



***DAUGAVPILS UNIVERSITĀTES  
61. STARPTAUTISKĀS  
ZINĀTNISKĀS KONFERENCES***

**TĒZES**

**ABSTRACTS OF  
THE 61<sup>st</sup> INTERNATIONAL SCIENTIFIC  
CONFERENCE OF DAUGAVPILS  
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Daugavpils Universitātē docētāju un studējošo zinātniskās konferences notiek kopš 1958. gada. Konferencēm ir starpdisciplinārs raksturs un tajās piedalās gan studējošie, gan arī ievērojami zinātnieki no dažādām pasaules valstīm. Daugavpils Universitātes 61. starptautiskās zinātniskās konferences pētījumu tematika ir ļoti plaša – eksaktās, humanitārās, izglītības, mākslas un sociālo zinātņu jomās.

Krājumā *Daugavpils Universitātes 61. starptautiskās zinātniskās konferences tēzes = Abstracts of the 61<sup>st</sup> International Scientific Conference of Daugavpils University* apkopoti materiāli, kas tiks prezentēti konferencē organizētajās darba grupās 2019. gada 11.–12. aprīlī un kas atbilst konferences formālajām prasībām.

Krājuma veidotāji saglabāja autoru iesniegto tēžu lingvistisko un gramatisko struktūru.

Par norādītajiem faktiem, izteiktajiem viedokļiem un lietoto terminoloģiju atbild tēžu autori.

The annual scientific conferences at Daugavpils University have been organized since 1958. The themes of research presented at the conferences cover all spheres of life. Due to the facts that the conference was of interdisciplinary character and that its participants were students and outstanding scientists from different countries, the subjects of scientific investigations were very varied – in the domains of exact sciences, the humanities, education, art and social sciences.

The Collection of Abstracts of the 61<sup>st</sup> Scientific Conference of Daugavpils University contains the abstracts on researches, which will be presented in the corresponding work groups organized within the framework of the conference in April, 11–12, 2019. In the abstracts published in *Daugavpils Universitātes 61. starptautiskās zinātniskās konferences tēzes = Abstracts of the 61<sup>st</sup> International Scientific Conference of Daugavpils University* we have preserved the authors' style (linguistic and grammatical structures), and the authors themselves are responsible for the facts and opinions reflected and the terminology used in their abstracts.

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# MĀKSLA

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# ART

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## **BOOK DESIGN AS A READING-BOOSTING FACTOR IN SOCIETY**

Key words: book design, book and reader interaction, e-book, cultural heritage.

Books cannot exist without the public who reads, buys and evaluates the content of the book and directly or indirectly its design too. The public is able to dictate trends and create demand for particular genres and types of books; this feature makes it necessary to explore the interests and opinions of the public on the necessity of books in everyday life.

To make it easier to understand the public opinion on the reading culture in the context of Latvia, the present study consists of two research points, in which the authors have studied quantitative data on book publishing in Latvia, and of a public survey on the interaction of books and readers. Such research tools allow understanding the popularity and importance of books in the context of the 21st century society and to study the interaction of a book's design and the reader.

The research aim is to explore the importance of book design for the public and analyze its effect on the increase of reading volume. In their research, the authors used the quantitative research method directly and through a computerized survey, which ensures a faster and more effective research process, statistical information summary, and comparison with the response distribution, the correlation method.

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## **COLOR IN UI DESIGN**

Keywords: UI design, User Interface, color

The aim of research: explore the scientific literature and internet resources about color use in UI design and based on them make recommendations for prospective designers.

Color is a great tool in the masters hands and, like any other tool, it has its strengths and weaknesses. In order to use it effectively, all options need to be considered in order to find solutions that are consistent with the objectives of the design. If you want to create harmonious visual compositions, you need knowledge about how colors work and how they interact.

The rules for using colors in the design of the user interface are one of the basic principles that help to create a user-friendly interactive interface. It is a powerful tool in the designer hands that influences many factors that are essential for easy visual perceptions. It helps to distinguish and separate objects, and encourages people to react or act in a certain way. The ability to use colors effectively is a mandatory requirement for anyone working with visual compositions.

Many designers - practitioners who work on creating a user interface (for example. V. Golovach (*B. Головач*), N. Curtis, W. Zielinski (*W. Zieliński*)), pays great deal of attention to color. In their articles and publications, they often highlight the role of color in creating user interfaces.

Color is a very difficult resource, especially in the era of digital design. At first glance, color science may not be difficult to learn, but there are many functions that require understanding.

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## **CONTEMPORARY CERAMIC TRENDS IN THE BALTIC STATES**

Keywords: *contemporary art, ceramics, artists, trends*

The art of the 21st century is reflected in the rich cultural and societal heritage through which artists find newer ways of portraying the era and demonstrating the diversity of artistic possibilities. Artists in the ceramics sector can freely express themselves, as modern times are rich in resources and information variety. Contemporary ceramic development direction is determined by various factors, such as experimenting with materials in search of new technical solutions, open thinking - without boundaries, rules and topics. The work consists of connecting different kinds of art. The era is responsible for the contemporary art in it, as it creates a spirit that characterizes itself. It is because of the time, experience and innovations that are being realized with the artist's thoughts, the artist finds how to portray this era through his art. With sophisticated experimentation contemporary artists are trying to come to another previously unforeseen result, something new, phenomenal. The works of contemporary ceramic artists from Latvia - Valda Podkalne, Sanita Ābelīte, Dainis Pundurs and Ilona Šauša were observed and studied more closely. From Lithuania - Rūta Šipalytė, Rytas Jakimavičius, Eglė Einikytė-Narkevičienė and Rasa Justaitė Gecevičienė. And Estonian ceramicists - Anne Türn, Merike Hallik, Karin Kalman and Annika Teder. The aim of the

study is to choose among the brightest and most active representatives of contemporary ceramics in the Baltic States to further describe the whole ceramics industry through their works, highlight the main trends, the concept of work, the idea, what materials are used, innovations and technical solutions.

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## ***CONTEMPORARY FASHION DESIGN: CONCEPTS, TECHNOLOGIES, PERSPECTIVES***

Keywords: fashion design, innovation, sustainability, concepts

The fast development of contemporary fashion design not only promotes the use of the modern technologies and innovations, but also encourages consideration of the sustainable design methods and original concepts. Synthesis of 21st century's digital technologies, modern textile materials and fiber, environmentally friendly strategies and techniques, as well as functional, aesthetic and creative fashion designers' solutions create products that are ready for the production (prototypes), or which perform the function of conceptual art objects.

Fashion design theorists (for instance, *Osmud Rahman, Minjie Gong, Sergey Moliavko, Naomi Kaempfer*, etc.) claim that modern consumers often doubt the development of the fashion system, highlighting the problem of the trend of excessive consumption in society and the popularity of disposable clothing production. They believe that innovations, usage of 3D printing technologies and the development of quality clothing production in all aspects can improve sustainability of the fashion design.

Contemporary fashion design perspective can also be seen in so-called *smart, intellectual* or *new generation's* textile applications, which offer the possibility to manipulate digitally with clothes, accessories or design elements, for instance, to communicate with the help of the sound, to determine the wearer's medical condition, to adjust to temperature changes, etc.

Emphasizing the most outstanding concepts, technologies and preferable perspectives, the goal of the research is to analyse the aspects of contemporary fashion design.

***Jeļena Koževņikova, Zeltīte Barševska***

## ***HOLOCAUST IN LATVIAN GRAPHICS ART***

Keywords: contemporary art, graphics, Latvia, Holocaust, interpretations.

Perhaps, the 20th century will be recorded in the annals of history, as one of the bloodiest centuries for human kind, in which two world wars took place by the small margin of just twenty years. The Nazi Germany's war crimes and the systematic annihilation of Jewish people during World War II (1939-1945) have become a dividing point for the entire history of the world. The Latvian Jewish Community was virtually destroyed during this period, but the country's territory was converted into a landfill for the dissolution of Western European Jews.

Nuremberg process (November 1945-October 1946), revealed the evidences of the Holocaust to the public, therefore shocking the society of the whole world and echoing in the world of art. Well-known world artists such as (Leo Haas (1901-1983), David Olere (1902-1985), Zoran Muzich (1909-2005), Art Slippelman (1948 -)) have expressed their views and feelings about Holocaust in their artworks, thereby attracting attention to this event of world importance and its consequences. In the Latvian graphics art, the subject of the Holocaust is not alien either. Artists, in the second half of the 20th century and today also, reflected upon this phenomenon (Josefs Kuzkovskis (1902-1970), Josifs Elgurts (1924-2007)). The aim of this study is to identify the coverage of the Holocaust topic in artworks of Latvia's graphics artists' and track these artifacts in modern art.

***Silvija Ozola***

## ***IMPACT OF SECONDARY WORSHIP PLACES ARRANGEMENT ON SPATIAL STRUCTURE AND PLANNING OF CITIZENS' CATHOLIC PARISH CHURCHES IN CITIES OF HANSEATIC LEAGUE DURING 13TH – 15TH CENTURY***

The plan of cult building consists of two large zones: the presbyterium where the sacred rituals take place, and the hall for the parish. Initially, cult building had a simple layout: a single apse for the altar was created. In early basilicas of Latin and Greek, or Byzantine cross-design, aisles never lasted and did not create sidewalks around the choir. In the course of development, the layout of the cult building and the presbyterium changed: secondary prayer places, or chapels, began to set up. The cult of relics flourished and chapels arranged around the holy site in the church. In the Catholic temple, the entrance into the apse was made by a wide circular passage around the choir to which polygonal chapels adjoined.

Jerusalem is the cult centre of the World. During the Second Crusade (1147–1149), knights rebuilt the Church of the Resurrection – the most important holy site for Christians. During the course of centuries, the complex around the rotunda has been supplemented with secondary worship places. Chapels influenced the architectonically spatial structure of citizens' Catholic parish churches, which were important for urban planning of Hanseatic League cities. After rebuilding of Riga

St. Peter's Church, secondary worship places were created, and the planning for one of the main citizens' Catholic parish churches in Livonia was made.

Goal of the research: analyse the common and different features of the planning of secondary worship sites at citizens' Catholic parish churches in Hanseatic League cities during the 13th – 15th century. Research novelty: evolution of secondary worship places of citizens' Catholic parish churches at Hanseatic League cities and Riga St. Peter's Church has been studied in the context of Resurrection Church of Jerusalem as the world's sacral centre. The main methods: this study is based on analysis of projects and cartographic materials of urban planning, published literature and inspection of buildings in nature.

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## ***LATVIAN HORSES IN A RURAL LANDSCAPE***

Keywords: graphics, lithography, the Latvian horse breed, the Latvian landscape, horse riding.

The purpose of the scientific research: to explore traditions of the image of the horse and horse riding in the Latvian and historic art;

to find unexplored branches in this topic and fulfill them both theoretically and practically. In this scientific research we will, firstly, overlook the history of birth and development, as well as specific features of Latvian horses breed. Secondly, we will find the most effective way of picturing them in graphics. Despite the fact that horses have followed human being in Latvia since ancient times. They can be seen on the pieces of art of Latvian artists, but particularly in graphics, in our opinion this topic is not sufficiently covered. There are a lot of pieces of art with horses in the history of Latvian art: Kārlis Zāle, Ādam Alksnis, Ivars Heinrihsons etc. Nevertheless, the horse has the unique plastic form and line, is interesting in statics and in motion, impresses at the same time with its power, and its sensitiveness, as well as can be the unlimited source of inspiration for artist, specialized in graphics. Our task is to follow and show the Latvian horse breed in the rural landscape, in their natural habitat, using the methods of lithography and drawing. We have a task to draw attention of the modern human being, which lives in a constant stress and in the world of technology, to the symbol of horse and to recall to the old friendship with the purpose of seeking in this relationship for harmony and natural powers. Not by chance, there are more and more Latvian inhabitants, who are eager to try themselves in horse riding, are curing their soles and body with nature and horses. We assume that this research and the series of lithography works will emphasize the image of horse and will add the new point of view in modern art on, which seemed to be, old and familiar things, which did not lose their relevance, and even gained new power.

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## ***SUSTAINABLE DESIGN IN INTERIORS OF EDUCATIONAL INSTITUTIONS***

Key words: sustainable design, educational institution, interior, interior decoration, survey.

The choice of sustainable design solutions is a topical alternative that is widely used in contemporary design in educational institutions, where environmental quality is particularly important from the point of view of health preservation and consumer education.

Aim of the article: to study the principles of sustainable design in a historical and contemporary context, to justify the need for sustainable design in an educational institution.

Research methods: theoretical - research and analysis of literature, normative documents, Internet resources; empirical - observations, questionnaire, analysis of the students' drawings, interviews. According to the used methods, the study is qualitative and non-experimental, as it is based on an interpretative strategy of the obtained data.

The study was carried out in Cesis Children and Youth Center. The survey was attended by three user groups - students, institution staff and parents - 64 respondents in total. 3 experts participated in the interviews.

As a result of the research, the application of sustainable design principles in interior decoration in the context of history and modernity was compared with the use of materials harmful to health, the issue of sustainable use of resources in the interiors of educational institutions was updated, it was proposed to include it as an essential criterion in the procurement specifications of interior and reconstruction.

The attitude of users towards the use of sustainable design materials in an educational institution and user preferences for interior design in Cesis Children and Youth Center has been clarified.

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## ***THE APPLICATION OF THE GUOHUA PRINCIPLES IN THE LATVIAN LANDSCAPE***

The purpose of the scientific work: to explore the principles of the Chinese art of Guohua with regard to their possible usage in the European art in order to enrich its technical, expressive and conceptual tools. The key point in distinguishing European and Chinese styles of drawing is in the use of various tools. In the first case, these are

“hard” tools and materials (pencil, coal, pen, etc., as well as heavy waterproof paper). In the second case, these are “soft” tools and materials (a special form of a brush and the thinnest paper with varying degrees of absorption). As a result of this difference, it is possible to ascertain the varying degrees of “sensitivity” of the material and, consequently, the extent of the impact the artist has on their work. In the case of Chinese art, the very process of creation is encapsulated in the preparedness and precision of the artist’s movements, as well as his ability to control his body and breath. Different ways of handling the brush and the accuracy and speed with which the brush touches the paper, as well as the ink taking into the brush variations, and even its ratio to water give rise to a rich palette of tones, lines, strokes and spots. In contrast to the Western tradition, the Chinese picture does not tolerate corrections due to the delicateness and fragility of the paper and requires a ‘one take’ performance without a single error with the full concentration and dedication of the artist. This study is a theoretical and practical experiment, during which it is planned to analyze the status quo of the contemporary Latvian landscape drawing and to identify the most important techniques of Guohua with the aim of “splicing” the two together. As the global history of the arts demonstrates, such a dense mutual influence of European and Oriental art at times paves the way to very strong and oftentimes revolutionary decisions, the development of the consequences of which are difficult to predict. This study aims to find the most organic introduction of the Guohua techniques into the Latvian landscape drawing without compromising its identity, but rather by expanding its capabilities from the perspective of Latvian contemporary art and its future prospects.

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## ***THE SIGNIFICANCE OF PERSONALITY IN PORTRAITURE ART***

Key Words: personality in portraiture, paintings, artists, contemporary art, portrait

This investigation will examine the development of the centrality of personality in portraiture art from antiquity to the present day. How traditions changed and what significance the personality had in paintings. Who the subjects were in the Early Gothic period. How traditions in the depiction of people changed during the Renaissance, in twentieth-century art, in Socialist Realism, and in modern art. The timeline of events will include Ugolino di Nerio, Hans Memling, Jan van Eyck, Rogier van der Weyden, Piero della Francesca, Edvard Munk, Grant Wood, Renato Guttuso, Aleksandr Deyneka, Balthasar Klossowski de Rola, Lucian Freud, Dino Valls, Emma Hopkins, and Kerry James Marshall. The similarities and differences between portraiture art and photography will be identified from the standpoints of choice of imagery and choice of device for producing a work of art and interpreting its artistic subject. We also propose a separate examination of the work of modern artists in Latvia in terms of their pursuit of subject matter for their paintings, including a study of the works of Miervaldis Polis, Harijs Brants, Ritums Ivanovs, Normunds Brasliņš, Jana Briķe. In conclusion we would like to share our own experiences in searching for topics and visual aesthetics. The goal of the research is to trace the development of the importance of personality in the history of portraiture art. To attempt to identify patterns in the history of portraiture as well as to show the relevance of human representation in modern art.

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## ***USE OF HUMAN BODY IN CONTEMPORARY ART***

Key Words: bodyart, contemporary art, contemporary artists, activity art, painting

Contemporary artists create new ways of expression, they synthesize. The human body has always been a source of inspiration for artists, although, when the modern art begins, the human body gets new borders, that are extended even more in the middle of the 20th century, when the human body becomes, both, canvas and brushes itself. Through performance and the activity art, the human body leaves diverse prints in the world of arts.

The representatives of the contemporary art has varied design conceptions. They do not have a common methodology but what is in common for them is this time and discovery of new dimensions. One of the contemporary conceptions is to refuse the inherited. When going out of the seen and known, one must face a part of society that is not capable of accepting innovations that are not clearly understandable for them.

In Latvia, ideas through body are realized by Metra Saberova, but Ilgvars Zalans works in the activity art. Both of them are well known abroad. Ai Weiwei is a significant multidisciplinary master who is internationally politically active. Marina Abramovic has used her own body as a media for 50 years. Yayoi Kusama has been active for more than 60 years. She has created her own easily recognizable handwriting. The created image is bright in its colours.

The aim of the research is to view some of the Latvian artists and some artists in the world in order to discover their personal experience in developing images between the creator and the spectator and to analyze different viewpoints in the process of creating art by using the human body.

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## **A 3 MONTH REVIEW OF FRESH FROZEN PLASMA AND CRYOPRECIPITATE USAGE IN PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL**

**Introduction.** Blood product transfusions have been widely used in medical practice to ensure adequate blood component levels. Considering that blood products are a valuable resource there is a need for appropriate blood product utilization and documentation.

**Aim.** To analyse the usage of fresh frozen plasma (FFP) and cryoprecipitate (CRYO) in Pauls Stradiņš Clinical University Hospital (PSKUH) and to evaluate the accuracy of documentation of blood product requests and supplies. **Materials and methods.** This retrospective study comprised data of FFP and CRYO usage in PSKUH from January to April 2018. The data were retrieved by archive search. The assessed parameters included patient's age, gender, clinical diagnosis, history of transfusions, the amount of requested and issued blood products, transfusion reactions. **Results.** 608 requests for FFP were received, in 495 cases it was issued. 179 requests for CRYO were received, 177 were issued. In total 1064 units (297,46 l) of FFP and 1547 units (61,88 l) of CRYO were issued. The average age in FFP recipients was 62.3 years - 223 females (45.1%) and 272 males (54.9%). For CRYO 61.2 years comprising 70 females (39.5%) and 107 males (60.5%). Based on diagnoses, 256 (51.7%) who received FFP were surgical and 204 (41.2%) therapeutic patients, there was no data about 35 (7.1%) cases. 104 (21%) had previously received transfusions, 86 (17.4%) had not, in 11 (2.2%) cases the data could not be obtained, in 294 (59.4%) cases information was not provided. For CRYO respectively 54 (87%) surgical patients, 14 (7.9%) therapeutic, 9 (5.1%) no data. 35 (19.8%) had received transfusions, 30 (16.9%) had not, 3 (1.7%) – could not obtain data, in 109 cases (61.6%) information was not provided. No transfusion reactions were observed. **Conclusions.** The requested amount of transfusion units does not correspond with the amount that was issued. More units were requested than issued. The documentation of blood product requests is superficial and not exact.

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## **A 3 MONTH REVIEW OF RED BLOOD CELLS TRANSFUSION IN PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL**

**Background.** The intent of this report is to familiarize health care professionals with the concept of effective quality assurance in regard to blood component, particularly red blood cells transfusion.

**Aim of the study.** The present study was designed to study of use of the red blood cells transfusion in Pauls Stradiņš clinical university hospital.

**Materials and methods.** This retrospective study comprised data of red blood cells component usage in Pauls Stradiņš clinical university hospital from January to April 2018. 1208 patients were scheduled for red blood cells transfusion. We included participants of any age and clinical diagnosis. There were collected data about patients sex, age, history of transfusions, the amount of requested and issued blood products, transfusion reactions. For statistical analysis IBM SPSS 25.0 was used.

**Results.** Totally, 1208 patients were included in the retrospective study. The average age in red blood cells component recipients was 65,00 years. In the request list issued red blood cells mass was 1,76±0,669(package), but requested was 1,93±0,768(package). Based on diagnoses, 485(40,14%) who received red blood cell were surgical and 602(49,83%) therapeutic patients, there was no data about 120(9,93%) cases. Per request of red blood cells was 480,7±179,93ml. 347(28,73%) had previously received transfusions, 193(15,98%) had not, in 21 (1,74%) cases the data could not be obtained, in 647(53,56%) cases information was not provided. No transfusion reactions were observed.

**Conclusions.** These findings demonstrate that current medical records lack the documentation necessary to evaluate transfusion practice for the majority of beneficiaries. The improved practice can be largely maintained provided staff are regularly reminded of appropriate guidelines and encouraged to transfuse for clinical need only.

## **ANALYSIS OF ANTIOXIDANTS AS BIOMARKERS OF OXIDATIVE STRESS IN DAUGAVA AND LIELUPE (*PERCA FLUVIATILIS L.*)**

Scientific research in natural sciences. Sub-branch of biology sciences. Authors: Ilya Cervjakov, Nikita Grigoryev, Anastasia Karnilova. Scientific supervisor is biology teacher Mg. biol. Janis Karklins. Scientific adviser is professor of University of Daugavpils Dr. biol. prof. Natalya Skute. Keywords: antioxidants, oxidative stress, biomarkers, *Perca fluviatilis L.* The work consists of 22 pages, the main part of which consists of 16 pages, and the supplement contains 6 pages. The theoretical part of the work contains the most important information about antioxidants and their importance. An insight into the nature of oxidative stress and the role of antioxidants in reducing it has been provided. The work contains information on the selection and characterization of the freshwater perch *Perca fluviatilis L.* as a research object. The aim of the work is to investigate the activity of individual antioxidants as biomarkers of oxidative stress in the perch (*Perca fluviatilis L.*) in the Daugava and Lielupe river, using quantitative analysis of samples. To achieve the aim, scientific literature (publications, research) on the topic analysis, antioxidant catalase (CAT) activity measurements and determination of malondialdehyde (MDA) concentration in the studied Daugava and Lielupe perch (*Perca fluviatilis L.*) were performed. Results were collected in the tables and analyzed. The main results showed that MDA can be detected in all samples from all three collection sites, however in the Lielupe estuary and river Daugava near Skrīveri the content of this substance is higher. The same is true for CAT activity. Consequently, the main conclusions of the authors are about the potential contaminants, their possible origins and types. The material and methodology in this section contain information on the analytical methodology. The results are compiled in 9 tables (3 of them in the main part of the work and the other 6 in the supplement). The authors have drawn conclusions from the results and have developed a plan for further research work.

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## **CAPTIVE BREEDING AS CONSERVATION MEASURE FOR BOMBINA TOADS (AMPHIBIA, ANURA) IN UKRAINE AND LATVIA**

Species of *Bombina* genus are mentioned in Resolution 6 species' protection list, in Appendix II (*B. bombina*) and Appendix III (*B. variegata*) of Bern Convention. Being listed in the Red Book of Ukraine (2009) as "Vulnerable" *B. variegata* inhabits only Carpathian and Subcarpathian regions (up to 2000 m a. s. l.). Using GIS-modelling, it was found out, that by 2030 *B. variegata* natural areas would be cut in half as a result of climate change. Following our prediction, *B. bombina* natural areas are likely to reduce and move to the North and North-West (Baltic countries) (Tytar et al. 2018). It means that eastern and southern *B. bombina* populations will suffer the most from climate change and invasive species (Pupina et al. 2018). That's why development of breeding methods for these species in herpetoculture is of great importance. Such practice is already very successfully implemented in Latvia (Pupina, Pupins 2015) and will be adopted for Ukrainian populations as there is a lack of information of this topic in Ukraine. According to our preliminary results, keeping low ambient temperature limit at 14°C is enough to stimulate *B. variegata* breeding without true hibernation. The first clutches were obtained in April (40-50 eggs in each). Metamorphosis started in 30 days. 3-8 tadpoles were metamorphosing every day. Total amount of tadpoles is 312. 122 individuals successfully underwent metamorphosis and 18 of them died immediately after its finishing. Stages № 39-41 had the highest death rates. In future management plans for these species' protection should include possibilities of reintroduction of captive bred individuals taking into account genetic peculiarities of breeding stock and wild populations. The study was conducted in accordance with legislation of Latvia and Ukraine, and with support of the VIAA project Nr. LV-UA/2018 "The ecological and biological triggers of expansion of the invasive fish, Chinese sleeper (*Perccottus glenii*), in Eastern Europe".

