried out by the teacher together with other participants in the educational process.

The pedagogical principles underlying the formation of the logical skills of elementary schoolchildren with MR have revealed a number of psychological and pedagogical conditions.

In our opinion, the optimal psychological and pedagogical conditions for the formation of the logical skills of primary schoolchildren with MR will be:

taking into account the age, individual characteristics of students and their somatic health; educational and extracurricular nature of correctional work; orientation to the zone of the nearest development of students.

It is important to define the category of "age", because psychological age may not coincide with the chronological. L.S. Vygotsky considers psychological age as "a qualitatively peculiar period of mental development, characterized primarily by the appearance of a neoplasm, which was prepared by the whole course of the previous development" [2]. In children with MR, as a rule, the psychological age is lower than the chronological age, their mental functions, social development situation, and leading activities do not correspond to the "norm of development". Therefore, the tasks offered by the teacher should be of moderate difficulty, selected taking into account the "zone of proximal development."

For the student with MR, a special spatial and temporal organization of the educational environment is provided taking into account the functional state of the central nervous system and the neurodynamics of mental processes (fast exhaustion, low working capacity, reduced general tone, etc.).

Creating the conditions under which correctional and developmental work is of an educational and extracurricular nature involves the implementation of the principle of integration of efforts of the immediate social environment. Therefore, tasks on the formation of logical skills are offered both directly on mathematics lessons, and in classes for extracurricular activities and in the process of independent work at home.

In the lessons of mathematics, the reserves of educational and methodological kits are used to the maximum, tasks are modified, and as a result they acquire a developing orientation. For example, for the formation of the logical skill "choosing the basis for classification", students are invited not only to find the values of the expressions proposed in the textbook, but to divide them into groups, to explain the grounds for separation. After finding the meaning of the expressions, they can divide the answers obtained into two groups, circle the answers of the first group with a red pencil, the answers of the second group with a blue pencil, and the basis for classification is selected independently or during a joint discussion.

A sufficiently complex logical skill is the formation of inference by analogy. For its development, the following modification of the task is proposed. Perform arithmetic with numbers and quantities.

Find a pattern.

$$74 + 12 \quad 74\text{mm} + 12\text{mm}$$

$$98 - 32 \dots 98\text{g} - 32\text{g}$$

$$56 + 44 \dots 56\text{c} + 44\text{c}$$

Students are asked: "How to correctly perform arithmetic operations with quantities? Is there an analogy with the addition and subtraction of numbers?" By analyzing the lines, students see that the addition and subtraction of named numbers follows the same rules as the addition and subtraction of ordinary numbers. It is important to follow the vocabulary of students, to help them correctly formulate conclusions. If independent formulations cannot be obtained, students need to repeat the formulated answer. It is advisable to propose that a similar task be performed on the field of small numbers, thereby achieving concentration on the formulation of the conclusion. Organizing such work, it is necessary to focus on the fact that only homogeneous quantities are added and subtracted.

If students make mistakes, for example, add up kilograms and kilometers, millimeters and kilograms, during extracurricular activities you can offer such a comic practical task. Offer to measure a strip of paper (6 cm) and a packet of salt, on which the weight (1 kg) is indicated, then find out from the guys if it is possible to fold 6 cm and 1 kg, suggest they practically complete the task. Ensure that students come to the correct conclusion - "centimeters and kilograms must not be added." Then, every time you try to perform actions with heterogeneous quantities, remind them of this example.

In the process of extracurricular activities, tasks may be offered whose contents are indirectly related to mathematics, but they contribute to the development of cognitive activity, induce keen interest among students and a desire to fulfill them. So, for the formation of a logical ability to compare concepts, a learner is offered a couple of words (for example: morning - evening; apple - cherry; cow - horse; ski - skates; tram - bus, etc.), which he must compare and answer questions about their similarities and differences.

For home independent work, it is assumed that the student receives specially designed cards with tasks that he performs under the control of his parents. In this case, the teacher, together with the psychologist, should conduct a training seminar where to explain to parents the goals of organizing this work, the role of each of the subjects of the educational process, the degree of their participation in the process of completing assignments, especially the presentation of assignments and monitoring their implementation. This will allow parents not only to receive information on the dynamics of the child's mental development, but also to realize the school's interest in solving problems. The tasks offered to students are usually of a playful and entertaining nature, using illustrative material.

In realizing the tasks of forming logical skills, it is necessary to focus on the zone of the nearest development of students, which is a discrepancy between the level of actual development (it is determined by the degree of difficulty of the tasks that the child solves independently) and the level of potential development (which the child can achieve by solving problems under the guidance of an adult and in cooperation with peers), which indicates the leading role of learning in the mental development of children [2].

Note that in the practice of teaching younger students with MR one can hear an opinion on the effectiveness of the massive use of game learning techniques. This opinion is erroneous, because This type of training, of course, leads to the achievement of some intermediate results, but does not fully contribute to the development of mental processes in primary school students.

The above principles and psychological and pedagogical conditions are the basis for a teacher designing a program for the formation of logical skills of elementary students with MR in teaching mathematics, which consists of several blocks that reflect the content and technology of work.

The following modules are distinguished in the structure of the program: conceptual, diagnostic, educational, organizational, pedagogical.

The conceptual module reveals the essence of the formation of logical skills in elementary schoolchildren with MR in teaching mathematics, goals, objectives, content and forms of organization of work.

The diagnostic module includes a program for studying the level of formation of logical skills in elementary students with MR at various stages of the program, comparing the results of the final control with the planned results of the program.

An educational and developmental module based on diagnostic data provides the creation of pedagogical conditions for the formation of logical skills in primary school children with MR.

The content of the program is calculated for one academic year and includes several sections.

1. Initial control (1, 2 lessons).
2. The formation of the ability to compare, produce analytical and synthetic activity (3 - 10 lessons).
3. The formation of the ability to classify (11 - 20 lessons).
4. The formation of the ability to build definitions (21 - 26 lessons).
5. The formation of the ability to make conclusions and evidence (27 - 32 lessons).
6. Final control (33, 34 lessons).

Activities during the lessons are aimed at using the reserves of the teaching materials, modifying tasks, and providing special individual tasks.

Homework involves students performing specially designed entertaining, gaming tasks.

So, the set of tasks presented in the program will be implemented in all forms of teaching mathematics: directly in mathematics lessons, in extracurricular activities in mathematics, in the process of homework.

The organizational and pedagogical module is aimed at describing the necessary material and personnel conditions for the implementation of the program. This section includes a list of teaching textbooks and materials for students, methodical literature for teachers, Internet resources. Personnel support - a characteristic of the necessary qualifications of teachers, as well as personnel providing medical and psychological support to students with MR in the school system, with the appropriate qualifications, confirmed by a document of a standard form (diploma, certificate) [3].

When forming the logical skills of primary schoolchildren with mental retardation, teachers should consider that the organization of the learning process and interaction in the teacher-student system is due to the specific features of the mental development of students with MR. In the process of implementing the program, the formation of logical skills is not a subject of special assimilation, but is presented in organic connection with other material in the course of mathematics. It is important for the teacher to see the reserves of the formation of logical skills in the tasks and transform them. For teaching younger students with MR, various methods and techniques are used, the emphasis is on the methods of advanced learning, the development of mental activity, highlighting the main elements, etc.

Thus, in the process of forming logical skills that form the content of holistic logical thinking, younger students with MR begin to apply the acquired knowledge and skills in new conditions, find more rational ways to solve tasks, be creative in their educational activities, and actively and with interest participate in educational process, which significantly affects the quality of their mathematical education as a whole.

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SPEECH ACTS IN THE WORKS OF NIL SORSKY

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Abstract. Speech acts such as appeal, entreaty, advice and others related to the sphere of “own” in the pragmatics of the speaker and used for motivation to model actions have been examined in this article. These speech acts convey idio-etnic picture of the world of Nil Sorskiy, embodied in his “Rules”, “Messages” in futural-imperative semantics, and presented by singular and plural verbs of the 1st, 2nd, 3rd person, infinitive, imperative verbs, present tense verbs, future and future conditional verbs conveying his idea of inward activity, “tacit prayer”, and idea of the ideal person in an ideal space.

Keywords: speech act, picture of the world, imperative, semantics, futural.

The speech act of the Old Russian text has a typological structure characteristic of its modern state and represents, according to scientists, three interrelated levels, distinguished depending on the attitude to various components of speech communication: the level of locution in relation to the used language means, the level of illocution in relation to the goal and the conditions of utterance and the level of perlocution in relation to the listener. In relation to Old Russian texts, the first and second levels of a speech act become important, since locution is the use of syntactic combination to form a statement, by means of which words are integrated into sentences aimed at representing the meaning in the language, illocution is a semantic activity. The following meanings are inherent in imperative forms: simple motivation, request, demand, appeal, order, permission, exhortation, supplication, prescription, demand, warning. Let us consider each of them in more detail on the material of the works of Nil Sorsky, since in his works a unique phenomenon is noted, based on the actualization of moral components through the implementation of temporal and moral semantics, the orientation of which is associated with a call for moral self-improvement of a person as the basis of his existence. The speech act ‘call’, which runs

through all the works of Nil Sorsky, is conveyed by the forms of the first person plural of the imperative mood, the infinitive, the combination of the forms of the first person plural verb with the yes particle. The 1st person plural form in the imperative mood category is the result of a metonymic transfer of the corresponding future tense form. From the point of view of cognitive semantics, such a transfer is explained by the specifics of the perception of the call by the speakers. In the pragmatics of the speaker, the call is perceived as a perspective for the performer. According to the Kazakh scientist L.T. Kileva, the concept of 'perspective' lies at the heart of the semantic category of futurism. This conditions the transformation of individual futural forms into modal ones, in particular into imperative forms. The use of the call mainly in the "own" sphere leaves an additional imprint on the selectivity of the formed language units, since, predetermining the author's unity with the reader, he sets the first person plural forms of the verb [1, 55]. All these forms serve as an incentive to moral purification, exemplary actions. In the spectrum of imperative meanings, the call is dominant in the "Charter", "Messages" of Nil Sorsky, transmitted by the first person plural forms of the verb. This was a call not only by a preacher, a church minister, a hermit, but also a person with high moral standards. In the "Charter", the first plural forms are used, containing the speech act "call" as a call to moral perfection - the dominant worldview in the Christian worldview of the f XIV-XVI centuries.

With regard to external activity, the Monk Nile prescribes for the wanderer complete non-possessiveness, simplicity in everything, so that in the temple he does not allow him to have silver things and jewelry; he orders to live, only by the labor of his hands, and repeats the words of the apostle that he who does not want to do, work should not eat, transmitted by the verb not appropriate in constant present tense: *«Иноком не подобает сребра стяжаніа имѣти. Того ради и нам съсуди злати и сребреніа самыа священныа не подобаетъ имѣти, тако же и прочая украшеніа излишныа, но точію потребная церкви приносити. Сіе же отъ святыхъ отецъ опаснѣ предано есть намъ, яко да отъ праведныхъ трудовъ своего рукодѣліа и работы, дневную пищу проча нужныа потреби ... не дѣлаяи бо, рече апостоль, да не ясть»* [2, л. 7-10].

Nil Sorsky, as the ideological inspirer of the movement of "non-possessors", urged the monks to focus on inner life, moral perfection, "smart doing." The source of spiritual strength for such a feat, Neil considered the Holy Scriptures and charged each monk tirelessly study it. He himself was a great connoisseur of Scripture, theological literature, the works of

the Church Fathers. Readability was combined with a pronounced ability to critically perceive theological texts. The speech act 'prayer', which contributes to the formation of the imperative mood of the verb in the Old Russian language, is associated with the speech act 'appeal', with the prescriptor, and with the performer of communication, and this in the speech act is manifested in the call for "smart doing", moral perfection. The prescription in the speech act "prayer" takes on a moralizing character and is used in the "Testament", as Nil Sorsky wants to show how to achieve moral purification and union with God by the example of his work: «*Сиа убо мы неразумни по мѣре худости нашего разума написахомъ на въспоминаніе себе и подобнымъ мнѣ, иже в чину учинимыхъ суть, аще и произволяютъ. Не отъ богадухновенныхъ писаніи святыхъ отецъ просвѣщенныхъ разумомъ. Вся бо, яже zde, не безъ свѣдѣтельства Божественныхъ писаніи суть. И аще что обрящется в сихъ неугодно Богу и бесполезно души нашего ради неразуміа, да не будетъ то, но воля Божіа свершенна и благоприятна да бываетъ; азъ же прощеніа прошу....*» [2, p. 90]. In the given passage verbs of the 1st person singular in combination with the particle yes, the 2nd person singular, the 3rd person plural are used, which is typical for the monuments of ancient Russian literature that we are studying. The path of "smart doing" was impossible to apply in state practice, and even more so, it could not become the basis of state ideology. Indirectly, this was also confirmed by the Rev. Nil Sorsky himself, who did not recognize any worldly glory and longed only for reassurance. The speech act 'prayer' finds its expression in the forms of the 1st, 2nd, 3rd person of the imperative mood. The use of the imperative in a speech act depends both on the dissuading and on the listener, since both are active participants in the act of communication. In all the works of Nil Sorsky, the transmitted fragments of his idio-ethnic picture of the world are quite relevant within the entire Slavic space, since they embody the foundations of morality.

So, shades of meaning 'call' and 'order' in the "Charter" and the "Messages" of Nil Sorsky are found only in speech acts where the speaker / prescriptor / has a social status higher than the social status of the listener / executor/. We observe the same thing in speech acts with the meaning of exhortation, demand. Quite often, with these shades of meaning in ancient Russian monuments of the period considered by us, the author turns to readers. This is especially true of works of oratorical and everyday genres, to which we include the "Charter of the Skitsky Life" and the "Message" of Nil Sorsky. In these works, the old Russian scribe refers to monks, readers either with an appeal or with exhortation, which, in our opinion, is connect-

ed with the author's intention. In the "Charter" of the Nile there is a speech act: *«Господи Исусе Христе Сыне Божіи, помилуй мя, все; овогда же поль Господи Исусе Христе, помилуй мя; и паки премѣни глаголи Сыне Божіи, помилуй мя – еже есть и удобнѣе новоначалнымъ, рече Григоріе Синаитъ. Не подобаеть же, рече, чясто пременяти, но покосно...»* [2, p. 21]. In this passage, Neil turns to God, because he believes that only he can help him in the fight against passions and bad thoughts.

Most of all the verbs in the imperative mood of the 2nd person singular and plural appear in the "Charter" with the meaning of the appeal. An appeal to God is noted in the following example: *«И абіе къ Господню лицу глаголетъ: сіе, Владыко, ангеломъ равна показаетъ мя, и лучша тѣхъ створить, ибо невидимъ тѣмъ еси существомъ, естествомъ же непреступень, мнѣ же зримъ еси всяко, и естеству твоему смѣшаетъ ми ся существо»* [2, p. 30].

The linguistic tradition retains the opinion that only the singular and plural forms of the 2nd person are recognized as imperative. However, we are following V.N. Belousov, including verbs in the imperative mood of the 1st person plural in the imperative paradigm [3, 99]. The imperative of the 2nd person singular and plural can be used with a hint of appeal in a speech act, where the author is also the prescriptor and the monk - is the executor: *«Хотяи приступити къ Господу и животу вѣчному сподобитися и жилище Христу быти и Святаго Духа исполнитися, да плоды Духа по заповѣдехъ всѣхъ Господнихъ възможетъ сътворити чисто и непорочно, сице долженъ есть начати: переѣе вѣровати извѣстно Господеви и отдати всего себе словесемъ заповедей Его, отрецися мира по всему, да ни о едіномъ видимыхъ умъ упразднится, но точію едінаго Господа предъ очіма имать и заповѣди Его, и Тому единому угодень быти токмо да тщится и въ молитвѣ пребывати всегда»* [2, p. 80-81].

In the "Charter" we see the use of the forms "yes + verb, homonymous to the verb of the present / future tense of the 3rd person singular and plural". The use of this form is apparently due to the large temporal coverage of these verbs. The form in the "Charter" has an expanded paradigm of shades of the meaning of motivation: appeal, exhortation, supplication, prescription, demand. The shade of meaning - appeal - does not require a direct, immediate motivation: the expression of will can be expressed indirectly and indirectly. We find such an indirect expression in a speech act, where the imperative form is expressed in the form of a verb, homonymous to the present / future tense of the 1st person plu-

ral with the particle *yes*. For example, in the "Charter" we find the following speech act: *«Егда бо престанемъ отъ таковыхъ бесѣдъ, аще и мнятся благи быти, абие по престатиу бесѣдованиу въ смущени бываемъ душею и не хотящимъ намъ сіа, и неволею двізаются в насъ и съвокуплени с нами не мало время пребываютъ. Понеже и къ ближнимъ и любимымъ намъ излишнаа и безвременна словеса смущение сътворяютъ и умное хранение и таинное поучение зѣло истливаютъ»* [2, p. 83].

From the point of view of the theory of speech acts, in the above examples one can single out the addresser the Nile and the addressee - God. From the point of view of the speaker's pragmatics, a prescriptor is found here - the same Nil Sorsky and the performer - monk, reader. That is, the author refers to one person, and calls indirectly another person. The form of imperative comes closer in semantics to the imperative mood of the 1st person of the plural - these forms have a joint action seme. In this form, we find a tinge of meaning between appeal and desire.

Most of all the verbs in the imperative mood of the 2nd person singular and plural appear in the "Charter" with the meaning of the appeal.

In Sorsky's works, as in modern Russian, we refer to futural-imperative semantics in the imperative mood of the 2nd person and plural person and the 1st person plural, and the 3rd person and plural person imperative with particle *yes*, individual interjections, syntactic constructions, lexical means with a meaning of incentive. When examining imperative in the light of the theory of speech acts, the dependence of the functioning of the imperative on the intentions of the speaker, on the social status of the speaker and the listener, and on the genre affiliation of an ancient Russian monument is revealed. Thus, the "Charter of the life of skits" by Nil Sorsky, created in the XV century, belongs to the genre of oratory prose. The intension of Nil Sorsky is the inner processing of the soul, moral self-improvement through "smart prayer", actualized through the speech act of "prayer" and prayer mood, a call for moral purity, as he believes that the immoral qualities of a person will remain in the past, and positive moral properties will acquire the timeless character of delocalization, that is, the syncretism of the future and delocalized time are correlated in the Charter with positive concepts calling for moral self-purification, a dream about an ideal person in an ideal space. Hence the spread of imperative forms with a touch of appeal. In addition, all forms are instructive, since the Neil constantly instructs monks, readers, tries to attract them to a righteous life through herding life, non-covetousness, inner work, struggling with thoughts, keeping the commandments set forth in the Divine Scripture.

During this period, the number of verb uses in the imperative mood of the 1st person plural with a semantic connotation increased. The speech act 'call' in the author's beginning in the "Charter", "Messages" of Nil Sorsky is also expressed by these forms with the use of the "yes" particle. These combinations receive a grammatical character in Old Russian and are a form of imperative mood containing a prototypical character. Calls for "clever doing", "clever prayer", the concepts of "exhortation", "sin", "love", "warning" are directly reflected in the texts of the "Charter", "Messages" as the main milestones of the moral core on which the moral personality (ideal person in an ideal space).

The "Charter" of Nil Sorsky is a work in which imperative broadcasting is revealed more than in other Old Russian texts. Intention of the Nile - attracting monks, readers to a righteous life, moral purification, exemplary actions. A great role in this period is played by the imperative mood of the 1st person of the plural with a semantic connotation of appeal. This suggests that the fragment of the conceptual picture of the world, created by Nil Sorsky, is determined by the imperatives of historical reality, which also outlined a strategy for future actions, which contributed to the interdependence of the categories of futurity and imperative.

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**A COMPARATIVE ANALYSIS OF THE GAME AND FREEDOM
OF CHOICE IN ENGLISH AND FRENCH POSTMODERNISM
(J. FOWLES AND P. MODIANO)**

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Abstract. In postmodernist literature of XX century the “game character” predominates because everything – business, culture, even human relations transform into “game” in modern world. The game began to be included in main notions and directives, which became foundational in intellectual activity, typical for cost of mind of new epoch.

Key words: postmodernism, novel, Fowles, playing style, England

The transformation of creativity into game is connected first of all with the fact, that postmodernist philosophy doesn't perceive the category of “essence”. It's quite logic, because the category of “essence” directs the writer towards the depth, to all roots of events or facts, and as a result the terms “aim”, “intension” are non-demanded, but notions “game” and “casual” are preferential.

In English literature this peculiarity is demonstrated in creative work of one of most extraordinary writers of modern epoch – John Fowles. John Fowles is unique phenomenon in English literature, he governs perfectly quite different styles of English prose and his novels are complicated and multilayer. In his books J. Fowles catches the reader's interest by intense storyline and set philosophical problem of human existence. The reading of Fowles' book always transforms into complicated intellectual game. In his books quite different personages are described- medieval knights, modern policemen from Scotland-Yard and ladies of Victorian age, students of 70s of XX century. “Refined” maniacs, sadists, superfine painters- it's not nearly whole list of personages, who inhabit J.Fowles' world. The timeframe and geographical borders of his world stretches from London to Greece, from English province of XIX century and medieval France to USA of mid twentieth century.