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## **FLOODING INDUCED CHANGES IN DNA SYNTHESIS IN DIFFERENT PARTS OF 3D LEAF WINTER WHEAT (*TRITICUM AESTIVUM* L.)**

Global climate changes causes increased precipitation, abnormal rainfalls in some agriculture territories, that are specialise on crops production, and leads to significant economic losses. Exaggerated soil water saturation leads to oxygen deprivation and root flooding stress, following with root anoxia, oxidative stress and intoxication. Dysfunction of roots leads to water and nutrient deficit in all parts of plant, wilting and senescence of leaves. Such energy consuming processes as cell division and associated with it DNA synthesis, are also depressed. Wheat is one of the major crops in the world, but it is very sensitive to root flooding stress.

The aim of our investigations was to study the activity of DNA synthesis in different parts of 3d leaf of winter wheat cultivar "Fredis" Latvian selection as a model. The main function of leaf basal part (folium casus vaginam) is the mechanical protection the delicate tissues of the shoots meristem; the main function of leaf middle part is photosynthesis; leaf apical part – photosynthesis and ageing processes. The experiment was carried in the climatic chambers under controlled environmental conditions. Soil environment for experimental group of plants were watersaturated during 10 days applied from 21 to 31 day of plant development. The DNA was extracted by use of modified saltig-out method. DNA was quantified spectrophotometrically (Shimadzu BioSpec-Nano) at A260/A280 and A260/A 230, A260/A280 ~1.8, and A260/A 230 ~1.9 respectively. DNA quality was checked by agarose gel electrophoresis (1.5%) in TBE buffer with ethidium bromide (0.5µg/mL).

Results of our investigations showed, that DNA synthesis decline significantly in all parts of 3d leaf, comparing with a control grope, but the most dramatic reduction was detected in the apical part of leaf on the 7<sup>th</sup> and 10<sup>th</sup> day of treatment – for 56 % and 47% respectively. In fact, the DNA concentration in the apical part of leaf after 10 days of flooding reached only 44% from the 1st day of treatment, but in the basal part – only 23.5% from the start position on the 1st day of treatment. Root flooding stress during tillering on the 21-31 day of plant development induces DNA synthesis depression and senescence intensification.

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## **IS SPERM DNA DAMAGE ASSOCIATED WITH IVF EMBRYO QUALITY ? REVIEW**

Keywords: Spermatozoa, Sperm DNA, Embryo, Pregnancy, In vitro fertilization

Sperm DNA damage is common amongst infertile men and may adversely impact natural reproduction, assisted reproduction and to a lesser degree IVF pregnancy. Sperm DNA integrity is vital for successful fertilization, embryo development, pregnancy, and transmission of genetic material to the offspring. DNA fragmentation is the most frequent DNA anomaly present in the male gamete that has been associated to poor semen quality, low fertilization rates, impaired embryo quality, and preimplantation development and reduced clinical outcomes in assisted reproduction procedures. High DNA fragmentation index (DFI) may be associated with poor outcome after ICSI. Our aim was to determine whether DFI impacts embryo quality. We conducted a review of studies that evaluated sperm DNA damage and embryo development and /or quality after ICSI. This review indicates that the evaluable studies are heterogeneous and that overall, there is no consistent relationship between sperm DNA damage and embryo quality and/or development.

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## **META AND BIOINFORMATICS ANALYSIS OF SNP OF PROTEASOME GENES AS POSSIBLE MOLECULAR MARKERS FOR MULTIPLE SCLEROSIS CASE/CONTROL STUDY IN LATVIAN POPULATION**

Multiple sclerosis (MS) is an autoimmune inflammatory disease of the central nervous system. Inflammation damages myelin, nerve fibers themselves and cells that make myelin, thus leading to neurodegeneration and disabilities. Proteasomes, the multycatalytic protease complexes, play critical role in degradation of proteins via ATP/ubiquitin-dependent process, which plays crucial role in immunity and its dysregulation and/or modulation may influence development and progression of different diseases. The proteolytic activities of proteasomes are reduced in brain tissue of MS patients. The aim of the study was to determine the prevalence and possible functionality SNPs of proteasome gene to analyze their usability as molecular markers for MS binding study in the Latvian population. Literature and sequence data on **six SNPs** of proteasomal genes: PSMB8 (rs2071543, rs9357155, rs9275596), PSMB9 (rs17587), PSMD9 (rs74421874, rs3825172) were analyzed using meta-analyze and **bioinformatical tools** for DNA and RNA secondary structure, DNA bending and transcription factor binding sites. In

European population, the prevalence of all SNPs is at least 14%, and there is information on their associations or linkage with different diseases, including MS, in different populations. The available literature and allele frequency data indicate that rs74421874 and rs3825172 maybe in complete linkage disequilibrium. The majority of SNPs studied demonstrated allele-dependent alternative secondary structures. Differential structures of DNA were found for rs9357155, rs17587, rs74421874, and rs3825172, and of RNA for rs2071543 and rs17587. Marked differences in simulated DNA curvature and bendability depending on allele were observed for rs9275596, rs9357155, rs74421874, and rs3825172. Alternative alleles of SNPs form and/or terminate the potential binding site of transcription factors in the SNP region. **Meta and bioinformatic analysis** of selected SNPs of PSMB8, PSMB9, and PSMD9 **illustrate possibility** of using them as molecular markers of MS by genotyping in association study. **Acknowledgments:** SAM No 1.1.1/16/A/016 project "Determination of proteasome-related genetic, epigenetic and clinical markers for multiple sclerosis".

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## **MICROBIOLOGICAL CHARACTERISTICS OF PATHOGENIC BACTERIA ISOLATED FROM TONSILLAR CRYPTS OF PATIENTS WITH CHRONIC TONSILLITIS**

Introduction. Microorganisms in tonsillar crypts have opportunity for longtime interactions with immune system. Antibacterial resistance and biofilm production are important characteristics of bacteria and can facilitate chronicization of the tonsillopathy. Bacteria in biofilm display elevated resistance to antibiotics, disinfectants, host immune system clearance.

Research objectives are to assess antibiotic susceptibility and biofilm producing ability of isolated pathogens from tonsillar crypts of patients with chronic tonsillitis.

Methods. Punch biopsy samples from tonsillar crypts were taken for microbiological testing. Identification of microorganisms was performed with MALDI - TOF mass spectrometry. Antibiotic susceptibility was tested on VITEK. Microtitre plate method was used for the in vitro cultivation and quantification of bacterial biofilms. The OD (optical density) of each well was measured using micro - titre plate reader. Cut-off value (OD<sub>c</sub>) was defined as three standard deviations above mean OD of the negative control. Strains were divided as following: OD ≤ OD<sub>c</sub> = no biofilm producer, OD<sub>c</sub> < OD ≤ 2 x OD<sub>c</sub> = weak biofilm producer, 2 x OD<sub>c</sub> < OD ≤ 4 x OD<sub>c</sub> = moderate biofilm producer, 4 x OD<sub>c</sub> < OD = strong biofilm producer.

Results. From tonsillar crypts of 68 patients with chronic tonsillitis following 60 pathogenic bacteria were assessed for biofilm production: S.aureus 22/60, K.pneumoniae 19/60, E.coli 4/60, S.pyogenes 3/60, S.pneumoniae 3/60, A.ewoffii 2/60, S.anginosus 2/60, N.subflava 1/60, M.morganii 1/60, H.influenzae 1/60, K.oxytoca 1/60, E.aerogenes 1/60. Majority of isolated pathogens were resistant to antibiotics which are used to treat episodes of tonsillitis. Using microtitre plate method 8.3% (5/60) of strains was no biofilm producers, 41.7% (25/60) of strains – weak biofilm producers, 43.3% (26/60) of strains – moderate biofilm producers, 6.7% (4/60) of strains – strong biofilm producers. Conclusions. Isolated pathogens from tonsillar crypts were resistant to antibiotics which are used to treat tonsillitis. Isolated pathogens from tonsillar crypts were weak (41.7%), moderate (43.3%) or strong (6.7%) biofilm producers. Only 8.3% of strains did not produce biofilm. During further studies the role of strong biofilm producers has to be evaluated as biofilm production plays a key role in the pathogenesis of chronic tonsillitis.

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# **MICROORGANISMS AND ANTIBIOTIC RESISTANCE PROFILE OF BACTERIA ASSOCIATED WITH LEAD-RELATED INFECTIVE ENDOCARDITIS IN PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL**

Background. Cardiac implantable electrical devices (CIED) remain as a mainstay treatment of chronic heart failure, bradycardias and various dangerous heart rhythm disturbances. The use of CIED's in appropriate patients, considerably increase survival and improve the quality of life.

Lead-related infective endocarditis (LRIE) is one of the most serious complications of cardiac implantable electrical devices. As the number of implanted devices grows every year, number of LRIE affected patients increases as well. Constantly growing bacterial antibiotic resistance is a major obstacle to successive treatment, which with increasing frequency leads to prolonged antibiotic usage, thus leading to greater toxicity and worse outcome. Detection of causal organism is crucial to successive treatment of LRIE.

**Objective.** The aim of the study was to identify LRIE causal bacteria and their antibiotic resistance profile in Pauls Stradins University Hospital.

**Materials and methods.** The retrospective study has evaluated patients, who were referred to Pauls Stradins University Hospital due to LRIE, for lead extraction. Lead extraction was performed surgically or transvenous. Causal microorganisms were cultivated either from blood, leads or device pocket. IBM SPSS v22.0 software was used for data analysis.

**Results.** Forty-nine patients with LRIE were selected for this study. The mean age was 60.8±17.2 years. Thirty-four were men (69.4%). Thirty-two (65.3%) patients have received antibacterial treatment before sample collection. Positive culture results were seen only in 63.3% (n=31) of cases. Nearly all patients had single causal bacterium, while two had multi-infection with 2 causal organisms. Most commonly isolated bacteria were *S. aureus* and Coagulase-negative staphylococci, with similar occurrence frequency - each accounting for 23.5%. Other less frequently isolated microorganisms were *Ps. aeruginosa* accounting for 4% and *E. coli*, *Acinetobacter* spp., *E. faecalis*, *Salmonella* spp., *E. gallinarum*, *Klebsiella pneumoniae* and *S. hominis* - each accounting for 2%.

*S. aureus* isolates were resistant in 63.6% of cases, mainly to Penicillin G (70.0%), while Coagulase-negative staphylococci were resistant in 83.3% of cases, most frequently to Penicillin G (71.4%) and erythromycin (45.5%). Neither were resistant to gentamicin and only 11.1% of Coagulase-negative staphylococci were resistant to rifampicin.

**Conclusion.** In our study 47.7% of LRIE were caused by *S. aureus* coagulase-negative staphylococci, which is similar to other studies. Other bacteria were seen considerably less frequently. Due to considerable burden of resistant bacteria, high suspicion is needed in patients with cardiac implantable electrical devices, to detect causal bacteria and successfully treat LRIE early in the course of disease. This reduces length of antibacterial treatment and as consequence - reduces the toxicity of antibacterial agents and improves general outcome.

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## **MOLECULAR IDENTIFICATION OF TRICHINELLA SPP. AND SEX RATIO DETERMINATION OF PARASITE LARVAE OBTAINED FROM RED FOX**

Nematoda parasites of *Trichinella* genus are distributed in all continents but Antarctica. Nowadays there are recognized nine species and three genotypes. Species identification mainly is based on molecular biology analyses. During current study *Trichinella* genotypes were identified by multiplex PCR. Sex determination in parasites was based on identification of rectum length. Benzanthrone fluorescent probes AZM and P13 were used for labelling the parasites. Confocal laser scanning microscope was used to visualize specimens using two lasers: green laser - absorption  $\lambda = 488$  nm, with filter FITC; fluorescence  $\lambda = 500-550$  nm and yellow laser - absorption  $\lambda = 561$  nm, with filter TRITC; fluorescence  $\lambda = 570-620$  nm. NIS Elements Advanced Research 3.2 64-bit software was used to measure the rectum length. The prevalent *Trichinella* species in Latvia was *T. britovi* (98.91%). *T. nativa* and *T. spiralis* species were identified in 0.97% and 0.12%, respectively. *T. britovi* larvae were obtained from muscle tissue samples of red foxes. The mean rectum length of males and females was 41.08  $\mu\text{m}$  ( $\pm 4.26$  SD,  $\pm 0.82$  SE) and 21.19  $\mu\text{m}$  ( $\pm 2.45$  SD,  $\pm 0.59$  SE), respectively. Sex ratio was significantly biased toward females ( $P < 0.05$ ). The average sex ratio ( $\delta/\text{♀}$ ) was 0.5515 $\pm$ 0.039 SD ( $\pm 0.004$  SE).

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*Alexey Shavrin*

## **ON THE FAUNA OF THE GENUS STENICHNUS THOMSON, 1859 (COLEOPTERA: STAPHYLINIDAE: SCYDMAENINAE) OF LATVIA**

The genus *Stenichnus* Thomson, 1859 includes four species known from Latvia (Telnov 2004). During the study of Scydmaeninae material deposited in the Beetle Collection of Daugavpils University (Institute of Life Sciences and Technology, Daugavpils, Ilgas), we found several species of the genus from western and eastern parts of Latvia, between which one species previously has not been recorded from this country.

*Stenichnus (Stenichnus) bicolor* (Denny, 1825)

(*croaticus* (C.Hampe, 1850), *exilis* (Erichson, 1837), *punctillatus* (Rey, 1888), *semipunctatus* (Fairmaire, 1860), *sibiricus* (Reitter, 1896), *vicinus* (Chaudoir, 1845))

**Studied material.** Daugavpils district, Ilgas. 10.06.1999. A. Barševskis.

**Remarks.** Transpalaeartic species. It is the first record for the fauna of Latvia.

*Stenichnus (Stenichnus) collaris collaris* (O.W.J. Müller & Kunze, 1822)

(*chevrierii* (Heer, 1841), *dalmanni* (Gyllenhal, 1827), *minutus* (C.R. Sahlberg, 1822), *obscuripes* Reitter, 1909, *propinquus* (Chaudoir, 1845), *punctipennis* (Stephens, 1835), *rufescens* Gerhardt, 1910, *subelevatus* (Rey, 1888), *tomentosus* Gerhardt, 1910, *tuberculatus* (Chaudoir, 1845))

**Studied material.** 6 specimens: Ventspils district, Moricsala Natural Reserve. 14.05.2004. A. Barševskis; 1 specimen: same data. 18.07.2007. A. Pankjāns, A. Soldāns, A. Barševskis & U. Valainis; 1 specimen: same data. 13.06.2008. M. Nitcis; 1 specimen: Riga District, stac. Kūdra. 29.06.1997. A. Titovs; 1 specimen: same District. Mežciems. 25.04.1993. A. Barševskis; 1 specimen: Daugavpils district, Likсна. 28.03.1997. R. Cibuļskis; 3 specimens: same data. 04.04.1997; 1 specimen: same data. 03.05.1997; 1 specimen: same district, Vabole. 07.03.1997. R. Cibuļskis; 1 specimen: same District, Ilgas. 09-12.09.1996. A. Barševskis; 1 specimen: same data. 03.06.1999; 1 specimen: same data. 26.06.1999.

**Remarks.** European-Siberian species, distributed from the British Isles to Eastern Siberia.

*Stenichnus (Stenichnus) godarti* (Latreille, 1806)

**Studied material.** Daugavpils, 55°55'10.26"N 26°30'36.20"E. 12.05.2010. A. Shavrin & A. Anishchenko.

**Remarks.** European species, distributed from the British Isles to countries of northern and eastern Europe.

*Stenichnus (Stenichnus) scutellaris* (P.W.J. Müller & Kunze, 1822)

(*punctatus* (Reitter, 1888))

**Studied material.** 1 specimen: Daugavpils. 01.07.1991. A. Barševskis; 1 specimen: Daugavpils district, Bebrene. 26-27.11.2006. E. Rudāns.

**Remarks.** European species, widely distributed from the British Isles to central European part of Russia.

I wish to thank Pawel Jałoszyński (Wrocław, Poland) for help in identification of the studies specimens.

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## **POSSIBLE FUNCTIONALITY OF GENETIC VARIATIONS IN MICROSATELLITE, POLYA, OF PSMA6 PROMOTER IN ASSOCIATION WITH AUTOIMMUNE DISEASE DEVELOPMENT IN LATVIANS**

*PSMA6* gene encodes proteasome  $\alpha 6$  subunit, which is a part of an outer hetero-heptameric ring of 20S core proteasome which together with 19S regulatory proteasome form a 26S proteasome, a central role player in ubiquitin dependent proteolysis in eukaryotic cells. A microsatellite, polyA, tract -655 bp from the transcription start site carries two insertions rs200541481 and rs200298313 at 5' end and a single nucleotide polymorphism (SNP) rs71640264 at 3' end of the tract. These variations increase or decrease the length of the polyA tract. Previous fragment length analysis in case – control study of juvenile idiopathic arthritis, bronchial asthma, obesity, multiple sclerosis and type 1 *diabetes mellitus* patients and healthy individuals in Latvian population revealed that rs200541481 might be associated with predisposition to autoimmune and metabolic diseases, while rs200298313 did not have any associations. rs71640264 was in complete linkage disequilibrium with another SNP in *PSMA6* 5'UTR - rs2277460, which previously has been associated with several disease development in Latvian population. However, the possible functional mechanisms of these variations have not been studied.

The aim of the study was to evaluate the functionality of genetic variations in *PSMA6* promoter polyA tract. The analysis of transcription factor binding sites (TFBS) was performed with MatInspector Release 10.1. Secondary DNA structure formation was studied in MFOLDROOT, and DNA bending and curvature analysis was performed with bend.it online tool.

Two new TFBS were created by variation rs71640264C>A, SORY/SRY.01 and ZFHX/AREB6.04 respectively. Neither of insertions at 5' end of the tract had an effect on TFBS. DNA secondary structure analysis revealed that in comparison to native polyA sequence all studied variations may cause remarkable changes in DNA secondary structure and free energy, creating more stable and structured structures. DNA bending analysis revealed that the most noticeable changes might be created by rs71640264C>A increasing the curvature and bendability of the 3' end of the polyA tract, while insertions did not create noticeable changes.

The study was funded from the ERAF SAM Nr. 1.1.1.1/16/A/016 project "Determination of proteasome-related genetic, epigenetic and clinical markers for multiple sclerosis".

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## **PREVALENCE OF ESCHERICHIA COLI ANTIBACTERIAL RESISTANCE IN PATIENTS WITH COMPLICATED URINARY TRACT INFECTION**

Introduction: *Escherichia coli* (*E. coli*) is the most prevalent facultative anaerobic species in the gastrointestinal tract of human, but it is also a healthcare problem, which is causing a number of significant diseases, most frequently - urinary tract infection (UTI).

UTI is one of the most common bacterial infections in the general population, with an estimated overall incidence rate of 18 per 1000 person per year. The bacterial spectrum of complicated urinary tract infection varies, but primarily it is caused by *E.coli*.

Antibiotics are generally chosen as main therapy for these patients. Due to rising antibiotic resistance, mortality associated with complicated urinary tract infection (cUTI) is rising as well. Therefore, it is necessary for medical specialists to evaluate bacterial resistance in their respective area regularly.

Objectives: To evaluate the *E. coli* incidence and antibiotic resistance profile in patients with cUTI in Pauls Stradins Clinical University Hospital.

Materials and Methods: Retrospective study was performed in the Centre of Urology in Pauls Stradins Clinical University hospital. Data was retrieved from medical histories of patients with cUTI. Statistical analysis was performed with IBM SPSS v22.0 software.

Results: One hundred fifty patients were included in the study. Eighty-two (54.7%) were women and 68 (45.3%) - men.

The most commonly isolated bacterium was *E. coli*. It was isolated in 91 patients (60.7%), out of which 56 (61.5%) were women and 35 (38.5%) - men. The mean age of women was  $50.4 \pm 23.1$  and men  $59.6 \pm 21.3$ . Body mass index (BMI) of men  $30.3 \pm 2.9$  kg/m<sup>2</sup> and women  $24.9 \pm 3.4$  kg/m<sup>2</sup>.

The highest *E. coli* antibiotic resistance was to Ampicillin – 54.4%, but the least to Imipenem and Meropenem (both - 0%). High resistance was seen also to Trimethoprim/sulfamethoxazole and Ciprofloxacin, 41.8% and 23.1%, respectively.

Conclusions: *E. coli* was most common pathogen, which caused cUTI in our study, which coincides with the literature data. Highest resistance of *E. coli* was seen to Ampicillin, Trimethoprim/sulf and to Ciprofloxacin. As the bacteria were resistant to these antibiotics more than in 20% of all cases, these drugs cannot be used in empirical treatment of cUTI, at present. It is important to reevaluate antibiotic resistance regularly, to be sure, that the drugs with the lowest resistance are used for empirical treatment.

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## **PREVIOUS AND FUTURE STUDIES OF THE ALIEN GAMMARIDS IN THE DAUGAVA RIVER**

The Ponto-Caspian gammarids are one of the most aggressive groups of alien crustaceans in European and Baltic freshwaters. The first extensive studies of the alien gammarids in the Daugava River were carried out under the national research program "The value and dynamic of Latvia's ecosystems under changing climate – EVIDEnT" project "Non-native species distribution and impact on the Baltic Sea and freshwater ecosystems" sub-project „Non-indigenous species distribution and impact on freshwater ecosystems” from 2014 to 2018. The results show that alien *Pontogammarus robustoides* is frequently occurred and the dominant gammarid in the Daugava reservoirs, it has suitable habitats and environmental conditions. Possible, *P. robustoides* has contributed to the elimination of the indigenous gammarid *Gammarus pulex* from the Lower Daugava River and its reservoirs, as well as there are detected its spreading in the upstream of the Pļaviņas Reservoir. There are given a first idea of the biological invasion potential of the alien gammarids *P.robustoides* and *Gammarus varsoviensis* at the reproductive level, and there are obtained the first data of *P.robustoides* populations at the molecular genetic level. However, researches of biological invasion success of alien gammarids are very actual and required (what factors contribute invasion success, what are alien gammarids advantages or differences compared to other gammarids?), especially in Latvia. Therefore, seasonally complex studies of population dynamics and reproductivity of gammarids will be continued and new biochemical studies in order to clarify physiological status of gammarids within different environmental condition will be started.

This research was supported by the national research program "The value and dynamic of Latvia's ecosystems under changing climate – EVIDEnT" project "Non-native species distribution and impact on the Baltic Sea and freshwater ecosystems" sub-project „Non-indigenous species distribution and impact on freshwater ecosystems” and by the DU Research Project No. 14-95/3 "Research of contributing factors on biological invasions of alien amphipods (*Pontogammarus robustoides*, *Gammarus varsoviensis*)”.

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the dominant gammarid in the Daugava reservoirs, it has suitable habitats and environmental conditions. Possible, *P. robustoides* has contributed to the elimination of the indigenous gammarid *Gammarus pulex* from the Lower Daugava River and its reservoirs, as well as there are detected its spreading in the upstream of the Pļaviņas Reservoir. There are given a first idea of the biological invasion potential of the alien gammarids *P. robustoides* and *Gammarus varsoviensis* at the reproductive level, and there are obtained the first data of *P. robustoides* populations at the molecular genetic level. However, researches of biological invasion success of alien gammarids are very actual and required (what factors contribute invasion success, what are alien gammarids advantages or differences compared to other gammarids?), especially in Latvia. Therefore, seasonally complex studies of population dynamics and reproductivity of gammarids will be continued and new biochemical studies in order to clarify physiological status of gammarids within different environmental condition will be started.

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**Natalja Škute<sup>1</sup>, Kristina Korgauzova<sup>2</sup>, Nadežda Harlamova<sup>3</sup>, Anna Batjuka<sup>4</sup>, Mihails Pupinš<sup>5</sup>, Artūrs Kārklīņš<sup>6</sup>, Artūrs Škute<sup>7</sup>**

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## **THE CHANGES OF OXIDATIVE PROCESSES UNDER THE POSSIBLE CLIMATE CHANGES IN FISH COMMON ROACH (*RUTILUS RUTILUS* L.)**

To determine the limits of climatic factors impact on typical hydrobiont organism the oxidative process in muscle of roach (*Rutilus rutilus*) was studied. The temperature 30°C corresponds to the maximum temperature of the water surface observed over the past 30 years at the Plavinas reservoir. Reactive oxygen species (ROS) have important roles in cell signalling, and can dramatically increase due to environmental stress, can damage lipids, proteins and DNA. Malondialdehyde (MDA) is one of the final products of stress induced membrane lipid peroxidation. Catalase (CAT) plays a significant role in defence against oxidative stress, since H<sub>2</sub>O<sub>2</sub> readily diffuse across.

Juvenile *R. rutilus* were obtained from local hatchery and kept in re-circulating water systems consisting of 3 tanks, 20 fish per tank. Temperature was altered at a rate of 1°C every 2 h until the experimental temperatures of 20°C, 25°C, 30°C were attained. After 0-, 1-, 2-week five fish from each tank were sampled, frozen and stored at -20°C to await further analysis. The determination of MDA and CAT was applied by spectrophotometric method. After 0-, 1-, 2-week five fish from each tank were sampled, frozen and stored at -20°C to await further analysis. The determination of MDA and CAT was by spectrophotometric method.

The level of various oxidative processes was determined at the optimum water temperature (20°C) in fish muscle tissue of juvenile and mature in aquaculture under laboratory conditions. It has been shown, that oxidative processes (lipid peroxidation and catalase activity) at elevated temperatures differ from juvenile and sexually mature crying. The catalase activity and MDA content remained unchanged in fishes, which were in tanks with different experimental temperatures on the same days; although it changed in every single temperature experiment. The rise in water temperature in the context of climate change does not affect the oxidative processes of fish.

This study was supported by National Research Programme 2014-2017 “EVIDEnT”, sub-project Nr. 4.6. Freshwater ecosystem services and biodiversity

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## **THE DISTRIBUTION AND EPIGENETIC CHANGES OF AMUR SLEEPER IN LATVIA**

Invasive species are recognized as one of the main threats to the native biodiversity in the world. The Amur sleeper, *Perccottus glenii*, is a very successful invasive species in Latvia and Europe that threatens native species of aquatic organisms and is especially dangerous for small northern marginal amphibian populations of species such as *Bombina bombina* and *Triturus cristatus*. The study of the prerequisites for the success of the *P. glenii* invasion in Latvia can contribute both to a better understanding of the interrelationships between local species and the invader species, as well as to enhancing the effectiveness of the measures to limit the *P. glenii* invasion.

This study analyzed the features and degree of synanthropization of 16 water bodies invaded by *P. glenii* in the south-eastern part of Latvia. Such parameters as the distance from the reservoir to the nearest building, to the nearest asphalt and dirt road, to another reservoir, the degree and nature of the economic use of the shore of the reservoir and other parameters are considered.

The study of DNA methylation gives the possibility of speculating that an evolutionary connection between environment, gene expression, and adaptation is possible. The total DNA methylation of Amur sleeper the luminometric methylation assay (LUMA) was applied. This method is based on digestion of genomic DNA with methylation sensitive and insensitive restriction enzymes (*HpaII* and *MspI*), followed by quantification of the resulting number of cut sites using a luminometric polymerase extension assay on a commercialized pyrosequencing platform. Total DNA methylation levels were detected in *P.*

*glenii* samples from 16 ecological different aquatic ecosystems. It was shown, that in the same age, sex and size of *P. glenii* samples the total DNA methylation levels are different in ecological different lakes.

This study was supported by National Research Program “EVIDeNT”, subproject Nr. 4.6. Freshwater ecosystem services and biodiversity

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## **THE PREVALENCE OF THIOPURINE METHYLTRANSFERASE GENETIC POLYMORPHISMS IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE**

**Introduction.** Thiopurine methyltransferase (TPMT) is an enzyme, which inactivates thiopurine drug azathioprine. Individuals who carry non-functional *TPMT* alleles are at higher risk for myelosuppression (Dean, 2016). TPMT test is suggested in adult patients with inflammatory bowel disease (IBD) being started on thiopurines (Feuerstein et al., 2017). The aim. To evaluate a prevalence of *TPMT* gene polymorphisms in selected IBD patient group.

**Materials and methods.** Retrospective study was done in Pauls Stradiņš Clinical University Hospital. Data about patients *TPMT* genotype, disease, age, history of azathioprine intake and side effects were analysed. qPCR was used to detect *TPMT* \*2, \*3A, \*3B and \*3C polymorphisms.

**Results.** A total of 40 IBD patients were included in study, 55% (n=22) female and 45% (n=18) male. The mean age of patients was 39,48 (IQR=29-49,75). 26 (65%) patients were diagnosed with ulcerative colitis and 14 (35%) with Crohn's disease. 95% (n=38) of patients had *TPMT*\*1/\*1 or homozygous wild-type *TPMT* genotype, 5% (n=2) had the heterozygous *TPMT* genotype: 2,5% (n=1) *TPMT* \*1/\*2 genotype and 2,5% (n=1) *TPMT* \*1/\*3A genotype. No patients had the homozygous *TPMT* variant genotype. 20 (50%) patients had history of azathioprine intake, 1 (5%) of them had heterozygous *TPMT* genotype. 6 (30%) patients, including 1 patient with *TPMT* polymorphism, had complications of azathioprine intake in anamnesis like leukopenia, myalgia, acute pancreatitis and bruises.

**Conclusion.** In our group 5% of IBD patients have *TPMT* gene polymorphisms, so are at higher risk for myelosuppression. Identifying of *TPMT* genotype is a good predictive test for the development of azathioprine caused complications, though therapeutic drug monitoring should be used to optimize azathioprine therapy and minimize the risk of azathioprine caused complications.

**Acknowledgments.** We acknowledge Genome Database of Latvian Population, Latvian Biomedical Research and Study Center for providing data and DNA samples.

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## **TRITURUS CRISTATUS AND LISSOTRITON VULGARIS IN THE NATURA 2000 NATURE PARK “SILENE” (SOUTH-EASTERN PART OF LATVIA): DISTRIBUTION, BREEDING HABITATS AND INVASIVE THREAT PERCCOTTUS GLENII**

Only two species of the Family Salamandridae (Amphibia: Caudata) live in Latvia. This is the Northern crested newt *Triturus cristatus* (Laurenti 1768) and the Smooth newt *Lissotriton vulgaris* (Linnaeus 1758). In Latvia, the ranges of the two species overlap and they are often found in the same biotopes, but may respond differently to the influence of negative factors, for example, the invasion of predatory fish into the water body. The study of the distribution and biotopes of these species is particularly important in the protected areas.

From June to August 2018, we conducted a study on the distribution of *T. cristatus* and *L. vulgaris* in 27 small water bodies in the Nature Park “Silene” (Natura 2000 code LV0300400; S= 3 825 ha). The scoop net of 40 cm diameter was used to catch the larvae in each pond; we made 10 catches at a distance of 1 m and at a depth of 0.1-0.5 m in places with small-leaved thick vegetation. For each water body, water temperature, the presence of other types of amphibians, fish, and biotope were noted.

As a result of the research, the larvae of *T. cristatus* were found in 10 (37%) water reservoirs, *L. vulgaris* - in 19 (70%) reservoirs. The presence of larvae *T. cristatus* (x,0) and *L. vulgaris* (0,x) in the investigated water bodies with the numbers: Sil-03a (3,3); Sil-03b (2,2); Sil-03c (3,2); Sil-03d (0,1); Sil-04a (4,2); Sil-05 (0,2); Sil-06a (3,1); Sil-06b (8,1); Sil-07 (6,3); Sil-08 (0,1); Sil-14 (0,2); Sil-15 (0,4); Sil-16 (0,2); Sil-17 (0,2); Sil-18b (0,1); Sil-20 (2,3); Sil-20-1 (1,1); Sil-20-2 (3,4); Sil-22 (0,1). N *T. cristatus*: N *L. vulgaris* =1:1,5. *T. cristatus* larvae were not found in water bodies occupied by invasive fish *Perccottus glenii*.

The study was conducted in accordance with legislation of Latvia and with support of the VIAA project Nr. LV-UA/2018 “The ecological and biological triggers of expansion of the invasive fish, Chinese sleeper (*Perccottus glenii*), in Eastern Europe”.

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**DOKTORANTU SEKCIJA "LITERATŪRZINĀTNE"**  
≈  
**DOCTORAL STUDENT SECTION "LITERARY STUDIES"**

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**Linda Zulmane,**

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**ANDRIEVA NIEDRAS PROZAS LAIKTELPA KULTŪRKRITISKO SKOLU  
ASPEKTĀ**

Referātā aplūkota A. Niedras prozas laiktelpa kultūrkritisko skolu aspektā, uzmanību vēršot uz bināro opozīciju pilsēta/lauki, daba/kultūra, savs/svešais u.c. atklāsmei. Izmantojot dažādas metodes teksta analīzei (semiotika, postkoloniālisms, ekokritika, ģeopoētika, aksioloģija u.c.), aplūkoti tipiskākie A. Niedras prozas laiktelpas modeļi.

**Zane Vaļule<sup>1</sup>**

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**LAIKA MODEĻI PĒRA LĀGERKVISTA STĀSTĀ "PATIESĪBĀ VIESIS"**

Pēra Lāgerkvista stāstā "Patiesībā viesis" tiek izmantoti dažādi laika modeļi. Lineārais laika modelis balstīts kristietībā, kas ļoti ietekmējusi P. Lāgerkvista daiļradi un ir viena no dominējošajām tēmām. Cikliskais laika modelis, kas radies mitoloģiska pasaules uztvēruma rezultātā, vērš uzmanību uz atkārtošanos un riņķojumu. Savukārt mehānisko laika modeli ietekmējuši tehnoloģiskie sasniegumi, kas izmainījusi klasisko uztveri par laika ritumu, uzskatot to par deformētu. P. Lāgerkvists izmanto dažādus laika modeļus, lai ar tiem risinātu eksistenciālas tēmas un attēlotu darba tēloto varoņu filozofisko skatījumu uz laika ritējumu.

**Sandija Iesalniece**

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**MEDIA SYNERGY AND INSTITUTIONAL COOPERATION AS AGENT OF THE  
BOOMING MARKET OF AUDIOBOOKS IN GERMANY AT THE END OF 20TH  
CENTURY TILL PRESENT**

The last decade of the 20th century in Germany was marked by the "boom" of audiobooks; the boom, called now the "audio-boom", still continues. Though the market share of audiobooks makes in 2017 only 3,1 % (physic sales, except digital sale) (according to the market survey Buch und Buchhandel in Zahlen 2018 (für 2017) by Boersenverein des deutschen Buchhandels), the users of audio content (audio books and audio plays) make 22% of the total population in Germany (according to the survey by Kantar EMNID on behalf of Audible, 2018). Facing decline in the turnover and number of book-buyers, at the end of last century the book market was looking for possibilities to attract new customers and to hold the existing ones, hence the audiobook was seen as the source of the hope ("Hoffnungstraeger"). However, the turn towards new media came also from radio institutions, which also experienced a decline of audience and were going beyond the radio exploring new venues for the audio-plays to be performed live etc. The audio plays, once aired on radio, were published as Audio-CDs. The German Radio-Archive collects historically relevant audio and audio-visual documents since 1952 and has made them available, both online and as audio-CD (dra.de). The audio book publishers in Germany turn to the sound archives of radio exploring the audio memory of the nation. Existing audio documents are used for audiobooks, and new audio documents of different genres are created. This is possible only because of cooperation between different institutions which have identical goal, i.e., to keep up with the change in media usage, to increase the number of users of both written and audio products. Not media competition, but media synergy is attracting the buyers, referring to the listeners of audio content and readers of printed or e-books.

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**PARATEKSTA PRAGMATISKĀ FUNKCIJA MŪSDIENU LATVIEŠU UN  
AMERIKĀŅU AUTORU CEĻJUMU APRAKSTOS**

Atslēgvārdi: ceļojuma apraksts, parateksts, naratīvs, mākslinieciskā forma, pragmatiskā funkcija  
Mūsdienu ceļojumu aprakstos noteicošā loma ir ne tikai pašam tekstam un tā strukturālajai formai, kuru nosaka literārā darba sižets, mākslinieciskās telpas un laika reprezentēšana, varoņu tēlu daudzveidība, paša ceļojuma attēlojums utml., bet arī teksta

mākslinieciskajai formai, kas iekļauj teksta vizuālo noformējumu un kas ir gandrīz katra ceļojuma apraksta viena no galvenajām īpatnībām, kas bieži atšķir šāda veida tekstus no pārējiem daiļliteratūras un nebeletristikas darbiem. Ilustratīvais materiāls – fotogrāfijas, dokumentu un arhīva materiālu attēli, ģeogrāfiskās kartes fragmenti – ir daudzu ceļojumu aprakstu neatņemama daļa. Mūsdienu literatūrzinātnē šo teksta sastāvdaļu dēvē par paratekstu, kura elementi ir arī epigrāfi, veltījumi, epilogi un pēcvārdi, kā arī autora vēstules, dienasgrāmatas un pārējais ar naratīvu saistītais dokumentālais materiāls. Katrs parateksta elements ir nenovēršami saistīts ar ceļojuma naratīva saturu un veic vairākas funkcijas, pirmkārt, šo saturu papildinot un vizualizējot. Dokumentālais un autobiogrāfiskais materiāls, piemēram, kalpo kā pierādījums tam, ka aprakstītie notikumi ir reāli; arhīva materiālu kopijas ir liecības par vēsturisko notikumu autentiskumu. Vizuālajam noformējumam ir jābūt noteiktajai mākslinieciskajai iedarbībai uz lasītāju, kura literārā darba recepcija bieži sākas tieši no parateksta. Tādējādi, šī pētījuma mērķis ir analizēt dažu latviešu un amerikāņu autoru ceļojumu aprakstu paratekstualitāti, noteikt parateksta pragmatiskās funkcijas tajos, akcentējot parateksta ietekmi uz galveno tēmu reprezentēšanu, vietu un cilvēku attēlojumu, kā arī uz lasītāja tekstu recepciju.

**Sandra Okuņeva**

## **REGIONĀLISTIKAS PĒTĪJUMI LATVIJĀ: LIEPĀJAS UNIVERSITĀTES KURZEMES HUMANITĀRĀ INSTITŪTA PĒTNIĒKU DEVUMS KURZEMES NOVADA KULTŪRVĒSTURISKĀ MANTOJUMA APZINĀŠANĀ**

Referātā reģionālistikas studiju kontekstā vispirms tiks raksturots Liepājas Universitātes Kurzemes Humanitārā institūta pētnieku devums Kurzemes novada kultūrvēsturiskā novada mantojuma apzināšanā un saglabāšanā: galvenie darbības virzieni, mērķi un uzdevumi, iesaistītās personas un rezultāti (izdevumi, tiešsaistes resursi, konferences, semināri u. tml.). Ziņojuma otra daļa tiks veltīta pētījuma *Kurzemes kultūras identitātes reprezentācija latviešu bērnu literatūrā* ieceru un procesa analīzei, ieskicējot pētījuma teorētisko bāzi, aplūkojamo jautājumu galveno tematiku, iespējamo potenciālo autoru loku un nozīmīgākās novadnieciskās izpausmes.

**Sergejs Žukovs**

## **RUTKU TĒVA ROMĀNI: DĒKU ROMĀNA FENOMENS LATVIEŠU LITERATŪRĀ**

Atslēgvārdi: Rīga, Rutku Tēvs, vēsture

Anotācija

Pētījuma mērķis: raksturot dēku romāna fenomenu Rutku Tēva daiļradē latviešu literatūrā.

Pētījuma uzdevumi:

- 1) iezīmēt Rīgas topogrāfiju uz romānos aprakstīto vēsturisko notikumu fona;
- 2) iekonturēt dēku romāna specifiku Rutku Tēva daiļradē;
- 3) analizēt sabiedrības atstumto cilvēku – bendes, tā kalpu, komediantu u. c. – tēlu specifiku Rutku Tēva daiļradē;
- 4) pētīt nozieguma un soda problemātiku Rutku Tēva prozā.

Rutku Tēva darbos priekšplānā tiek izvirzīts vēsturiskais laiks, kas konkrēti un tieši parāda noteikta laikposma cilvēkus un to raksturus – bez mitoloģiskas, pārdabiskās pasaules klātbūtnes aprakstītajos notikumos. Reāli vēstures notikumi un personības kalpo kā fons un sava veida dekorācija romānos atveidotajiem piedzīvojumiem. Tekstos dominē beletristikas, izklaides literatūras pazīmes.

Romānam ir paliekoša vērtība latviešu literatūrā, akcentējot dažādu vēsturisko notikumu saistību ar latviešu tautu un Latviju kopumā.

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## **ЛОКУСЫ ИНФЛЯНТ В “ЗАМЕТКАХ О ПОЕЗДКАХ ПО СТРАНЕ” ЭДУАРДА ХЛОПИЦКОГО**

К понятию „локуса” впервые обратился Ю.М. Лотман в своих статьях по семиотике и типологии культуры. Под локусом Ю.М. Лотман понимает приуроченность героя к какому-либо месту. По отношению к герою локус является функциональным полем.

В своих “Заметках о поездках по стране”, опубликованных в 1863 году, этнограф и литератор Эдуард Хлопицкий обращается, в том числе, к описанию Инфлянт. В его заметках можно рассмотреть локусы связанные с конкретными городами, а также локусы характерные для Инфлянт в целом. К примеру, к приватным локусам, обозначающим жилища относятся замки, наличие которых автор перечисляет во всех названных городах (Крыжбург, Ликсна, Краслава, Динабург, Режица, Люцин). К природным локусам относится река Двина. Инфлянты названы краем голубых озер, что также относит озеро к природным локусам. При этом озеро Луза, которое автор выбирает для характеристики города Люцин является характерным локусом лишь для этого города. К социальным локусам можно отнести костел, значимость функционирования в духовной сфере которого многократно подчеркивается Эдуардом Хлопицким. В докладе также представлены многие другие примеры локусов, среди них типы динамичных, комплексных и социальных локусов (согласно классификации О.Е. Фроловой).

*Silvija Kotāne*

## ***BŪTISKĀ KAITĒJUMA VIDES INTERESĒM IZVĒRTĒJUMS***

Kaitīgo seku izvērtējums noziedzīgos nodarījumos videi. Kaitīgas sekas – būtisks kaitējums, ko radījusi prettiesiskā darbība (vai bezdarbība), materiāla sastāva noziedzīga nodarījuma objektīvās puses pazīme. Būtisks kaitējums ar likumu aizsargātām vides interesēm kā vērtējuma jēdziens teorijā un praksē.

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## ***CIRCULAR ECONOMY: DIRECTIONS OF DEVELOPMENT IN EUROPEAN UNION COUNTRIES***

The circular economy is an economic model that through the use of ICT is aimed at restoring, conserving and renewing of resources, at controlling of the process of waste generation, their reduction and reuse, at increasing in employment. It is an economy that has a restorative and closed nature.

The main precondition for the circular economy formation is the digitalization, which has a multidirectional impact on the economy. First, it opens up new opportunities for the global problems solving, transforming business, but at the same time it is accompanied by an escalation of global problems caused by an increase in consumption of resources and energy, increase in electronic waste generation and a reduction in employment. Second, it contributes to the transition to a non-linear economic model, which allows to optimize the production process, to create a closed-type economy model. The circular model leads to the development of the economy "3R" (Reduce, Reuse and Recycle), involving the optimization of the production process, repeated or joint use of the product and waste recycling.

The basis of the circular economy is formed by closed supply chains, whose formation should lead to the realizing of the zero waste principle. Its implementation in practice has led to the emergence of new business models.

The leaders in mastering the model of circular economy and closed supply chain are the European Union countries, which identify the main directions of the circular economy development.

Of interest is the experience of countries and leading international corporations in mastering new business models in a circular economy. Among them are: circular suppliers, resources recovery, sharing platforms, product life extension, including product refurbishment and/or component remanufacturing, waste/products recycling.

The development of the circular economy is accompanied by the appearance of external and internal, positive and negative effects of its functioning.

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## ***DIGITAL REALITY IN LATVIA: HEALTHCARE EXPERIENCE***

Key words: digital medicine, e-health, blockchain, digital development.

The aim of the study is to consider a set of problems to be solved while implementing projects based on the achievements of the new technological order by the using the example of healthcare in Latvia, primarily the e-health project. Since January 1, 2018, the use of the e-health system in Latvia is mandatory, but so far only "Digital Recipe" project has been functioning at full capacity. The experience with the introduction and use of digital medicine in Latvia indicates a large range of problems faced by state institutions and local governments, medical establishments, medical staff, and patients. A systematic vision of the problems of implementing digital medicine requires at least a necessity to take into account and solve seven relatively independent tasks: technical and technological, economic, legal, organizational, managerial, social, psychological, and cultural ones. In terms of systemic vision, the assessment of these aspects of the e-health programme implementation is presented by means of extensive use of data retrieved from international organizations, Latvian state statistics, scientific research studies, including the ones carried by the authors.

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## ***DIGITĀLĀS EKONOMIKAS JĒDZIENS UN TĀS MODELIS: EIROPAS SAVIENĪBAS VALSTU PIEMĒRS***

**Atslēgas vārdi:** digitālā ekonomika, digitalās ekonomikas indikatori, Eiropas Savienības valstis, faktoranalīze, digitālās ekonomikas modelis.

Raksta mērķis ir definēt digitālās ekonomikas jēdzienu un izstrādāt digitālās ekonomikas modeli uz Eiropas Savienības valstu piemēra.

Digitālās ekonomikas izplatīšanās notiek, balstoties uz internetu. Interneta straujā attīstība pārveidoja gan uzņēmējdarbības vidi, gan sabiedrību. Digitalizācija ir transformējusi vairākus nozares – tirdzniecība, mārketingu u.c. Sakarā ar šo transformāciju digitālā ekonomika tiek definēta dažādos veidos, no dažādiem skatu punktiem.

Digitālās ekonomikas jēdziens tiek traktēts neviennozīmīgi, proti, vairākos literatūras avotos parādās vairākas vispusējas definīcijas. Digitālā ekonomika tiek saukta arī par interneta ekonomiku, jauno ekonomiku, informācijas ekonomiku, tiešsaistes ekonomiku u.c. Tāpat literatūrā maz tiek minēts un analizēta digitālās ekonomikas mērīšana, respektīvi, vienots digitālās ekonomikas indekss netiek minēts, tādējādi arī noteikti rādītāji netiek definēti, kas atspoguļo digitālo ekonomiku.

Raksta ietvaros tiek definēts digitālās ekonomikas jēdziens un uz tā pamata tiek noteikti un apkopoti rādītāji, kas raksturo digitālo ekonomiku ES valstīs. Balstoties uz noteiktajiem rādītājiem, tiek konstruēts digitālās ekonomikas modelis. Digitālās ekonomikas modeļa konstruēšanas pamatā tiks izmantoti 2017. gada digitālās ekonomikas rādītāji ES valstīs.

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## ***ENROLLMENT AND STUDY OPPORTUNITY DISPARITIES AMONG REGIONAL UNIVERSITIES IN LATVIA***

Higher education is a fundamentally important prerequisite for the creation of a functional knowledge society, while the purpose of the whole education system is to increase the competitiveness of each individual in the general labour market, while it can help increase social cohesion. In the regions of Latvia socioeconomic disparities are significant with the population of the state continuously centering around the Riga planning region (especially the capital city), while in other regions the population is decreasing significantly. The aim of sustainable regional development is to promote and ensure balanced development of the state thus enabling its sustainable. One of the approaches for ensuring equal development is related to the opportunities for acquiring tertiary education.

The lack of diverse study programmes may cause risk of “**brain drain**” in-between the regions may question the future sustainability of certain regions, thus causing negative long-term consequences for the regional development. Equal accessibility to higher education in the regions is an important precondition for a balanced development of national economy. In the light of tendencies in the higher education system replicating those of the general population, an ever increasing proportion of students from regions enroll in HEIs of Riga.