The writer himself declared once, that “he would like to write one work in each genres” and he succeeded to do it. In novel "The Collector", which brought him world fame, the drama of the relationship between two persons- clerk Clegg and student Miranda, becomes an existential drama in the genre of Jean Paul Sartre. In this work the artistic technique of two-voice texture was used: the first part was written on behalf of Frederic Clegg (he is the embodiment of darkness), and the second one – on behalf of Miranda (she is the embodiment of light and mind) in the form of her intimate diary. In Fowles' works the same facts and events are exposed to light in quite different ways. The author reserves his position of the observer and makes the reader to make sense and to understand himself the history of the horror he has been told.

The novel "The Magus" is considered to be the most complicated and controversial work by J. Fowles. Here the writer used romantic details and presented them together with a delicate idea of moral understanding of his own “Me”. In novel “Daniel Martin” the prolonged story of two characters relationship transforms into an artistic tractate about the purpose and meaning of life, about genuine and false art. This novel is written in a genre of biography, and now the hero exclaims: “Hell with existential nausea!”

In the novel “The French Lieutenant Woman”, J.Fowles went much deeper and did not give the opportunity to define the genre in the frame of a concrete work. (It must be pointed out, that this novel is the most perfect work by J.Fowles from technique position). Thinking over this difficult and ambiguous book, one come to the conclusion that it is both an exemplary “retro-novel” and an experimental “novel inside novel”. In this novel the writer demonstrates his presence by explicit intervention in the text. E.g. the reader is offered three possible endings of the novel, on the pages of the novel a confidential conversation is carried out. In this talk the strengths and objections of the characters are discussed, the fate of the novel, and the mechanism of the whole story is revealed.

Having thoroughly studied the entire Victorian era, John Fowles does not limit himself by the exact reproduction of life style. The writer reproduces both the structure and the artistic world of the Victorian novel, reviving the type of those heroes. These heroes are perfectly familiar to writer from the works by English writers –Ch. Dickens, W.M.Thackeray, Ch. Bronte.

The leading hero of the novel, a well-to-do businessman, Mr. Fremer, is preparing the marriage of his only daughter Ernestina with a young darwinist scientist Charles Smithson. Charles Smithson is going to receive the baronetage in the near future and it is not indifferent to Freeman. This is the first layer of the novel, associated with the genre of the “retro-novel”

and it is easily recognizable. So, Fowles's experiment on the reconstruction of the historical atmosphere was remarkably successful. However, there is also another layer in the novel - it is also very interesting and plays more significant role in the writer's plan. So, the main idea of "The French Lieutenant Woman" is connected with this layer and is associated with Sarah Woodruff, who is the leading female character of the novel. A young woman who came from the lower estate of society and is a teacher in the house of wealthy inhabitants of the city is the main type of novel. She is a nurse and looks after a French lieutenant who was injured in a shipwreck. Soon he left the city and disappeared forever from the life of a girl who sincerely loved him. So, Sarah's name is dirtied up, but she doesn't aspire to refute this disrepute. The baselessness of that bad reputation became clear at the end of the work only by one person - Charles Smithson.

But Fowles is interested in the plot of the novel very little. While talking about the meetings of Charles and Sarah, which were initiated by herself, talking about Sarah's strange and mysterious behavior towards Charles and, finally, talking about her sudden disappearance and wanderings of the hero in search for her J. Fowles raises a number of questions. These questions and problems are connected with spiritual and physical love, and they are set in the form in which he feels and understands himself this matter, in form, in which he thinks about the relationship between the humans in different historical times.

Strict Victorian morals, its suppression of natural physical instincts, does not cause the writer any sympathy and understanding, because for him the physical and spiritual matter in a person are merged together. In the same time strict and restrained Victorian morality is more preferable for him than moral debauchery and permissiveness, which does not liberate the feeling, but grows it poor.

In Fowles' novel, Charles has to make choice between two alternative life paths - "actual" and "non-actual" one. This matter is presented here as a choice between two women who love Charles, as a choice between feeling and duty. Hero's bride Ernestine embodies all Victorian virtues, but mysterious Sarah, "The French Lieutenant Woman" to Fowles' mind is a blame of Victorian morality. In relation to Charles, Sarah plays the role of a "mentor" in the novel, she is his guide in his pilgrimage to himself. In order to make the hero recover his sight, to arouse reciprocal passion in her, she opens for him a "magic theater" with one actor. Sarah arranges "occasional" dates, presents him with her fictitious confession, provokes him to bold actions and, finally, connecting with him, disappears without a trace.

“Falling under the spell of his beautiful temptress, Charles gradually begins to understand that before meeting with Sarah he was a “living dead” without freedom and love, an obedient executor of the will of the era. He realizes that his deepest aspirations and desires are at variance with the requirements of the system, but he can make his own choice: either an “non-authentic” existence within the social structure, promising money and comfort, or a “genuine” existence outside of it, promising love, anxiety, and disorder.” (3. p.14). Just as Sarah plays with Charles, testing him and pushing him to realization of choice freedom, Fowles also plays in a novel with his readers, whom he also makes to do their choice. “With this aim writer includes in the text three versions of the ending: “Victorian”, “bel-letristic” and “existential” one. So, writer invites the readers to check themselves and decide which choice seems to them true and which is false.

If we take at face value the deceptive finale given in chapter 44, the question is decided simply. Here the Victorian ending of the plot is presented - duty wins the feeling, Charles, does not meet with Sarah, he marries Ernestine and survives to 114 years. But, after only a few pages, it turns out that we were fooled, and the author laughs at those who did not notice the parody of this chapter.

As for two other versions for the finale here the situation is more complicated. Certainly, Fowles is cunning when he tries to assure us that these versions are completely equal and their sequence in the text determined the lot. The happy end, in which the hero forever finds Sarah, and even turns out to be the father of a charming child, looks too literary from conventional position, so it cannot be considered the truth. If the novel really ended in this way, then the hero’s pilgrimage would get an achievable goal.” (3. p.14)

To Fowles’ mind the formation of a person does not stop until the end of his life, and the only purpose of life’s stay is the path itself, the continuous self-development of a person, his path from one free choice to another one. Therefore, only the last chapter of the novel, in which the hero’s last hope is lost can be considered to be the only “true” version of the finale. Here the hero’s illusion of saving love is destroyed. So, he loses Sarah in order to continue his difficult life journey through antagonistic and rough world, the path of a man who has lost all his supports, but in substitution gained “a particle of belief in himself.” And only giving preference to this version of the finale, the reader becomes writer’s like-minder. Three versions of the finale are far from the only unexpected technique used by Fowles in his game with readers’ preferences. Here we observe a constant game with literary subtexts. The main place among them is taken by the

works of famous English writers of the era to which the novel is dedicated. The playing character of the style adds a special poetic expression to the artistic world of John Fowles. This game can be real or conditional, epoch-making or local. It includes the reader synchronically both in the subjective time of the hero and in the objective time of the real action. All these features create a special temporal artistic space of J. Fowles' works.

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FORMATIVE FAMILIES WITH TOP *KING* IN THE EVEN LANGUAGE

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Abstract. The article is devoted to the study of the derivational potential of onomatopoeic words of the Even language using the example of a word-building nest with a *kih* top - imitation of ringing, strumming of metal objects. A word-building nest consists of eighteen derivatives (nouns, verbs, adverb, figurative word). The main method is suffixation, several derivatives are formed by conversion, one as a result of reduplication. Most derivatives are at the first stage of word formation.

Keywords: Even language, word-building nest, onomatopoeia, derivatives, conversion.

In the Even language, as in many other languages of the world, there is a layer of vocabulary, which in linguistic literature is called differently: onomatopoeia, ideophones, imitative words, mimemes, figurative words, imitative, sound-figurative words, onomatopes, etc.

“Onomatopoeic words are imitations of sound phenomena in nature. They denote concepts about sound. When transmitting the results of auditory impressions, onomatopoeic words include an element of imitation within the limits of the articulatory capabilities of a person, due to which their meaning is quite specific” [1, p. 286].

The composition of onomatopoeia characteristic of a particular language varies greatly depending on the characteristics of the culture and geographical environment of the people who speak the language. The onomatopoeic words of the Even language mostly represent imitation of the cries of birds and animals, as well as imitation of sounds arising from a collision, the contact of various objects.

The onomatopoeic words of the Even language bring a special note to the speech, making it a truly lively, original native speech. They carry not only a pure imitation of various sounds, but are also often used as figurative characteristics of actions. For instance: *кап-кап-кап* – imitation of the

sound made by greedy grabbing of food (by a dog); *бop* – imitation of the sound resulting from the falling of small solid objects on a hard surface (for example: beads falling on the floor).

In the Even language there are nine groups of onomatopoeic words. These are: onomatopoeic words that convey sounds made by a person; onomatopoeic words that convey sounds made by animals; onomatopoeic words that convey sounds made by birds; onomatopoeic words that convey the sounds made by insects; onomatopoeic words that convey sounds of inanimate nature; onomatopoeic words that convey the sounds of movement; onomatopoeic words that convey sounds arising from a collision, contact of objects; onomatopoeic words that convey sounds arising from the separation of objects; onomatopoeic words that convey mechanical sounds.

The most numerous is the group of onomatopoeias that transmit sounds arising from a collision, the contact of objects. It can be imitations of all kinds of blows, knocks, creaks, friction, cracks, rustles, crunches, rattles, clicks, rattles, rumbles, etc. In our work, we will consider the word-building potential of onomatopoeic *киң* belonging to this group and denoting the imitation of ringing, strumming of metal objects through a system of syntagmatic connections in the word-building nest, where *киң* will be the source word of the word-building nest.

Adhering to the definition of A. N. Tikhonov, by a word-building nest we mean a collection of words ordered by relations of derivativeness, characterized by a common root [5, p. 36]. The structure of a word-building nest is determined by the ratio of units of two planes - syntagmatic and paradigmatic. In the syntagmatic plan, the word-building nest is a collection of word-building chains, and in the paradigmatic plan, it is a collection of word-building paradigms [5, p. 41].

A word-building nest is the largest and most complex, structurally, unit of the word-forming system. The systematic approach to the study of word formation, in contrast to the consideration of separate, disparate phenomena, allows you to identify the main and diverse relationships in which words of any language are located, making up separate microsystems within the framework of the macrosystem, holistic lexical and word-formation systems [4, p. 5].

The study of sequential productivity from the initial *киң* revealed the following picture:

киң/г/а/ла/к ringing of a bell

киң/ги/дэй ring, ding, strum (about metal objects)

киң/ги/н ringing, strumming (of metal objects)

киң/гэ/н/дэй ring, ding, strum (about metal objects)
киң/гэ/н ringing, strumming (of metal objects)
киң/гэ/лчи/дэй thunder, clatter, grumble, rumble, strum, rattle, clang,
ring
киң/гэ/лчи/н 1) rumble, grumble, roar, strumming, rattling, clang-
ing, ringing, alarm; 2) call
киң/гэ/лдэ/дэй thunder, grumble, clatter, rumble, strum, rattle,
clang, ring
КИҢ киң/гэ/лэн/дэй 1) thunder, grumble, clatter, rumble, strum, rattle,
clang, ring; 2) call
киң/гэ/лэ/сэн/дэй 1) thunder, grumble, rumble, chatter, clang,
ring; 2) rung
киң/гэ/лэн ringing, strumming (of metal objects)
киң/гэ/мкэн/дэй ring
киң/гэ/мкэ/лдывун call, bell
киң/и/дай 1) make a subtle sound; 2) buzz, squeak (about in-
sects); 3) whistle (about wind, bullet)
киң/и/л/дай 1) buzz, peel (about insects); 2) begin to buzz, ring.
киң/и/н 1) subtle sound; 2) buzzing, squeaking (of insects); 3) whistle
(about wind, bullet)
киң-киң *art.* ding-ding
киң/э/с instantly breaking, cracking (about metal)

Thus, the derivational volume of a word-building nest with a vertex *киң* is eighteen derivatives. Most of the derivatives are made up of a verb block of nine derivatives, the nominal block includes seven derivatives, one adverb and one figurative word. The structure of the nest consists of thirteen syntagmatic connections. The core method of word formation is suffixation, two nouns are formed by conversion, the figurative word as a result of reduplication. In the word-building nest, the first stage of word-formation is most developed.

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EVEN HYDRONIMS

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Abstract. This article is devoted to the study of hydronyms in Even language. Hydronymic vocabulary of Evens is considered for the first time in a linguistic plan. The material was the author's field work.

Keywords: Evens, toponyms, hydronyms

The need for a scientific study of geographical names, which are a certain category of words in the lexical system of any language, is universally recognized today.

Hydronymics is closely related to the history of society, which contributed to the emergence of geographical names for a particular territory. The relevance of the topic is due to the lack of frontal research and analysis of Even hydronymy, which carries the most valuable linguistic, geographical, ethnographic and historical information. Until now, private questions of hydronymics have been mainly studied, individual names have been analyzed, in most cases the etymology of toponyms is given. We can also mention the works of V. A. Keimetinov [1], E. V. Nesterova, I. I. Sadovnikova [2].

The geographical vocabulary and terminology of the Even language, which reflects visually observable objects of the near and far environment, is the richest and most specific in content, at the same time the oldest part of Even language. It reflects the specific spirituality of the ancestors of modern Evens, which became the basis for their separation into an independent ethnic group. Carrying out linguistic analysis, we focus on elucidating the semantics and etymology of the word, since it is in them that the most distinctive features of world perception and spirituality are expressed.

The modern Even language and its dialects have an extensive system of hydronymic terms.

In this article we will consider terms with the meaning of water bodies. *Бирандя* «big mountain river»; *окат* «river», *төңэр* «lake» and *биракчан* «small mountain river» one of the common concepts denoting a river, lake

and mountain river; *дюлка* «small spring river feeding on springs spreading from the main river valley»; *элгэн* «small, deep river with smooth banks, flowing smoothly across the plain»; Term: *эе-н* «current, descent down the river», *эендэй* «flow, run (about the river), swim downstream».

The analysis of the Even language hydronyms showed that the main part of Even hydronyms are semantically transparent names. Taking into account both linguistic and extralinguistic factors, hydronyms are divided into two large semantic groups: hydronyms, which reflect the physical and geographical properties of water bodies and their environment, and hydronyms, resulting from human activity. They, in turn, can be developed into separate subgroups. They mainly cover the whole range of names of water bodies. The names of water bodies reflect:

1) The speed, the strength of the flow of the hydraulic object:

Хо Эе-н «fast current», name of the river Berezovka;

small stream *Тынытындя* formed from the word *тиничин* «pressure, squeeze», the stream flows into the right tributary of the Berezovka river;

2) the shape or outline of the channel:

Люнкидэ river is formed from the word *linkutkan* *линкуткан* «hanging overhead», an inflow of Buordakh (an inflow of Moma), a river flowing between narrow gorges; *Суонулддун* river is derived from the word *суонут* «yurt frame», to a person standing on the bank of this river it seems that like he is standing in a yurt (a tributary of Moma), etc.;

3) ground, soil: the river Bulkut - a tributary of Andygychan (a tributary of Moma): *Булкут* - from the word *булэ* «mud, swamp, slurry, mud, silt»

4) plant world:

Коңаталчи lake «reedy», the name is derived from the word *коңат* «reed», by adding affix *-пчи*, denoting possession of large quantities.

Инмэкэткэн river - the right tributary of the Kolyma River, the name means «small, lonely coniferous forest», lit. «only coniferous forest.»

Ирэкэгчэн river is derived from the word *ирэт* «young larch» using an affix with the meaning of a collection of objects *-кэг* and the addition of a diminutive affix *-чэн*.

Тэнкэли lake, is derived from the word *тэнкэ*, which means «forest, forest edge», based on the name, a forest grows near the lake.

Орбаталчи river means «much blackcurrant», derived from the word *орбат* «blackcurrant» by attaching an affix *-пчи*, expressing possession of a large number of objects. *Орбаталчи* lit. «the area where blackcurrant grows abundantly».

Буңэтэ lake translated from Even means «hairy trees», the name of the lake is derived from the word *буңэ* «hairy larch», adjective suffix *-та*

forming the quality of the subject.

Бучулчи lake means «rotten trees», the name of the lake is derived from the word *бучуни* «rotten tree», by adding affix *-пчи* expressing possession of large quantities.

Нинкатапчи lake means «dried trees», from the word *нинкат* «dried tree» by adding affix *-пчи*, by adding affix.

Хеваскан in the translation «dried, old lake», is formed from the word *хевас* «dry, rotten tree», by adding affix *-кан*, which gives the subject a diminutive value. From the crumbling from rot, turning into the dust of an old tree, the Evens collected dust for cradle bedding for small children.

5) life and house life of the population

Кинкилин river «jingle bells», tributary of *Андыгычан* (tributary of *Мома*), near this river the Evens released deer for feeding, hanging small bells on their neck so they would not get lost;

6) color: *Мэцэнрэпчи* – formed from *мэцэн* – «silver», means «Silver».

Some hydronyms are derived from anthroponyms: river *Ньинил* (Even. woman name) tributary of *Мома*. According to legend, at this place a girl named *Ньинил*, running after a wounded mountain sheep, fell off a cliff and crashed to death. Before her death, she asked that the river flowing under this rock be named after her.

Figurative and metaphorical names occupy a special place: the stream *Бургачан* is derived from the word *бур* «sparkling stone, flint» (tributary of *Березовка*); stream *Чиринкан* is derived from the word *чирит* «red copper», the stream flows into the right tributary of the *Березовка* river; stream *Когычан* (tributary of *Березовка*), is derived from the word *когалда* «bobber»; stream *Усбиракчан* (tributary of *Березовка*), is formed from two words *ус* «evil, unkind» and *биракчан* «small mountain river»; stream *Биялгыкан* (tributary of *Березовка*) is derived from the word *биялга* «raging»; river *Нолука* «hair between hooves», the river begins after the confluence of two tributaries, and between them there is a mountain, on top of which tall grass grows (tributary of the *Мома*), *Чөнинде* – formed from *чөнидэй* – «sigh heavily», means «Big sigh».

Their identification provides great opportunities for studying the issue of reflecting the properties of an object in a title that contains a comparison of an object with any object or phenomenon of reality.

In his work, the author of the monograph “Millennium Trails” Keymetinov V.A. claims the name of the river *Лена* is derived from the Even word *эйэнэ* from *эйэндидди*, which means «big current», or «something flowing», for example, *иңадук эйэнни*, what is translated as «flowing from

stone or from mountains » with which we agree.

From the term *hilен, hilэлкэн* the name of one of the tributaries of the *Индигирка* river, *Силэннээх* river and the village of *Силэннэх* is formed. From the base of the verb *hedэй (-hidэй) –he, -hu* the name of the *Синэ* river is formed, which flows into the *Лена* river in its middle course on the territory of the Khangelakhs ulus, and the village of the same name *Синск*, located at the mouth of the river [1].

Evens do not currently have a single territory. They live in the Magadan, Kamchatka Oblasts, Khabarovsk Krai, Chukotka Autonomous Okrug and in the Republic of Sakha (Yakutia). Their ethnic history has been covered since the beginning of the XVII century, from the time the northeastern territories joined the Russian state [3]. Moving from west to northeast, the Evens gradually supplanted the Yukagirs and Koryaks who had lived here for a long time. Hostile relations were reflected in the names of rivers *Булун, Булур* «enemy», «foe», literally «yukagir». River *Ньока* and *Нюха* from Even *нёка* «Yakut», *Нючали* from the Even word *нючи* «Russian», river of «Russians», *Чайбуха* from the word *чайнчибар* «Koryak-Chavchuvens».

Thus, the hydronymic group under consideration contains one of the most ancient layers of the Even language thesaurus, and represents the stages of development of toponymy in close connection with sociolinguistic factors that determined the formation of ethnolinguistic features of the language over the course of historical time. A certain part of hydronyms reflects the stages of cognition and development of the natural world over the centuries.

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**THE DEVELOPMENT OF EMOTIONAL INTELLIGENCE,
PSYCHOLOGICAL BOUNDARIES OF THE PERSONALITY AND SELF-
ATTITUDE AMONG FUTURE PSYCHOLOGISTS**

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Abstract. The paper presents the results of an empirical study, which is a formative experiment conducted in the form of psychological training, the main tasks of which were the creation and implementation of a training program aimed at developing emotional intelligence, psychological boundaries and self-identity of psychology students. The sample consisted of 50 students (10 people were experimental and 40 in the sample), students at the Faculty of Legal Psychology of Moscow State Psychological and Pedagogical University. The main hypothesis of the work was the assumption that such a form of developing psychological activity, such as group training, is capable of exerting significant qualitative changes on the development of emotional intelligence, the psychological border of personality and self-attitude in adolescence.

During the study, data were obtained demonstrating the various changes that occurred during the input of the forming experiment with each subject. In general, we can say that the formative experiment carried out had a definite effect on the emotional intelligence, the psychological border of the personality, and the self-attitude of psychology students.