**Aim of the research** is to analyse the available statistical data on the regional state funded higher education institutions (HEIs), their enrolment and study opportunity indicators, diversity of study fields provided in the regions, thus determining the existing regional disparities between the statistical regions of Latvia and the HEIs within. The presented data shows great disparities in terms of equal study chances in certain fields of study as well as the proportion of enrolled students who originate from the given regions, among which Vidzeme region stands out the with highest level of specialization and the least proportion of enrolled students among all RHEIs. The **novelty of this study** lies in the use of a study thematic fields based approach, thus further indicating the skills based disparities among the regions.

**Andrejs Vasiljevs**

## ***ILGSTOŠĀ BEZDARBA SPECIFIKA DAŽĀDOS EKONOMIKAS CIKLISKĀS ATTĪSTĪBAS POSMOS***

Viena no galvenajām iezīmēm tirgus ekonomikā ir konkurence, kas aptver dažādas jomas, tostarp arī darba tirgu. Konkurences un ierobežoto darba vietu rezultātā rodas bezdarbs, kas ir neizbēgams sociāli ekonomiskais fenomens. Bezdarbs, ko izraisa globālās pārmaiņas ekonomikā, nereti noved pie veselās nozares ierobežošanas un attīstība kavēšanas, tādējādi veidojot ilgstošo bezdarbu. Ilgstošie bezdarbnieki ir personas, kuras ir bez darba 12 mēnešus un ilgāk. Tēmas aktualitātē saistīta ar to, ka ilgstoši bezdarbnieki ir otrā lielākā bezdarbnieku mērķgrupa un kārtais ceturtais bezdarbnieks meklē darbu vārāk kā vienu gadu. Turklāt vairākums šīs grupas pārstāvju ir bezdarbnieki vecumā 50 gadi un vairāk, kas rada papildus izaicinājumus nodarbinātības politikas īstenošanai. Ilgstošo bezdarbnieku skaits būtiski pieaug arī ekonomikas lejupslīdes periodos, pie tam mainās arī to dzimuma un vecuma struktūrā. Līdz ar to ir būtiski pētīt ilgstoša bezdarba fenomenu un valsts politiku tās samazināšana ilgtermiņā un noskaidrot būtiskākus cēloņus kas ietekmē ilgstoša bezdarba dinamiskās un strukturālās izmaiņas, ka arī tā mazināšanas iespējas mūsdienās un nākotnes perspektīvā.

## **LATVIJAS DARBA TIRGUS KOPSAKARĪBAS ZINĀŠANĀS BALSTĪTAJĀ EKONOMIKĀ**

Kaut arī šobrīd darba tirgus nesabalansētība ir mazinājusies, uzņēmumiem vēl joprojām trūkst darbinieki, taču tiem darbiniekiem, kuri ir bez darba, trūkst nepieciešamās kvalifikācijas. Līdz ar to darba tirgus pieprasījuma un piedāvājumā vērojama nesabalansētība. Darba tirgū vēsturiski nozīmīgas ir zināšanas un indivīda spēja savas zināšanas pielietot, pierādot sevi darbā. Izglītības nozīme valsts attīstībā ir viens no svarīgākajiem valsts konkurētspēju nodrošinošiem faktoriem. Turklāt izglītības līmenis ietekmē gan darba iekārtošanas iespējas, proti nodarbinātību, gan karjeras iespējas, gan arī darba algas lielumu. Darba tirgū pieprasījums pašlaik ir profesiju grupās, kurās pārsvarā ir nepieciešams augstāks izglītības līmenis nekā vidējā izglītība. Tas pamatā ir saistīts ar to, ka aizvien vairāk vienkāršo un manuālo darbu, tiks aizstāti ar tehnoloģiskiem risinājumiem, kā arī notiek darbaspēka piedāvājuma pārstrukturēšanās no vidējās uz augstākās kvalifikācijas grupu. Piemēram, veselības aprūpes un sociālā labklājības jomā speciālistu iztrūkums grupā personām ar vidējo profesionālo izglītību ir daudz zemāks, nekā personām ar augstāko izglītību. Tāpēc ir svarīgi izprast, ka izglītība ir ne tikai personīgās izaugsmes faktors un apdrošināšana pret bezdarbu, bet arī visas sabiedrības attīstības stimuls.

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## **PASAULES UN ES VALSTU EKONOMISKĀS DIFERENCĒTĪBAS PAKĀPE**

Pamatojoties uz pētījuma priekšmeta – valstu ekonomiskās diferenciacijas – strukturālo operacionalizāciju, autore noskaidroja, ka katram valstu diferenciacijas (ekonomiskās, sociālās, kultūras, politiskās, lingvistiskās, etniskās utt.)veidam ir raksturīgi šādi strukturālie elementi: pakāpe, raksturs, virziens, temps, teritoriālais līmenis un teritoriālais griezumums. Šī raksta ietvaros autore veica pasaules un ES valstu ekonomiskās diferenciacijas (metodoloģiski korekti–diferencētības) pakāpes kā viena no ekonomiskās diferenciacijas procesa strukturālajiem elementiem, salīdzinošo analīzi, izmantojot variācijas koeficientu (angļu valodā: *coefficients of variation*). Empīriskās izpētes rezultātā tika noskaidrots, cik liela ir pasaules un ES valstūekonomiskās diferencētības pakāpe salīdzinājumā ar citu diferencētības veidu pakāpēm. Analizējot vēsturiskā Tautas attīstības indeksa (VTAI) apakšindeksu, autore ieguva negaidītu rezultātu – pasaules valstu ekonomiskā diferencētība nav (un kopš 1870. gada līdz pat 2015. gadam nekad nav bijis) tas diferencētības veids, pēc kura pasaules valstis atšķiras visvairāk. Gluži otrādi – pasaules valstu ekonomiskā diferencētība ir visvājāk izteikta salīdzinājumā ar to iedzīvotāju izglītību un dzīves ilgumu. Lai pārliecinātos par analīzes rezultātiem, kas tika veikts ar VTAI rādītājiem no 1870. gada līdz 2015. gadam, autore veica arī pasaules valstu un ES dažādu diferencētības veidu salīdzinošo analīzi, izmantojot Apvienoto nāciju organizācijas Attīstības programmas (ANOAP) un Pasaules bankas datus. Šīs analīzes rezultāti parādīja, ka gan pasaules valstu, gan ES valstu ekonomiskā diferencētība vairākkārt pārsniedz citus diferencētības veidus, piemēram diferencētību pēc iedzīvotāju veselības, un šī tendence ir noturīga vismaz pēdējo 18 gadu garumā. Tādējādi veiktā analīze pierādīja, ka VTAI rādītāju bāze no 1870. līdz 2015. gadam nav izmantojama tālākajā empīriskajā analīzē.

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## **PERSONU AR INVALIDITĀTI NODARBINĀTĪBAS PROBLĒMAS UN IESPĒJAMIE RISINĀJUMI INTEGRĀCIJAI DARBA TIRGŪ**

The aim of the study is to research the employment issues of people with disabilities. A survey of people with disabilities and content analysis of the three largest mass media of the year of 2017 were used in the study. The author of the study carried out a questionnaire of people with disabilities as well as data collection and analysis were present. The survey was conducted for one month: from 14.11.2017 until 14.12.2017. The conclusions and suggestions derived from the study are as follows:

The organizations representing people with disabilities should work more efficiently with the media and communication with society in order to address the problems of people with disabilities, including employment issues; When making decisions for welfare and employment policies, decision-makers and the representatives of welfare sector should take into account the continuous increase in the number of people with disabilities; Employment policy-makers (SEA (NVA), MoW (LM)) should revise the plan of employment and retraining actions to provide active involvement of the organizations representing people with disabilities in the process of planning the employment policies for individuals with disabilities; To promote the employment of people with disabilities, it would be useful for the MoW (LM) to create a social advertising campaign, for example, by highlighting success stories, etc; The number of people with disabilities tends to increase every year, including those with moderate disabilities. Employment policy-makers should consider this factor; The change of employer's perceptions and values regarding the employment of people with disabilities should be stimulated by the state through various social advertising campaigns; In the year of 2017, there were relatively few articles directly regarding the employment of people with disabilities. In general, mass media pay very little attention for questions regarding the employment of people with disabilities;

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## **PROBLEMS OF THE SOCIAL INSURANCE REGULATORY FRAMEWORK OF SELF-EMPLOYED PERSONS IN LATVIA**

Keywords: self-employment, micro-enterprise tax, social insurance, social protection of self-employed persons

Interest in self-employment as a form of employment is increasing in the territory of the European Union Member States with the changes in population habits. The rapid development of market and spreading of “sharing economy” have contributed to the change in relations between employers and employees. Mobility of population in interaction with technologies has provided the possibility to work remotely; thus, allowing flexibility. On the one hand, self-employment envisages freedom of decision and the possibility of time management for individual workers, while on the other hand – low level of social protection. Research done in the European Union has shown that self-employment is increasingly being misused by employers to reduce corporate tax payments. This tendency is also observed in Latvia, which indicates the topicality of the problem. In every country, the activities of self-employed persons are regulated by a number of legal and regulatory enactments. The main aim of this research is to investigate the shortcomings of Latvia’s legislation regarding the regulation of social insurance of self-employment. The research results in identification of the main problems in the field of social protection for self-employed persons. The primary research methods such as monographic, statistical analysis, scientific induction and deduction are employed for the research purpose.

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## **REĢIONĀLĀS INSTITUCIONĀLĀS VIDES SADARBĪBU VEICINOŠIE TIESĪBU AKTI LATVIJĀ**

Atslēgas vārdi: institucionālā sadarbība, reģionu attīstība, normatīvais regulējums

Izpētes objekts – normatīvais regulējums, kas nosaka/veido institucionālo vidi republikas pilsētās Latvijā. Pētījuma priekšmets – institucionālā sadarbība republikas pilsētās.

Raksta mērķis – izpētīt normatīvo regulējumu, kas nosaka institucionālo sadarbību Latvijas republikas nozīmes pilsētās un novērtēt to ietekmi uz ilgtspējīgu attīstību.

Darba uzdevums – analizēt tiesisko regulējumu un institucionālo vidi. Novērtēt normatīvā regulējuma ietekmi uz institucionālo sadarbību ekonomiskās vides attīstīšanā Latvijā.

Kā pētījuma metodes rakstā tiek izmantotas – analīze, sintēze, aprakstošā, indukcija un dedukcija

Raksts tiek veidots kā topošā doktora darba sastāvdaļa pētījumā par institucionālās sadarbības ietekmi uz ilgtspējīgu attīstību republikas pilsētās.

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## **SMART GROWTH CONDITIONS AND OPPORTUNITIES IN ZILUPE DISTRICT (LATVIA)**

The Zilupe district is located far from the center of the country, which largely determines the specifics of their socio-economic development. Similar to other EU border districts in Latvia, Zilupe has lower economic growth rates than the center regions. Often, international borders are perceived as obstacles to development, because they are related to objective limitations (e.g., border crossing, different legislative and institutional systems, and political commitment) and co-operating burdensome factors (e.g., different language, culture, socio-economic development) The most common challenges for border districts are: low level of economic activity of the population; specific of labor mobility when migration from the territories of the district to the state center takes place; low business activity; limited mobility of transport, financial and investment flows; relatively low level of infrastructure development, etc. However, in the context of the modern regional development policy paradigm, these challenges, as well as the specific local resources and the ways in which they can be used, can create stimulus for growth in these territories. Thus, the aim of the research is to develop the new knowledge of the smart growth in the Zilupe district.

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## **THE INTEGRATION OF CULTURAL AND CREATIVE SPILLOVERS IN URBAN CULTURAL POLICY MAKING. EXAMPLE OF CESIS (LATVIA) AND ESPOO (FINLAND)**

Key words: cultural and creative spillovers, urban cultural policy.

The notion of cultural and creative spillovers is comparatively new in cultural policy discourse. Cultural and creative spillovers are defined as the processes by which activity in the arts, culture and creative industries has a subsequent broader impact on places, society or the economy through the overflow of concepts, ideas, skills, knowledge and different types of capital.

Considering the impact of the cultural sector on other sectors and including the aspect of cultural and creative spillovers in strategic planning of cities helps the cultural sector to raise strong arguments in favor of public investment in culture and support of creative industries, proving wider benefits for local social and economic innovation.

Nevertheless the research about the impact of cultural and creative spillovers is still very limited. There are different initiatives and recommendations for the municipalities in recent European research projects, how to benefit from cultural and creative spillovers. However, the development of concrete methodology for broadened urban cultural policies is rather complicated as it possibly asks for a new interdisciplinary approach, introducing new structures for more connected cross-sectoral cooperation within a municipality as well new evaluation criteria.

In the paper 2 examples of contemporary urban cultural policies are analyzed, estimating to what extent 3 main categories of cultural and creative spillovers (knowledge, product or industry and network spillovers) are included in the cultural strategy documents of Cēsis (Latvia) and Espoo (Finland).

Cēsis is acknowledged as one of the most important cultural centres of Latvia in The Creative Latvia 2014-20 strategy and has based its development on the use of local specific culture and creative potential. Espoo considers itself as a pioneer of progressive and innovative cultural city, introducing cross-sectoral development programmes with new network-like structures and methods.

Based on these examples, recommendations for the integration of cultural and creative spillovers in contemporary urban cultural policies are provided.

The methods applied in the research are referential analysis of literature and cultural policy documents.

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## **UZŅĒMUMU SADARBĪBAS AR VALSTS UN PAŠVALDĪBU ANALĪZE UN PILNVEIDES IESPĒJAS REĢIONA ATTĪSTĪBAS KONTEKSTĀ**

Atslēgas vārdi: uzņēmējdarbība, sadarbība, valsts, pašvaldība

Valsts un pašvaldības cenšas stimulēt uzņēmējdarbību, lai sekmētu pilsētas iedzīvotāju labklājību un savu budžetu piepildījumu. Savukārt uzņēmēji ir ieinteresēti sava biznesa attīstībā. Valsts, pašvaldības un uzņēmēju sadarbība var veicināt uzņēmējdarbības attīstību kopīgo mērķu sasniegšanai.

Lai veidotu un stiprinātu šo sadarbību, ir svarīgi izvērtēt esošo situāciju:

- pašvaldības un valsts atbalstu jaunu uzņēmumu veidošanā un strādājošo uzņēmumu stimulēšanā,
- uzņēmumu gatavību sadarboties ar valsts iestādēm un pašvaldību,
- atbalsta saņemšanas intensitāti.

Pašlaik pastāv daudz valsts administrētu mehānismu uzņēmējdarbības veicināšanai. Arī pašvaldības cenšas piedāvāt vietējiem uzņēmējiem atbalsta iespējas, izstrādājot saistošus noteikumus par nodokļu atvieglojumiem, sniedzot palīdzību infrastruktūras sakārtošanai utt. Pašvaldības un valsts pārstāvji cenšas uzrunāt uzņēmējus, veidojot ar tiem abām pusēm izdevīgus kontaktus.

Pētījuma mērķis ir analizēt Daugavpils uzņēmumu, valsts un pašvaldības sadarbību. Pētījuma rezultātā tiks iegūta informācija par to, vai uzņēmēju, valsts un pašvaldību komunikācija ir produktīva, cik lielā mērā uzņēmumi ir gatavi sadarboties ar valsti un pašvaldību, izmantot viņiem piedāvātās atbalsta iespējas, un vai šis atbalsts vienmēr ir pietiekošs, lietderīgs un atbilst uzņēmēju vajadzībām. Svarīgi ir arī noskaidrot, vai uzņēmēji ir informēti par atbalsta iespējām un kādi ir šķēršļi atbalsta saņemšanai. Izmantojot pētījuma rezultātus, tiks izstrādāti priekšlikumi sadarbības uzlabošanai.

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## **VIDUSSKOLU ABSOLVENTU FINANŠU PRATĪBAS ANALĪZE**

Atslēgas vārdi: finanšu lietpratība, finanšu pratība, absolventi.

Finanšu pratība ir zināšanu un prasmju kopums, kas cilvēkam ļauj izprast un sekmīgi organizēt savu finanšu pārvaldīšanu un pieņemt pārdomātus lēmumus par daudzveidīgo finanšu pakalpojumu izvēli un to atbilstošu izmantošanu, nodrošinot finansiālo stabilitāti un ilgtspēju. Finansiāli protošam indivīdam ir zināšanas par finansēm un ekonomiku kopumā un viņš spēj šīs zināšanas izmantot savas turpmākās labklājības veicināšanai un finansiālai izaugsmei, lai sasniegtu savus privātos mērķus.

Latvijas iedzīvotāju demogrāfiskie dati nav iepriecinoši. Kopš 2011. gada, pieaugot dzimstības līmenim, nedaudz pieaug bērnu un pusaudžu īpatsvars (0-14 gadi) valstī, toties samazinās darbības vecuma iedzīvotāju skaits (15-62 gadi). Ņemot vērā to, ka Latvijā, jo īpaši Latgalē, pensijas vecuma iedzīvotāju skaits ir lielāks par bērnu un pusaudžu īpatsvaru, tas nozīmē, ka nākotnē varētu būt mazāks iedzīvotāju skaits darbības vecumā un savukārt demogrāfiskās slodzes līmenis varētu pieaugt. Tieši tāpēc ir jāvelta pastiprināta uzmanība izglītības pilnveidošanai jau skolās, lai pabeidzot vidusskolu, jaunieši būtu spējīgi pārvaldīt savas finanses, līdz ar to veicināt jauniešu uzņēmējspēju, kas savukārt ietekmētu tautsaimniecības attīstību. Veikts pētījums ar mērķi izvērtēt vidusskolu absolventu finanšu pratību. Empīriskā

pētījuma rezultātā noskaidrots, kā vidusskolu absolventi novērtē savas zināšanas finanšu jautājumos un gatavību tās praktiski pielietot dzīvē. Saskaņā ar autoru veiktajiem aprēķiniem, iegūtie dati ļauj analizēt kā absolventi spēj izvērtēt, zina un izprot finanšu lietpratību.

Pētījumu aktualizē sabiedrībā, to starp lēmumu pieņēmējiem valsts institūcijās notiekošā diskusija par Latvijas iedzīvotāju finanšu lietpratību saistībā ar ekonomiskajām norisēm valstī.

DRAFT

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# MENEDŽMENTS

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# MANAGEMENT

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## ***A COMPREHENSIVE ASSET-BASED APPROACH TO SUSTAINABLE BORDER GUARD PERSONEL MANAGEMENT***

**Keywords:** staff quality management, professional development, State border organization, sustainability.

State border organization is the one under the strict supervision of the Ministry of Interior Affairs that implements the state border and state security politics. The aim of the personnel management is efficient management of the staff members in order to ensure educated, qualified and motivated personal development for fulfilling the tasks and functions set in the normative requirements with the aim to foster the professional development of personal and loyalty to the State. The quality management of personnel is determined by the contemporary challenges in world security (cybercrime, international terrorism, human trafficking, illegal migration). Life in a complex, interconnected world where human economic, social and political systems change rapidly, requires to offer professional work of personnel in order to meet the international requirements. Leaders of the state border organization need the knowledge to manage this complexity and that require improved best practices. Generational changes in the State border organization causes the need to pass the best of the existing knowledge to new generations. This leads to the need to explore personal management strategies in reorienting current management to more sustainable modes of management as well as to design suggestions for the improvement of personal quality management.

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## ***BASIC FACTORS OF SMART GOVERNANCE CONCEPT FOR OCCUPATIONAL SAFETY DEVELOPMENT***

The aim of the study is to generate new knowledge on recent governance innovations in occupational safety management. It relates the emergence of joint action by the occupational safety sector's participants, public and private actors and citizens, all of whom have an increasing role to play in field of occupational safety in modern conditions. The importance of occupational safety in modern labour market is becoming increasingly important as in many areas organizations are increasingly confronted with new challenges: new forms, methods and principles of working (eg, production in time, overload and increased work intensity, robotics, crowdsourcing), on-line platform activities and labor market global trends (eg aging and other demographic changes, dynamic technological development and automation, increase in the number of self-employed, etc.), work processes and their organization (eg. remote, virtual work). **Smart occupational safety** is a **multi-level** governance **ecosystem** with active cooperation between different levels of stakeholders, organizing and running a society with the aim of ensuring the best possible working conditions, while keeping the goals of efficiency for organizations, thus bringing well-being.

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## ***EFFICIENCY OF CONTROLLING RESTRICTIONS ON COMBINING OFFICES OF PUBLIC OFFICIALS***

Key words: public official, efficiency, restrictions of the activities of public officials

There is an actual topic in society and in the political community for the need to establish a modern, compact and efficient civil service, which would lead to efficient use of public resources. Without being identified as one of the country's priorities, for the prevention and combating of corruption it is difficult to claim a priority in the state budget formation process and the achievement of the results within the available funding is relevant.

A scientific problem arises - how to rationally and sustainably distribute public resources to law enforcement agencies and other public institutions in different areas of the corruption prevention and combating sector by maximizing resource efficiency?

The constraints imposed on public officials are an essential part of anti-corruption policies.

The State Chancellery defines efficiency as the orientation of employees to achievement of results and development of such public administration policy and services that can deliver the greatest benefits to the economy and the population with use of

the least possible resources, where employees' professionalism in their ability to reduce administrative burdens, offering solutions to simplify procedures, cut costs and move towards higher productivity in the public sector is crucial.

The aim of the research is to explore the effectiveness of the restrictions imposed on state officials in Latvia by identifying problems and making suggestions for improving efficiency

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## **INSTITUTIONAL VALUES AND PSYCHOLOGICAL MICROCLIMATE OF BORDER INSPECTION UNITS**

Situations when employees do not have a clear system of organizational values have a negative impact on a job satisfaction by leading an employees to inadequate expectations as well as feelings of dissapointment. It is important to realize that the awareness of the individual values of the institution's employees strengthens the individual motives of the employees actions, which are not always aligned with the common values of the institution and its operational objectives, and lead to the loss of authority management and irrational use of human resources potential. One of the most important functions of management is given to communication processes. This research is dedicated to the study of an institution's effective internal communication that promotes an atmosphere of trust, which in turn increases the productivity of organization and improves interpersonal relationships, and enhances teamwork efficiency, mutual support, and internal solidarity. All these processes in the given research are examined in an inseparable interrelation with the values of the institution, which in turn are closely related to the established psychological microclimate of the institution. Organizational values play an important role in the development process of institution, therefore the article analyzes the common values of the institution and, according to the officials of the institution, they are related to the psychological climate in the institution. The in-depth study of the institution's common values in the proposed research is based on a survey of the exhibition staff, results are obtained using Osgood's semantic differential and Likert's scale.

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## **LIFESTYLE TYPES OF LATGALE CUSTOMS CONTROL POINT OFFICER AND THEIR EFFECT ON LEVEL OF THE BURNOUT SYNDROME**

**Keywords:** lifestyle, professional burnout, personality peculiarities, staff.

The research is about lifestyle types and their effect on level of the burnout syndrome. Human`s lifestyle express itself in thinking, senses, speech, behaviour, world perception, conflict and crisis overcoming. Lifestyles are important in any work process, so there is a desire to find out, if we can use it to avoid from burnout syndrome.

Course of the study: in the Latgale Customs Control points was conducted a questionnaire, including two tests and additional questions about respondent`s` age, sex, work experience, marital status. One test - for professional burnout diagnostics by K. Maslach and C. Jackson`s test to determine the level of the professional burnout of workers. The second test - using scale of lifestyle types by R.M. Kern and J. White.

As a research result there were researched lifestyles of Customs officers, determined the most typical and dominant lifestyles in the Customs service, researched link of lifestyles and their effect on the level of the professional burnout.