Keywords: psychological training, psychological border of personality, emotional intelligence, self-attitude.

According to various educational standards, a specialist psychologist must have a wide range of competencies, consisting in the knowledge, skills and abilities that a student must master in the process of studying at a higher educational institution. However, in the modern view, competence should be identified not only with knowledge, skills, as it is a broader concept, which, in essence, is a synthesis of the cognitive, subject-practical, motivational, value and personality components of this concept. Competence can be defined as a deep and stable personal characteristic that

allows the subject to realize the acquired knowledge, skills, abilities and life experience in various combinations depending on the type of tasks to be solved and the standards for their implementation, set within a specific cognitive and social contexts [11]. However, despite this, in most modern educational standards, insufficient attention is paid to aspects of the personality of a future specialist, i.e. what an effective psychologist should be in his activity, what personality traits he should possess.

Until now, it has not been sufficiently studied what personality traits are necessary for a future specialist psychologist in the first place.

In this study, it is proposed to consider several constructs that could form the foundation for the development of the professional "I" of the future specialist psychologist. These constructs are "Emotional Intelligence" and "Psychological Frontier of Personality" and "Self-Relation".

The concept of emotional intelligence over the past ten years has been actively developing, there are many approaches to the definition of this phenomenon and its structure [1]. In this work, emotional intelligence will be understood as a set of abilities for understanding and managing their own and others' emotions. The ability to understand and manage emotions is very closely related to the general orientation of the personality to the emotional sphere, with interest in the inner world of people and, first of all, in their own. In this regard, it becomes obvious that the future specialist psychologist must have a high level of emotional intelligence [7; 8].

Like emotional intelligence, the psychological border of the personality is also associated with the interaction of a person with the environment and himself [6]. For a specialist psychologist, it is extremely important to be able not only to make contact, but also to be able to maintain this contact for sufficient time, which sometimes can take up enough strength and internal resources. That is why for a harmonious and healthy interaction with oneself and others it is important to form the optimal psychological border of the personality. In fact, the psychological border is a psyche mechanism that determines how to deal with internal or external impulses in each specific situation: stop, skip, give, etc. Thus, the development of the psychological border of the personality will allow the psychologist to not only perform certain actions, which he learned, but also to be congruent in the process of work [4; 5].

The last, but no less significant construct for this work, necessary for successful professional psychological activity is "Self-Relation" [3]. Self-relation in domestic psychology has been studied for a long time, however, its structure and its components are still debatable [9]. In this study, self-attitude is considered as an affective component of self-awareness, the main

units of which are emotional components - self-esteem, self-sympathy, self-interest, forming an emotional space in which the corresponding actions unfold. Self-reliance as a subject's attitude toward oneself can be positive (conducive to self-realization), negative (obstructing self-realization) and conflict (conducive to and obstructing realization at the same time) [10].

It is obvious that an effective future psychologist should have not only generally positive self-attitude, but also positive professional self-attitude, which makes up most of professional self-identity, it is obvious that professional and personal self-relationship are very closely related.

Currently, there are a large number of forms and methods recommended for conducting training sessions in higher educational institutions, however, in our opinion, the form of group training work has been and remains one of the most effective, capable of leading to qualitative changes in the personality constructs described above.

The main goals of the formative experiment described in this study were:

1. The development of intrapersonal emotional intelligence;
2. The development of interpersonal emotional intelligence;
3. The development of the functions of the psychological boundaries of personality;
4. The development of a positive self-relationship.

The formative experiment was organized in the form of group training work. The training program was designed for 40 hours, classes were held once a week, for 10 weeks. Each session was 4 hours long. The experimental group (training participants) was 10 people (6 girls, 4 boys) aged 18-19 years old, the control group consisted of 40 respondents of the same age (20 boys and 20 girls). Subjects were selected into the experimental group based on their interest and desire for self-development. Immediately before the first training session and one month after the end of the program, a diagnostic study of all groups of respondents was conducted using the following psycho-diagnostic methods:

1. V.V. Stolin, S.R. Panteleeva questionnaire of self-reliance;
2. Methods of diagnosis of the psychological boundaries of personality by T.S. Levy;
3. D.V. Lucin's test of emotional intelligence.

The diagnostic study also included a psychological interview with each participant in the experimental group, which was carried out individually. The main purpose of the interview was to fix qualitative subjective assessments and opinions of participants regarding their characteristics of emotional intelligence, psychological boundaries of personality and self-relation.

The thematic plan of the formative experiment (training programs) was a large number of tasks that were divided into basic and additional. Additional tasks of each lesson were:

- Development of the ability to recognize one's and others' emotions;
- Development of ability to differentiate feelings, emotions and thoughts;
- Developing the ability to effectively express your emotions.

This condition is due to the fact that in the described training program the development of the above abilities occurs mainly in group discussions (sharing), and is not the purpose of the developmental exercises on which the program is based.

The main tasks were distributed by the days of the training program as follows:

- Day 1: Development of self-interest and self-esteem;
- Day 2: Development of the non-releasing function of the psychological boundary of the personality;
- Day 3: Development of self-acceptance and self-confidence;
- Day 4: Development of the permeable function of the psychological boundaries of the personality;
- Day 5: Development of self-interest and self-esteem;
- Day 6: Development of the absorbing function of the psychological border of the personality;
- Day 7: Development of the giving psychological frontier of the personality;
- Day 8: Development of a restraining psychological border of a person;
- Day 9: Development of self-interest and self-esteem;
- Day 10: Development of a calmly neutral psychological border of the individual.

The results of the study can be divided into two blocks. First, the obtained average values for each of the methods will be analyzed, as well as the results of the statistical data analysis (Student t-test for related samples for a significance level of 0.05). Then, the main results of a qualitative analysis of changes in the studied personality constructs will be presented.

Before analyzing the results of the experimental group, it is important to clarify that the results of the control group before and after the program did not show significant differences.

Based on the data obtained on the D.V. Lucin test (Fig. 1), it can be noted that on all scales there are various changes in the experimental group before and after the program, however, more significant are reflected on the scales "General level of emotional intelligence", "Understanding your emotions" and "Intrapersonal emotional intelligence". The development trend according to these indicators is confirmed by statistical data processing.

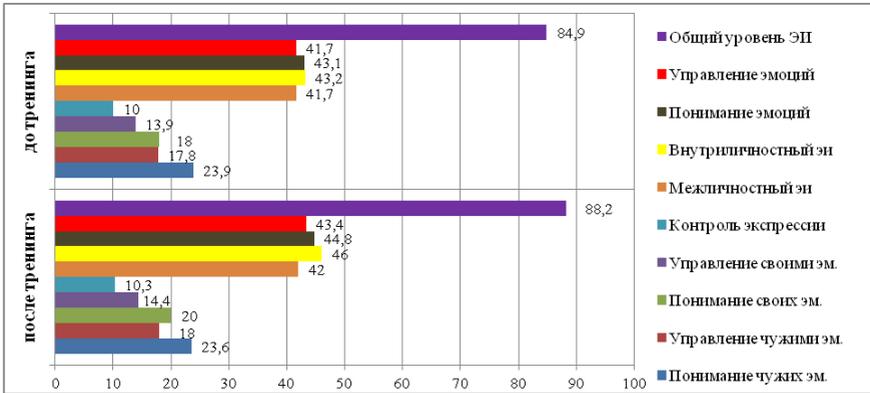


Fig. 1. Average values for the D.V. Lucin test of emotional intelligence

A qualitative analysis of the results of an interview with each subject at the end of the experiment also confirmed the presence of changes associated with these scales. Subjects claim that after participating in the study, each of them began to notice a change in their emotional states, increased differentiation of basic emotions and feelings, and that all subjects became more able to more effectively control and express their "negative" emotional manifestations.

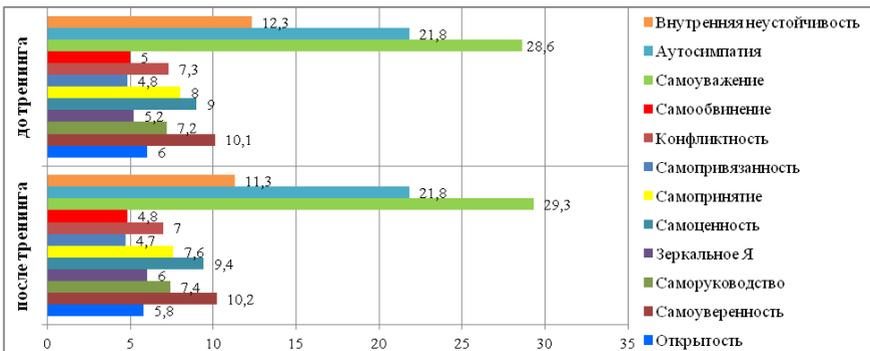


Fig. 2. The average values of the V.V. Stolín, S.R. Panteleeva self-attitude questionnaire

The results obtained by the methods of V.V. Stolín, S.R. Panteleeva (Fig. 2) and T.S. Levy (Fig. 3) do not have statistical grounds to speak of any significant changes, however, the observation conducted throughout the experiment and both interviews (input and output) show that the changes do exist.

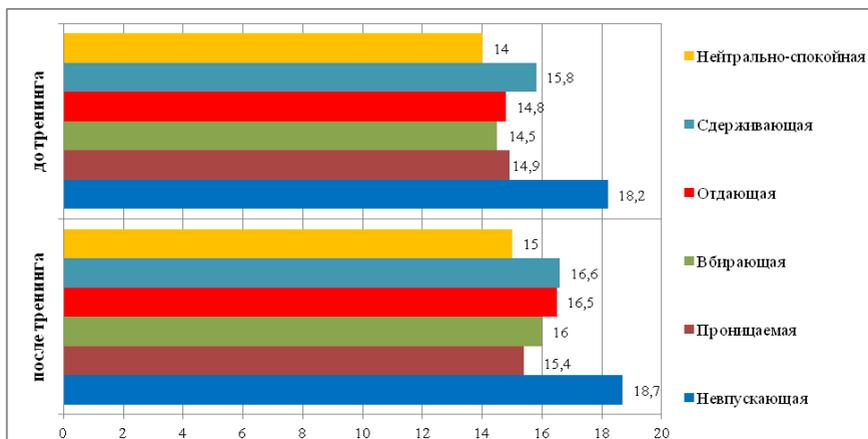


Fig. 3. Average values according to the Levy method of diagnosis of the psychological border of personality

Thus, the psychological border of the personality, emotional intelligence and self-attitude can be developed using the method of psychological training. The results obtained indicate that during the training the functions of the psychological boundaries of the personality change, the level of emotional intelligence, especially its components, “understanding of one’s emotions”, “emotions of other people” and “managing one’s emotions” increases, internal conflict and self-accusation decrease, as well as increased self-acceptance.

Self-reliance acts as the most difficult-to-change construct in the course of this training program. However, there is a tendency to increase self-acceptance by participants.

Group psychological work, and in particular, group discussions of their own and others' thoughts, feelings, emotional states, develop the emotional sphere of participants, teaching them to be careful, attentive and sensitive to themselves and to others [2].

The results of this study consist not only in confirming the hypothesis that the training form of psychological work is able to develop various personal abilities, but also in demonstrating the capabilities of the training form of work for personal development in the educational process. The introduction of training and group forms, for example, in seminars can not only contribute to personal development, but will also make classes for students much more interesting and productive.

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CELTIBERIANS IN THE ROMAN ARMY ON THE RHINE-GERMAN LIMES

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Abstract. The article considers the question of the presence of military units of the Spanish Celtiberian tribes in the Roman military structures on the Rhine-German limes in the I-III centuries. There are no special historical works on this subject both in the world and in Russian historiography. There are only brief references in reference books about various auxiliary units of the Roman army recruited in Spain. On the territory of the limes in the provinces of Lower and Upper Germany, Retsii and Norik served seven auxiliary units of the Roman army, which were formed on the territory of Asturias, a locality in the province of Spain of Tarracon, where the Celtiberians lived.

Keywords: Roman army auxiliary troops; auxilia; Celtiberians Rhine-German limes; Lower Germany; Upper Germany; Raetia; Norik.

In connection with the transition at the end of the XX - beginning of the XXI centuries of a number of domestic historians to the methodological principles of historical anthropology and social history, which orient us to the study of the contribution to the historical processes of ordinary people and small nationalities, such studies are becoming increasingly **relevant** in modern domestic and foreign historiography.

From the time of their conquest by Caesar, the Celtic tribes of Transalpine Gaul began to actively participate in the military enterprises of the Romans, both as part of auxiliary units and legions. In addition to the Gauls themselves, small Celtic subethnoses such as the Celtiberians in Spain, Alpine hill tribes and the Gauls in Asia Minor also took part in them.

Purpose of this article is to identify and describe the military units of the Celtiberians who took part in military enterprises as part of the Roman army in the garrison of the Rhine-German limes in the I-III centuries.

Scientific novelty of study consists in the fact that neither in domestic

nor in foreign historiography the military enterprises of this small ethnic group of the ancient world as part of the Roman army were studied by anyone.

The spread of Roman rule to the Rhine, after the inclusion of all Gaul in the Roman Empire, was an important event in European and world history, affecting the lives of the peoples inhabiting the western part of the continent of Eurasia to this day.

Under Augustus, a division into three provinces took shape in Gaul: Gaul of Cisalpine or "Gaul in toga", Gaul of Transalpine or "Gaul in pants" and Gallia Dalnaya or "Shaggy Gaul". At the end of the 1st century BC. e. under the emperor, a Council of three Gallias was created.

In these territories 6-8 million Celts lived, about a hundred thousand soldiers of the Roman army were stationed, more than 200 thousand Roman colonists lived.

The Romans managed to end internal strife among the Gauls, and their troops protected the civilian population from raids by German gangs.

In the first centuries of our era, Gallia became the richest part and the granary of the empire, became one of the main suppliers of food products. Gallic wines, grains and olive oil were valued in all regions adjacent to the Mediterranean Sea. The commodity handicraft industry was developing, producing saws, axes, swords and numerous (up to hundreds of thousands) ceramic products from Gallic iron. In addition, Gallia exported fine woolen cloth, glass and bronze items.

In difficult times, Gallia more than once became the pillar of the Roman state, but sometimes it itself brought not small excitement.

So, in 152-153 a wave of devastating earthquakes passed through the eastern possessions of the empire. The supply of food from Egypt stopped. In Rome, riots of the starving began. Everyone were rescued by the second granary of the empire - Gaul. Emperor Anthony Pius organized the supply of additional food supplies from Gaul and expanded their distribution for the poor Roman proletarians.

On the other hand, such wealth and independence created the basis for separatist sentiments, and Gaul was repeatedly shocked by anti-Roman revolts.

Therefore, inside Gaul there were constantly vexillations of the garrison of the Rhine-Germanic limes.

During the period of the principate, the word "limes" meant the boundary that separated the territory of the empire from the barbarian tribes, since the Romans believed that the borders of their empire bordered the entire civilized world.

At the beginning of the II century, the Roman Empire, for the most part

of its borders, was forced to reduce its offensive activity and move on to defense. First of all, this was reflected on the borders with the Germanic tribes, where the conquest gave way to the construction of capital defensive fortifications of the so-called German limes.

In those places of the border where there were no natural obstacles that would have made it impassable for barbarians, the Romans erected their engineering structures, such as watch towers, ditches with ramparts filled with water and fortified with a stockade.

Thus, the most important strategic area of the Decumatian fields in the bend of the upper Rhine was protected from enemy attacks by the engineering structures of the German limes at the junction of the provinces of Raetia, Norik and Upper Germany.

Back under the emperor Claudius (41-54), the construction of the castles Unterkirchberg, Ristissen, Emerkingen, Mengen-Ennetach and Irzighofen, which defended the Roman right bank of the Rhine, began to be built.

Under the rule of Vespasian and Titus (69-81), the construction of defensive structures continued, and fortified military roads appeared between the capital Raetia Augusta Vindelicorum, the camp of the XI Klavdiev Legion in Vindonissa and the campsite of VIII Augustov in Agrenator. In the course of these roadworks, fortresses were founded in the vicinity of Offenburg, Waldmössingen, Sülz, Geislingen, Burladingen, Gomadingen, Donstetten, Urspring, Gunzburg, and in the east direction - Nassenfays, Kösching and Aining, which we still have the opportunity to explore.

Domitian (81-96) also did not leave the limes without reconstruction. He moved fortifications from external borders into the province of Raetia in the area of modern Baden-Württemberg and laid down new castles of auxiliary troops. Further, the paths headed to Cannstadt and to the north towards Neckar and Heidelberg and connected with the paths south of Mogontziak, on which auxiliary camps appeared near the modern towns of Benningen, Valheim, Böckingen and Wimpfen, which were finally equipped in the second half of the 90s.

In the late 90s, under the leadership of the provincial governor, the future Emperor Trajan, the construction of militarized objects continued in picturesque places on the right bank of the Rhine in the area of the Mogontziac legion fortress, where Gnei Pinarius Klement, proconsul of Upper Germany, laid castellas in the valleys for auxiliaries in the mid-70s Main and Nydd in the vicinity of the modern settlements of Mainz-Kastel, Wiesbaden, Hofheim, Frankfurt, Frankfurt-Domhügel, Högst, Okarben and Friedberg. These defenses were intended for auxiliary units, and sometimes the vexillations of legions. Buildings were strengthened by earthen

ramparts, ditches with water and wooden vertical gouges. Under Trajan, advanced posts near Arnsburg, Butzbach, Capersburg, Saalburg, Zugmantel and Marienfels were added to them.

In the early 90's, the Romans were able to gain a foothold in the fertile area of the Vetter River in the southern foothills of Taunus. Military structures were built in the towns of Echzel, Oberflorstadt, Heldenbergen, Mittelbuchen and Salisberg.

An important milestone in the construction of limes was the 90s, when the future great emperor Mark Ulpuy Trajan was the governor of Upper Germany. Even after becoming emperor in 98, he did not go to Rome, and for another year he supervised the work on improving border fortifications. He pushed the eastern part of the border near Wetterau, building castellas in Markobel, Rüklingen and Grossscrotzenburg, where, in addition, they built a stone bridge over the River Main. This made it possible to build a fifty-kilometer road along the river, thus connecting a series of observation towers of legionary camps in Stockstadt, Nidenberg and Obernburg with Wörth. Then a fortified eighty-kilometer military road headed to the wooded Odenwald foothills.

In the next ten years, every eight hundred meters there, Trajan ordered the construction of wooden towers for observers, fortifying them with earthen ramparts. Thus, a ninety-kilometer defense line was equipped with fortifications in Seckmauern, Lutzelbach, Filbrunn, Oilbach, Würzberg, Hesselbach, Schlossau, Oberschaydenthal and Neckarburken.

Emperor Hadrian (117-138), known for his restlessness and passion for traveling the empire, went on an inspection trip in winter 121 to Raetia and Lower Germany. Under his supervision, the northern border, ranging from headdesdorf fortifications to wimpfen along the banks of the Neckar River, over two hundred kilometers, was fortified with polysadas of thirty-centimeter oak piles three meters high.

During the reign of Hadrian, old fortifications were repaired everywhere and new ones built. The fortifications built by previous emperors were expanded and surrounded by stone walls and towers. New fortresses were immediately placed on stone pedestals or built stone.

In 159-165 under Emperor Antoninus Pius the Pious, new fortifications were built only of stone. He, as before Traian, pushed the borders of Upper Germany to the east another thirty kilometers from the old border near Odenwald and Neckar. The new border from Miltenberg to Lörch and in Raetia was supplied throughout with stone tower structures, a six-meter ditch and a four-meter shaft, not only in Raetia, but throughout the Upper German Limes.

Finally, the limes took shape under the emperor Komode (180-192),

in which on the eastern borders of Raetia the wooden polisades were replaced by four-meter-thick stone walls one meter thick. Erected on a line 175 km from the Lerhat structures on the Rhine to the Gingheim structures already on the Danube, these fortifications gave the German limes a complete look.

Given the importance of Gaul as the granary of the Empire and the threats posed by the bordering Germanic tribes, the Roman government concentrated about half of its legions and a large number of auxiliary troops on the Rhine limes.

Legions: IIII of Macedon, X Twin, August II, XIII and XIV Gemini, XVI Firstborn, I German, V Zhavoronkov, XX Valeriy Victorious, XXI Swift, VIII Spanish, VIII August, XI Claudius the Pious Faithful, I Minervin, XII Firstborn, XII Firstborn, Gemini, XXX Ulpiansky [1, p. 38-40], IIII Soransky [ILS. № 2226], III Gali [ILS. № 2313].