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## **MEDIĀCIJAS IZMANTOŠANAS IESPĒJAS LATVIJĀ**

Līdz ar sabiedrības attīstības tendencēm mainās ekonomiskā situācija, sabiedrības sociālā struktūra, attiecības un vērtības. Nepārtrauktā kustībā un mijiedarbībā veidojas jaunas attiecības, rodas domstarpības, kurās tiek apdraudētas vērtības, un kuru risināšanai nepieciešams meklēt efektīvākas domstarpību risināšanas metodes. Lai panāktu, ka domstarpībās iesaistītās puses izmanto efektīvāko domstarpību risināšanas veidu, tiek attīstīta sabiedrības izpratne par taisnīguma sasniegšanas iespējām, pilnveidota un bagātināta domstarpību risināšanas sistēma ar alternatīvām domstarpību risināšanas metodēm. Kā viena no alternatīvo domstarpību risināšanas metodēm ir mediācija. Mediāciju domstarpību risināšanā pasaules valstu praksē izmanto jau vairākus gadu desmitus, un tā ir atzīta par efektīvu alternatīvo domstarpību risināšanas metodi. Mediāciju ar labiem rezultātiem izmanto valsts iestādes, privātu uzņēmumi, sabiedriskās organizācijas, privātpersonas domstarpību risināšanā dažādās nozarēs un jomās. Kā mediācijas priekšrocības visbiežāk tiek norādītas: ātrums, izmaksas un efektivitāte. Latvijā mediācija valstisku nozīmi ieguva 2014. gada 18. jūnijā līdz ar Mediācijas likuma stāšanās spēkā un mediācijas kā alternatīvas domstarpību risināšanas metodes izmantošanas atzīšanu. Lai gan līdz šim mediācija Latvijā vēl nav guvusi augstu popularitāti un sabiedrības uzticību, mediācija attīstās, par to liecina mediācijas izmantošanas iespējas dažādu domstarpību risināšanā un augstie mediācijas kā alternatīvas domstarpību risināšanas metodes izmantošanas domstarpību risināšanā

efektivitātes rādītāji praksē. Lai mediācija kļūtu par sabiedrības kultūras sastāvdaļu, ir nepieciešamas pārmaiņas sabiedrības kultūras un tiesiskās apziņas līmenī.

Atslēgvārdi: alternatīvas domstarpību risināšanai, alternatīvās domstarpību risināšanas metodes, domstarpības, domstarpību risināšana, mediācija.

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## **QUALITY OF WORKING LIFE OF NURSES AND POTENTIAL STAFF TURNOVER IN LATGALE REGION**

Key words: nurses, quality of working life, staff turnover.

**Introduction:** In the area of health care, there is currently a shortage of medical staff, particularly in the area of nursing - approximately 1 500 nurses are currently missing in hospitals. In almost all countries, nurses are the largest group of healthcare providers providing the highest percentage of patient care - both preventive and curative. The quality of working life is defined as a multidimensional concept, which includes the feelings of the employees about the content of work, the physical work environment, salary, autonomy at work, participation in teamwork, participation in the decision-making process, guaranteed job security, communication, relationship with colleagues, management support and work life balance. However, reliable information on the quality of working life of nurses at the hospital is limited. Turnover of the nursing staff can have a negative impact on the quality of life in the Latgale region as a whole.

**Aim:** The aim of this study is to assess the quality of working life of nurses and the potential staff turnover in the Latgale region and to determine their interdependence.

**Materials and methods:** The sample was composed of 370 nurses working in health care institutions in Latgale region - Daugavpils regional hospital, Jekabpils and Preiļi hospitals. In order to achieve the goal of the research, three research tools were used: a questionnaire of socio-demographic indicators of nurses, Brook's Quality of Nursing Work Life Survey (Brooks, Anderson, 2001) and the Potential Anticipated Turnover scale (Hinshaw, Atwood, 1984). The results of the research showed that for more than half of the working nurses have mid level of quality of working life, more than a third of nurses in Latgale region want to change their jobs. The quality of working life of nurses is closely linked to the rate of employee potential turnover.

The authors of the study believe that the practical application of the research is significant, the data obtained in this study helps to critically and realistically assess the current situation in Latgale region, to develop strategies for improving the quality of working life of nurses and to prevent potential staff turnover. In addition, the study contributes to the development of research in the professional field of nurses, as well as help to address health sector governance in general.

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## **SERVICE QUALITY IN THE PUBLIC SECTOR OF LATVIA**

Key words: *Service quality, SERVQUAL, customer expectations, public sector.*

**Introduction:** The service industry plays an increasingly important role in the economy of many countries. On average, each eleventh Latvian resident (8.8%) works in the public sector - for state institutions or institutions of local government, for capital societies owned by above mentioned institutions, or in other institutions related to the State, or to local governments. Public services are a "tangible" result of the activities of institutions of state administration or self-governments, which becomes apparent as ensuring certain benefits to its customers - to the society.

**Aim:** The aims of the study was to characterize the concept of service quality and assessment methods; collecting foreign experience in evaluating of service quality; practically check the method in Latvian state institutions; analyze the results of the examination and draw conclusions about the possibilities of using the method.

**Material and methods:** The SERVQUAL instrument was adopted to measure the quality of customer service as it demonstrated the "gap" between the customers' expectations and the perceptions. The Statistical Package for the Social Sciences version 22.0 was employed to analyze the data.

**Results:** The practical part of the research summarizes the data collected for practical inspection of the above mentioned model of the quality assessment - SERVQUAL (Parasuraman et al. 1985). The purpose of this research was to test the suitability of the SERVQUAL method for assessment of service quality, to understand its compliance with Latvian conditions. The research was based on a selection of customers of public services, 300 people in total in Latvian regions, in 2017-2018. The research was carried out at the state institutions of Latvia regions which provide services of social assistance, services of employment promotion; implement the state policy of environment protection; provide services of legal assistance. The satisfaction of the customers of institutions and the quality of the rendered services were assessed.

**Conclusion:** The study tried to present the findings of assessing the expectations and perceptions of service quality for customers in a public service context in Latvia. The service quality gaps indicated that the public service department was failing to meet the expectations of their customers. The results of this analysis provide evidence that service provider gaps must be reduced. An important step in minimizing service provider gaps is regularly measure customer expectations and

communicate these expectations. Quality assessment of services provided by public authorities and regular evaluation of their – monitoring should become an integral part of public administration.

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## ***SPECIAL PROVISIONS RELATED TO THE BORDER CHECKS OF MINOR PERSONS***

The United Nations Convention on the Rights of the Child, as one of the most important international instruments for the protection of child's freedom and fundamental rights, minor persons are defined as a particularly vulnerable group regarding criminal offenses, especially for the reason that minors are not able to take the full care of themselves. In the scope of border crossing, human trafficking and child abduction are at the forefront of such crimes. One of the main tasks of the State Border Guard is to control the compliance of the rules regarding the entry, stay and transit of persons in the territory of the Republic of Latvia, parallelly within its ability and activities to carry out the activities described in the Asylum Law. A logical and reasonable assertion that these conditions also apply to border checks of minors at the external borders. In the research, taking into account international laws principles contained in, are defined certain categories of persons to whom these provisions applies, i.e., are defined the concept of a minor, as well as an provided an insight into the action models of State Border Guard officials, finding the cases of non-compliance of minors border crossing procedures.

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## ***THE ANALYSIS OF IMPROVEMENT OF EFQM BUSINESS EXCELLENCE MODEL***

European Foundation for Quality Management defined the benchmarking guidelines of EFQM business excellence model in early 90-ies of the 20th century, and keep them updating periodically. The excellence model is a structure envisaged for the interpretation of excellence guidelines in performance. In order to facilitate the benefits from the EFQM adoption in the company, the management shall initially ensure the compliance of the business activities to the aforementioned excellence benchmarking guidelines. If the company fails to understand and accept the guidelines entirely, the mastering of the model can be complicated and even pointless for any type of the business. EFQM guidelines serve to analyse the performance of the company and justify the adoption of the model in the level of top management.

The aim of the research is to study the improvement possibilities of the performance quality assessment in Latvian companies, basing on EFQM business excellence model. The hypothesis of the research is following: improving the EFQM business excellence model used in the performance quality assessment in Latvian companies by including important new criteria and integrating them into conventional criteria of the model could increase the competitiveness of the business and drive it towards higher level of excellence. The tasks of the research consists of studying the benchmarking guidelines of European business excellence model; in the result of assessment by Latvian and foreign business excellence and quality experts verify the assumptions included in the EFQM business excellence model with author's improvements, thus approbating and proving he hypothesis; to draw the conclusions and come up with the proposals.

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## ***THE EFFECTIVE INDICATORS OF CRIMINAL PUNISHMENT ENFORCEMENT INSTITUTIONS***

In conformity with the new approach to administration, the effectiveness of state administration is determined by setting aims, planning respective activities and assessing what has been achieved, i. e. by determining the degree of achieving the aim. To evaluate the effectiveness of state administration institutions, systems of results and effective indicators corresponding to a definite political sphere are designed and introduced. The political sphere of criminal punishment enforcement is no exception in this respect. For planning, implementation and supervision of this sphere, too, the systems of results and effective indicators are created and introduced.

At assessing the results obtained in the period of 2015 – 2017, we can draw a conclusion that the institutions of criminal punishment enforcement do not carry out the registration of many effective indicators which have been planned to achieve in the guidelines for the re-socialization of prisoners. The public surveys, provided by the Administration of Penal Institutions (further – API) and State Probation Service (further - SPS) and published within the period of 2015 – 2017, supply the information only about two out of the thirteen effective indicators, and the information about the implementation of the rest of eleven effective indicators is not available at all.

Currently, effective indicators, accessible in the API and SPS public surveys of 2015 – 2017, sooner reflect the results of API and SPS activity than the degree of achieving the highest aim (the aim of re-socialization policy).

## ***THE ESSENCE AND ATTRIBUTES OF ENTREPRENEURSHIP COMPETENCY***

Entrepreneurial competencies are considered to be higher-level competencies that include personal qualities, skills and knowledge. Business performance relies on entrepreneurship competency and it is influenced by a wide range of both external and internal factors; thus, it is important to research and develop this ability. The aim of the research is to determine the key components of entrepreneurship competency, importance of its development and possibilities for practical improvement.

The research methods include academic paper analysis, statistical data analysis as well as case study. The research results show that entrepreneurship competency is widely studied in scientific literature, and it refers to the ability to act upon opportunities and ideas and transform them into value for others. It involves creativity, critical thinking and problem-solving skills, and is related to opportunity, conceptual, relationship, strategic, organising and commitment competencies. Training programmes, a range of courses, career guidance and planning have a positive impact on people's creative abilities. In Latvia, the problem-solving, communication and information skills topical for every entrepreneur are at a relatively high level. In accordance with the Latvian legislation learning outcomes of study programmes identify the competencies, skills and knowledge to be acquired. Management programmes place particular emphasis on the analytical, synthesis, critical thinking, communication and assessment competencies.

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## ***THE PHENOMENON OF LEADER GENIUS AS A SUBJECT OF PSYCHOBIOGRAPHICAL RESEARCH***

Key words: leader, phenomenon of leader genius, factors facilitating leader's development, psychobiographical study  
Investigation of the phenomenon of leader genius is a promising future perspective in science. Scholars have been interested in issues related to the investigation of traits specifically characteristic of leaders, trying to locate the essential factors of leader formation as well as the features that hold a person in a leading position. Traditionally the phenomenon of genius has been regarded in relation to the action of leaders. The studies produced by scholars until the present (referring to previously published articles) reveal that one of the major factors of the formation and development of leader genius is the presence of crises in his/her life. Another essential factor usually mentioned is possessing by an outstanding leaders of "spiritual vision", ardent enthusiasm that, along with outstanding abilities and moral principles, helped them promote and implement their ideas.

**The aim of the present research is reconstruction of psychological characteristics** of leaders' personality and factors of its formation and development as an instrument of bringing out the phenomenon of ingenious leader's personality. **Accordingly, the object of the research is** the phenomenon of leader genius, criteria of genius, personal traits.

The present research applies the psychobiographical method, the method of action outcomes analysis. The holistic analysis of the nature of genius leads to specifying the factors of its formation and development, produces the reconstruction of the psychological peculiarities of leaders' personalities. It elaborates a complex method of drawing the psychobiography of leaders' personality oriented towards the investigation of its psychological characteristics and ways of personality formation with consideration for all determinants of its development and diverse manifestations.

The present research opens up a new perspective on the investigation of the phenomenon of ingenious leader's personality in the process of its development and, due to its interdisciplinary nature, makes it possible to unite problems of history (biography) and psychology (psychobiography).

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## ***THE POLITICS OF A CORPORATE SOCIAL RESPONSIBILITY IN THE ENTERPRISE X FOR A SUSTAINABLE REGIONAL DEVELOPMENT***

Keywords: corporate social responsibility, sustainability, sustainable development  
Since the time of the industrialization, there was a discussion of whether the enterprise needs to undertake a societal responsibility. This responsibility implies for the enterprise to undertake a responsibility to act ethically and to foster economic development by improving the quality of working force, families, and to ensure the quality of the societal development.

The interest in corporate social responsibility has increased in the last years. Enterprises become aware that corporate social responsibility can be used as a strategy to foster sustainable development of enterprises.

In a contemporary economic situation, one of the most effective mechanisms to attract investments and to raise the competitiveness of companies is by implementing social responsibility in companies. Globalization processes in the

world make one to pay more attention to ethical questions in the society at large and in companies. The aim of the article is to explore the process of implementation of the strategy of a societal responsibility in enterprise X. The following research methods were employed in this research: the analyses of documents, interviews with the higher level managers of the enterprise X. The author analyses difficulties while implementing the strategy of societal responsibility and suggests ways of improvement of the implementation of the strategy of corporate social responsibility.

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## **VADĪŠANAS STILA VEIDS UN STARPKULTŪRU KOMUNIKĀCIJAS KOMPETENCE MŪSDIENĀS IR AKTUĀLA TĒMA, KO NOSAKA TIRGUS PĀRMAIŅAS UN UZŅĒMUMU SPĒJA PIELĀGOTIES ŠĪM PĀRMAIŅĀM**

Pēdējā laikā īpaša aktualitāte tiek pievērsta uzņēmuma attieksmei pret darbinieku, tam, kā darbinieks jūtas savā kolektīvā, cik motivēts un ieinteresēts viņš ir uzņēmuma mērķu sasniegšanā. Tas viss ir tiešā veidā saistīts ar darbinieka un tiešā vadītāja attiecībām, un rezultāts šai savstarpējai vadītāja un darbinieka ietekmei ir darba produktivitāte un uzņēmuma ilgtspēja.

DRAFT

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# ĶĪMIJA

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# CHEMISTRY

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## ***BENZANTRONU ATVASINĀJUMU TERMISKĀ ANALĪZE UN SPEKTROMETRISKAIS RAKSTUROJUMS***

Mūsdienās plaši izmanto benzantronu grupas atvasinājumus gan dažādās nozarēs, gan zinātniskos pielietojumos. Vielu raksturošanai pašlaik izmanto tādas metodes kā termiskā analīze un spektroskopija. FT-IR un TG/DTA metodes ir efektīvas benzantronu krāsvielu pētīšanā, tās nodrošina vispusīgu materiāla raksturojumu, atverot jaunas pētniecības iespējas. FT-IR ir ļoti nodēriģa, lai klasificētu izejvielas un sastāvdaļas, ko izmanto krāsās, krāsvielās, polimēros u.c., bet termiskā analīze tiek plaši pielietota, lai izpētītu savienojumu termisko sadalīšanos procesā un aprēķinātu saistītos kinētiskos termodinamiskos parametrus. Darbā veiktie pētījumi un iegūtie rezultāti sniedz informāciju par elementu analīzi un termisko stabilitāti. Pētīto krāsvielu īpašības atkarīgas no struktūras un sastāva.

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## ***BIOGAS PRODUCTION POSSIBILITY FROM AQUACULTURE WASTE***

The current energy supply at a global level depends on fossil energy (oil, coal, natural gas). Fossil fuels are non-renewable resources and their reserves are declining very rapidly.

Unlike fossil fuels, biogas is a completely renewable resource because it is produced from biomass. Biogas will not only improve the country's energy balance, but will also make a major contribution to preserving natural resources and improving the environment.

Another major environmental challenge facing today's society is the growing amount of waste. Controlled landfilling or incineration of organic waste is not the best practice, as environmental standards are now much stricter.

As we know, the two biggest problems of aquaculture production are the high amount of waste from fish life processes, as well as the large amount of energy needed for economic activity (Multiannual Strategic Guidelines for Aquaculture 2014-2020).

The production of biogas by anaerobic digestion is considered to be an optimal solution for the recycling of various types of organic waste by converting this waste into renewable energy and organic fertilizer.

According to the data of the Central Statistical Bureau, in 2016, 816 ponds with a total area of 5592 ha, 1245 basins with a volume of 17727051 m<sup>3</sup> and 2513 recirculation systems with a volume of 2786 m<sup>3</sup> were used for aquaculture production in Latvia. ).

As a result of our research, a biogas plant laboratory model was created from the biogas processes of the existing laboratory bioreactor EDF-5.4\_2 and biogas production was tested in laboratory conditions from aquaculture surpluses of various aquaculture enterprises. Analyzing the composition of the obtained biogas with a gas chromatograph - mass spectrometer, the optimal ratio of raw materials between the aquaculture fish life-process waste and fish-processing waste was calculated for the biogas plant. Based on the results of the research, recommendations were made on the possibilities of building a biogas plant, as well as on the optimal composition of raw materials necessary for the production of the biogas plant.

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## ***CHEMICAL COMPOSITION OF FIVE LICHEN SPECIES (C. RANGIFERINA, P. FURFURACEA C. STELLARIS, R. FARINACEA AND C. ISLANDICA) EXTRACTS***

Lichens are symbiotic organisms, which wide distributed in a wide range of habitats. Their secondary metabolites possess many biological activities, such as antibiotic, antitumor, allergic, and antibacterial, antioxidant and others. Interest in the use of lichen metabolites is increasing.

The aim of our investigation was by extracting five lichen species – *C. rangiferina*, *P. furfuracea*, *C. stellaris*, *R. farinacea* and *C. islandica* – to find a more suitable extractor (acetone/ethanol) and the composition of the extracts obtained, as well as to test the antifeedant properties of the resulting extract solutions on specimens of the *Arion vulgaris* species.

More common lichen species selected and their ultrasound extraction performed. The obtained extracts subjected to chromatographic analysis. Results showed that the highest mass of extracted substances obtained by extraction with ethanol. Chromatography analysis of lichen extracts showed that most of the components are aromatic hydrocarbons and their derivatives - benzoic acid derivatives and phenolic compounds; dibenzofurans, steroids. Esters, sugar alcohols and derivatives of aliphatic acids also have been found. The composition of acetone extracts differs from the ethanol extracts, mainly with a higher content of more hydrophobic organic compounds. *C. rangiferina*, *P. furfuracea* and *C. stellaris* ethanol extracts showed specific activity which was related to decrease in grazing intensity and slug weight loss after feeding on treated food. The most effective extract was from *P. furfuracea*.

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## **DETERMINATION OF VOLATILE ORGANIC COMPOUNDS (VOC) IN HOOKAH TOBACCO**

Hookah smoking is a common practice that has spread out globally. Although similarities between cigarette and hookah smoking exist (e.g. exposure to nicotine, carbon monoxide, toxic metals, and polycyclic aromatic hydrocarbons), there are also considerable differences. It is believed that use of hookah tobacco are safer and less harmful for health than cigarette smoking, but there is growing evidence on the hazardous consequences of smoking hookah.

The aim of this preliminary investigation is detection of the volatile organic compounds (VOC) in smoke from hookah tobacco.

In order to imitate the smoking process in the laboratory conditions, a simulated hookah apparatus was constructed. Five types of tobacco for hookah were analyzed.

An extraction method involving solid-phase adsorption (SPA) and gas chromatography mass spectrometry (GC-MS) was developed for the qualitative analysis of hookah smoke. 3-Aminopropyl-functionalized silica gel and activated coconut charcoal was used as sorbents for SPA for substances collection during smoking process. Elution of VOC from sorbent was performed using organic solvent dichloromethane.

Chromatographic analysis indicated that the hookah tobacco contains big amount of VOC. Some of them are highly toxic for human (for example, toluene), but harm from the presence of certain substances (for example, ethyl butyrate, isoamyl acetate, jasminaldehyde) is not proven.

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## **IDENTIFICATION OF CHEMICAL COMPOUNDS IN AN ELECTRONIC CIGARETTE AEROSOL**

In recent years, the popularity of electronic cigarettes has grown rapidly. Electronic cigarette manufacturers emphasize that electronic cigarettes are safe and harmless for health, and even help to stop smoking. At the same time the safety of electronic cigarettes is still not scientifically proven and causes a lot of disputes. Firstly, this is due to a lack of quality standards, as a result of which the substances and their quantity found in the product do not match to the label information. Secondly, there is a lack of an independent epidemiological studies on the short- and long-term effects on the health and safety of the consumer and the people around them.

The aim of this work is to identify chemicals in an electronic cigarette aerosol and to assess their potential impact on consumer health. To achieve this goal, a smoking mechanism was modeled - the forming aerosol was adsorbed on a sorbent, further desorbed with a mixture of acetonitrile and dichloromethane and analyzed by using gas chromatography. Aromatic compounds such as toluene and xylene, which are toxic to humans and even carcinogenic, have been found in electronic cigarette aerosols.

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## **JAUNU LUMINISCĒJOŠU AMĪDU SINTĒZE**

Mūsdienās amīdiem ir plašs praktiskais pielietojums. Tie ir bieži sastopami augu un dzīvnieku izcelsmes vielās, piemēram, amīda atvasinājums - nikotīnamīds ir B 5 vitamīns, kuram ir galvenā funkcija – nodrošināt dzīvo organismu ar nepieciešamu enerģiju. Daudzus amīdus izmanto kā ārstnieciskās vielas (sulfamīdpreparāti, paracetamols u.c.) un rūpniecībā polimēru (neilona, kaprona, elastāna) ražošanā. Dotajā darbā galvenais uzdevums bija izpētīt 3-N-(2-hloracetamido)benzantrona reakcijas ar aminoskābēm un heterocikliskiem savienojumiem (benzimidazola atvasinājumiem) ar nolūku iegūt jaunus luminiscējošus savienojumus, kurus turpmāk varētu izmantot biomolekulu un dzīvo šūnu struktūru

vizualizācijai. Iegūtajiem savienojumiem piemīt izteikta luminescence 500-580 nm reģionā. Jaunsintezēto vielu struktūra un tīrība pierādīta ar KMR, IS spektroskopijas un hromatogrāfijas metodēm.

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## ***SYNTHESIS OF HETEROCYCLIC DERIVATIVES OF NITROARENES***

Triazoles are five-membered heterocyclic compounds with interesting physical and chemical properties. This class of heterocyclic derivatives has stimulated great interest from synthetic and medicinal chemists because triazoles are also heterocyclic targets of considerable importance in the pharmaceutical sector. This heterocyclic moiety is present within the core structure of numerous drugs. This paper covers synthesis of new triazoles from nitro-benzantrones. One of reactions with sodium azide in DMSO resulted in a product with strong red fluorescence, as well as few byproducts with yellow and orange fluorescence. Chromatographic and spectroscopic methods were used for further analysis. These new compounds are characterized by high chemical stability, large Stokes shift, good fluorescence quantum yields and fluorescence in crystalline phase.

**Elina Sedlionoka, Jelena Kirilova**

## ***THE SYNTHESIS OF LUMINESCENT MARKERS FOR LABELING OF BIOMOLECULES.***

Benzanthrone is a unique substance with his high photostability and bright fluorescence. These fluorescent dyes are well known as luminophores that emit from yellow-green to red-purple. There are a lot of methods described in the literature of using benzanthrone dyes, that are widely used nowadays, for investigations of fats, proteins and other organic compounds in the cells. Despite this, there is still a need for new stable fluorescent derivatives that can bind to biomolecules to visualize them as a result. In this connection present work is devoted to synthesis of new benzanthrone compounds with reactive groups – nitrile, isothiocyanate and amidine. Using 3-brombenzanthrone and 3-nitrobenzanthrone, three described in literature methods were applied for planned research. The first one method – copper-catalyzed conversion of 3-brombenzanthrone into the corresponding cyanide. As a result, target nitrile was not obtained. The second one, using 3-nitrobenzanthrone with carbon disulfide for preparation of isothiocyanate derivative is not suitable also. The next method – ligand-free palladium-catalysed cyanation of 3-brombenzantrone successfully gave the result – new 3-cyanobenzanthrone which was then be used for synthesis of unsubstituted amidine. The obtained compounds have been characterized by mass- spectroscopic and chromatographic methods.