Auxiliary units: cohors I Flaviae [ILS. № 2119], cohors VIII Breucorum [ILS. № 2559], cohors I Ituraeorum [ILS. № 2562], cohors I Thracum [ILS. № 2569], cohors I Sequorum et Raurorum [ILS. № 2584], cohors I Flavia Damascenorum milliaria equitata sagittariorum [ILS. № 2585], cohors IIII Aquitania equitata civium Romanorum [ILS. № 2602], cohors II Gallorum [ILS. № 2603], cohors XXIII voluntariorum civium Romanorum [ILS. № 2604], cohors I Germanorum Philippianae [ILS. № 2605], cohors I Helvetiorum [ILS. № 2613], ala Scaevae [ILS. № 2490], ala Gallorum Pertiana [ILS. № 2491], ala I singularum pia fidelis civium Romanorum [ILS. № 2492], ala Sulpiana [ILS. № 2502], ala Agripiana [ILS. № 2503], ala Claudia [ILS. № 2504], ala I Flavia [ILS. № 2507], ala Affrorum [ILS. № 2508], ala Asturum [ILS. № 2509], ala Bosporanorum [ILS. № 2510], alae Augustae Ilyraeorum [ILS. № 2511], ala Nori|corum [ILS. № 2512], ala Pannoniorum [ILS. № 2513], ala Vocontiorum [ILS. № 2536], numerus Cattarensium [ILS. № 2626], numerus exploratorum Divitiesium Antoninianorum [ILS. № 2626], numerus Brittonum Triputiensium [ILS. № 2624].

Among these units were units formed in Tarracon Spain, where the Celtiberians lived.

Cohors I Asturum (The first Asturian cohort) was formed from residents of the Asturian district of Tarracon Spain, the Celtiberians from the clan of the Asturians. The formation of the cohort probably dates back to the time of the reign of the Julius-Claudius dynasty. At the beginning of the II century, a unit with this name was located in the castell of the Roman region of Norik in modern Switzerland at the source of the Danube river in the Alpine mountains near Lake Baden, where a part of auxilia was sent back when Flavius Vespasian was at the top of the imperial power. The

fortification in the form of a castle was probably built by the forces of the cohort itself, and therefore received the name in its honor - the Castellum of Asturias.

Cohors I Asturum Equitata (I horse cohort of asturs) - one of the earliest auxiliary units recruited from Celtiber volunteers from the region of Asturias in Tarracon Spain. Mentioned in epigraphic monuments from the beginning of the I-II centuries (14, 90, 116, 134). From then until the end of antiquity it was located in the castle of the province of Upper Germany. Some of its units periodically took part in campaigns outside the provincial deployment.

ILS 2575. Freioverus | Veransati f. | cives Tung., eq. ex | coh. I Astur., an. | L, stip. XXII, h. s. e., | t. f. i. H. f. c.

Prope Moguntiacum ad vicum Zahlbach rep.

Cohors II Asturum equitata (II horse astrology cohort) - a mixed horse and foot military unit. As the epigraphic monuments appear, typed in Tarracon Spain, where the Celtiberians lived, during the reign of emperors from the Flavian dynasty and was sent to a camp near the modern city of Bogengraven in the then province of Lower Germany.

During the uprising of the impostor Saturnin after the death of Emperor Vespasian, the cohort, together with other units deployed in the province, opposed the usurper on the side of supporters of the emperor Domitian, who, in gratitude for his loyalty, awarded the unit the title of "Pious Faithful" (*pia fidelis*). The cohort camp until the end of the 1st century was a castell in the vicinity of the modern town of Brol. At the beginning of the second century, the unit was relocated to the Roman province of Britain, where it remained until the end of antiquity.

ILS. № 2711. M(arci) Valer(erio), M(arci). f(ilio) | Gal(leriano) Propinquo | Grattio Cereali | Edetano¹, flam(ini) p(rovinciae) H(ispaniae) c(iterioris), | cui honores civitatis | suae resp(ecta) ac genio | lusit(aniae), adlecto in | equite a T(ito) imp(eratori), praef(ecti) | fabr(orum) bis, praef(ecti) coh(ores) | secund(um) Astur(ianum) in | Germ(aniae), trib(uni) leg(io) V Mac(edonica) | in Moesia, praef(ecti) alae | Prhygum (*sic*), item praef(ecti) | alae III Thracum in Syr[*a], | p(rovinciae) H(ispaniae) c(iterioris).

Cohors II Hispanorum peditata. The second Spanish foot cohort was formed in 90 of the inhabitants of the region of Asturias in Tarracon Spain and sent to the Castell Traectum on the German limes in the Roman province of Lower Germany. The cohort included 480 Celtiberian foot soldiers [4].

Cohors [prima] Flavia Ulpia Hispanorum milliaria equitata civium

¹Celtiberian people in Tarracon Spain.

Romanorum. The first thousandth Flavian Ulpiana horse cohort of Roman citizens was formed from Celtiber veterans of various Spanish military units who already had Roman citizenship, obtained as a result of honorary resignation (*honesta missio*) at the end of their first 25-year service under the Flavian and Antonin dynasties. Cohort totaled one thousand forty soldiers: 800 foot soldiers and 240 cavalry. It began its military career in Lower Germany, and at the beginning of the II century was called up by Trajan to participate in the Dacian wars, where it remained. [2, p. 141; 5, p. 133].

Cohors [prima] Hispanorum [quingenaria peditata] pia fidelis. The first foot of five hundred soldiers, the Spanish Pious Faithful Cohort, was specially recruited at the turn of the I-II centuries from the Celtiber mercenaries to participate in the Dacian Wars Trajan. Before the start of the Dacian campaign, it was deployed in one of the castells in the province of Upper Germany. During the conquest of Dacia, it received honorary titles and remained there until the end of the Roman occupation (III century) [2, p. 136; 5, p. 124].

Ala I Hispanorum Auriana (First Spanish ala Aurianov). The purely cavalry unit originates in the Asturian region of Tarracon Spain, inhabited by Celtiberians. Formed during the period of the reign of Gaius Julius Caesar Octavian Augustus, the first Roman emperor, the granddaughter of the dictator Guy Caesar. Its name was acquired from the clan brand of its founder and first commander, a native of the Celtiberian clan Auriev. Hence the "Auriana". Since its foundation, it has been based on the Rhine Limes. During the time of Tiberius-Claudia, it was relocated to the Danube and located in a castle near the legionary camp at Aquinas, where it remained until the outbreak of the civil war of 69-70. During the events of that war, Ala fought along with Vespasian. After the victory of Vespasian, the unit entered the Raetia garrison for some time, and then was returned to its old castell near Aquinas. After the reign of Trajan at the beginning of the II century, the unit was again relocated to Raetia, where it remained until the end of the century. Camp Weisenburg was designated for her. From here, it undertook campaigns beyond the Danube during the Markoman Wars. Information about it disappears at the end of the 3rd century during the civil wars of "soldier emperors" [6, p. 106-107].

So, by the end of the II century, the Rhine-Germanic limesus was a unique border fortification for that period, including an extensive network of stone road communications with bridges, stone walls, watchtowers, six-meter ditches up to three meters deep and ramparts with oak policades for cavalry patrols from thirty-centimeter pillars up to three meters high. At these structures, there were constantly reconnaissance groups of 5-8 aux-

ilaria, which transmitted an alarm to the main border forces located near the border. There, on a regular basis, horse and foot auxilia and legion bills from one hundred to two hundred warriors were housed in camps and castells.

Among them, seven auxiliary units of the Roman army, which were formed on the territory of Asturias, a locality in the province of Tarrakon-skaya Spain, where the Celtiberians lived, served on the territory of the limes in the provinces of Lower and Upper Germany, Raetia and Norik.

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Abbreviations

ILS - Desau H. Inscriptiones Latinae selectae. Ed. 2. Berolini, 1954-1955. Vol. I-IV.

CELTS AND ROME: GALATIANS AND THE ROMAN ARMY

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Abstract. Based on the analysis of narrative sources data and the information available in the scientific and historical literature, the article examines the formation and evolution of such a Celtic subethnos as the Galatians on the territory of the Asia Minor Peninsula and analyzes their relationships with local ethnic substrates, as well as contacts with Roman conquerors.

These relationships evolved from purely hostile, which were accompanied by robbery and violence, to the phenomena of syncretism and assimilation, up to their transformation into gallogreks-gallates. Their contacts with the Roman conquerors also went from hostile to the inclusion of the Galatians in the Roman military system.

There are no special historical studies that posed similar tasks in world and domestic historiography.

Keywords: Roman army, Celts, Gauls, Galatians, Anatolia, Gnei Pompey the Great, Deuterian.

In connection with the transition at the end of the XX - beginning of the XXI centuries of a number of Russian historians to the methodological principles of historical anthropology and social history, which orient us to the study of the contribution to the historical processes of ordinary people and small nationalities, such studies are becoming increasingly **relevant** in modern domestic and foreign historiography.

After the formation of the Celtic linguistic and cultural community in northwestern Europe in the VI-II millennium BC, at the beginning of the V century BC, the Celts begin to migrate along the Eurasian continent, taking root in the south of the British Isles as Britons and brigants, in the north of the Iberian Peninsula, like the Celtiberians, in the west and southwest of Europe, like the Gauls and Alpines, and on the peninsula of Asia Minor, like the Galatians.

Having instilled fear in the territories of Northern Italy, Macedonia and

the North Balkan regions, Celtic roving units crossed the Bosphorus Straits and moved to the central part of Anatolia. The Hellenic population they began to call the regions of Asia Minor occupied by them Galatia. Since almost 200 years, foreigners have been the main force threatening the safety of local residents.

The purpose of this study based on an analysis of narrative data and the available scientific and historical literature, is to consider the formation and evolution of such a Celtic subethnos as the Galatians on the territory of the Asia Minor Peninsula and to analyze their relationships with local ethnic substrates, as well as the evolution of contacts with Roman conquerors.

The scientific novelty of this study is that there are no special historical studies that pose similar problems in world and domestic historiography. The works known to us are mostly factual, descriptive.

The Celtic invasion of Anatolia had a number of features, for the king of Bithynia Nycomed invited, providing ships, ten thousand Celts to relocate to Asia Minor, thinking that they would help him in the dynastic struggle with his brother Zipoit, and also repel the invasion of Bithynia by the Seleucids.

With the help of Celtic mercenaries, Nycomed dealt with his brother without any problems and became the sole ruler of Bithynia. The Galatians, having divided into three divisions on the basis of tribal grounds (trocma, tolithobogs and tectosagi), began to plunder the Asia Minor territories, ruining city communities, taking their inhabitants captive, taxing the inhabitants of the choir.

Since the invited tribes of tolistobogii, Torkma, and tectosagus took their wives and children with them, the total number of migrants was about twenty thousand. Tolistobogii choose to settle down by Ionia, the Torkmans settled on the coast of Gelespont, the tectosagi stationed on the banks of the Galis River [5. XII, IV. 10, V. 1-4].

Residents of Miletus and Ephesus, Kizik and Ilion, Priena and Eritrea, the largest Hellenic colonies in Asia Minor chose to pay off the robbers with cash indemnities.

Then the Seleucid king Antiochus I decided to curb the appetites of the robbers, and at the same time put control of the Bithynian kingdom. In 275 BC he inflicted a crushing defeat on the Galatians in the famous "battle of the elephants," mentioned by Appian and Lucian of Samosata. The Gauls, frightened by the war elephants of Antiochus I who had not been seen before the village, overturned the cavalry into their own infantry and fled in disarray, but still managed to maintain their possessions in the center of Asia Minor [1. 65; 3. 9], and for several dozens of years they terrorized the local population, having located their bases in the central part of the pen-

insula north of the Phrygian territory in the middle reaches of the Sangaris and Galis rivers.

Over time, the Celtic militancy began to decline, and they began to quickly assimilate with the local population, more advanced in terms of social evolution. Ancient authors noted that when they entered into mixed marriages with the Greeks and Phrygians, they gradually turned into gallogrecs [2. XXXVIII].

This was the second feature of the advance of the Celts eastward. If in the early periods the Celts brought their culture to the occupied territories, then in Asia Minor the processes of assimilation took on exactly the opposite character.

For another 46 years, the Gauls, or as locals now began to call them, the Galans robbed Anatolia. Only the king of Pergamon Attal I, who refused to pay tribute to them and defeated them under the walls of Pergamum, could finally stop their atrocities [7. P. 98].

Around 229 BC The king of Pergamon succeeded in ousting the Galatians to the north of Phrygia in the valley of the Sanagarius and Galis rivers, where the Celts formed their kingdom of Galatia, which took shape as a triple-tribal union. According to Strabo, the three Galatian tribal unions were each divided into four tribes, and their twelve leaders in Greek sources were called tetrarchs (Greek: τετραρχίαι).

Each tetrarch had a subordinate judge of the tetrarch tribe and military leader. The tetrarchies created a general council of 300 noble representatives [5. XII, IV.101; V.1-4].

Local kings were ambivalent to the Galatians. On the one hand, they tried to resist them when the foreigners' appetites threatened their own possessions, on the other hand, they constantly attracted Galatian mercenary military units in the fight against their neighbors.

According to the Roman writer Justin, not a single conflict in Asia Minor was complete without the participation of Galata mercenaries from one side or the other.

So it was under Tsar Bithynia Nycomed I, who invited them to the territory of Anatolia, providing ships for crossing the Bosphorus. Later, his descendants Zeela and Prusius I attracted Galatian warriors to fight the Seleucids and Pergamums. Other local kings of Asia Minor were no exception. So the Galatians made up a significant part of the army of Antiochus III, and when the army of the Roman consul Lucius Cornelius Scipio in the winter campaign of the Syrian war of 190–189 BC defeated the Seleucid army under Magnesia, they did not recognize the Roman conditions of the peace treaty with Antiochus and took a tough anti-Roman position, than

brought the wrath of the new Roman consul Gnei Manlius Vulson, who replaced Scipio in Asia Minor, who arrived to make peace with Antiochus III.

In fact, Vulson was dissatisfied with the peacekeeping tasks entrusted to him and, referring to the hostile position demonstrated by the Galatians, and wishing to decorate gain the laurels of the winner, and to strengthen his position in the army with solid military booty, without notice to the Senate decided to seize Galatia.

The Galatians built a fortress on top of Mount Olympus and, believing that nature itself made their camp impregnable, did not expect a Roman assault. The consul, having secretly conducted reconnaissance, led the legions straight from the march to the enemy's position and won, destroying 10 thousand enemy soldiers and capturing more than 40 thousand inhabitants. The Romans, sending prisoners to the rear, continued on towards the Galatian capital.

Not far from Ankira, the Galatian envoys arrived in a Roman camp, supposedly to negotiate the conditions of surrender. However, as it turned out later, they wanted to delay the assault on the capital, and have time to transport civilians and treasures to the opposite bank of Galis. At the same time, an attempt was made on the consul and his lictors on the way to the negotiating place, and only the unexpected help of the Roman foragers detachment saved Manlius Vulson from captivity and death.

The battle unfolding a day later was reminiscent of the previous battle: the Galatians were located on two hilltops, the Romans, using their advantage in archers and velits, went to storm the enemy's positions up the hill-sides, and the Galatians, unable to withstand the intensive firing of darts and bows, rushed to run, seeing the approaching cohorts of legions. The victory of the Romans was complete.

As a result, the Galatians paid off with gold, which they accumulated over a century of robberies of the Asia Minor population, which enriched Manlius Vulson himself, as well as his soldiers and commanders, so that upon returning to Rome they were put on trial for unauthorized military operations and barely managed to justify themselves.

In fact, the control of the defeated Galatia was taken by the king of Pergamum Eumenes II, who became an ally in this unauthorized enterprise of Manlius Vulson. So from 183 to 179 BC, the Galatian soldiers served in the army of Eumenes II and fought against King Pontus by the name of Farnak I. Only in 168 BC, under the guidance of a certain Solvetius, did they rise up against the rulers of Pergamum and not only expelled them from their country, but also invaded the borders of the kingdom of Pergamon. The intervention of the Romans saved Eumenes

II from defeat, and by decision of the Senate of Galatia, freedom was returned.

In 86 BC, Galatia was again conquered, this time by King Pontus Mithridates VI Eupator, who, having conquered almost the whole of Asia Minor, invited the Galatian tetrarchs to a feast where they were all killed. The management of Galatia was entrusted to a governor by the name of Evmakh. However, the leader of the Tolistobogii Deiotar revolted against the Pontians and expelled them from the country. At the same time, the Romans defeated Mithridates. According to the Dardanian world of 85 BC, Mithridates lost power over Galatia, and Deiotar was recognized as a tetrarch of the tolistobogii tribe.

When, in 74 BC, in the next Mithridate War, Deiotar sided with Gnei Pompey, the Roman commander expanded the Galatian possessions after the end of the campaign in 64 BC, giving up Armenia Minor, Paflagonia and part of the territories of the Pontic kingdom under their jurisdiction. Gnei Pompey later helped Deiotaru conquer the Trocms and began to consider him as the supreme tetrarch of the Galatian lands.

In the Third Mithridates War, 63/62 BC, Deiotar was again in the camp of the victor, and Pompey the Great, who favored him, declared him a friend and ally of the Senate and the people of Rome and appointed him king of all the Celts of Anatolia.

Using the experience of seconded officers and veterans of the Roman army, Deiotar created an army on the Roman model. Already in 48 BC, this army numbered 12 thousand infantry and 2 thousand cavalry [11. P. 25-26].

Cicero mentions a figure of 39 cohorts [14. P. 202-203].

In Caesar's civil wars with the Pompeians 49–48 BC, Deiotar sent 300 cavalymen to Pompey to reinforce Porspey, and after the defeat and death of his patron he began to curry favor with Caesar.

Already in 47 BC, Galatian troops fought in the army of the legate of Caesar Gnei Domitius Calvin with the army of the son of Mithridates VI Farnak II, who tried to recapture his father's possessions in Anatolia. However, the battle at Nikopol ended in defeat for them.

Then Gaius Julius Caesar, using his Gallic experience to pacify the local population, formed a legion from the surviving Galatians with the granting of Roman citizenship rights, which fought on his side in the battle of Zela [11. P. 67], where Farnak was defeated.

Although Caesar forgave the Galatian king, he significantly reduced the territory of his kingdom, giving the tetrarchy of trocms to the rule of Mithridates of Pergamon, and Armenia Minor to Ariobarzan III, who reigned in Cappadocia. Only in 44 BC, when Caesar was killed by the conspirators,

did the triumvir that ruled in the East mark Anthony restore the Galata kingdom in the former territories.

In civil strife between the triumvirates of the second triumvirate and the Republicans, Deiotar helped the latter with cash, food and military units. However, his son-in-law and the commander of the Galatian units of Aminta in 42 BC before the battle near the town of Philippi switched to the side of Mark Anthony, which allowed Deiotar to restore friendly relations with him and maintain his possessions in Anatolia.

In 40 BC after the death of Deiotar, his throne, Mark Anthony, transferred to Aminte, increasing his possessions at the expense of the territories of Cappadocia, Pamphylia, Lycaonia and Pisidia.

Amynta provided his own, created by Deiotar on the Roman model of the troops of Marc Anthony for a campaign in Parthia in 36–34 BC, and to fight Octavian. However, in 31 BC, on the eve of the battle of Actium, Aminta with the rest of the Roman legions of Mark Anthony moved to the opposite camp [4. 61-63].

This act rehabilitated Aminta in the eyes of Guy Julius Caesar Octavian and he forgave him for the capture of Isavria and Northern Cilicia, as well as the insidious murder of the owner of these territories, Antipater from Derba.

Amynta launched active military operations to pacify the homonads who carried out pirate raids on the lands of Cilicia and Pamphylia, but in 25 BC, during the assault on their main base, Cremna was ambushed and killed, after which the Romans turned Galatia into a Roman province of praetor rank, with the residence of the governor in the capital city of Aminta Ankir.

The Galatian legion, formed by Caesar, the provincial proprietor Mark Lollius officially entered the register of Roman legions of Augustus under the number XXII, since at that time the last legion XXI the Swift was listed there and assigned him the honorary name in honor of Deiotar - legio XXII Deiotariana [8. P. XX].

Probably, at that time Emperor Octavian determined his permanent deployment in Egypt in a camp near Alexandria of Egypt, where he remained until the second quarter of the II century, together with the III Cyrenaic Legion. The first epigraphic monument with the name of the legion, discovered by archaeologists in the choir of Alexandria in the town of Nikopol, dates from the eighth year of the I century AD [15. P. 24].

XXII Deiotaro Legion took part in most of the military campaigns that the Romans waged in the east.

Veksillations (landing forces up to the cohort, since the cohort was a miniature legion) of the legion actively participated in campaigns and bat-

tles outside the province of deployment. So in 39 soldiers of the Legion were sent to the aid of the troops of the Emperor Caligula, preparing to march on the Zarein Germans [15. P. 31]. In 63 legionnaires of XXII Deiotar went on a Parthian campaign under the command of Corbullan [13. P. 64-68].

In 70 groups from the legionnaires of the Egyptian garrison as part of four cohorts participated in pacifying the next unrest of the Jews under the leadership of Guy Eternius Fronton [13. P. 82]. In 115, the situation repeated itself. The Jewish diaspora of Egypt and Cyrenaica revolted. Since the uprising was very massive, the forces of the Egyptian garrison requested help from Rome, and those who arrived in 116 vexillations of the Danube army led by Quintus Marcius Turbon helped restore, not without difficulty, order, and only a year later by the end of summer 117 [9. P. 68].