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### **PRINCIPLES OF ACUTE BRONCHITIS ANTIMICROBIAL THERAPY IN FAMILY MEDICINE PRACTICE**

**Objectives** – Key words – Acute bronchitis, antibiotic therapy, general practice

Acute bronchitis is an inflammation of the bronchi mucous, which usually occurs after an acute virus infection. The main symptom describing bronchitis is coughing. Acute bronchitis is one of the most common causes of unnecessary antibiotic prescriptions. The main goal of this study is to estimate if general practitioners prescribe antibiotics according to guidelines and thus if the therapy has been correctly assigned, as well as to find out which antibiotics are prescribed the most and how many patients have had chronic diseases, which according to guidelines should require antibiotic therapy.

**Materials and methods** – This was a retrospective study. Medical records of 118 patients were analyzed, providing the diagnosis, comorbidities, symptoms and the disease progression, as well as the therapy. The data was analyzed using SPSS and Microsoft Excel. The study was performed according to the NICE guidelines.

**Results** – According to the guidelines, first choice for antibiotics is doxycillin, with an alternative option of amoxicillin, clarithromycin and erythromycin. In the family medical practices, 50% of all events resulted in therapies without the use of antibiotics. In 20.34% of all cases, amoxycillin was prescribed, in 11.86% - amoxiclav, in 8.47% - azithromycin, and in only 5.08% of all cases doxycillin was prescribed, even though it should be the number one choice according to the guidelines. The results divided patients into 4 groups - In 50.85% of all cases, the treatment was correct, as there were no indications for general practitioner to prescribe antibiotics; In 18.64% of all cases, patients received the correct antibiotic therapy, as there were indications according to NICE guidelines; In 18.64% of all cases antibiotics were prescribed, but according to NICE guidelines, they were not necessary; In 11.86% of all cases, antibiotics were prescribed because of disease indications, but the choice of antibiotics was incorrect.

**Conclusions** – It is not possible to access if the therapy was correctly assigned in all the cases. It would be best to stick as closely to the NICE guidelines as possible.

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### **A FREQUENCY OF FLATFOOT IN CHILDREN WITH OBESITY COMPARED TO CHILDREN WITH NORMAL BODY MASS INDEX**

**Key words:** Flatfoot; obesity; children.

**Introduction:** Obesity in childhood is a large health issue in clinical medicine including flatfoot problem.

**Objectives:** To systematically assess frequency of flatfoot in children with obesity compared to children with normal body mass index.

**Methods:** Data was collected using data base PubMed and WileyOnlineLibrary, using search terms (“flatfoot” or “pes planus”) and (“obesity”) and (“children”). Research papers published from 30.01.2012 to 01.01.2019. Articles that met the inclusion criteria were assessed for eligibility using “PEDro” rating scale. All chosen studies had control group (children with normal body mass index), participants were 3 - 18 years old, and no chronic diseases, which can be associated with obesity, were mentioned.

**Results:** From seventeen found studies, five studies were included in the review. For the comparison were chosen flat foot frequency, over half of the studies utilized means of imaging or measuring the foot to determine structural changes or describe foot morphology. Imaging modalities included a “footprint” measurement termed a pedograph, radiographs, three-dimensional measurement systems or scanners, ultrasound, and laser surface scanner. Flatfoot frequency was compared in children with increased and normal body mass index. Studies showed that in overweight children the prevalence of flatfoot was higher (chi-square = 14.32, p = 0.002; p < 0.001); had a significantly lower plantar arch height (1.1 ± 0.2 cm; p = 0.04); positive correlation with Foot Posture Index-6 (p < 0.05). In the group of obesity girls, the significance level was p < 0.001 for both feet, and in the group of boys, the significance level was p < 0.01 in the right foot and p < 0.05 in the left foot. In the group of obesity girls, the significance level was p < 0.001 for both feet, and in the group of obesity boys, the significance level was p < 0.01 in the right foot and p < 0.05 in the left foot.

**Conclusion:** Current research about obese children’s flatfoot frequency indicate a difference between the flatfoot frequency in obese children and children with normal body mass index.

## **A FREQUENCY OF MIGRAINE IN ADULTS WITH OBESITY COMPARED TO ADULTS WITH NORMAL BODY MASS INDEX**

**Introduction:** Obesity in adulthood is a large health issue in clinical medicine. It is a risk factor for such health problems as stroke, myocardial infarction and diabetes mellitus. Migraine, from other hand, can lead to restrictions in such as everyday life activities, thus, even more restricting physical activities.

**Objectives:** To systematically assess of frequency of migraine in adults with obesity compared with frequency of migraine in adults with normal body mass index.

**Methods:** Data was collected using data base PubMed, using search terms ("migraine" ) and ("obesity" ) and ("adult" ). Research papers published from 01.01.2010. to 01.01.2019. Articles that met the inclusion criteria were assessed for eligibility using "PEDro" rating scale. All chosen studies had control group (adults with normal body mass index), participants were more than 18 years old, and no chronic diseases, which can be associated with obesity, were mentioned.

**Results:** From forty-seven found studies, five studies were included in the review. For the comparison were chosen migraine diagnosis frequency among people with different BMI, who completed the self-reported questionnaire, which were given to adults included in the research. Migraine diagnosis frequency was compared in adults with increased and normal body mass index. Two included studies indicated that odds of having migraine is greater in persons with obesity (OR: 3.06, 95% CI: 1.11-8.43 and OR=2.07; 95%CI 1.273.39, respectively). Two studies showed that persons with obesity has a greater prevalence of migraine ( $p = 0.000$  and  $p \leq 0,001$ ). And one study analyzed BMI for persons and found that the mean BMI was greater in those with EM ( $27.8 \pm 0.30 \text{ kg/m}^2$ ) compared with controls ( $27.1 \pm 0.4 \text{ kg/m}^2$ ;  $p \leq 0.05$ )

**Conclusion:** Current research on obese adults migraine diagnosis frequency indicate a difference between the migraine frequency in obese adults and adults with normal body mass index.

**Key words:** Migraine, obesity, adult.

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## **ANALYSIS OF THE PEDIATRIC CARDIAC INTENSIVE CARE UNIT POPULATION IN LATVIA**

**Keywords.** Pediatrics, Cardiac intensive care, Congenital heart defect.

**Introduction.** Heart defects correspond to the most common congenital malformation affecting 8:1000 live births. Many of these patients will undergo surgical repair or develop complications requiring intensive care. We audited this population in the only pediatric intensive care unit in Latvia.

**Objectives.** The objective of this study was to analyze Pediatric cardiac intensive care unit population in Latvia over eleven-year period.

**Materials and Methods.** In a retrospective analysis, admission data from the Pediatric Intensive Care Unit (PICU) of Children's Clinical University Hospital were screened to gather patients admitted for cardiovascular pathologies. Clinical data for the period from 01/01/2008 to 31/12/2011 were collected from paper medical records and for period from 01/01/2012 to 31/12/2018 from electronic medical records (IntelliVue Clinical Information Portfolio; Phillips). Descriptive statistics were done by using Microsoft Excel (v15.26) and SPSS Statistics (v23.0) software.

**Results.** From a total of 8369 PICU patients 1490 (17.8%) were admitted for cardiovascular pathologies and further included in the study; 740 (49.7%) were male, 750 (50.3%) were female. The median age was 18.5 (IQR = 7.0–81.0) months; 6.5% (n=97) were newborns. Median PICU stay was 1.08 (IQR=0.93-4.77) days. Main admission diagnoses included: congenital heart defect (CHD; n=1301), heart rhythm disorders (n=101), dilatation cardiomyopathy (n=47), pericarditis (n=9) and other (n=32). From CHD the most common diagnoses were: ventricular septal defect (33.5%), atrial septal defect (15.5%), patent ductus arteriosus (15.1%), coarctation of the aorta (9.1%), tetralogy of Fallot (7.4%) and atrioventricular septal defect (5.8%). The overall in-PICU mortality in cardiovascular group was 5.0% (n=74). Over 11-year period the total in-PICU mortality of cardiologic patients decreased from 13.9% in 2008 to 0.7% in 2018 ( $p < 0.001$ ; OR 0.78 [95% CI: 0.72.-0.85]).

**Conclusion.** Our analysis demonstrates that cardiologic patients form one-fifth of the general PICU population with the most frequent admission diagnosis - congenital heart defect. Also the overall in-PICU mortality in the cardiovascular group is relatively high, but had tendency to decrease from 2008 to 2018.

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## **ANXIETY AND DEPRESSION PREVALENCE AMONG MEDICAL FACULTY STUDENTS AND THEIR ASSOCIATION WITH ADVERSE CHILDHOOD EXPERIENCES**

Key words: Anxiety, Depression, Adverse childhood experiences

Introduction. Medical students are at higher risk for anxiety and depression compared to general population. Research shows that approximately 35% of medical students are suffering from anxiety disorders, as opposed to 12% for general population. Almost 30% of those students suffer from depression or symptoms of depression. Strong correlations were observed between various ACEs and later symptoms or diagnosis of depressive and anxiety disorders.

Aim. To determine anxiety and depression prevalence among medical faculty students and to detect its association with adverse childhood experiences.

Materials and methods. In this cross-sectional study, medical students from 1st till 6th year were asked to fill a questionnaire electronically on voluntary basis. Questionnaire consisted of demographic data, HADS (Hospital Anxiety and Depression Scale) and ACEs (Adverse Childhood Experiences) test. SPSS v.22 for Windows was used to perform all statistical analysis.

Results. Altogether 159 medical faculty students submitted their responses. Overall 83% were female, 17% were male students. The prevalence of anxiety disorders was approximately 45% (21% was subclinical, 23% were clinical manifestations). Around 36% of the respondents confirmed that they are suffering from depression (22% - subclinical, 14% clinical depression). Also, 14,5% marked at least 4 adverse childhood experiences. There was statistically significant association between anxiety and adverse childhood experiences score ( $p=0,023$ ). For women there is a more notable correlation between physical violence in childhood and alert level ( $p<0,05$ ). There was no statistically significant association between depression and adverse childhood experiences score; however, there were some trends between these results. For females a major correlation between an experienced violence in childhood and depression in adulthood was identified; however, for male respondents such correlation was not observed.

Conclusion. Results of this study showed that there is high prevalence of anxiety and depression in medical faculty students and there is significant correlation between anxiety and adverse childhood experiences.

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## **APPEARANCE CONCERNS AND THE BODY DYSMORPHIC DISORDER QUESTIONNAIRE RATES IN HEALTHY ADULTS**

Background. There is a society pressure on body – image and self – esteem and changing appearance demands nowadays.

Normal appearance concerns should be distinguished from body dysmorphic disorder (BDD). Body Dysmorphic Disorder Questionnaire (BDDQ) is a screening tool for BDD. A positive screen requires “Yes” to the both parts of the Question 1, “No” to the Question 2, “Yes” to any of the parts of the Question 3 and  $\geq 1$  hour per day spend thinking about body defect (Question 4).

Aim. To identify the normal appearance concerns and BDDQ rates among healthy adults.

Methods. Civil servants from Ministry of Interior, who had no major health problems and were at good mental health, filled in the BDDQ (Latvian or Russian translation), while having a compulsory annual health check. BDDQ – screening rates were calculated and the disliked body parts are identified.

Results. 130 questionnaires were extended in order of attendance; 116 (89.2%) were eligible.

Demographics: aged 18 - 67, mean age 36.5 +/- 10.1 Females n=60 aged 18 - 67, mean age 36.8 +/- 11.2. Males n=56 aged 18 - 57, mean age 36.2 +/- 9.

Positive answers:

Question 1A - 76 respondents (65,5%);

Question 1A and 1B - 34 (29.3%).

Question 1A, 1B and Question 2: 21 (%) were excluded from the further testing as their main concern was being overweight.

The remain 13 respondents (11.2%) reported the disliked body parts: skin (scars, wrinkles, acne), hair, breasts, stomach and hips shape, shape or size of the nose; they spend less than 1 hour per day thinking about body defect (Question 4).

Four respondents (females, aged 27 - 39) reported the impact of body defects on the quality of life (distress), two of them reported difficulties in unformal social activities as well, one respondent reported about avoiding certain situations.

No impact of body defects on the formal social activities was reported.

No BDDQ positive persons were detected.

Conclusion. BDDQ screening in mentally healthy adults is negative. Normal appearance concerns are widespread and most prevalent and meaningful in females. Concerns about being overweight is the most prevalent.

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## **ASSESSMENT AND COMPARISON OF RIGA AND LATVIAN REGIONAL SCHOLARS COMPREHENSION ABOUT SEXUALLY TRANSMITTED INFECTIONS (STIS)**

**Introduction.** According to the World Health Organisation data, one out of 20 adolescents obtain a sexually transmitted infection each year. It is highly important to evaluate knowledge of adolescents about STIs and their transmission to avoid further infections.

**Aim.** Aim of the study was to determine teenage knowledge about STIs, to compare if there is a difference between those learning in Riga and in different Latvian regions.

**Materials and methods.** Survey data were collected from adolescents and analysed using IBM SPSS.

**Results.** Out of 287 respondents, 135 are studying in Riga schools, 152 in different Latvian regional schools. 51% of sexually active Riga and 47% of regional scholars use condoms during sexual intercourse to prevent STIs. The average self-assessment rate about quality of self-protection from STIs was 3.69 in Riga and 3.88 out of 5 in regional teenagers. 59% of all Riga respondents know that the only contraceptive which is useful for STIs prevention is condom, compared to 68% in regional adolescents' answer. 67% of Riga and 69% of regional teenagers know that STIs can be transmitted via another routes. 80% of Riga scholars, 84% of regional ones know that STI can manifest as suprapubical pain, itching, swelling, dysuria, ulcers in genital area. 51% of capital and 87% of regional pupils note that symptoms can differ in both sexes. 84% of Riga and 89% of regional scholars answered that STIs can present following some time after *coitus*. When asked to mark the sources adolescent used to acquire knowledge about STIs, answers were as following – social media (60% in Riga adolescents and 77% in regional ones), school lessons (38% and 64%), informative booklets (22% and 55%), family members (22% and 18%).

**Conclusions.** Only half of respondents use condoms to avoid STIs. Majority of adolescents know that STIs can transmit via routes another than sexual contact and are familiar with symptoms of STIs. The main source used to get information about STIs is social media. Overall knowledge about STIs is similar in both – Riga and regional adolescents.

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## **ASSESSMENT OF THE QUALITY CRITERIA FULFILLMENT OF THE REHABILITATION PROCESS ACCORDING TO THE PATIENT SATISFACTION QUESTIONNAIRE DATA**

Key words: Quality criteria, rehabilitation, PSQ-18, general satisfaction.

**Introduction:** Patient satisfaction with the provided health care is a significant component of quality assessment and healthcare outcomes. The Patient Satisfaction Questionnaire Short Form (PSQ-18) provide information on seven dimensions of patient satisfaction directed toward their doctors.

**Aim:** To assess the patient satisfaction with the provided health care in Pauls Stradiņš Clinical University Hospital, outpatient rehabilitation center.

**Methods:** The questionnaire was distributed to 242 patients who were treated in rehabilitation center during the time period from 16.07.18 until 15.03.19.

**Results:** Using descriptive statistics methods were analyzed the overall score distribution characteristics. The mean general satisfaction score- 4.25 (SD 0.59), satisfaction with technical quality- 4.29 (SD 0.52), interpersonal manner- 4.46 (SD 0.68), communication- 4.28 (SD 0.60), financial aspect- 3.77 (SD 0.88), time spent with doctor- 4.20 (SD 0.72), accessibility and convenience- 3.69 (SD 0.71).

**Conclusions:** The results reveal good patient satisfaction with the provided health care.

## **ASSOCIATION BETWEEN OFFSPRING'S FREQUENCY OF HOSPITALIZATION WITHIN THE LAST YEAR AND PARENTAL EXPOSURE TO EMOTIONALLY TRAUMATIC EVENTS WITHIN THE LAST 3 YEARS**

Key words. Parental emotional trauma. Children's health. Hospitalization.

Introduction. The child is closely connected with his parents since early childhood. If a parent has experienced emotionally traumatic event, then there is a possibility that it will affect offspring's health (Racine et al., 2018). The association between parental emotional traumas and offspring's physical health is reflected in several studies (Meinck et al., 2017), but there are no such studies in Latvia.

Objectives. The study objective was to assess the association between offspring's frequency of hospitalization within the last year and parental exposure to emotionally traumatic events within the last 3 years.

Materials and methods. A cross-sectional study was conducted. In the study participated 75 parents and 97 children. The study group (SG) included 30 parents whose children (n=30) had been hospitalized due to acute or chronic illnesses. The control group (CG) included 45 parents whose children (n=67) had never been hospitalized due to acute or chronic illnesses. The respondents in the SG were interviewed in an emergency department of Children's Clinical University Hospital. The respondents in the CG were interviewed in social media (online). Parental exposure to emotionally traumatic events were assessed using the *Recent Traumatic Events Scale from Childhood Trauma Questionnaire* (Instrument Author: Pennebaker, J.W. & Susman, J.R.). Offspring's frequency of admission to hospital was assessed using semi-structured questionnaire. All data was analyzed using IBM SPSS 22.0 and Excel 2016.

Results. In the SG within the last year once to the emergency department have been admitted 46,7 % of children, 2 times – 36,6 % of children, ≥3 times – 16,7 % of children. 83,3 % of children have never stayed in hospital, 13,3 % of children stayed in hospital once, 3,3 % of children - twice.

Within the last 3 years 3,3 % of parents in SG have not experienced emotional trauma, in CG – 20 % of parents. 1 emotional trauma has been experienced by 26,7 % of parents in SG, by 13,3 % of parents in the CG. 2 emotional traumas have been experienced by 43,3 % of parents in SG, by 46,7 % of parents in CG. ≥3 emotional traumas have been experienced by 26,6 % of parents in SG, by 20 % of parents in CG. Comparing SG and CG, there were no statistically significant differences in the number of experienced emotional traumas within the last 3 years, in emotional traumas' evaluation and in confidence in others about traumatic experience at the time ( $p > 0,05$ ).

Conclusions. There was no significant association between offspring's frequency of hospitalization within the last year and parental exposure to emotionally traumatic events within the last 3 years.

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## **BONE CEMENT IMPLANTATION SYNDROME INCIDENCE IN PATIENTS WITH DIFFERENT TYPES OF HIP ARTHROPLASTY IN TRAUMATOLOGY AND ORTHOPAEDICS HOSPITAL**

Background. Bone cement implantation syndrome (BCIS) is one of the most important causes in intraoperative mortality, which is estimated to be as high as 0.11%, and is mostly associated with total hip arthroplasty. The pathophysiology of the syndrome is poorly understood. According to literature, Grade 1 BCIS is defined as sudden drop in systolic blood pressure by 20% or more or SpO<sub>2</sub> drop below 94% at the time of bone cement implantation. Though, statistical data is lacking due to absence of large-scale epidemiologic studies, incidence of Grade 1 BCIS is estimated to be around 21%.

Aim. To analyze the incidence of BCIS in patient groups with different hip arthroplasty types.

Materials and methods. The retrospective study was conducted in Traumatology and Orthopaedics Hospital in Riga, Latvia. Patients with coxarthrosis were selected for the study. All patients were divided in three categories: patients with cemented hip joint arthroplasty, patients with hybrid hip joint arthroplasties and patient with non-cemented hip joint arthroplasties. Anesthesia charts for all patients were reviewed for arterial pressure, capillary oxygen saturation, and heart rate before, during, and after cementation. IBM SPSS 22.0 software was used to collect, store and analyze data. Continuous variables are shown as mean ± SD.

Results. One-hundred and fifty patients were selected for the study, fifty patients in each type of hip arthroplasty group: cemented hip arthroplasty, hybrid hip arthroplasty and non-cemented hip arthroplasty. A total of four cases of Grade 1 BCIS was observed in patients with cemented hip arthroplasty, all of them were associated in sudden systolic blood pressure drop >20% (min. 21.0%, max. 40.0%, mean. 30.2%) around the time of implantation of bone cement for acetabular component. All patients, that experienced BCIS were females aged 62 to 82 (mean age 73.8 ± 8.4 years), three patients had ASA of 3, one patient had ASA of 2. All the patients were hypertensive, and three patients had anemia.

One episode of sudden systolic blood pressure drop was observed around the time of prosthesis implantation in non-cemented hip arthroplasty.

Drop of SpO<sub>2</sub> below 94% was not observed in any patient in our study.

Conclusions. Data on incidence of Grade 1 BCIS, which was acquired in the study significantly differs from that in literature. In our study the incidence of Grade 1 BCIS is 8.0%, compared to 21% from literature sources. This may be due to the fact, that most recent definition of BCIS is proposed in 2009, and most large-scale studies on BCIS were conducted before 2000.

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## ***BURNOUT SYNDROME CORRELATION WITH BAD HABITS AND CHRONIC DISEASES IN HEALTHCARE PROFESSIONALS***

**Keywords:** Burnout syndrome; occupational medicine; chronic diseases; bad habits

**Introduction:** A lot of people all around the world suffer from burnout syndrome. This condition is described with 3 factors: emotional exhaustion, depersonalization and reduced feeling of personal accomplishment. Often people start to smoke, increase alcohol consumption or start using drugs due to burnout syndrome. This condition, if untreated, may lead to chronic diseases development.

**Aim:** Our goal is to find out if there is any correlations between burnout syndrome and bad habits (such as increased alcohol consumption, smoking, overeating, drug use e.c.) and chronic diseases.

**Materials and methods:** This is cross-sectional study. Respondents filled out the online or printed out anonymous survey based on abbreviated Maslach burnout inventory which is used to diagnose burnout syndrome. The results were then collected, systemized and analyzed by Microsoft Excel and SPSS.

**Results:** There were 93 participants of the survey. All of them are healthcare professionals. Only 26 (27,96%) of them have burnout syndrome. Only 6 (6,45%) of all participants never use alcohol, 60 (64,52%) are non-smokers, 5 (5,38%) use antidepressants, 6 (6,45%) are overeating, and 6 (6,45%) use drugs; 63 do not have any chronic conditions (67,74%). Correlation coefficient between alcohol consumption and burnout syndrome is 0,156 ( $p=0,136$ ); between smoking and burnout syndrome it is -0,011 ( $p=0,914$ ); between chronic diseases and burnout syndrome it is 0,005 ( $p=0,963$ ).

**Conclusion:** Scientific research concludes that there is no any statistically significant correlation between burnout syndrome and alcohol consumption ( $p=0,136$ ), smoking ( $p=0,914$ ), chronic diseases ( $p=0,963$ ) and any other bad habits at all ( $p=0,461$ ).

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## ***COLORECTAL CANCER PATIENTS VIEWS ON HOW TO IMPROVE THE COLORECTAL SCREENING TEST COMPLIANCE, QUALITATIVE RESEARCH.***

**Key words:** Colorectal cancer, faecal occult blood test, qualitative research, oral presentation.

**Objectives:** Colorectal cancer is the third most common oncology in Latvia. The five – year survival rate for colorectal cancer diagnosed at an early stage is 90% compared with 5% for the late stage disease. Therefore, colorectal cancer screening programme using faecal occult blood (FOB) test takes place in Latvia since 2009 to diagnose colorectal cancer at an early stage. However, during the last 10 years patients' compliance is very low – it was only 16.0% in 2018. However, 45% is a minimal response rate that is recommended by European guidelines. Objective of the study is to investigate the possible solutions of low FOB screening test compliance problem offered by colorectal cancer patients.

**Method:** A qualitative study was conducted in Rīga East University Hospital. Ten colorectal cancer patients 50 to 74 years old of various education levels were included in research. All patients have undergone recent colorectal oncology excision surgery. Patients were interviewed regarding their participation in FOB screening test and a possible solution of low screening test compliance by their opinion. Semi – structured interviews were audio recorded, transcribed and analysed.

**Results:** Nine out of ten patients never participated in colorectal screening program. The main reason for that was an absence of information about the development features of colorectal oncology and lack of information about the FOB test availability at family doctors practise. The interviewees offered option on how to improve this situation - screening program should become a compulsory test for everyone, informational booklets should be available at family doctors practise, information about the colorectal oncology and invitation to the FOB screening test should be sent by post.

**Conclusions:** Study results imply that awareness on colorectal cancer screening programme is low among colorectal cancer patients before diagnosis and rises after. Absence of information about the colorectal cancer development and FOB test availability are the main reasons for non-compliance to the FOB test.

## **COMPARISON OF WORK ABILITY INDEX OF WORKERS OF METALWORKS FACTORY PLANT AND ADMINISTRATION OFFICE IN LATVIA**

**Keywords.** Work ability index.

**Introduction.** There has always been a divide in conditions and attitude between factory workers and office workers - in this case heavy machinery operators and administration clerks of same company (Leax Baltix) by filling out a verified, objectified work ability index (WAI) questionnaire.

**Materials and methods.** A prospective study includes respondents(n=67) working in factory and office of Leax Baltix corporation. We collected filled out WAI forms and calculated the WAI and compared it to the rest of the data using IBM SPSS Statistics 25.

**Results.** Mean age was 36.6 (95% CI 33.2-40.0) years for the workers on factory floor and 37.8 (95% CI 36.2-39.4) years in the office. 55.9% (95% CI 41.2-73.5) of the workers in the office were male, 44.1% (95% CI 26.5-58.8) were female and 100% of the factory workers were male. Average WAI was 39.3 (95% CI 38.3-40.3) for office workers and 37.6 (95% CI 36.2-39.1) for factory workers. The results obtained corresponds to age groups and most common health problem was old trauma (56.2%) for all the respondents. Main part of the problems for the factory workers were old trauma, mostly hand injuries (38.2%). Most common problems for the office workers were lower extremity injuries (38.2%), high blood pressure (26.5%), obesity (26.5%), upper airway infections (26.5%) and skin rash (35.3%) of which half were allergic. The results obtained corresponds to age groups and WAI compared between office and factory workers in two age groups (22-35 and 36-67). Using Mann-Whitney test we see an association in WAI comparing factory workers in said different age groups (p=0.003). There was no association comparing office workers in both age groups.

**Conclusion.**

Physical workers are exposed to increased harmful conditions than office workers, such as loud noises, vibration, chemicals, physical overload and others. These harmful conditions affect health in long term increasing risk of disease or disability or even cause it. Additional harmful working conditions might be affecting WAI in factory workers comparing to office workers therefore further research should be required to determine what precautions should be set to decrease the long term effects of harmful effects on factory workers.

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## **DIETARY HABITS AMONG RIGA STRADINS UNIVERSITY 5TH AND 6TH YEAR MEDICAL STUDENTS**

**Key words:** Dietary habits, health

**Introduction:** Healthy dietary habits has been a topic for discussion with a significant rise in interest during recent years, emphasizing the positive impact of a healthy diet on one's quality of life and overall wellness, however a significant part of society lacks knowledge about the topic and choose not to pursue a healthy lifestyle. Corresponding to the survey carried out by Latvian center for disease prophylaxis and control-61,3% of the respondents described their body weight as "normal", however by calculating the respondents BMI, 31% were characterised as overweight and 23% met the criteria of obesity. 58,8% of respondents had not had any change in diet in the past.

**Aim:** To acquire data about dietary habits of 5th and 6th year medical students in Riga Stradiņš University

**Materials and methods:** 78 Riga Stradiņš university students participated in an electronic survey. Data was collected online, analyzed using MS Excel and IBM SPSS Statistics 24.

**Results:** Mean age-24 years (min 24, max 32, SD=4.8), male to female ratio-1:3,33 (n=18:60). Mean weight=70.4 kg. BMI ranged from 16.3 to 43. 20 respondents were overweight. 47.4%(n=37) of respondents reported having good, 48.7%(n=38) moderate and 3.8%(n=3) poor knowledge about healthy nutrition. Daily use of sweets and sweetened beverages were reported by majority of respondents, 77.3% and 67.6%. Inclusion of fruits and vegetables in a meal multiples times a week was 82.7%(n=62) and 86.7%(n=65). 38.5%(n=30) of respondents evaluated themselves as overweight, of which 93.3%(n=28) considered taking on a healthier diet and 55.1% of respondents (n=43) had followed a healthy diet at some point prior to the survey.

**Conclusion:** Survey displayed various characteristics of an unhealthy diet, yet majority was willing to improve their dietary habits had pursued a healthy lifestyle before. A part reported having excess body weight and showed awareness of a potential problem impacting their health.

## ***DYSMENORRHEA: ASSOCIATED SYMPTOMS, RISK FACTORS AND IMPACT ON QUALITY OF LIFE IN ADOLESCENT WOMEN***

**Introduction:** Dysmenorrhea is one of the common conditions, related to pain in women of reproductive age. Dysmenorrhea is associated with high prevalence among young girls. Depending on the literature, the identified potential risk factors are associated with early menarche, altered menstrual cycles, weight changes or harmful habits. Teenage girls almost always are quietly suffering from the pain caused by dysmenorrhea and their associated symptoms. Therefore it can lead to a negative impact on women's quality of life, including psychosocial functioning.

**Aim of the study.** To explore the associated symptoms of dysmenorrhea, potential risk factors and to find out how dysmenorrhea impacts psychosocial functioning among young girls.

**Materials and methods.** The study was carried out from November 2018 to February 2019 in 14 high schools of Latvia. 460 students aged 16 to 19 were voluntary surveyed by self-structured questionnaire. Obtained data was statistically analyzed in Microsoft Excel 2013 and IBM SPSS software, version 20.0.

**Results:** 64.8% (n=298) of girls were having dysmenorrhea. There were found no significant relevance between dysmenorrhea and painful menstruation, early menarche, altered menstrual cycle daily activities or harmful habits. The most common physical symptoms were headache 42.6% (n=196) and backache 37.0% (n=170). 86.6% (n=258) of all girls experienced the presence of emotional symptoms and impact on quality of life during menstruation. From all the girls who were having dysmenorrhea, emotional symptoms were less likely to have in girls who have had menarche at age older than 13 years – 73% (n=46),  $p < 0,05$  ( $p = 0,003$ ) and in more common girls whose menstruation flow was strong – 89.9% (n=186),  $p < 0,05$  ( $p = 0,012$ ), the emotional symptoms occurred more often in girls whose cycle was irregular – 90.5% (n=38),  $p < 0,05$  ( $p = 0,03$ ). Severe dysmenorrhea was more often found in cases when the menstrual flow was heavy – 82.8% (n=48),  $p < 0,05$  ( $p = 0,034$ ). 22.1% (n=66) of all girls with dysmenorrhea because of pain or associated symptoms did not attend school, 47.3% (n=141) released sport activities, 40.9% (n=122) avoided social activities, 56.0% (n=167) confirmed difficulties in learning process.

**Conclusion:** There is no strong relationship between dysmenorrhea and raised risk factors. Dysmenorrhea significantly affects emotional and physical health in adolescent. It is necessary to educate girls and society on the importance of dysmenorrhea, causing psychosocial impairment and to try to screen this problem to reduce or make easier the suffer of young girls.

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## ***EFFICIENCY OF REHABILITATION FOR PATIENTS WITH MIOFASIONAL SYNDROME***

**Background.** 85 people were evaluated using numerical analog scale and multidimensional pain assessment scales, that is the mainly used by the National Health Service.

There were two research groups made – experimental (I group) with 43 patients, where 29 were women and 14 were men and control (II group) with 42 patients, where 28 were women and 14 were men. The rehabilitation nonpharmacological technologies were applied only to the patients of the I group.

Numerical analog scale is 11 gradescala where pain intensity is displayed with numbers from 0 to 10. Pain is determined as intense or very strong, if the patient marks number 7 or higher, numbers 4-6 correspond to moderately strong pain and not very intense pain is marked by number 3 or lower. Multidimensional pain assessment scale that was used during the research showed not only the pain intensity but also its influence on functional capacity and life activity of the patients. The treatment complex including soft tissue techniques, exercises, amplipulse therapy (course 10 times) that refer to rehabilitation technologies was provided to selected group of participants.

**Aim.** To examine the effectiveness of nonpharmacological technology use for patients with myofascial pain syndrome.

**Methods.**

1. Surveying of patients with myofascial pain syndrome.
2. The comparative analysis of both groups before, during and after the research process.

**Results.** It was found that at the beginning of the research I group pain characteristics according NRS were more intense than those of the II group. The most significant difference according to Student criteria that shows the effectiveness of described rehabilitation technologies, is shown while comparing pain intensity in I group at the beginning and at the end of research. All the pain intensity indicators are lowered that obviously demonstrates the decrease of pain intensity. The pain intensity of the II group patients, where rehabilitation technologies were not applied, even increased in several positions at the end of the research. It proves the effectiveness and usefulness of the rehabilitation technologies.

**Conclusion.** Rehabilitation technologies used during the research showed statistically significant decrease of the pain syndrome in all the indicators of NRS pain intensity scale that proves the effectiveness of the rehabilitation method used.

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## **EVALUATION OF MOBILITY IN PATIENTS WITH KNEE OSTEOARTHRITIS AFTER SAPROPEL MUD THERAPY USING TIMED UP AND GO TEST**

Key words. Knee osteoarthritis, mud therapy.

Limitation of mobility, pain and stiffness are symptoms leading to an impaired activity of daily living. Additive mud therapy can relieve pain and decrease mobility constrictions to improve the efficiency of physiotherapy. The Timed Up and Go test can be used in knee osteoarthritis as an instrument overall mobility. The aim of this study was to evaluate the overall mobility prior to and after mud application therapy. A total of 224 patients with diagnosed osteoarthritis of the knee took part in this trial. Participants were randomly divided into 3 groups. Group 1 with mud application at 37-40°C. Group 2 with mud that had been heated to a temperature of 100°C prior to the procedure and control group. Patients TUG test results were evaluated prior to treatment, after the course of 10 days and, later on, 3 and 6 months after the treatment. Group 1 and 2 showed improvement after a treatment of 10 days, which remains 6 months later. The results in the control group demonstrate a worsening of test score 6 months after the treatment. It shows that local mud application in patients with knee osteoarthritis improve overall mobility and the effect maintains 6 months later.

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## **FACTORS AFFECTING HOSPITAL STAY IN PATIENTS AFTER DIFFERENT TYPES OF TOTAL HIP ARTHROPLASTY**

Background. Prolonged stay in hospitals is associated with increased the risk of hospital-acquired infections in older patients, disrupts patient flow and reduces access to care due to hospital bed shortages, as well as increases healthcare costs.

Aim. The aim of study was to analyze the difference in hospital days between different patient categories and identify patient groups, that are higher risk for prolonged hospital stay.

Materials and methods. The study format is cross-sectional retrospective study. It was conducted in Traumatology and Orthopaedics Hospital in Riga, Latvia. Patients with coxarthrosis were selected for the study. All patients were divided in three categories: patients with cemented hip joint arthroplasty, patients with hybrid hip joint arthroplasties and patient with non-cemented hip joint arthroplasties. IBM SPSS 22.0 software was used to collect, store and analyze data. Continuous variables are shown as mean ± SD.

Results. Total number of 150 patients were selected for the study, 50 in each group. Number of males and females was 59 (39.3%) and 91 (60.7%) accordingly. Mean age of all patients was 62.7 years ± 11.7, mean BMI was 29.4 ± 6.3 kg/m<sup>2</sup>, and mean hospital stay was 8.3 days ± 3.9. Mean hospital stay for each patient group was 9.6±4.0, 7.9±3.9 and 7.2±3.5 days ( $p=0.006$ ). Mean patient age in cemented, hybrid and non-cemented group was 69.5±8.2, 65.2±8.7 and 53.3±11.5 years respectively ( $p=0.001$ ). Mean DMI for each group was 28.5±8.4, 29.6±4.8 and 30.0±5.1 kg/m<sup>2</sup> accordingly ( $p=0.472$ ).

Men spent in hospital fewer days than women, 6.8 ± 2.4 and 9.2 ± 4.4 days accordingly ( $p<0.001$ ). However, when analyzed in each individual group, statistically significant difference in hospital days between men and women, were seen only in non-cemented patient group ( $p<0.05$ ).

Significant correlation was observed between patient age and number of hospital days, when analyzed in all patient groups ( $r_s=0.359$ ,  $p<0.001$ ). When analyzed in individual groups, however, statistically significant correlation was observed only in hybrid patient group ( $r_s=0.301$ ,  $p<0.05$ ).

Interestingly, ASA score did not significantly correlate with hospital stay, when analyzed in all patients or in each individual group. Mean ASA score was 2.5±0.6, 2.5±0.5 and 2.2±0.5 for each patient group ( $p=0.004$ )

Total number of comorbidities has shown to significantly correlate with number of hospital days, when analyzed in all patients ( $r_s=0.198$ ,  $p=0.015$ ), but was insignificant when analyzed in individual patient groups. Total number of comorbidities in each patient group was 2.6±1.5, 2.2±1.6 and 1.7±1.7 accordingly ( $p=0.013$ ).

Conclusions. Gender, age and number of comorbidities have shown to have statistically significant effect on number of days spent in hospital. ASA risk score did not have statistically significant impact on patient hospital stay.

## **FACTORS ASSOCIATED WITH GLYCEMIC CONTROL IN HOSPITALISED DIABETES MELLITUS PATIENTS**

**Introduction.** Adequate glycemic control (GC) is crucial for diabetes mellitus (DM) patients as it is associated with less DM complications such as retinopathy, neuropathy, diabetic kidney disease, coronary artery disease and stroke. Factors associated with GC can be assessed with several tools, for example, the Diabetes Self Management Questionnaire (DSMQ)- a self report questionnaire containing four subscales which each assess Glucose Management (Medication use and glycemia monitoring), Dietary Control, Physical Activity and Health Care use.

**Aim.** The objective of this study is to assess associations between GC and factors involving diabetes self management (DSM), patient demographics, disease related factors and laboratory data.

**Materials and Methods.** The study had a cross-sectional design. DM patients from Rīga East Clinical university hospitals and Rīga Stradiņš university hospitals Endocrinology ward completed the DSMQ and a questionnaire for disease and demographic status assessment. Laboratory data were obtained from hospital charts. Spearman's correlation coefficient was calculated to assess correlations between HbA1c levels and different numerical patient data.

**Results.** A total number of 70 patients participated in our study. 41% (N=29) were males and 59% (N=41) were women, mean age was 58 years (range 18-87 years; SD=19 years). HbA1c was measured in 52 research participants and the mean HbA1c level was 9.25% (range 4.5% to 16.2%; SD= 2.81%). Statistically significant correlations were found between the total DSMQ score and HbA1c ( $\rho = -0,38$ ;  $p = 0,005$ , N= 52) and between Dietary Control subscale and HbA1c ( $\rho = -0,43$ ;  $p = 0,002$ , N=52).

**Conclusions.** GC assessment using DSMQ total score and Dietary Control score both have a statistically significant correlation with HbA1c, possibly indicating that self-care factors related with Dietary Control are more associated with GC than other factors.

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## **FACTORS CONTRIBUTING TO CHRONIC KIDNEY DISEASE (CKD) DURING LIFETIME**

Keywords: chronic kidney disease, profession, dialysis, lifestyle, addictions, disability.

Introduction: Every year in Latvia, the number of patients with CKD is increasing, despite the decrease of population and high mortality among dialysis patients. However, there are no professional risks factors analyzed in Latvian population, which directly or indirectly influence the development of the disease.

Aim: The research aim is to find out the reasons of developing CKD during lifetime in Latvia, especially, paying attention to profession that directly or indirectly contribute to the development of the disease.

Materials and Methods: The study use data that is generated by anonymous questionnaires between dialysis patients. Data includes working conditions, occupation, harmful habits and other possible factors that contribute to the development of CKD will be clarified. Statistical analysis was performed with SPSS 22.0 The Shapiro-Wilk test initially used to verify the normality of the variables and choice of statistical tests. The Mann-Whitney test was used for data comparison of the groups and Spearman test to identify correlation.

Results: Among 100 subjects there were 58 men (58%) and 42 women (48%). The average age was 67 years (mean=67.43; SD=12.9). 38 (38%) of the patients was using alcohol regularly, 37 (37%) was smoking, and 81 (81%) had arterial hypertension, 19 (19%) had diabetes, and 8 (8%) had family history of the kidney disease, before the development of CKD. 47 (47%) of patients had the history of the long term NSAID use before the CKD developed. 40 (40%) of patients had occupational disease. and 67.5% from these 40% was using NSAIDS in long term because of the pain syndrome associated with occupational disease. Analysis indicated significant higher rate of CKD in patients with long term NSAID use ( $p<0.00$ ). Analysis also indicated no differences between men and women in development of the CKD due to lifestyle or professional factors ( $p<0.001$ ).

Conclusions: Results of this study showed that the main risk factor for the development of the CKD is arterial hypertension. Also important risk factors are type 2 diabetes, the regular use of alcohol and smoking. Those patients, who have developed professional diseases during lifetime, should be included in the risk group for development of CKD. The most common professions associated with CKD are truck, bus, tractor drivers. They develop professional disease, that leads to chronic back pain and therefore regular NSAID use associated with development of CKD.

## ***FAMILY NEEDS IN PEDIATRIC PALLIATIVE CARE HOME HOSPICE APPROACH***

Key Words: palliative care, family needs, hospice care

Pediatric palliative care in Latvia is organized in the form of a home hospice care model. Pediatric palliative care comprises active, fully comprehensive care of children with progressive chronic diseases in case all radical treatment options have been exhausted. The family with an incurably sick child is at the forefront of pediatric palliative care. Care for the family is directed towards the following goals: meeting the needs of the family, minimize care givers distress, improving the well being outcome of caregivers improve family to maintain patients comfort.

Aim of the article is to find out family needs in pediatric palliative care home hospice approach. The pilot study sample comprises 10 parents with children receiving palliative care services. Quantitative research method was applied. Family needs was measured in six categories - information, family and social support, financial, exploring to others, professional support and community services. The Family Needs Survey (*Bailey, Simensson, 1988*) was used. According to the outcomes of the study, parent needs are related with information and financial support insufficiency. Need for information how to educate child more often have 41 – 45 years old parents ( $p=0.00$ ) who take care of child up to one year old ( $p=0.01$ ). Need for funding support for nanny service depend on the place of residence – financial support often need families in Riga region ( $p=0.03$ ).

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## ***FINDRISC TEST ANALYSIS IN THE POPULATION OF LATVIA***

**Objectives:** According to the World health organization, the volume of incidences of type 2 diabetes (T2DM) is rising rapidly. Finnish Diabetes Risk Score (FINDRISC) questionnaire allows estimating type 2 diabetes risk probability over the next ten years. The aim of this study is to investigate the prevalence of undiagnosed hyperglycemia in Latvia and to suggest an improvement of the FINDRISC test by adding glucose level test.

**Materials and methods:** In the cross-sectional study, data were collected in 2017 - 2018 in Riga, Latvia, and its region. There were 446 participants who attended Diabetic Screening Project which is a part of the Latvian Medical Student Associations Public health's project. The screening group was led by the head of Diabetic Screening Project who is the main author of this research.

**Results:** In this research 375 participants were analyzed, of which 59.2% were under the age of 45, 13.3% 45-54 years, 14.4% 55-64 years and 13.1% were over 64 years old. For 159 participants (42.4%) BMI was above the normal range. 31.2% of participants were with a positive family history of T2DM ( $p < 0,0001$ ), and for 14.7% of participants, glucose levels in the past have been increased. Dividing the FINDRISC questionnaire scale into groups, 40.8% of the participants were in a high risk of developing T2DM over the next 10 years. In the low-risk group, with glucose intolerance was diagnosed only 3.2% of the population, but in high-risk group elevated glucose was found for 7.4%, showing a trend of increase. Our data suggest, that even in low-risk groups the glucose intolerance probability is significant.

**Conclusion:** The FINDRISC test is an effective method for determining a patient risk of developing T2DM in over the next years. Making this test improved by adding actual glucose measurement, this test could be more successfully used as a screening method in GP practices.

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## ***FREQUENCY OF HIV TESTING AND REGULARITY OF CONDOM USE AMONGST THE LATVIAN POPULATION WITHIN THE 18 TO 25 YEAR AGE GROUPS***

**Keywords:** Sexually transmitted infections, HIV, condoms.

**Introduction:** Latvia is one of the leading countries with the highest number of HIV infections in Europe. People under the age of 25 have been exposed to a greater risk of infection. Condoms are still the only method of prevention that protects against HIV and other sexually transmitted infections.

**Objectives:** The goal of the research is to study the frequency of HIV testing, regularity of condom use with a regular partner and new sexual partners within the 18 to 25 year age groups.

**Materials and methods:** Questionnaires were used to investigate these issues. Data was processed using MS Excel 2010 and SPSS 20 programs.

**Results:** A total of 554 people participated in the study, of whom 466 (84.1%) were women and 88 (15.9%) were men aged between 18-25. Overall, 278 respondents (50.1%) have been tested for HIV. Of these, 85 (30.6%) do not use condoms or use condoms irregularly with new sex partners. In turn, 276 (49.9%) respondents have not been tested for HIV and 68 (24.6%) of them do not use condoms or only occasionally use condoms during sexual intercourse with new partners. 239 (43.2%)

Respondents do not use or only use condoms occasionally with their regular partner, of whom only 119 (42.8%) have been tested for HIV. HIV infection has been diagnosed in 3 (0.5%) respondents.

**Conclusion:** The results show that only half of the respondents have been tested for HIV infection, 1/4 do not or only occasionally use condoms during sexual intercourse and have never been tested for HIV. Therefore, the true number of HIV infections in Latvia has to be even higher.

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## ***HAND DISINFECTION FREQUENCY BETWEEN NURSES AND NURSING ASSISTANTS***

**Introduction.** The hands of the health care workers are one of the main mechanisms for the transmission of the nosocomial infection, and proper hand hygiene can reduce the spread of infection by 40%. But medical personnel do hand hygiene, half as much as it should be done, and this increases the risk of transmission of nosocomial infection. **Aim.** Find out which situation health care workers perform hand disinfection more often, by comparing nurses, nursing assistants. What is the relationship between health care workers hand disinfection in each particular situation. **Materials and methods.** 84 health care workers, who worked at the 2nd hospital in Riga, were interviewed for hand disinfection frequency, using an anonymous questionnaire with processed and analyzed data obtained. **Results.** 42 nurses, 42 nursing assistants do hand disinfection more often after contact with the patient's biological material 83%; before and after contact with wound 73%; before contact a patient with a specific risk of infection 66%; before invasive procedures 59%; before possible contamination 46%. There is no statistically significant difference between the health care workers and the frequency of hand disinfection - after contact with the patient's biological material. 82% nurses, 28% nursing assistants perform hand disinfection before invasive procedures. 77% nurses, 56% nursing assistants perform hand disinfection before contact a patient with a specific risk of infection. 59% nurses, 33% nursing assistants perform hand disinfection before possible contamination. 86% nurses, 56% nursing assistants perform hand disinfection before and after contact with a wound. (p less than 0.05)

**Conclusion.** Health care workers perform hand disinfection most often after contact with the patient's biological material and are equally carried out by all medical staff. Hand disinfection before invasive procedures, the contact with the patient, before and after contact with wounds more often is performed by nurses.

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## ***HEADACHE IN EMERGENCY MEDICINE DEPARTMENT WORKERS COMPARED TO MEDICAL STUDENTS***

**Keywords:** headache, emergency medicine, students

**Introduction.** Headaches is one of the most common health problems to face. They can have very variable characteristics and each individual can tolerate them differently. Often, they may significantly impede communication, capacity of performing, concentration, and may even lead to a complete inability to perform duties.

**Aim.** Evaluate headache frequency, characteristics, relieving factors, used therapy, impact on ability to work, study, communicate in emergency medicine department workers and compare the same headache criteria with medical students.

**Materials and methods.** Anonymous questionnaire with multiple questions were created. Total there were 133 participants in the study. Data from students were obtained electronically, while data from emergency medicine workers were obtained by paper surveys. Data were analyzed using IBM SPSS Pearsons Chi square test and Microsoft Excel.

**Results.** Participated 63 emergency medicine department workers and 70 medical students. Age median in emergency medicine department workers were 26 years and in student group 21 year (interquartile range 4). There were 98 woman and 35 man. Statistically significant difference were in headache localization – emergency medicine workers had one (unilateral or bilateral) headache, but students had combination of both (Pearsons Chi square < 0,003). From relieving factors students had more benefit from sleep, rest and fresh air (p<0,05). Together, students had more factors (4-6 factors) that relieved headache than emergency medicine workers. (p <0,05). No statistical significance were found between ability to concentrate, communicate, making decisions or being late for school/work during headaches (p >0,05), but student group showed that headaches interferes with the performance of duties (p <0,001). No statistical significance were found between headache duration, day time, frequency, characteristics, used medication.