There are several versions about the end of the history of the XXII Deiotar Legion.

Since the last evidence of the presence of the legion in Egypt dates back to 119, some researchers believe that it was disbanded for refusing to suppress the next (121/122) Jewish rebellion in Alexandria, which in our opinion is unlikely [10. P. 99-100].

A number of historians, referring to the story from the "Chronography" of Sextus Julius Afrikan that the Pharisees had destroyed some "Roman phalanx" by poisoned wine in 123, see this as the death of Legion XXII Deiotaro, which is also very doubtful [11. P. 225-232].

More likely is the version that in 132 the legion was sent to Palestine to suppress an incredibly large Jewish uprising led by Bar Kokhba and was defeated there by the rebels [12].

Thus, the relations of Celtic-speaking tribes that came to the territory of Asia Minor with local ethnic substrates evolved from purely hostile, which were accompanied by robberies and violence, to the phenomena of syncretism and assimilation, until their transformation into gallogreks-gallates. Their contacts with the Roman conquerors also went from initially hostile to the inclusion of the Galatians in the Roman military system, and complete romanization through the creation of national military units.

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**THE FORMATION OF THE INFORMATION SPACE AS A FACTOR
OF SCIENTIFIC DEVELOPMENT (ON THE EXAMPLE OF RUSSIAN
HISTORICAL SCIENCE OF THE XVIII CENTURY)**

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Abstract. The article shows the role of questionnaires and academic discussion in the formation of the national scientific and information space of Russia in the XVIII century, the active participation of statesmen and scientists in this process, and the strengthening of the importance of the Academy of Sciences. Questioning and discussion retain their positions in the arsenal of the means of scientists and the forms of their activity in our time.

Keywords: information space, XVIII century, St. Petersburg Academy of Sciences, Ya.V. Bruce, I.K. Kirilov, V.N. Tatishchev, M.V. Lomonosov, G.-F. Miller.

In the XVIII century, the state and scientists begin an active scientific knowledge of Russia, expeditions were organized, and historical-geographical and historical-economic descriptions of individual regions are carried out. They were carried out by statesmen, among whom the most prominent became famous Russian scientists: I.K. Kirilov, V.N. Tatishchev, P.I. Rychkov and others. They all understood that, firstly, history and geography were inextricably linked, and it was not by chance that the historical description was closely connected with the geographical description. And secondly, both officials and scientists saw the most important state task in describing the country, the solution of which is absolutely necessary for the benefit and prosperity of Russia, and this should be addressed. In practice, for the collection of materials in capitals and provinces at first there was only one mechanism that could be set in motion - the state one. At the same time, the St. Petersburg Academy of Sciences played a special role, which demanded and sought the corresponding decrees from the Governing Senate. Such decrees were necessary, for example, for sending out

a questionnaire. At the Academy of Sciences, the remarkable scientists M.V. Lomonosov and G.-F. Miller, who improved data collection, developed questionnaires, wrote historical texts.

The practice of questioning the regions was instituted under Peter I. In 1724, questions were sent, the answers to which should have come from the field, and it was expected that they would serve as the basis for the preparation of a geographical description of Russia. Peter I entrusted the compilation of such a description with his associate, Field Marshal, President of the Berg and Manufactory Colleges, Yakov Vilimovich Bruce. So, they called in Russia James Daniel Bruce (1669-1735), a Russian statesman, a representative of the Scottish clan Bruce, who settled in Russia in the middle of the XVII century. Jacob Bruce himself, also called "Russian Faust" and "Russian da Vinci," was born in Moscow [1]. Bruce instructed V.N. Tatishchev. According to Vasily Nikitich, this assignment required a lot of intensive and lengthy work, however, it was the source of energy that fed Tatishchev's work on his "Russian History". Tatishchev wrote about Count Bruce with the greatest reverence, as a beginner, a man of high intelligence in the sciences, an skillful, zealous and hardworking "prospector" to the benefit of Russia in all circumstances. He credited Bruce with his translations of the necessary "to knowledge and benefit" books from English and German into Russian [2, p. 20-21].

Vasily Nikitich Tatishchev (1686-1750), to whom Ya.V. Bruce later became an iconic figure in Russian historical science, who sees in Tatishchev his "father", "ancestor", the first historian of the Russian Empire. After the death of Tatishchev, his main multivolume work "Russian History" was carefully read in both capitals (Petersburg and Moscow) and the provinces. This fundamental work had a profound impact on the minds of Tatishchev's younger contemporaries and descendants, and she herself became a factor in the development of the scientific space of the Russian Empire - conceptual, historiographical, and source.

The views of Tatishchev contributed to the formation of historical representations of I.N. Boltin (1735-1792), in the critical works of which the authoritative historian V.O. Klyuchevsky (1841-1911) saw the origins of the most promising directions in the development of Russian historical science of the XIX century. Also noteworthy is the fact of writing a preface to the Lomonosovs' "The Russian History" by Tatishchev M.V., at the request of the author.

Obtained in the middle and second half of the 1720s, on behalf of Bruce, the data from the field were processed and summarized not by Tatishchev, but by the chief secretary of the Senate Ivan Kirillovich Kirilov

(1695-1737). His name is better known to geographers as the compiler of the first atlas of the Russian Empire of 1726-1734 [3, p.20], the founder of Russian economic geography. If the name of Tatishchev is associated with the foundation of Yekaterinburg, which grew out of a factory and a fortress, then the founder of Orenburg (1735) was Kirilov, a Russian geographer, historian, and statistician.

In 1734, for scientific and practical purposes, V.N. Tatishchev sent out his own questionnaire, in which he included questions of a historical, ethnographic, geographical and statistical nature. This first edition of Tatishchev's questionnaire, which he subsequently improved, was published in 1985 by A.B. Kamensky [4, p. 38-41].

Being himself a major administrator (from the autumn of 1734 Tatishchev was the Head of the Ural mountain state-owned factories), he addressed his profile to governors, generals, and "other ranks of the top graders" [4, p.40]. They were required information about the peoples, their place of residence and customs; features of the names and origin of cities (time and reasons for foundation), the number of churches and houses (treasury and wooden), streets and malls, descriptions of churches and monasteries. Great importance was given to the nature, structure of trade and its main directions, as well as the importance of certain crafts in a particular region. A special question of the questionnaire drew attention to the situation of local residents: "What kind of contentment and disadvantage do they have, or what do they get what they need from" [4, p.40].

Tatishchev sent his questionnaire to the Academy of Sciences for discussion, but the active Tatishchev did not wait for comments from the academicians, and the current administrator did not have time. He sent questions to the provincial offices of Siberia and the Kazan province himself. Tatishchev did not satisfy the answers that began to come in 1735, and in 1736 he prepared a more detailed questionnaire. In the 1730s-1750s, Tatishchev used the materials he collected when writing his historical and geographical works.

Thus, in the XVIII century, questionnaires became an important form and method of scientific and organizational work, and contributed to the development of methods and skills for collecting data, improving the technique of describing specific territories. Questionnaires were that important primary material, on the basis of which their subsequent generalization and systematization was carried out, a scientific vision (concept) was developed and the work on compiling historical-statistical and historical-geographical descriptions was coordinated. The origins of the questionnaire were outstanding scientists. In compiling the questionnaires, they set

themselves broad scientific and applied goals. Started by I.K. Kirilov and V.N. Tatishchev direction was continued M.V. Lomonosov and G.-F. Miller. They also participated in the preparation and distribution of questionnaires to the field to obtain the necessary information.

The most accurate description of the great Russian encyclopedist scientist - Mikhail Vasilievich Lomonosov (1711-1765), whose name is honored by Moscow State University, was given by the great Russian poet Alexander Sergeyevich Pushkin (1799-1837). Pushkin had "the property with which not all historians are gifted" - "a true understanding of history" [6, p. 108]. At one time, a close friend of the poet, Prince Pyotr Andreyevich Vyazemsky (1792-1878), drew attention to this circumstance. Vyazemsky was also a poet, a well-known literary critic, but not only, but also a historian, memoirist, statesman and public figure [7]. A.S. Pushkin described the encyclopedic scientific and professional activity of M.V. Lomonosov deeply and briefly. For us, the sequence in which Pushkin listed Lomonosov's classes: historian, rhetorician, mechanic, chemist, mineralogist, artist, and poet was especially important. Lomonosov studied history for many years, beginning in 1734. The result of his historical works was "Ancient Russian History from the beginning of the Russian people to the death of Grand Duke Yaroslav the First or 1054."

Both Tatishchev and Lomonosov understood the interconnectedness of Russian and world history, and believed that it would not be possible to "clarify" one without the other. Russian scientists well knew foreign historiography. They read Samuel von Pufendorf (1632-1694), Treyer Gottlieb-Samuel (1638-1743), they knew the Chronicle of Titmar of Merseburg (975-1018), which covered the history of the Polabian Slavs in the X-XI centuries. They knew the works of Polish and Czech chroniclers of the XVI century, the works representing Italian and French historiography.

M.V. Lomonosov took an active part in the work of the Geographic Department of the Academy of Sciences. His most important work was the "amendment of the Russian Great Atlas", which was published in 1745 in Russian and Latin and consisting of 19 special and one general map [5, p. 190, 193]. For this purpose, a questionnaire was developed to collect material from the field. After discussing the Lomonosov questionnaire by academics, Mikhail Vasilievich expanded it. He was interested in all sectors of the economy: industry and agriculture, trade and transport, crafts [4, p.40]. In 1760, together with a special decree of the Senate, a questionnaire printed in the amount of 600 copies was sent out by the Academy of Sciences in provinces. Already after the death of Lomonosov in the 1780s, his questionnaire was used to describe individual areas, so the scientist's

train of thought worked for a historical perspective. As M.V. Lomonosov himself liked to say, “so that the people will continue to benefit” [5].

Miller, in all likelihood, knew the contents of Tatishchev's questionnaire. Miller's questionnaire was sent out by the land gentry cadet corps. Materials sent from Siberia in response to Miller's questionnaire were not published. One of the first signs was the information posted on the Internet by the Municipal budget institution “Archive of the city of Novokuznetsk” in the Kemerovo Oblast [8]. This source describes in detail the state of the city of Kuznetsk in the XVIII century.

Gerhard Friedrich Miller (1705-1783) was a native of Westphalia. He came to Russia young in 1727 and here he found his second homeland. Miller accepted Russian citizenship after living in Russia for 22 years. In 1748, Miller was appointed court historiographer. He left a noticeable mark in the development of scientific Russian history, archival affairs and education, he did a lot to preserve the scientific heritage of V. N. Tatishchev, to whom he was respectful. Miller participated in expeditions of the St. Petersburg Academy of Sciences, explored Siberia, and studied local peoples. In the 16 Siberian archives of Tobolsk, Kuznetsk, Nerchinsk, Berezov and others, he identified materials, made copies of acts and other documents, mainly of the XV-XVII centuries, put in order the archives he visited. The scientist returned to Petersburg with his famous "Portfolios ...". Following the results of the expedition, Miller wrote the “History of Siberia”.

Another important form and means of intensifying the exchange of thoughts in the XVIII century is a scientific discussion. Among the first is a long scientific discussion that unfolded within the walls of the Petersburg Academy of Sciences from October 1749 to June 1750. It has become a historical phenomenon that has attracted and continues to attract the attention of researchers. Over the course of five months, the Academy of Sciences held 29 meetings of the Extraordinary Assembly of Academics and Associates. All meetings were devoted to the discussion of Miller's dissertation (in the understanding of his contemporaries - speech, reasoning) “On the Origin and the name of Russian People”. The scientist prepared his speech, by virtue of the duties of a historiographer, for the namesake (name day) of Empress Elizabeth Petrovna. However, work on the text with Miller went with great difficulties.

M.V. Lomonosov was appointed the second speaker at a public assembly dedicated to the namesake of Empress Elizabeth Petrovna. He was instructed to compose a laudable word to the Empress, which was easily written by him. Note that the event was mandatory, in accordance with the Academic Rules of 1747, assemblies were to be held regularly.

The discussion around Miller's thesis does not give rest to modern scientists. However, few researchers have studied the discussion process in detail. V.V. Fomin showed that Lomonosov was just one of the participants in the discussion [9]. Miller's views were accepted only by the poet V.K. Trediakovsky (1703-1769). Objections to the text of Miller were expressed by astronomer N.I. Popov (1720-1782), researcher of Siberia and Kamchatka S.P. Krasheninnikov (1713-1755) and other academics. Note that Miller later agreed with a number of criticisms of Lomonosov.

Thus, statesmen and scientists actively participated in the formation of the national scientific and information space of Russia in the 18th century. The role of the Academy of Sciences was strengthened. Mobility was given to the process by the expeditions that it organized. Questionnaires are firmly established in the practice of collecting information. The first academic discussion had a great influence on the development of Russian historical science. The obvious incentives for the development of the information space, which had an interdisciplinary character in the 18th century, were such forms as questionnaires, compilation, and then refinement of the atlas of the Russian Empire and academic discussion. Questioning and discussion retain their positions in the arsenal of the means of scientists and the forms of their activity in our time.

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GENETIC POLYMORPHISM OF SOME CYTOKINES IN NEWBORNS WITH HYPOXIC EVENTS

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Abstract. Hypoxic brain damage in newborns remains at a high level, the urgency of this problem is due to the high incidence, complexity of prevention, and long-term neurological consequences. An analysis of the genes that control the activity of cytokines involved in neurodamage will prevent its occurrence.

Keywords: genetic polymorphism, interleukins, asphyxia, intrauterine hypoxia.

The incidence of fetal hypoxia, asphyxia of newborns is 4 -6%. According to WHO, a large percentage of neonatal deaths in the world occur for the following reasons: asphyxia (23%), premature birth (29%), severe infections (sepsis and pneumonia) in 25% of cases [1]. The most common cause of perinatal mortality is intrauterine hypoxia [2]. The causes of asphyxia of the newborn are many: burdened obstetric and gynecological history, pathological pregnancy, complications during childbirth [3]. The pathological course of pregnancy, childbirth and / or childbirth in asphyxia leads to the development of hypoxic-ischemic encephalopathy (HIE). The frequency of occurrence of HIE among full-term infants is from 2 to 9 cases per 1000, associated not only with high mortality, but also with the development in 25-30% of cases of consequences, such as cerebral palsy (CP), epilepsy, behavioral and speech disorders, syndrome attention deficit, hyperreactivity [4, 5, 6].

A hypoxic state in newborns can massively initiate an inflammatory reaction. Microglia cells and astrocytes produce various immunoactive substances, including cytokines, which are the main participants in immune responses [7]. The study of genes that affect the activity of cytokines is gaining increasing popularity in the modern world. Interleukin genes have an extremely high degree of polymorphism [8]. The data available today suggest a close association of gene polymorphisms with a variety of CNS pathologies in newborns: cerebral ischemia, transventricular leukomalacia, etc. In older children, carriage of cytokine polymorphism is associated with a risk of CP, attention deficit disorder, spastic tetraplegia and other neurological disorders. However, the studies practically did not touch on the genetic polymorphism of cytokines in groups of full-term newborn babies who underwent hypoxia (both chronic intrauterine and acute births) [8, 9, 10]. A promising area of research into the genetic polymorphism of umbilical cord blood cytokines will open up new links in the pathogenesis of hypoxic damage to the brain and will reveal a predisposition to CNS diseases in the early stages, which will make it possible to predict the risk of pathology, its severity, as well as individually select specific therapy for a particular patient.

Purpose of the study: describe the frequency of the genetic polymorphism of the cytokines IL-1 β (C-511T), IL-1 β (C3953T), IL-6 (C174G) in newborns with hypoxic events and in children who have not experienced hypoxia.

Materials and methods. The study included 128 full-term newborns with hypoxic events. Children were born in Zabaykalsky Krai, Chita at the Perinatal Center Krai Clinical Hospital and Zabaykalsky Krai Perinatal Center. A retrospective analysis of the history of the development of newborns was carried out. Children were divided into 2 groups: the first group (48) - newborns who experienced CIUH, the second group (80) - newborns born in asphyxiation. The criteria for inclusion in the 1st group of the study were: the presence of the fact of transferred CIUH. Criteria for inclusion in group 2: Apgar score of 7 or less in the first minute of life, the presence of acidosis and deficiency of bases, deviations in neurological status. The control group (the third group) consisted of 52 full-term newborns with an average Apgar score of 8 or higher with no data on previous intrauterine hypoxia.

In the first group, the diagnosis of hypoxic-ischemic encephalopathy II was made in one case (2.08%), 12 children (25%) did not have pathological neurological symptoms, the remaining newborns had clinical signs of grade I HIE. Grade II HIE was diagnosed in 18 children (22.5%) of the sec-

ond group, the remaining children had clinical signs of HIE I. The diagnosis was made according to the classification of H. Sarnat and M. Sarnat (1976) in the modification of B. Stoll and R. Kliegman (2004) [5]. In the control group, 52% of children did not have any neurological symptoms, 48% had a transient character of deviation in neurological status, and by the end of the early neonatal period had physiological neurological status.

A genetic study was carried out by polymerase chain reaction (PCR) on the blood leukocyte DNA to detect the polymorphism of IL-1 β (C-511T), IL-1 β (C3953T), IL-6 (C174G) (NPF "Litekh", Moscow) with electrophoretic detection agarose gel amplification products. In accordance with the requirements of biomedical ethics approved by the Helsinki Declaration of the World Medical Association (2000), informed consent was obtained from legal representatives of children to participate in the study. Statistical processing of the results was carried out using the software packages Microsoft Excel 2010, STATISTICA 10.0 (Stat Soft Inc., USA). To compare groups according to a qualitative binary criterion, the χ^2 (Pearson) criterion was used. The degree of risk of the development of events was evaluated by the odds ratio (OR) with the calculation of 95% confidence interval (CI) for it. Values of $p < 0.05$ level were considered statistically significant.

Results. When conducting molecular genetic studies, all the desired mutations in the homo- and heterozygous state were found.

In the group of newborns undergoing CIUH, the TT genotype ($p=0.04$) and the T SNP allele IL-1 β (C-511T) ($p=0.01$) predominated in comparison with the control group (Table 1). The relative probability of detecting the IL 1 β -511T allele in children undergoing intrauterine hypoxia was 2 times higher than in healthy children [CI 95%: 1.14 - 3.5]. The relative probability of identifying the IL-1 β -511TT genotype in these children was 2 times higher [CI 95%: 0.83 - 4.77].

In the same study group, when studying the polymorphism of the IL-1 β gene, the T allele ($p = 0.03$) at the point C3953T prevailed, in contrast to the control group. The relative probability of detecting the IL1 β -3953T allele in children undergoing CIUH, compared with healthy ones, was 2.33 times higher [CI 95%: 1.28 - 4.25].

In children born in asphyxia, the T SNP allele IL-1 β (C-511T) prevailed compared with the control group ($p=0.03$). (Table 2). The relative probability of detecting the IL1 β -31T allele in children born in asphyxia, compared with healthy ones, was 1.72 times higher [CI 95%: 1.05 - 2.83]. The relative probability of detecting the IL-1 β -511TT genotype in such children was 1.69 times higher [CI 95%: 0.76 - 3.75].

Table 1
The frequency of alleles and genotypes of the studied polymorphisms in children who experienced CIUH and children in the control group

Polymorphism	Genotype, allele	Frequency of allele, genotype		P	X2	OR[95% CL]
		Main group (n=48)	Control group (n=52)			
II-1β(C-511T)	C/C	6 (12,5%)	17 (32,6%)	0,04	6,33	0,29 [0,1 – 0,82]
	C/T	24 (50,0%)	23 (44,2%)			1,26 [0,57 – 2,77]
	T/T	18 (37,5%)	12 (23,0%)			2,0 [0,83 – 4,77]
	C	36 (0,375)	57 (0,548)	0,01	6,01	0,49 [0,28 – 0,87]
	T	60 (0,625)	47 (0,451)			2,02 [1,14 – 3,55]
II -1β(C3953T)	C/C	27 (56,2%)	31 (59,6%)	0.74	0,58	0,87 [0,39 – 1,92]
	C/T	14 (29,16%)	16 (30,7%)			0,98 [0,41 – 2,32]
	T/T	7 (14,58%)	5 (9,6%)			1,6 [0,47 – 5,55]
	C	68 (0,708)	78 (0,75)	0,03	4,28	0,81 [0,43 – 1,51]
	T	42 (0,292)	26 (0,25)			2,33 [1,28 – 4,25]
II-6(C174G)	C/C	6 (12,5%)	11 (21,1%)	0,49	1,42	0,53 [0,39 – 2,93]
	C/G	25 (52,0%)	23 (44,2%)			1,37 [0,62 – 3,01]
	G/G	17 (35,4%)	18 (34,6%)			1,03 [0,45 – 2,35]
	C	37 (0,385)	45 (0,433)	0,49	0,46	0,82 [0,46 – 1,44]
	G	59 (0,615)	59 (0,567)			1,21 [0,69 – 2,14]

Note: significant variability of the carriage of alleles in groups is noted in bold.

Table 2
The frequency of alleles and genotypes of the studied polymorphisms in children born in asphyxia and children in the control group

Polymorphism	Genotype, allele	Frequency of allele, genotype		P	X2	OR [95% CL]
		Main group (n=80)	Control group (n=52)			
II-1β(C-511T)	C/C	13 (16,2%)	17 (32,6%)	0,07	5,1	0,37 [0,16–0,86]
	C/T	40 (50,0%)	23 (44,2%)			1,26 [0,62 – 2,54]
	T/T	27 (33,7%)	12 (23,0%)			1,69 [0,76 – 3,75]
	C	66 (0,413)	57 (0,548)	0,03	4,65	0,57 [0,35 – 0,95]
	T	94 (0,587)	47 (0,452)			1,72 [1,05 – 2,83]
II-1β(C3953T)	C/C	49 (61,2%)	31 (59,6%)	0,78	0,47	1,07 [0,52 – 2,18]
	C/T	21 (26,2%)	16 (30,7%)			0,80 [0,37– 1,73]
	T/T	10 (12,5%)	5 (9,6%)			1,34 [0,43 – 4,17]
	C	119 (0,743)	78 (0,75)	0,91	0,01	0,96 [0,54 – 1,70]
	T	41 (0,257)	26 (0,25)			0,51 [0,26 – 1,00]
II-6(C174G)	C/C	13 (16,2%)	11 (21,1%)	0,40	1,82	0,72 [0,29 – 1,76]
	C/G	45 (56,2%)	23 (44,2%)			1,62 [0,80 – 3,27]
	G/G	22 (27,5%)	18 (34,6%)			0,71 [0,33 – 1,52]
	C	71 (0,443)	45 (0,432)	0,86	0,03	1,04 [0,63 – 1,72]
	G	89 (0,557)	59 (0,568)			0,95 [0,58 – 1,57]

Note: significant variability of the carriage of alleles in groups is noted in bold.

Discussion. A hypoxic state in newborns can massively initiate an inflammatory reaction. IL-1 β is synthesized by NK cells, monocytes, dendritic cells, macrophages, epithelial, endothelial and smooth muscle cells of blood vessels and B-lymphocytes. Under the influence of IL-1 β , vascular cells of the vascular endothelium secrete polypeptides similar to platelet-derived growth factor, which stimulate cell migration and proliferation, and initiate the release of vascular inflammatory mediators. This cytokine, secreted in the brain after the initial hypoxic damage, plays a large role in neurodamage, while contributing to the development of one of the main regulators of cerebral vascular tone - nitric oxide [11, 12, 13]. IL-6 is a pro-inflammatory cytokine produced by macrophages T-lymphocytes, endothelial cells, microglia, astrocytes. In newborns with periodically recurring seizures after asphyxia, the level of IL-6 is higher. According to many published sources, levels of proinflammatory cytokines such as IL-1 β and IL-6 in the brain reflect the degree of hypoxic-ischemic brain damage [11, 13, 14]. The genes that control cytokines are of great interest for study, because modern data suggest the close relationship of gene polymorphisms with a variety of pathologies (including damage to the central nervous system) and can be used as markers in the diagnosis of diseases. In the study of M.L. Gabriel et al. (2016) revealed a definite relationship between the IL 1 β — 511C/T polymorphism and the development of periventricular leukomalacia [9]. Accordingly, it can be assumed that the carriage of IL-1 β cytokine gene polymorphism and its increased expression will lead to the development of a cascade of pathoimmunological reactions, manifested in the form of hypoxic brain damage. Carriage of other polymorphic variants of the cytokine genes studied by us did not differ in the observation groups, but their influence on the development and course of the pathological process is very likely. Thus, in the study of the cytokine system in premature infants with cerebral ischemia, a polymorphism of allelic variants of the gene IL-6 — C-174G, was revealed. The relationship between the development of CP after hypoxia-ischemia of the brain, as well as cognitive impairment and dementia with the carriage of genetic polymorphisms of the IL-6 gene, was noted [15, 16].

Conclusion. In children with hypoxic events, all variants of the studied polymorphisms of cytokine genes were revealed. The increased frequencies of carriage of genotypes IL-1 β – 511TT and IL-1 β – 3953TT, alleles IL-1 β – 511T and IL-1 β – 3953T in newborns undergoing asphyxia and chronic intrauterine hypoxia revealed their possible participation in the activation of inflammation in the brain, which we revealed leading to neurodamage and determines the course of the disease. Based on the foregoing, it can

be concluded that the formation of hypoxic damage to the brain and its progression depends not only on the severity of cerebral blood flow disturbance, anaerobic glycolysis and changes in hemostasis, but also on violations of cytokine production, expressed in an increase in the concentration of pro-inflammatory interleukins, including genetically determined.

Thus, the study of the frequency of alleles and genotypes of genetic cytokine polymorphism in children with hypoxic brain damage will allow us to identify predictors of the pathology of the nervous system.

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**METHODOLOGICAL APPROACHES
TO ASSESSING THE QUALITY OF DRUGS**

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Abstract. Currently, worldwide validation and verification of microbiological methods is one of the urgent and discussed problems of modern pharmaceutical production. Drugs can be the cause of human pathology. In this regard, quality control of drugs is of great importance. The work is based on the requirements of the State Pharmacopoeia of the Russian Federation of the XIII edition (2018), section "Microbiological purity" OFS.1.2.4.0002.18). [9] This paper presents the results of a study of a qualitative indicator of "Sterility", a quantitative method of "Microbiological purity" of intermediate products and determination of bacterial endotoxins in drugs.

Research methods are described in detail, the results are presented in tabular form for all indicators. Control studies accompany all studies of prototypes using test stamps.

The correctness of using the methodology of the indicator "Bacterial endotoxins" has been proved. Since the initial verification, there have been no changes in the production technology, composition of the drug, revalidation can be carried out on one series of the drug.

Keywords: validation, revalidation, verification, microbiological purity, bacterial endotoxins, drugs.

Introduction

Currently, it is validation that is the mechanism to ensure the stability of the technological process at all stages of the production of medicines. [3,4] In the quality assurance system of pharmaceutical products, an important role is played by the timely monitoring of raw materials, intermediate products, and finished drugs by standard methods. Method validation, i.e. confirmation of its ability to give reliable, reproducible and verifiable results in real conditions can serve as the main criterion for choosing an analysis method or a stage in its development. Verification (applicability assessment) - experimental evidence that the technique is suitable and can be correctly reproduced in a particular laboratory.

The most commonly used non-validated methods of microbiological analysis, for example, according to the FDA inspection, is one of the most significant violations in the control laboratories. The main task of microbiological verification, like any other method, is the experimental proof that it is suitable for achieving the goals for which it is intended, as well as an analysis of the potential for false positive and false negative results. When developing a methodology for microbiological analysis of a specific drug: the antimicrobial effect of the sample is determined according to the corresponding general pharmaceutical composition, the test conditions are selected, for example, the required dilution of the drug, a suitable diluent, an antimicrobial inactivator, and the developed test method is verified using target test strains of microorganisms.

In the course of the study, possible effects on the result of the analysis of such factors as the nature and characteristics of the sample, the nutrient medium, the test conditions, etc. were determined [1,2]

Purpose of this study is to assess the applicability of the validation/verification parameters of microbiological methods.

Materials and research methods

In this study, we used the methods of the indicators “Sterility”, “Microbiological purity” and “Bacterial endotoxins” described in the modern State Pharmacopoeia (XIV, OFS.1.2.4.0003.15) [9], using the high-quality method of membrane filtration in drugs and relevant regulatory documents. [5,6,7,8] The suitability of the selected neutralizing liquid and its amount for eliminating the antimicrobial effect were determined.

The studies were carried out: on three different series of the drug and on different days, on three different batches of culture media (thioglycol medium and Saburo medium) with confirmation of growth properties and sterility, involving three specialists, for each of them to study one series of the drug. Ofloxacin and paracetamol, an infusion solution of 10 mg/

ml "were used for the study with preliminary determination of the concentration of the acceptance criterion for test microbes *Escherihia coli*, *Salmonella abony*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa*, *Candida albicans*.

As a microbial test to evaluate validation and verification we used strains of microorganisms *Escherihia coli* ATCC 25922 240533 and *Candida albicans* NCTC 885-653 303902, obtained from FSBI "NTsESMG", Moscow.

In total, more than 30 studies were carried out and analyzed and the compliance of equipment, reagents, the use of control methods, certification of the laboratory and employees was confirmed.

Results and discussion

It was established that "Testing the solutions for infusion with sterility by membrane filtration" corresponds to MU 42-51-15-93 "Control of microbial contamination of technological clothes" and MU 42-51-14-93 "Control of microbial contamination of the hands of personnel" correspond to MU 42-51-9-93, "Control of microbial contamination of industrial premises and equipment" and MU 42-51-4-93) [10] "Control of microbial contamination of air of industrial premises", which is reflected in table 1.

Table 1
"Control of microbial air contamination of industrial premises"

№	Name	Number	Premises cleanliness class	Qualification data	Operation/ procedure in progress
1	2	3	4	5	6
1	Sterility test room	Q-109	C	Validation protocols IQ, OQ, PQ	Sterility test performance.
2	3rd dressing gateway	Q-112	C	Validation protocols IQ, OQ, PQ	Staff training.
3	2nd dressing gateway	Q-111	D	Validation protocols IQ, OQ, PQ	Staff training, storage of sterile clothing.

Studies have shown compliance with pharmacopeia requirements

The pharmacopeia test strains of *Escherihia coli*, *Candida albicans* microorganisms prepared for the study in accordance with the pharmacopeia requirements are presented in table 2.

Table 2
"Test strains of microorganisms in accordance with pharmacopoeial requirements"

№	Microorganism name	Strain name	Strain number	Received from	Receipt date
1	<i>Escherihia coli</i>	ATCC 25922	240533	FSBI "NTsESMG", Moscow	25.04.19.
2	<i>Candida albicans</i>	NCTC 885-653	303902	FSBI "NTsESMG", Moscow	25.04.19.

It was established that the test strains correspond to pharmacopoeial requirements, and are prepared and controlled according to the regulations.

Studies of the indicator "Sterility" and the definition of "Specificity" for *Escherihia coli*, *C. albicans* were carried out. The sterility index revealed the presence of growth in each sample of the medium inoculated with microorganisms, and the specificity index showed the absence of growth by non-inoculated microorganisms. To control the indicator "Sterility" in the medicinal drug, sowing was performed in accordance with SOP-KO-09.2-046-02.

Ofloxacin was used for the study with preliminary determination of the concentration of the acceptance criterion on the test microbes *Escherihia coli*, *Salmonella abony*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa*, *Candida albicans*.

Ofloxacin and its antimicrobial properties, a neutralizing liquid and its amount to eliminate the antimicrobial effect in the medicinal product meet the requirements.

The determination of the indicator "Bacterial endotoxins" in drugs was carried out according to OFS.1.2.4.0006.15 by the method of gel-thrombus test. Medicines do not contain bacterial endotoxins in the amounts determined in the test and do not affect the course of the reaction. The test drug paracetamol, solution for infusion of 10 mg/ml "may contain interfering factors that enhance and/or inhibit the reaction of the LAL reagent with bacterial endotoxins. The results showed that the test drug paracetamol, a solution for infusion of 10 mg/ml in a dilution of 1/4 did not inhibit and did not enhance the gelation reaction.

Therefore, the drug in any other dilution, not exceeding the maximum permissible value, met the requirements of the pharmacopoeial article of the enterprise.

Thus, the correct use of the methods of indicators “Sterility”, “Specificity” and “Bacterial endotoxins” described in GF XIV, OFS.1.2.4.0003.15 using the membrane filtration method in drugs in the microbiological laboratory of “IST-PHARM” LLC, And experimental studies were accompanied by positive and negative controls.

If during the period that has passed since the initial verification there were no changes in the production technology, composition of the drug, and for the analysis the same reagents are used as at the initial stage of verification, revalidation can be carried out on one series of the drug.

Conclusions:

1. Confirmed: compliance of equipment, reagents, certification of the laboratory and employees.

2. The correctness of using the methodology of the indicator “Microbiological purity” described in the GF XIY, OFS.1.2.4.0002.18 using the membrane filtration method in an intermediate product of drugs in the microbiological laboratory of “IST-PHARM” LLC has been proved.

3. The suitability of the selected neutralizing liquid and its amount for eliminating the antimicrobial effect in drugs was determined.

4. The absence or presence of antimicrobial activity in the intermediate product of drugs was revealed.

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9. MU 42-51-4-93 “Control of microbial air contamination of industrial premises”.
10. State Pharmacopoeia RF XIV OFS.1.2.4.0006.15.

FEATURES OF TOTAL INTRAVENOUS ANESTHESIA IN OPIATE-DEPENDENT PATIENTS

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Abstract. 86 patients with an inactive tuberculous process of pulmonary etiology who underwent laparoscopic thoracotomy under total intravenous anesthesia were examined. Of these, 48 were non-opioid-dependent and 40 patients were opioid-dependent. When conducting total intravenous anesthesia, opioid-dependent patients require an increase in the consumption of anesthesia components: propofol hypnosis - by 50%, esmeron muscle relaxant - by 200%, opioid analgesic - by 600% S due to impaired liver and receptor apparatus - GABA receptors, cholinergic receptors, mu opiate receptors.

Keywords: opioid-dependent patients, total intravenous anesthesia

The source of problems associated with anesthetic management in opioid-dependent individuals are: 1. Tolerance to narcotic drugs; 2. Cross tolerance to other drugs used in anesthesia regimens; 3. Pathology of organs and systems associated with severe chronic lesions of systems and organs (cardiovascular, renal, hepatic) [1,2]. Opioid-dependent patients have peculiarities during anesthetic management during surgical interventions and manipulations. The most underlying problem is the use of large quantities of opioid analgesics for adequate intraoperative analgesia. There are also questions with the use of hypnotics, muscle relaxants, but this problem is under study.

Purpose of the study - to determine the consumption of hypnotics, opioids, muscle relaxants in opioid-dependent patients during total intravenous anesthesia.

Material and research methods

A double-blind, controlled, prospective, randomized clinical trial was performed.

The collection of clinical material was carried out on the basis of the State Budgetary Healthcare Institution "Republican Clinical Phthisiopulmo-

nology Center” of the Ministry of Health of the Republic of North Ossetia-Alania (SBHI RCPHC MH RNO-Alania).

Informing the patient’s consent to participate in the study, the layout of the patient’s questionnaire was approved by the ethics committee of the FSBEI “North Ossetian State Medical Academy” of the Ministry of Health of the Russian Federation.

A total of 86 patients were included in the analysis, who were diagnosed with an inactive phase of the tuberculous process of pulmonary etiology and who, according to indications, underwent laparoscopic thoracotomy in order to perform a lobectomy on the right or left. The age of patients ranged from 20 to 60 years (on average - 38.6±6.2 years). Patients are stratified by gender, physical characteristics and severity of the condition, which makes it possible to obtain reliable comparable results.

Inclusion Criteria:

- informed consent of the patient to participate in the study;
- male gender;
- the physical status of the class ASA I and ASA II;
- voluntary reporting of bad habits;
- indications for laparoscopic thoracotomy;
- indications for one or another type of anesthesiological aid.

Exclusion Criteria:

- patient refusal to participate in the study (lack of informed consent);
- physical status of class ASA III;
- transition to an open operation;
- contraindications for anesthetic management;
- the presence of a history of polyvalent allergies, diabetes mellitus, acute cerebrovascular accident, epilepsy, decompensated cardiovascular disorders, organic damage to the central nervous system;
- intraoperative blood loss over 500 ml.

Of the bad habits, all patients indicated the use of tobacco products with an experience of 6 to 36 years. 67% of patients recognized chronic alcohol use for 3 to 20 years.

The concomitant diagnosis of drug addiction and / or chronic alcoholism was established after the mandatory consultation of a narcologist.

All patients for 2 to 6 years received the complex of drugs necessary for the treatment of tuberculosis.

Protocol for total intravenous anesthesia:

- *Premedication*: diphenhydramine 0.1 mg/kg 30 minutes before the patient is admitted to the operating room;
- *Preoxygenation*: obligatory, 3-4 minutes;

- *Induction:* propofol 4 mg/kg, fentanyl 4 µg/kg, esmeron 0.6 mg/kg;
- *Intubation of the trachea with a double-lumen tube;*
- *Maintenance of anesthesia:* fentanyl (according to the clinic) + propofol (2-6 mg/kg+h) readings from the BIS monitor within 45-50 [3];
- *Myoplegia:* esmeron (according to the indications of a neuro-muscular transmission monitor [4]);
- *Volume of infusion:* balanced multicomponent isosmolar crystalloid solutions in a dose of 5-7 ml/kg, h.

With the end of the surgery, the amount of drugs used during the anesthetic administration was calculated: propofol - mg/kg. min; fentanyl - in mcg/kg, min; Esmeron - in mg/kg, min.

Statistical research methods

The results are presented as mean (M), maximum and minimum values (Max-Min), mean standard deviation (m). Normality of distribution was determined by the criteria of Kolmogorov-Smirnov and Shapiro-Wilk. Statistical processing (descriptive statistics, pairwise t-test for dependent samples, Kruskal–Wallis test of the obtained results was performed using the STATISTICA 7.0 software package (StatSoft, Inc., USA). The results were considered statistically reliable at $p < 0.05$.

Results and discussion

The number of patients in the non-opioid-dependent group (group A) is 48, and in the group of opioid-dependent individuals (group B) - 40 people.

The average duration of anesthetic benefits was 86+10 minutes (65 - 125 minutes) in group A, 90+10 minutes in group B [$P > 0.05$].

The time from the end of propofol infusion to extubation in group A was 14+3 minutes, in group B 26+2 min [$P < 0.05$]. Blood loss was estimated on average between 250 and 300 ml in both groups.

The amount of hypnotic, muscle relaxant, and opioid based on body weight and time during the anesthetic period in groups A and B are shown in table 1.

Table 1
Hypnotic, muscle relaxant, and opioid consumption during anesthetic management

Drug	Drug consumption in group 1A	Drug consumption in group 1B	P
Propofol, mg/kg. min	0,900±0,100	1,450±0,100	<0,05
Esmeron, mg/kg. min	0,120±0,020	0,260±0.030	<0,05
Fentanyl, mcg/kg. min	0,006±0,001	0,036±0,008	<0,001

In opiate-dependent patients (group B), during the anesthesiological aid, for the required depth of loss of consciousness, according to the BIS-data, an increase in the supply of propofol hypnotic by 50% is required compared with the group of non-opioid-dependent patients (group A). Also, patients of group B need 2 times more administration of non-depolarizing muscle relaxants. For adequate intraoperative analgesia, opioid-dependent patients have to increase the dose of opioid analgesic fentanyl by 6 times during total intravenous anesthesia.

The group of opioid-dependent patients has three aggravating factors: prolonged use of tuberculostatic drugs, abuse of heroin and its synthetic derivatives, as well as, in a large percentage of cases, alcohol abuse. All three of these factors have, first of all, a damaging hepatotropic effect, which leads to hepatotoxic damage with subsequent development of liver failure [5,6]. Functional and organic damage to the liver leads to a violation of the amino acid metabolism, including gamma-aminobutyric acid, through which the hypnotic effect of propofol is carried out in the central nervous system and, therefore, increasing doses of propofol is required to achieve the necessary depth of anesthesia.

Available literature and domestic clinical guidelines indicate that in patients with opioid dependence, the dose of opioid analgesics should be increased by 30-100% [7,8]. Our results show that in order to achieve adequate anesthesia, the doses of the opioid analgesic fentanyl must be increased by 600%, which, apparently, is a consequence of two components. The first is a decrease in the sensitivity of mu-opiate receptors due to their conformation due to the prolonged exposure to exogenous ligands - heroin and its synthetic derivatives. Second: chronic use of narcotic drugs, tuberculostatic drugs, alcohol leads to hepatotoxic damage with the subsequent development of liver failure. The presence of liver failure requires an appropriate correction of the doses of painkillers in the direction of a sharp increase [5], since the transformation of opioid analgesics occurs in the liver.

As regards the use of muscle relaxants during anesthesia in opioid-dependent patients, there are only few indications: do not use succinylcholine [9], since cocaine and heroin users develop hypersensitivity to succinylcholine [10], which may be due to a low level of cholinesterase activity due to damage to the liver tissue. We in the present study showed that the use of non-depolarizing muscle relaxants has its own characteristics - namely, shortening their action and, accordingly, increasing doses. This circumstance is probably also associated with liver damage, impaired cholinesterase metabolism, which is involved in the mechanism of neuromuscular transmission.

An increase in the doses of the components of total intravenous anesthesia leads to an extension of the time required from the moment of termination of anesthesia to extubation of the patient.

Thus, our results indicate that in opioid-dependent patients, the functioning of the receptors responsible for the action of the components of total intravenous anesthesia is impaired: propofol hypnosis (GABA-ergic receptors), fentanyl opioid (μ -opiate receptors), non-depolarizing esmerone muscle relaxant (cholinergic receptor).

Conclusions

1. When opioid-dependent patients receive anesthesia medication by the method of total intravenous anesthesia, it is necessary to increase the doses of propofol hypnotic by 50%, non-depolarizing esmerone muscle relaxant - by 200% and opioid analgesic fentanyl - by 600%.

2. It increases almost 2 times the time from the end of anesthesia to extubation of the patient.

2. A change in the doses of the components of total intravenous anesthesia in the upward direction in opiate-dependent patients is a consequence of impaired function of receptor systems: GABA-ergic, cholinergic, μ -opiate.

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BLOOD PLASMA OSMOLARITY CHANGES AS THE REASON OF CONSCIOUSNESS IMPAIRMENT IN PATIENTS WITH STROKES

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Abstract. Thirty patients with ischemic stroke and 26 patients with hemorrhagic stroke were examined. It was found that in all patients the level of osmolality of blood plasma was increased, which directly correlated with the level of consciousness: with a decrease in consciousness, osmolality increased, with an increase in consciousness, it decreased. An increase in the osmolality of blood plasma in patients with ischemic stroke was mainly due to hyperglycemia, in patients with hemorrhagic stroke, mainly due to hypernatremia.

Keywords: stroke, blood osmolality

Purpose of the study

To identify the relationship between the osmolality of blood plasma and the level of consciousness in patients with strokes.

Material and methods

We examined 56 patients aged 46 to 66 years (average age 53.3 ± 3.4 years), of whom 15 were men and 41 were women. Using CT and MRI, it was found that 30 patients had ischemic stroke, and 26 - hemorrhagic stroke. The study included individuals who did not have diabetes mellitus or renal failure. Blood biochemical parameters were studied: osmolality, concentration of glucose, urea, sodium. The level of consciousness was evaluated according to the Glasgow Coma scale and by the values of the BIS-spectral monitor [Slepoushkin V.D. et al., 2014]. To establish reference values of biochemical parameters, blood plasma samples were taken from 12 healthy volunteers (control group) aged 35-45 years. Studies and sampling of blood were carried out on the 1st and 5th days of patients in the Department of Anesthesiology and Resuscitation (DAR) in the morning.

Results and discussion

Indicators for assessing the depth of loss of consciousness according to the Glasgow Com scale and BIS monitor indicators, as well as the values of blood plasma osmolarity in people of the control group and patients on the 1st day of stay in the DAR are shown in Table 1.

Table 1
Indicators for assessing the level of consciousness and osmolarity of blood on the 1st day of stay in the DAR

Groups	Glasgow Com score	BIS monitoring indicators	Blood plasma osmolarity
Control p= 12	14,7±0,2	97,8±0,7	297,5±1,3
Group A p=30	9,1±0,6*	62,3±2,1*	318,2±3,1*
Group B p=26	7,2±0,4**	42,2±2,1**	332,6±3,3**

*Designations: * - P<0,05 in relation to the control group; ** - P<0,05 in relation to group A.*

In patients with hemorrhagic stroke (group B), the level of consciousness was lower than in patients with ischemic stroke (group A). Blood plasma osmolarity in patients with hemorrhagic stroke was statistically significantly higher than in patients with ischemic stroke.

An increase in the osmolarity of blood plasma in patients with diagnosed ischemic stroke is mainly due to an increase in the concentration of glucose in the blood, while in patients with hemorrhagic stroke, an increase in the osmolarity of blood was mainly a consequence of an increase in the concentration of sodium ions.

In the process of intensive treatment (mechanical ventilation, sedative, metabolotropic, infusion therapy) on the 5th day of stay of patients in the anesthesiology and intensive care unit, the indicators shown in table 2 were recorded.

Table 2
Indicators for assessing the level of consciousness and osmolarity of blood on the 5th day of stay in the DAR

Groups	Glasgow Com score	BIS monitoring indicators	Blood plasma osmolarity
Control p=12	14,7±0,2	97,8±0,7	297,5±1,3

Groups	Glasgow Com score	BIS monitoring indicators	Blood plasma osmolality
Group A p=28	11,2±0,6 [^]	72,4±2,5 [^]	307,5±3,4 [^]
Group B p=21	9,4±0,3 ^{**^}	52,9±2,5 ^{**^}	320,3±3,5 ^{**^}

*Designations: * - $P < 0,05$ in relation to the control group;; ** - $P < 0,05$ in relation to group A.; ^ - $P < 0,05$ in relation to the corresponding value on the 1st day of stay in the DAR (see Table 1)*

Within five days of observation, two patients died in the group with ischemic stroke (group A) (mortality 6.7%), and 5 patients died in the group with hemorrhagic stroke (mortality - 19%).

In both groups, survivors had a higher level of consciousness, although in the group with hemorrhagic stroke, the level of consciousness remained lower than in patients with ischemic stroke.

The plasma osmolality indices in both groups of patients decreased compared with the values determined on the 1st day of observation, but still remained above the reference values. In patients of group B, the values of osmolality of blood plasma were higher than in patients of group A.

A direct correlation dependence ($r = +0.61$) was determined between an increase in the level of consciousness (points on the GlasgowCom scale, BIS monitoring indicators) and a decrease in the level of osmolality of blood plasma.

As on the first day, an increase in the osmolality of blood plasma in patients with ischemic stroke on the 5th day was determined mainly due to an increase in the concentration of glucose in the blood plasma, while in patients with hemorrhagic stroke, it was mainly due to an increase in the content of sodium ions in the blood.

Data show the need for early correction of hyperglycemia and hypernatremia in patients with brain damage, as these two factors are predictors of adverse outcomes [Jauch-Chara K., Oltmanns R.M., 2014\$; Kazuhide Matsushima et al.,2012].

Conclusions

1. In patients with stroke, osmolality of blood plasma increases mainly due to hyperglycemia in patients with ischemic stroke and mainly due to hypernatremia in patients with hemorrhagic stroke.

2. The level of osmolality of blood plasma directly correlates with the level of consciousness: with a decrease in the level of consciousness, osmolality increases and vice versa, with an increase in the level of consciousness, plasma osmolality decreases.

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**THE COURSE OF GASTRIC ULCER ASSOCIATED WITH
HELICOBACTER PYLORI DEPENDING ON THE PRESENCE OF
EPSTEIN-BARR VIRUS IN THE GASTRIC MUCOSA**

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Abstract. The article presents modern aspects of the relationship of ulcerative lesions, their scarring processes and further exacerbation of gastric ulcer, depending on the presence of *Helicobacter pylori* and Epstein-Barr virus in patients with gastric mucosa. It is concluded that not only *Helicobacter pylori* infection but also other microflora can support inflammation, as well as contribute to re-exacerbation or reinfection of this disease.

Keywords: peptic ulcer, *Helicobacter pylori*, Epstein-Barr virus.

Peptic ulcer disease (PUD) – chronic recurrent disease of the gastrointestinal tract, most often affecting people of working age, leading to disability, worsening the quality of life of patients, somewhat less likely to lead to disability due to the development of complications (bleeding, perforation, penetration, scar-ulcer stenosis of the pylorus, malignant neoplasm stomach, as well as the need for surgical intervention [1]. The prevalence of peptic ulcer (PU) among adults is extremely varies between years and countries ranging from 5 to 15% of the population [2]. The discovery of the pyloric *Helicobacter pylori* (*H. pylori*.) and its role in the pathogenesis of chronic gastritis, PU, maltoma and gastric cancer contributed to the fact that PU became considered as “*H. pylori* - associated disease” [3]. According to published data, this microorganism is detected in 80-85% of patients with gastric ulcer [4]. All PU patients with positive test results for *H. pylori* infection are recommended to undergo eradication therapy (ET), [5, 6] schemes of which are included in the recommendations called the

“Maastricht Consensus” [7], but due to the lack of 100% *H. pylori* eradication *pylori* is periodically improved and supplemented. According to published data, ET efficiency is 70-80%, but in a number of patients, even after successful removal of the infection from the gastric mucosa (GM), clinical manifestations of the disease persist, and persistence of inflammatory infiltrate is noted [8, 9].

Common causes of ET failures are resistance of *H. pylori* infection [10, 11], as well as the presence of additional microflora in GM, which stimulates and supports inflammation in it.

The problem of antibiotic resistance of *H. pylori* has been extensively studied in the Smolensk region, Russian Federation. Thus, the prevalence of resistant of *H. pylori* strains to clarithromycin and metronidazole in the Smolensk region remains low, so standard triple therapy is still recommended as empirical treatment of first-line of *H. pylori* infection in adults. And the preference for choosing second-line empirical therapy between quadrotherapy with bismuth and triple therapy with levofloxacin is given in favor of quadrotherapy with bismuth because of the high level of *H. pylori* resistance to levofloxacin [12].

In addition, the inclusion of probiotics in the ET infection of *H. pylori* leads to an increase in its effectiveness and a decrease in the incidence of undesirable complications [13, 14].

Proponents of the infectious theory of the origin of PU believe that only *H. pylori* managed to adapt to the existence in the sharply acidic environment of the stomach, and if another microflora is found in GM, they declare it transient. However, this point of view was refuted by evidence-based studies of microbiologists and clinicians [15, 16, 17]. It turned out that in healthy people and in PU patients, in addition to *H. pylori*, the mucous membrane of the stomach is colonized by another mucous microflora (M-microflora), which has adhesive properties, invasiveness (unlike *H. pylori*) and high virulence, including various types of streptococcus (hemolytic, green), staphylococci, micrococci, enterobacteria, fungi of the genus *Candida*, representatives of the family Herpesviridae, etc. [16, 18]. One of the main causative agents of herpes virus infection is the Epstein-Barr virus (EBV) [19].

For some reason, no one discusses and does not take into account the values of M-microflora isolated from the gastric mucosa in the pathogenesis of PU and its relapses, and they selectively focus only on the role of *H. pylori* in this process. After all, it is obvious that the three- and four-component regimens used for the eradication of *H. pylori* in PU patients affect not only *H. pylori*, but also the entire M-microflora that colonizes

the mucous membrane of the stomach and duodenum. Therefore, its effectiveness cannot serve as evidence of the exceptional role of *H. pylori* in the pathogenesis of PU and its relapses.

Thus, conflicting information on the effectiveness of ET and the effect of other microflora on GM with the development of chronic gastrointestinal disease indicates the relevance of studying the interaction of *H. pylori* and EBV and the need for further study of this problem.

To solve this problem, we have formulated the purpose of the study: to identify the effect of Epstein-Barr virus and *H. pylori* on the rate of scarring of gastric ulcers and the frequency of exacerbation of the disease

Materials and research methods. We examined and treated 74 men with PUD associated with *H. pylori*, in whom the ulcer defect was up to 0.5 cm in diameter and located on its small curvature.

The diagnosis of the disease was established on the basis of clinical and medical history, laboratory data (general blood test, feces for implicit blood), instrumental methods of investigation (results of fibrogastroduodenoscopy (EGD) with GM biopsy - 2 biopsy samples from the stomach and 1 biopsy sample from the antrum). *H. pylori* was detected by a urease cut test, and the presence of *H. pylori* and EBV was determined by morphological and polymerase chain reaction (PCR) methods. The exclusion criteria from our study were: PUD complications, absence of *H. pylori*, symptomatic ulcers (drug, "stress", with endocrine pathology, and other chronic internal diseases), multiple ulcers.

The age of men participating in the study ranged from 18 to 59 years (mean age 41.2 ± 7.4). The duration of the disease ranged from 1 to 10 years, an average of 4.8 years.

All patients received standard triple ET with the addition of a probiotic [14]. Monitoring of the treatment was carried out after 8 weeks and 3 months after the start of treatment, and then patients were monitored for one year.

The dynamics of the transition of the stages of development of the ulcerative process was considered (Vasilenko V.Kh., 1987). According to published data, healing of a stomach ulcer before the formation of a "red" scar occurs on average in 6-7 weeks, and the formation of a "white" scar in 2-3 months. [20]. All patients were divided into 2 groups. The first observation group (38 people) consisted of patients in whom EBV was determined in biopsy samples except *H. pylori*. The second observation group (34 patients) consisted of patients in whom only *H. pylori* was detected in biopsy samples by PCR.

Statistical data processing was carried out using the program Excell MS Office 2007.

Research results and discussion. When analyzing the dynamics of ulcerative scarring, it was found that in group 1 of the studied 14 patients (37%) by week 8, an ulcer formed in the form of a hyperemic section of the mucous membrane with linear retraction (stage of the “red” scar) at the ulcer site, and in 63 (58%) of patients, the ulcer was just beginning to acquire a slit-like form with small areas of infiltration, edema and hyperemia around it (the stage of “scarring”).

In the 2nd group of patients, by the 8th week after eradication therapy, only 4 patients (12%) had a “scarring” stage, and 30 (88%) had a “red” scar.

3 months after EGD, 24 patients (63%) from the 1st observation group had no active inflammation, and the scar acquired a “whitish” appearance due to the replacement of granulation tissue with connective tissue. *H. pylori* eradication was noted in 33 patients (87%).

A full-fledged scar (the “white” scar phase) was formed in 32 patients (94%) of the 2 groups of subjects, and *H. pylori* eradication was achieved in 31 patients (91%).

Subsequent exacerbation in group 1 of the study was observed on average after 6-7 months in 16 patients (42%), and in group 2 - in 5 patients (15%).

As can be seen, from the study, the destruction of *H. pylori* infection radically changes the course of the disease, preventing its recurrence. *Helicobacter pylori* therapy is accompanied by successful healing of the ulcer. Moreover, the ulcer healing effect is caused not only by the active antiulcer components of the eradication schemes, but also by the elimination of *H. pylori* infection itself, which is accompanied by the normalization of proliferation and apoptosis in the gastroduodenal mucosa.

But the cause of PU may be a combination of *H. pylori* and herpes viruses, in particular EBV, which in our study was found in 51% of cases, and ulcer healing was slower, and exacerbations were more common than in patients in whom only *H. pylori* was present in GM.

Conclusions:

1. The treatment that kills *H. pylori* is effective not only in the healing of an ulcer, but also in preventing recurrence of the disease.

2. The strategy for the treatment of peptic ulcer disease by eradicating *H. pylori* infection has an advantage over all groups of antiulcer drugs: this strategy provides long-term remission of the disease, possibly a complete cure.

3. With exacerbation of gastric ulcer in the gastric mucosa, the combined presence of *H. pylori* and Epstein-Barr virus was 51%.
4. Patients with long or poorly scarring ulcers, in addition to examination in accordance with the order on the approval of the standard of specialized medical care for patients with gastric ulcer, duodenal ulcer № 773n dated November 9, 2012, it is necessary to determine other mucous flora in the gastric mucosa, in particular Epstein-Barr virus.
5. When detecting herpes viruses, it is necessary to carry out treatment correction.
6. The presence of Epstein-Barr virus in the gastric mucosa during *H. pylori* eradication exacerbated gastric ulcer.

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**AN INTEGRATIVE APPROACH TO ANTI-AGING MEDICINE BASED
ON A COMBINATION OF TWO INNOVATIVE PHYSIOTHERAPY
TECHNOLOGIES**

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Abstract. In our previous message, we presented the theoretical rationale for the rational combination of dynamic electroneurostimulation (DENS) and spectral phototherapy (SPT) for the comprehensive elimination of cosmetic defects and the restoration of functional reserves of the body. In this post, the integrated DENS&SPT technology is positioned as an example of integrative medicine. The algorithm of using this innovative technology is presented, as well as the comparative results of separate and combined use of DENS and SPT.

Keywords: integrative medicine, dynamic electroneurostimulation (DENS), spectral phototherapy (SPT), integrated technology, cosmetology facial defects, functional reserves of the body.

" One feels in the midst of the cleverest and most humane doctors a longing for still universalism, a desire to find ways from a closed, localized pathology to constitutional therapy, to awareness not only of individual diseases, but also of a man's personality. Having examined the body down to the molecule, creative curiosity once again turns its gaze towards the integrity of the disease, which is different in each case." Stefan Zweig.

" The aging process is infinitely complex and diverse. Understanding it — is a task equivalent to the task of knowing the essence of life."

V.V. Frolkis, 1988 [1].

Integrative medicine. The disease-centric paradigm focused on a detailed study of etiopathogenesis, identification of nosological forms and elimination of the actual pathological process reflects mainly an analytical scientific approach. However, in the direct sense of the word health care is more consistent with the centered paradigm corresponding to the synthetic approach to the human sciences. It focuses the doctor on the study of sanogenesis, a holistic approach to the study of man in all its diversity and inseparability of its biological and social entities and their manifestations. Both paradigms generate, although overlapping, but still different methodologies and arsenals of methods.

The division of the body into systems and the corresponding allocation of scientific biomedical disciplines is very conventional. This convention, useful at the analytical stages of studying the structure and functions of the body, turns into a clear obstacle at the synthetic stage of knowing its integrity. One of the main factors that ensured the progress of medicine and biology in the second half of the XX and present centuries is the closer interpenetration of scientific disciplines that previously developed somewhat apart. The consequence of this process was the emergence of the concept of "integrative medicine" (IM).

IM, more than complementary medicine, focuses on health and healing than on disease and its treatment. That is, follows a centered paradigm. IM considers the patient as a holistic system with its psychophysiological and morphological features. The main tool of IM — is a systematic approach that allows treating a person strictly in accordance with his problems, and not according to standard schemes. Such a holistic approach to human health and illness is not limited to medical activities. It encourages both the patient and the doctor to pay special attention to lifestyle, diet, physical activity, rest, leisure, sleep and relationships, in other words, all the components of a healthy lifestyle.

Most often, IM is understood as the cooperation of academic and traditional (alternative) medicine. However, this cooperation should be viewed in a broader format. It unites the ways of regulation of almost all life aspects of a person, integrating science, art and religion (Fig. 1).

Analysis of accessible, generally consistent, IM definitions shows that it can be used as a generic name for all medical areas, which are based on a systematic approach that takes into account all the internal and external connections of a living organism and is based on a synthesis of all the knowledge accumulated by mankind.

Antiaging medicine (AM). Aging is characterized by numerous changes, various vital processes, manifested in changes in appearance, impaired

activity of various organs and a decrease in the functional reserves of the body. Many hypotheses have been put forward about the causes of aging. According to the adaptation-regulatory theory of aging, it is a multi-cause, multi-focal process, leading to a decrease in the reliability of self-regulation systems of the body. On the basis of the adaptive-regulatory theory of aging, the concept of vitaukt has been put forward (from lat. vita - life, auctum - increase), which includes a variety of anti-aging mechanisms. Aging is a systemic process, manifested in changes in appearance, impaired activity of various organs and a decrease in the functional reserves of the body. Therefore, AM should be based on an integrative systems approach [1]. This attitude is shared by many modern researchers [2 - 7]. An example of an integrated approach in anti-aging medicine is the consensus statement adopted at the XXI World Congress of the International Association of Gerontology and Geriatrics on the merger of anti-aging and aesthetic medicine. The measures taken should provide a combination of correction of cosmetic defects with a slowdown in the reduction and restoration of human adaptive capabilities, thus eliminating the previously established distinction between aesthetic and anti-aging medicines.

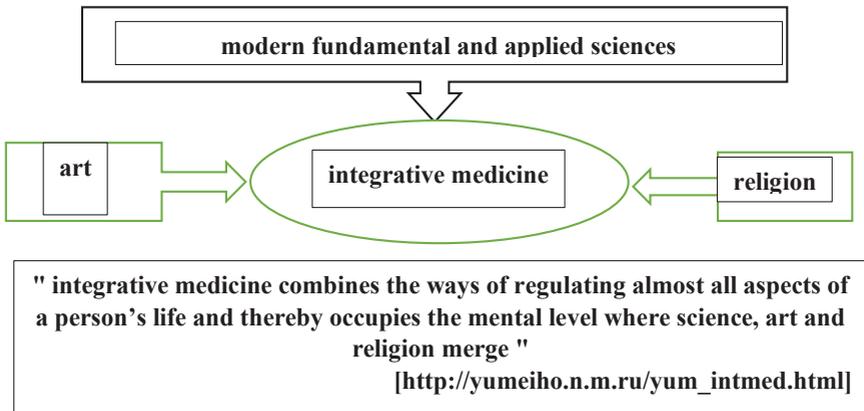


Fig. 1. Integrative medicine.

Now anti-aging, like medicine as a whole, is focused on the predominant use of pharmacological agents characterized by local targeted action, and therefore not able to solve the complex problems of an aging organism. According to the WHO, iatrogenicity occurs in 20% of patients and makes up 10% in the structure of hospital mortality. A significant proportion of iatrogenic pathology is made up of side effects of drug therapy,

which are recorded in 10-20% of hospital patients. Moreover, many patients suffer from a hidden epidemic of side effects of pharmacotherapy, which leads to an increase in the number of hospitalizations and deaths [8, 9, 10]. In aesthetic medicine, the introduction of fillers is the most popular. When using any of them, various complications are possible from bruising and edema to tissue necrosis, retinal artery occlusion and drug migration. Sometimes it is necessary to resort to surgical extraction of previously introduced fillers [11]. These circumstances prompt the search for effective non-pharmacological AM technologies. Modern hardware cosmetology provides targeted delivery of necessary nutrients and/or drugs.

Physiotherapy in antiaging medicine. Physiotherapeutic methods in modern AM are very scarce [12]. As of January 29, 2020, only 23 publications were found in the Pubmed database for the query “physiotherapy in antiaging medicine”. In the Russian Federation, along with a number of articles, books have been published on the use of physiotherapy in AM [13 - 16]. Modern physiotherapy is focused on the combined use of various factors, which provides a mutual enhancement of the therapeutic effect of each of them [17, 18].

The publications [19, 20] present the positive results of the use of galantaminum cholinomimetic electrophoresis in combination with microcurrent and multichannel electrostimulation in the treatment of patients with acne and patients undergoing plastic surgery to eliminate cosmetic deficiencies in the form of senile skin atrophy of the II and III degree, including complicated facial neuropathy. This comprehensive technology activates lymphatic drainage, which enhances the clinical effect of the treatment and improves humoral and cellular immunity, as well as optimizing the autonomic regulation and condition of the gastrointestinal tract. The combined use of laser biorevitalization and microcurrents for correcting the signs of photoaging of facial skin to a greater extent than the isolated use of the components of the method improves the quality characteristics of the skin, which leads to a decrease in skin pH, increased moisture and elasticity, normalization of sebum secretion, and leads to restoration of basic functions of skin [21].

Algorithm for combined use of DENS and SPT. In our previous report [22], a theoretical rationale for the rational combination of DENS and SPT was presented. The algorithm for action in episodic and regular procedures is the same. After questioning and examining the patient, a conductive gel or cream is applied to the skin of the face, the choice of which is at the discretion of the doctor-cosmetologist, based on the current problems of the patient. Then, for 15-20 minutes, the DIADENS device in the “therapy” mode with a frequency of 77 Hz at a comfortable energy level stimulates

the face with massage lines with an emphasis on existing problem areas. Then previously applied gel or cream is removed from the skin. If there are results of a study of the microelement composition of the body, 1% aqueous solutions of salts of deficient chemical elements are applied to the problem areas of the face. In these cases, emitters with spectra of the same trace elements are used. In the absence of laboratory data, you can use Dead Sea water or mineralized thermal water "Vichy", containing 21 and 15 chemical elements, respectively. In these cases, the SPECTRO-COSM apparatus is used, which emits the spectra of 11 chemical elements most important for skin health (K, Ca, Mg, Na, Mn, Cu, Zn, Fe, Si, Se, Pt) [23]. The exposure is carried out with direct contact of the output window of the emitter with the skin of the problem area with an exposure of 2-3 minutes per zone. The total exposure time to SPT usually does not exceed 15 minutes.

Comparison of the results of separate and combined use of DENS and SPT is illustrated by the data of tables 1 and 2.

Table 1.
GAIS self-assessment of facial enhancement under the influence of DENS and SPT procedures.

№ of procedures (number of patients)	GAIS Scores in the "DENS" group			
	0	+1	+2	+3
1 (n=25)	2	4	5	8
2 (n=6)	-	-	2	4
3 (n=6)	-	-	2	3
	GAIS Scores in the "SPT" group			
1 (n=25)	18	7	-	-
2 (n=25)	10	13	2	-
3 (n=25)	6	14	5	-
	GAIS Scores in the "DENS&SPT" group			
1 (n=110)	-	8	32	40
2 (n=20)	-	-	15	5
3 (n=15)	-	-	5	10

The GAIS scale is intended for self-assessments of the effectiveness of the procedure, it contains 7 points: 0 - no change, and 3 gradations of improvement (from +1 to +3) or deterioration (from -1 to -3) of appearance [24].

The stress levels of the functional reserves of the patient's body were evaluated according to the indicators of cardiointervalography of R. M. Baevsky in the modification of the "Traffic Light" type health assessment system [25].

Table 2.
Changes in stress levels of the functional reserves of the body with separate and complex use of DENS and SPT.

Score	DENS(n = 25)		SPT (n = 25)		SPT&DENS(n = 110)	
	before	after	before	after	before	after
1	-	4	-	-	-	6
2	-	12	-	4	-	14
3	4	6	3	6	5	5
4	10	2	4	7	9	-
5	6	1	2	3	4	-
6	1	-	1	1	2	-
7	1	-	-	-	2	-

Correspondence of the scores to the levels of the functional reserves of the body: 1 - optimal, 2 - normal, 3 - moderate, 4 - pronounced, 5 - pronounced stress, 6 - overvoltage, 7 - pronounced overvoltage.

Instrumental assessment of the condition of the skin of the face was carried out on the apparatus Aramo SG manufactured in Korea, which allows you to measure 6 basic skin parameters: moisture, elasticity, fat, smoothness, pores, sensitivity. 13 out of 25 patients in the DENS group showed improvement in appearance after the first procedure, and after the second in all 25. In the SPT group, there were significantly less pronounced tendencies to improve the appearance of patients even after three procedures. Both episodic and regular combined use of DENS & SPT exceeded the effectiveness of the isolated action of DENS.

Conclusion. Since aging is a multicomponent AM process, it should be based on an integrative systems approach. Complex modal physiotherapy in the form of innovative DENS&SPT technology is able to provide quick and safe elimination of cosmetic defects and the restoration of functional reserves of the body

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PEROXIDE DISINFECTING COMPOSITION FOR THE DISINFECTION OF SOIL FROM BACTERIA AND SPORES OF INFECTIOUS CAUSING AGENTS

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Abstract. A peroxide disinfectant composition is proposed that has antimicrobial activity against a wide range of microorganisms, high disinfecting activity, versatility, high activity in the presence of organic substances, relatively low toxicity, safe properties in relation to people, storage stability, gentle effect on materials of processed objects, environmental safety.

The peroxide disinfectant composition is effective in disinfecting the surface of the soil contaminated with bacteria and spores of dangerous and especially dangerous infectious diseases.

The proposed disinfectant composition can serve as the basis for disinfectological technology designed to accelerate the elimination of soil foci of dangerous and especially dangerous infections resulting from the burial, slaughter, and mortality of sick animals as a result of industrial accidents, disasters and bioterrorist acts.

Keywords: disinfectant composition, bacteria, bacterial spores, chernozem soil, loamy soil, disinfecting effectiveness, soil infection foci.

A particular danger to the health and life of people and animals is represented by soil foci of dangerous and especially dangerous infections that have arisen in places of slaughter and death of sick animals, especially in an agonal state. In such places, the causative agent of anthrax was detected even after disinfection of the soil. This is due to the fact that when an anthrax microbe enters the soil, it passes from the vegetative form to the spore form, which is extremely resistant to environmental factors and disinfectants [1-3]. Therefore, one of the urgent problems of medicine and veterinary medicine is the search for effective and suitable for wide practical application of means and methods of sanitation of the soil foci of infectious diseases.

So far, the only means of non-specific prevention of infectious diseases, localization and elimination of foci of dangerous and especially dangerous infections are disinfectants of a chemical nature.

Modern means for medical disinfection are very diverse in composition and physicochemical properties, antimicrobial and disinfecting activity, toxicity and consumer properties [4]. However, many disinfectants have a number of disadvantages and negative properties, one of which is a lack of effectiveness in relation to the spore form of the anthrax pathogen [1, 3, 5]. In this regard, the experimental selection of disinfectants with high activity against spores of the causative agent of anthrax and effective technologies for the rehabilitation of dirt and soil from bacteria and spores is of particular importance for the elimination of soil foci of especially dangerous infections.

To disinfect the soil, mainly contaminated with the causative agent of anthrax, it is proposed to use the introduction into the soil of biomass of antagonists of anthrax - actinomycetes of the genus *Cinereus* (species *Actinomyces griseus*, *A. griseovariabilis*, *A. chromofuseus*) [6]. The method is based on the use of actinomycetes - producers of antibiotics as a biological means of inactivation of the causative agent of anthrax.

The proposed method of soil sanitation from anthrax spores is not very effective, since actinomycetes and their metabolic products are partially effective only against vegetative forms of bacteria and do not cause the death of anthrax pathogens. In addition, in order to suppress the vital activity and death of vegetative cells of the anthrax microbe, it takes a lot of time and optimal conditions for the vital activity of actinomycetes and favorable conditions for germination of anthrax pathogens spores, including the presence of a nutrient substrate in the soil, optimal soil temperature (not lower than 18-20 °C) and high soil moisture, oxygen access, etc.

Another technological approach to the elimination of soil foci of dangerous and especially dangerous infections is that a film is stretched over the infected area parallel to the surface of the earth, the edges of which are dug up with earth, and open vessels are installed under the film into which liquefied gas is poured, for example, gas a mixture of ethylene oxide with methyl bromide [7]. In order to increase the effectiveness of disinfection, open pits are installed in the ground.

However, when performing work on soil disinfection using a gas mixture of ethylene oxide and methyl bromide, a number of limitations and disadvantages of the technology were revealed:

- low efficiency of the disinfection method, because the process itself depends on external conditions (temperature, humidity and soil structure);
- high risk of emergency situations at any stage of the work on soil disinfection in the form of leakage or release of toxic gases into the atmosphere;
- air and soil pollution with toxic gases upon completion of the disinfection process with the remnants of the gas mixture, etc.

Of the disinfectological technologies for sanitizing soil foci of dangerous and especially dangerous infections, the method of disinfecting the territories of old anthrax cattle burial grounds is of interest, in which the soil is watered with an aqueous solution of SaBiDEZ at a concentration of 0.7% (using hydrogen peroxide) [8]. However, when testing this method of disinfection, even on small volumes of soil contaminated with spores, the effect was absent.

Thus, from literature available to us it is clear that in medical and veterinary practice there are no effective and safe means and technologies for the rehabilitation of soil contaminated with bacteria, fungi, viruses and spores of pathogens of dangerous and especially dangerous infections.

In this regard, the purpose of this study is to develop a highly effective disinfectant and disinfection technology designed for the accelerated and reliable elimination of soil foci of dangerous and especially dangerous infections resulting from the burial, slaughter, and mortality of sick animals as a result of industrial accidents, catastrophes, and bioterrorist acts.

Materials and research methods

In the study, bacterial strains of pathogens associated with the provision of medical care (*Salmonella enteridis* strain 237; *Pseudomonas aeruginosa* strain L23), vaccine strains of plague bacteria (*Yersinia pestis* strain EV), vaccine bacterial strain of anthrax *Bacillus anthracis* (strain STI-1) and bacteria *Bacillus stearothermophilus* ATCC 12980 obtained from the collection of microorganisms FBSI SSCMB in lyophilized form.

Working bacteria cultures of *S. enteridis* strain 237 and *Ps. aeruginosa* strain L23 was grown on meat-peptone agar (MPA) for 24 hours at a temperature of 37 °C.

A working plague microbe culture, *Y. pestis* strain EV, was grown on meat-peptone agar for 24 hours at a temperature of 37 °C. To obtain a bacterial suspension, the bacterial culture from the surface of the agar medium was washed with sterile saline solution (pH-6.2), then the resulting microbial suspension was filtered through a sterile cotton-gauze filter and diluted to a standard concentration of two billion microbial bodies per 1 ml.

The cultures of test microorganisms used in the work (*S. enteridis* strain 237; *Ps. Aeruginosa* strain L23 and *Y. pestis* strain EV) were typical in their cultural and morphological properties, and in terms of resistance to conventional disinfectants for vegetative forms of GI pathogens they met regulatory requirements.

For the cultivation of bacteria *B. anthracis* STI-1 and *B. stearothermophilus* ATCC 12980, Hottinger agar (160 mg amine nitrogen), fish flour hydrolyzate-based culture medium (GRM № 1) and Luria-Bertani (LV agar / LV) medium were used -bouillon).

Spore cultures of bacteria *B. anthracis* STI-1 and *B. stearothermophilus* ATCC 12980 were obtained according to the standard method [9].

Evaluation of the antimicrobial activity of the proposed disinfectant was carried out according to methods generally accepted in Russia [10].

The disinfecting effect of disinfectant working solutions was studied on test surfaces and test objects that imitate medical instruments and medical waste, technological equipment, interior and household appliances, and household items. The microbial culture was suspended in physiological saline to a concentration of at least 2×10^9 MK / ml. Test surfaces and test objects were contaminated with a suspension of microorganisms (bacteria, bacterial spores). At the end of the experiments, a universal neutralizer was used to neutralize the active components of the disinfectant, including Tween-80 - 3%, cysteine - 0.1%, lecithin - 0.1%, histidine - 0.1%, saponin - 0.3%, thiosulfate sodium - 0.5% [10].

Results and discussion

To safely and effectively disinfect soil contaminated with pathogens of dangerous and especially dangerous infections, including anthrax pathogen spores, in a wide range of positive temperatures (from 3 to 20 °C) on various types of soils with short exposure times, a composite disinfectant was proposed, consisting of from hydrogen peroxide, Quaternary ammonium compounds, sulfanol, water and various functional additives [11].

Evaluation of the disinfecting activity, as well as the determination of the disinfection regimes of the proposed peroxide composite disinfectant, was carried out during the disinfection of complex objects of the environment and furniture objects: test surfaces contaminated with organic substances, test objects of sanitary equipment, contaminated linen, dishes with food residues, cleaning equipment, medical waste, air contaminated by bacteria and spores of pathogens of dangerous and especially dangerous infections. For disinfection, several methods of processing objects were used - irrigation, rubbing, immersion or soaking, aerosolization. Disinfectant consumption rates for wiping - 100 ml/m², for irrigation - 300 ml/m², for aerosolization - 30 ml/m³.

It was found that the study of the antimicrobial properties of peroxide composite decanter on various test surfaces, test items and test objects contaminated with bacteria, pathogens associated with the provision of medical care and bacteria especially dangerous infections, has pronounced bactericidal and disinfecting properties in the concentration range from 0.3 to 3% for hydrogen peroxide at an exposure time of 30 to 120 minutes (table 1).

Table 1 - Modes of disinfecting with peroxide composite disinfectant solutions of surfaces, objects and materials, air, contaminated with bacteria, pathogens associated with the provision of medical care (IASP) and bacteria especially dangerous infections.

Disinfection conditions	Disinfection Objects			
	Surfaces, equipment, hard furniture,	Dishes, laundry, toys, medical supplies	Air and indoor surfaces	Medical waste and cleaning equipment
Test germs	Pseudomonas aeruginosa strain L23			
Processing method	Rubbing or irrigation	Dipping or soaking	Aerosolization	Soaking or dipping
The concentration of the solution,% (hydrogen peroxide, HP)	1,0	1,0	0,5	3,0
Processing time, min	30	30	30	120
Test-microbes	Salmonella enteridis strain 237			
The concentration of the solution,% (by HP)	0,5	0,5	0,5	2,0
Processing time, min	30	30	30	120
Test-microbes	Yersinia pestis strain EV			
The concentration of the solution,% (by HP)	0,3	0,5	0,3	2,0
Processing time, min	60	120	30	120

For effective disinfection of test surfaces, dishes, laundry, contaminated with organic substances, and medical waste contaminated with anthrax pathogen spores, working solutions of the agent are required in concentrations of 4-6% at a treatment time of 60-120 min (table 2).

Table 2 - Modes of disinfecting with peroxide composite disinfectant solutions of surfaces, air, objects and materials during contamination with anthrax pathogen spores

	Surfaces, equipment, hard furniture,	Dishes, laundry, toys, medical supplies	Air and indoor surfaces	Medical waste and cleaning equipment
The concentration of the solution (for hydrogen peroxide)	4,0 %	4,0 %	4,0 %	6,0 %
Time of processing	60 min	120 min	60 min	120 min

Thus, the proposed peroxide disinfectant composition effectively disinfects test surfaces, test items contaminated with pathogens of infections associated with the provision of medical care, and pathogens of especially dangerous infections, in concentrations of 0.3-3% for hydrogen peroxide at an exposure time of 30-120 min. When disinfecting surfaces and various objects seeded with bacterial spores, a disinfecting effect was observed when exposed to solutions of the agent in concentrations from 4% to 6% and exposure of 60-120 minutes.

During the test, the disinfectant solutions did not have a pungent odor and did not contaminate the treated surfaces; they are safe for personnel using the recommended personal protective equipment.

So, the proposed peroxide compositional disinfectant is 100% effective against pathogens of various infectious diseases and anthrax spores.

It was also found that the disinfectant is environmentally friendly, does not damage structural materials and metals and can be used for disinfection of various environmental objects, buildings, machinery and technological equipment. After use, the disinfectant disintegrates into harmless products.

The test of the disinfecting activity of the proposed disinfectant on samples of various types of sterile soil (chernozem, loam) contaminated with bacteria and spores of pathogens of especially dangerous infections was carried out in laboratory conditions. It was found that the bacteria of the

causative agents of plague in soil samples are inactivated by a 13% solution of hydrogen peroxide for 24 hours. It was also found that for decontamination of soil from spores of anthrax microbe, the disinfection effect can be achieved by treatment with a 15% disinfectant solution (using hydrogen peroxide) at an exposure time of 24 hours.

Tests of the disinfecting activity of the disinfectant were also carried out under conditions close to real environment. For this, a large volume of loamy soil (approximately 1-1.1 m³) was loaded into an experimental model of soil anthrax cattle burial ground [12]. To a soil depth of 50; 150 and 250 mm were laid in microcontainers with spores of *B. stearothermophilus* ATCC 12980, imitating spores of the causative agent of anthrax. The soil surface was watered with a solution of a disinfectant at a concentration of 10-15% (for hydrogen peroxide) and kept for 24-72 hours at ambient temperature during the daytime of 11-18 °C, and at night at a temperature of 3 to 9 °C. After the time of soil surface treatment, the micro-containers with spores were removed from the soil, the disinfectant residues on the surface of the spores were removed using a universal neutralizer, then the spore suspension was sown in a liquid nutrient medium and on a dense agar medium to determine the survival of bacterial spores.

It was found that surface treatment of the soil with a working solution of the proposed disinfectant in a concentration of 15% at an exposure time of at least 24 hours leads to complete inactivation of bacterial spores at a soil depth of 1 to 250 mm (table 3).

Table 3 - Modes of disinfecting with solutions of peroxide composite disinfectant of the soil surface during contamination with bacterial spores

Soil samples	Loam soil		Chernozem soil	
Hydrogen peroxide concentration	15,0 %		15,0 %	
Average ambient temperature	10 °C		12 °C	
Processing time, h	24	24	24	24
Depth of processing, mm	50	100-150	50	100-150
The level of spore inactivation,%	99,7	99,3	99,3	99,0

Thus, the studies showed that the examined peroxide composite disinfectant, consisting of hydrogen peroxide, quaternary ammonium compounds, sulfanol, water and various functional additives, has universal antimicrobial activity, and also has low toxicity and is environmentally friendly. The tool effectively disinfects any complex surfaces and objects, including

soil, contaminated with bacteria and spores of pathogens of dangerous and especially dangerous infections. The disinfecting effectiveness of a 15% solution of peroxide composite disinfectant was also established under scaled conditions, close to real natural soil ecosystems, in relation to bacterial spores on the soil surface and to a depth of not more than 250 mm.

Active ingredients that make up the disinfectant are hydrogen peroxide and alkyldimethylbenzylammonium chloride. With a combination of hydrogen peroxide and alkyldimethylbenzylammonium chloride, their damaging synergistic effect on the cellular structures of microorganisms takes place [13]. Hydrogen peroxide and alkyldimethylbenzylammonium chloride at relatively low concentrations disrupt the permeability of cell membranes, cause solubilization of proteins and phospholipids, protein denaturation and inactivation of enzymes, destruction of cell structures and cytoplasm [14].

It should also be noted that the tested disinfectant is environmentally friendly, does not damage structural materials and metals and can be used for the disinfection of various environmental objects, buildings, machinery and technological equipment. After disinfection, the product completely breaks down into harmless products: water and traces of alkyldimethylbenzylammonium chloride.

The effectiveness of the peroxide disinfectant composition in disinfecting the surface of the soil contaminated with bacteria and spores of dangerous and especially dangerous infectious diseases can serve as the basis for the development of disinfectological technology intended for the accelerated and reliable elimination of soil foci of dangerous and especially dangerous infections resulting from burial, slaughter, mortality of sick animals, as a result of technological accidents, disasters and bioterrorist acts.

Conclusions

1. A peroxide disinfectant composition is proposed that has antimicrobial activity against a wide range of microorganisms, high disinfecting activity, versatility, high activity in the presence of organic substances, relatively low toxicity, safe properties in relation to people, storage stability, gentle effect on materials of processed objects, environmental safety.

2. The proposed peroxide disinfectant composition is effective in disinfecting the surface of the soil contaminated with bacteria and spores of dangerous and especially dangerous infectious diseases.

3. The proposed disinfectant composition can serve as the basis for disinfectological technology intended for the accelerated and reliable elimination of soil foci of dangerous and especially dangerous infections resulting from the burial, slaughter, and mortality of sick animals as a result of industrial accidents, catastrophes, and bioterrorist acts.

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