**Conclusion.** Headaches more interferes with the performance of duties in student group, but in the same time students have more headache relieving factors than emergency medicine workers.

## **HEADACHE IN WORKING MEDICAL STUDENTS COMPARED TO NON-WORKING MEDICAL STUDENTS**

Keywords: headache, students, risk factors

Introduction. Headaches is common health problem that affects our every day life. They affect our free time activities, but much more they affect our ability to work and study. Sometimes they affect us so significantly that can lead us with inability to perform duties.

Aim. Evaluate characteristics of headaches, risks, used medication, accompanying symptoms and headache impact on communication, concentration and work abilities in working and non-working students.

Materials and methods. Anonymous questionnaire with multiple questions were created. Total there were 138 respondents. Data from all students were obtained electronically. Obtained data were analyzed with Microsoft Excel and IBM SPSS Pearson Chi-square and Fisher's Exact test.

Results. Participated 70 non-working medical students and 68 working medical students. Age median in non-working group were 21 years, but in working group 23 years (interquartile range 4). Together there were 118 woman (85,5%) and 20 man (14,5%). Statistically significant difference were in one of twelve headache risk factors – non-working students headaches were more affected by food and alcohol than working students (Pearson Chi-square 0,02; Fisher's Exact 0,026). Other analyzed risk factors had no statistical significance ( $p > 0,05$ ). Another statistically significant factor were used therapy. Proved that, non-working students more use paracetamol in treatment for headaches than working students (Pearson Chi-square 0,007; Fisher's Exact 0,011). No statistical significance were found between other used therapy, characteristics of headaches or how headaches affect communication, concentration, decision making or missing school during headache episode. Conclusion. Only risk factor that showed statistical significance between groups in provoking headaches were food and alcohol. Non-working medical students more often use paracetamol in treatment for headaches than working medical students.

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## **KIDNEY TRANSPLANTATION IN LATVIA: A COMPREHENSIVE STUDY**

According to Latvian Association of Transplantologists, kidney transplantation is a method of choice for treating patients with terminal chronic renal disease.

The objective of this retrospective study was to analyse donor and recipient quantitative and qualitative properties in Latvia.

A retrospective study was carried out using the data of 146 patients who had undergone kidney transplantation between the years 2014 and 2016 at the Latvian Transplantation centre. The data were collected from medical records. Data were analysed with IBM SPSS.

A total of 146 patients received a kidney transplantation – 79 (54%) men and 67 (46%) women. Mean patient age was 51.44 ( $\pm 13,05$ ) years. Patients stayed in hospital for average of 16.51 days. Patients needed kidney transplantation due to different causes: autoimmune – 59 (40.41%), genetic – 27 (18.49%), arterial hypertension – 25 (17.12%), structural damage – 18 (12.33%), diabetes mellitus – 8 (5.48%), and unspecified – 9 (6.16%) patients. They received kidneys from 84 donors – 59 (70%) men and 25 (30%) women. Mean donor age was 49.59 ( $\pm 13,47$ ) years. 53 (63%) donors died after spontaneous event, 31 (37%) – after traumatic event. 56 (67%) donors were pronounced dead after brain death, 28 (33%) – after circulatory death. Before explantation, donors stayed in intensive care unit for average of 3.27 days. During transplantation, the kidneys experienced cold ischemia for average of 16.2 hours. Operation time averages around 181.25 min. One patient has died. 24 (16.44%) patients had delayed transplant function, 23 (15.75%) patients developed acute transplant rejection, 37 (25.34%) patients developed urinary tract infections. Four (2.73%) have undergone transplantectomy, but 141 (96.57%) patient was discharged home with functioning kidney and no need in dialysis.

In conclusion, kidney transplantation is an effective method of treating end-stage renal disease with high success rate, which is qualitatively performed in Latvia.

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## **KNOWLEDGE AND ATTITUDE TOWARDS TOBACCO SMOKING RELATED HEALTH RISKS OF PEOPLE IN HEALTH CARE AND GENERAL POPULATION**

**Key words.** Public health, smoking, health risk, knowledge

**Introduction.** According to The Tobacco Atlas, in Latvia more than 534'000 adults use tobacco each day with more than 4'700 tobacco related deaths yearly - about 25,8% of male deaths and 7,2% of female deaths are linked to tobacco smoking. [The Tobacco Atlas, 2010] The most common causes of death related to tobacco smoke are cardiovascular diseases, chronic obstructive pulmonary disease and various types of cancer. [Talhout et al., 2011]

**Aim.** To evaluate and compare the knowledge of and attitude towards tobacco-smoking related health risks between health care related people (HC) and general population (GP).

**Materials and methods.** A questionnaire was created using Google Forms and distributed through social media. A total of 577 responses were collected and analyzed using IBM SPSS Statistics 23 ( $p < 0.05$  was considered as statistically significant).

**Results.** Of 577 respondents 192 were related to health care (HC) and 385 were not (GP). The mean age of HC group was 28.23 (SD=9.91), in GP – 27.68 (SD=9.52). Gender distribution in both groups differed – in HC group more women were present (83.3% versus 71.2%,  $p=0.001$ ). There were more people who had never smoked in HC group (36.5% versus 21.3%,  $p=0.000$ ) and there were more people who had quit smoking in the GP group (22.6% versus 13.5%,  $p=0.000$ ).

Knowledge about tobacco related health problems was generally better in HC group (9.34 versus 7.42 of 11,  $p=0.000$ ), but knowledge about lung diseases ( $p=0.188$ ) and infertility ( $p=0.055$ ) was equivalent between groups. HC group did identify most of the tobacco-smoking related tumor locations better than GP, but knowledge about skin ( $p=0.306$ ) and blood ( $p=0.673$ ) cancer did not differ between groups. HC group did tend to evaluate themselves higher than GP (4.1 versus 3.15 out of 5,  $p=0.000$ ), but HC group more often over evaluated their knowledge than GP (47.8% versus 27% of the cases,  $p=0.000$ ). Both groups in this study were equally concerned about their health risks related to tobacco smoking and no statistically significant differences were found.

**Conclusion.** Although in general health care related people did have better knowledge about tobacco-related health risks than the general population, this study shows that it is not complete and could be improved.

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## **LATVIAN RESIDENT PHYSICIANS' ATTITUDE TOWARDS EUTHANASIA AND ASSISTED SUICIDE**

**Key words:** euthanasia, assisted suicide

**Introduction.** Euthanasia and assisted suicide are highly debated topics in Europe and the USA. Although some public discussions in Latvia are being active for years, no legal regulations exist for euthanasia or assisted suicide. It is crucial to find out physicians' attitude towards the issue as both practices imply their direct participation.

**Aim.** The aim of this study was to determine Latvian resident doctors' attitude towards euthanasia and assisted suicide.

**Materials and methods.** An anonymous questionnaire was designed to assess resident doctors' attitude towards various aspects of assisted suicide and euthanasia. The participants were asked to express their agreement or disagreement for each of 16 statements based on Likert scale. Before filling the questionnaire, the definitions of passive and active euthanasia, as well as assisted suicide were given. An explorative data analysis was performed in R programming language. For Likert scale questions "Neutral" was picked as reference value and a two-sided one-sample Mann-Whitney test was performed. To adjust for multiple testing, Bonferroni correction to p-values was applied.

**Results.** A total of 68 resident doctors submitted the questionnaire, 58 females (85.29%), 10 males (14.71%) of age groups 25-34 (97.06%,  $n=66$ ) and 35-44 (2.94%,  $n=2$ ). The majority of them (54.41%,  $n=37$ ) were involved in the care of terminal patients. 60.29% ( $n=41$ ) partly or fully agree that in some cases active voluntary euthanasia should be legalized in Latvia ( $p < 0.05$ ). As to assisted suicide, 48.53% ( $n=33$ ) partly or strongly agree on legalization, whereas 36.77% ( $n=25$ ) do not ( $p > 0.05$ ). The majority of resident doctors (54.41%,  $n=37$ ) strongly disagree that a physician who has assisted her patients in suicide should be sued ( $p < 0.001$ ). If active euthanasia was legal in Latvia, 41.8% ( $n=28$ ) residents would probably or certainly practice it in some cases, 30.88% ( $n=21$ ) would not and 27.94% ( $n=19$ ) would not be sure ( $p > 0.05$ ). The majority (61.77%,  $n=42$ ) partly or fully agreed that active euthanasia should be legalized only in presence of heavy physical symptoms ( $p < 0.05$ ) and 75% ( $n=51$ ) partly or fully disagree that it could be allowed also when patients suffer due to psychological issues (e.g. loneliness) ( $p < 0.001$ ).

**Conclusions.** Resident doctors generally support legalization of active voluntary euthanasia in Latvia, but only for cases where heavy physical symptoms are present. Although attitude towards assisted suicide legalization is unequivocal, positive attitude is more prevalent. The study continues and data from certified physicians as well as medical students will be collected.

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## **LONG-TERM OUTCOMES AND RECURRENCE RATE FOLLOWING CONVENTIONAL EXCISION OF WRIST GANGLION**

**Keywords.** Wrist ganglion, recurrence, conventional excision, plastic surgery

**Introduction.** Ganglion is the most common type of benign tumor of the hand. Conventional wrist ganglion excision is gold standart treatment. Many factors may influence fibrous tumor recurrence. These factor identification and study should provide better surgery outcome and cyst recurrence prevention.

**Objectives.** The objective of this study was to examine and compare patient individual risk factors with the rate of recurrence following wrist ganglion excision.

**Materials and Methods.** In this retrospective study, patients after conventional wrist ganglion excision were contacted by telephone and interviewed about their current condition, return of tumor and possible risk factors of wrist ganglion recurrence. They were offered to assess their pain by 0–10 pain intensity numeric rating scale, where 0 is total absence of pain and 10 means that pain is so severe that patient goes unconscious shortly. Descriptive statistics were done by using Microsoft Excel (v15.26) and SPSS Statistics (v23.0) software.

**Results.** From a total of 82 patients, who underwent surgery and participated in the telephone questionnaire, 14 had ganglion cyst recurrence. 26,83% were male, 73,17% were female. Median age of respondents was 36,00 (IQR=29,00-48,25) years. Distribution of age was the same across categories of all recurrences (U=369.000; p=0.187). Out of all ganglions 72% were dorsal and 28% ventral. There was no significant correlation between age and pain (Spearman correlation; p=0,111). There was no significant association between hand labor and wrist ganglion recurrence rate (p=0,373).

**Conclusion.** There was no difference between left and right hand in patients with ganglion cyst recurrence, in 50% of cases ganglion was localized in right hand. There was no significant association between ganglion cyst recurrence and gender. Ganglion localization didn't show any correlation with recurrence rate.

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## **MEDICATION ADHERENCE, TREATMENT SATISFACTION AND QUALITY OF LIFE AMONG PATIENTS WITH HYPOTHYROIDISM**

**Introduction.** Hypothyroidism is believed to be a common health issue worldwide. Thyroid hormone therapy is significantly associated with improvements in thyroid-related symptoms and in general quality of life (QoL), but sometimes patients may be symptomatic despite adequate levothyroxine therapy, which influences both QoL as well as patient satisfaction with treatment. Treatment effectiveness is determined jointly by the efficacy of the treatment agent and the extent of adherence to the treatment. Despite the availability of efficacious interventions, nonadherence to treatment remains a great problem across therapeutic areas.

**Objectives:** The aim of this observational cross-sectional study was to assess the therapeutic adherence, treatment satisfaction and quality of life of patients on LT4 treatment in outpatient practice.

**Methods and materials:** In this cross-sectional study were included 41 patients (6 male, 35 female; 22-83 years, mean age 58.9, interquartile range = 32.5), treated with hypothyroidism (41.5% had previous thyroid surgery or radioactive iodine treatment, 53.7% diagnosed with Hashimoto thyroiditis) at Pauls Stradiņš Clinical University Hospital and Riga Eastern University Hospital from November 2018 to January 2019. Patients completed treatment adherence questionnaire, underactive thyroid-specific QoL and treatment satisfaction questionnaires. Thyroid-related symptoms and blood thyroid function tests (TSH and fT4) were assessed. The analysis controlled for patient age, sex, comorbidities status.

**Results:** More than half of all respondents showed good adherence level, only 9,7% of all patients had poor agherence. All patients were visited general practitioner or endocrinologist with frequency at least 1 time per year. 26,82% of patients had troubles to postpone breakfast, so they took medication just before breakfast, thus this may result with reduced levothyroxine absorbtion. Patients reported negative influence of hypothyroidism on QoL, especially on weight (65.9%), physical capabilities (63.5%), physical appearance (63.4%), energy (58.5%), working life (53.6%). Despite levothyroxine therapy some patients reported fatigue (68.3%), weight gain (53.6%), dry skin (51.3%), feeling cold (34.2%), poor memory (34.1%) and concentration (31.7%), muscle weakness (24.4%) and aches (7.3%). Good QoL reported 56.1% of respondents, but bad – 22%, the remaining part reported their QoL to be “neither good nor bad”. Treatment satisfaction at time of diagnosis was at least two times lower than treatment satisfaction during recent period of few weeks. Patients were most satisfied with convenience of treatment (73.2%) and less satisfied with understanding of their disease (36.6%).

**Conclusions:** In general, adherence to the levothyroxine (LT4) treatment was good. Patients had poorer QoL if they had several thyroid-related symptoms and multiple medical conditions. In general, main part of patients was satisfied with convenience of treatment. The correlation between serum hormone level (fT4 and TSH) and QoL score was not statistically proved.

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## **MOST COMMON CARDIOVASCULAR DISEASES AS MIGRAINE COMORBIDITIES**

**Background.** Last studies have found that migraine is common with other diseases. These cases are called "comorbidities", which means that they occur in parallel and are likely to affect a migraine. Suspected that cardiovascular disease's (CVD) vascular component is part of the pathophysiology of migraine. There are studies showing a link between migraine and stroke, subclinical cerebrovascular disease, coronary artery disease, arterial hypertension and patent foramen ovale.

**Aim.** The general aim of the study is to identify cardiovascular comorbidities of migraine and it's clinical pattern.

**Materials and methods.** A retrospective study was performed at the Headaches Center in outpatient clinic "Veselības centrs 4". The study contain data from medical histories including Headache Questionnaire of patients with migraine with/without aura. Data was analyzed with *IBM SPSS 22* software.

**Results.** The study involved 100 patients, of which 88 were female (88%) and 12 male (12%). Patients ages ranging from 17 to 66 years (M=37,34; SD=11.01). Only 31% of patients had migraine with aura (n=31) and 69% presented with migraine without aura (n=69). The total amount of patients with cardiovascular disease was 19 (19%). 37% of patients with CVD (n=7) had migraine with aura and 63% (n=12) – migraine without aura. 3% of all patients (n=3) had anamnesis of stroke, 4% of patients (n=4) had transient ischemic attack, 5% of patients had stage 1 hypertension (n=5), 10% of patients had stage 2 hypertension(n=10) and only 1 patient had dyslipidemia (1%). All patients with stroke had migraine with aura.

**Conclusions.** The total prevalence of CVD in patients with diagnosis of migraine is 19%. Also our data suggest that the most common CVD was stage 2 hypertension. There is a statistically significant relationship between stroke and migraine with aura ( $p=0.028$ ).

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## **OCCUPATIONAL DISEASES AMONG OFFICE WORKERS IN LATVIA**

**Background.** The aim of this study is to report health problems among office workers in Latvia. Office workers due to various physical factors (static posture, repetitive movements, local compression with tool or surface) are more likely to develop occupational diseases, such as musculoskeletal disorders.

**Materials and methods.** Latvian office workers (n=110) with various occupational diseases were randomly selected and included in this cross-sectional study. We used descriptive analysis, Pearson's correlation, and multiple regression analysis for statistical assessment.

**Results.** From total count of patients-41.8% have 2 diagnoses, 22.8% of them have 3 or more diagnoses. There is musculoskeletal disorders prevalence among office workers. 98.2% of office workers was diagnosed with musculoskeletal disorder. 83.7% of all diagnoses is upper limb compression neuropathy, 77.3% of diagnoses is carpal tunnel syndrome. 3.6% is stress-related disorders.

**Conclusion.** This study provides evidence that musculoskeletal symptoms are common in Latvian office workers. These findings indicate the need for more attention to musculoskeletal disorders among office workers and to develop specific strategies to reduce the occurrence of musculoskeletal disorders symptoms among office workers.

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## **OVERTREATMENT OF PROSTATE CANCER IN POPULATION OF LATVIA: UNNECESSARY RADICAL PROSTATECTOMY IN PATIENTS WITH EARLY STAGE PROSTATE CANCER**

### **Introduction**

Prostate cancer (PCa) is one of the most common cancers worldwide and most common cancer in men. There are two main approaches to patients with prostate cancer: active surveillance, watchful waiting and radical treatment. Most common radical treatment option used is radical prostatectomy, which is associated with high morbidity after surgery. Androgen deprivation therapy, external beam radiation therapy and brachytherapy are also widely used treatment options in PCa. Overdiagnosis and overtreatment is associated with reduced quality of life and increases health-related costs. The aim of this study, is to define how many patients are overtreated.

### **Materials and methods**

We retrospectively analysed 488 consecutive PCa patients after RP at the Department of Urology, Pauls Stradins Clinical University Hospital, Riga, Latvia. A total of 347 out of 488 patients met the inclusion criteria: (a) transrectal ultrasound (TRUS) guided prostate biopsy performed with at least 8 needle core biopsies in total; (b) RP performed between January 2012

and August 2017; (c) a final pathomorphological report available. None of the patients received any therapy prior to RP, such as androgen deprivation or radiation therapy. 86/347 patients were classified as low risk PCa, based on European Urological Association prostate cancer guidelines which offer the following criteria for low risk PCa [11] :

- 1) PSA <10 ng/ml;
- 2) GLS <7 (ISUP grade 2/3);
- 3) cT1-T2a.

**Results.** There were 86/347 (24.8%) patients with low-risk PCa identified according to the previously mentioned criteria. For 64/86 (74.4%) of patients, GLS was upgraded after RP. There were no GLS downgrades after RP.

**Conclusions.** 24.8% of patients with PCa are overtreated and their quality of life is irreversibly affected. In Latvia active surveillance should be used with precaution, due to the high incidence of Gleason score upgrade after performing radical prostatectomy. Gleason score assigned from TRUS guided biopsy should be generally supported by additional diagnostic methods, such as MRI.

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## **OVERVIEW OF INFLUENZA INFECTION IN PREGNANT WOMEN FROM 2016 TO 2018**

Keywords: influenza, complications, pregnancy

**Introduction.** Changes in the immune system during pregnancy predispose pregnant women to more severe course of influenza. Despite the support of Ministry of Health by decreasing vaccination costs, the vaccination coverage remains low. Aim of the study is to get the complete data about hospitalized pregnant women with influenza from 2016 to 2018.

**Materials and methods.** Current retrospective study was conducted at Riga East University hospital Latvian Centre of Infectious Diseases. 111 medical histories were analyzed covering data from 2016 to 2018. IBM SPSS Statistics 22 was used to analyze the data. Statistical significance level was set at  $p < 0.05$

**Results.** 111 cases of influenza infection in pregnant women were gathered from year 2016 to 2018 in Latvian Centre of Infectious Diseases. In 2018 there were 39 cases, in 2017 – 32, and 2016 - 40 cases;  $M=37$ . Patients' mean age  $M=28.82$ ;  $SD=4.66$  years; average gestation week was 21.8 weeks;  $SD=9.39$ . Average hospital stay was 3.15 days;  $SD=1.39$ . There were no significant differences in hospital stay depending on the year.

In 2018 and 2016 there was a higher rate of developed influenza complications (35% and 40%), but in 2017 complications were seen in 9%. Most common complications were acute sinusitis ( $n=17$ , 39.5%), pneumonia ( $n=11$ , 25.6%), acute bronchitis ( $n=10$ , 23.3%). 1.6% ( $n=2$ ) of all patients were vaccinated against flu. No pregnancy-related complications developed during hospital stay.

There was no statistically significant association between influenza type and complications ( $p=0.8$ ,  $p=0.4$ ). There were 29 patients with type A flu with complications and 11 with type B influenza.

**Conclusion.** As the vaccination coverage in this patient group is critically low, the average number of hospitalized pregnant women with influenza is 37 patients per year. There was no statistically significant difference in the hospital stay from 2016 to 2018. Most common complications were acute sinusitis, pneumonia and acute bronchitis.

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## **PHYSICAL ACTIVITY AMONG RIGA STRADINS UNIVERSITY 5TH AND 6TH YEAR MEDICAL STUDENTS**

**Key words:** Physical activity, health

**Introduction:** Physical activity is crucial for sustaining good overall health, function of the musculoskeletal system, weight control and cardiovascular stability. Other benefits of exercise include stress and anxiety relief. Yet many avoid regular exercise despite knowing the benefits. A 2016 survey by Center for disease prophylaxis and control of Latvia showed that 39% males and 37% females described their fitness as satisfactory yet 43.7% of males and 38.8% of females preferred passive pastime activities and only 7% of males and 6% of females had regular exercise of  $\geq 30$  min. Further evaluation of physical activity of population is advised to analyze current trends in participation or avoidance of regular exercise.

**Aim:** To analyze physical activity of 5th and 6th year medical students in Riga Stradins University.

**Materials and methods:** An electronic survey was carried out with 78 responders. Data about age, gender, physical parameters and physical activity trends were analyzed using MS Excel and IBM SPSS statistics 24 and included in the study.

**Results:** Male to female ratio was 1:3,3 ( $n=18:60$ ), median age 24 years, mean weight 70.4 kg. BMI's were calculated, with mean 24.8, range 16.3 - 43. 70.7% ( $n=56$ ) reported having regular physical activity, 28.2% ( $n=22$ ) did not. The majority - 36.8% ( $n=28$ ) exercised 1-2 times a week whilst only 5.4% ( $n=4$ ) 3-4 times weekly. Length of exercise was 30-60 min for 41.8% ( $n=28$ ) respondents, only 3% ( $n=2$ ) exercised  $\geq 2$  h at a time. 45.5% ( $n=30$ ) reported gym as sport of choice. Aim for

exercise for 52.3% was to feel better overall and improving health for 33.6%. Reasons for avoiding physical activity was sloth (36.5%) and lack of free time (38.5%).

**Conclusion:** The survey showed that majority of medical students included exercise in their weekly routine, and duration of workout was >30 min for majority, concluding that most respondents maintain an optimally healthy lifestyle with regular exercise as its component.

### **Anete Bērziņa**

Zinātniskā darba vadītāja - Dr.med. Anna Mihailova

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## **PODAGRISKA ARTRĪTA KOMBINĀCIJA AR CITAS ETIOLOĢIJAS ARTRĪTIEM**

Atslēgas vārdi - podagriska artrīts, citas etioloģijas artrīti, kombinācija.

Ievads - Podagra ir viens no populārākajiem artrītiem vīriešiem. Sievietes lielākoties slimo menopauzes vecumā. Tās riska faktors ir hiperurikēmija. Komorbidātes ir hipertensija, liekais svars, hiperlipidēmija, cukura diabēts, hroniska nieru mazspēja, kā arī dažādi medikamenti. Šī slimība pacientam izraisa dzīves kvalitātes zudumu, skartās locītavas deģenerāciju, kā arī nieru mazspējas un nierakmeņu veidošanos. Daudzos gadījumos pacientam ar podagrisku artrītu var būt papildus arī citas etioloģijas artrīts.

Mērķis - Izpētīt podagriska artrīta kombināciju ar citu artrītu veidiem.

Materiāli un metodes - Pētījuma dizains atbilst aprakstošai statistikai. Iekļauta retrospektīva datu analīze ar 140 podagriska artrīta ambulatorajiem pacientiem laika periodā no 2014. -2018. gadam. Iegūta informācija par dzimumu, vecumu, podagras skartajām locītavām un ar kādiem citas etioloģijas artrītiem šie pacienti slimo. Šī informācija un dati apkopoti Microsoft Excel un analizēti ar SPSS sistēmu.

Rezultāti - Visbiežāk podagras skartā locītava pacientiem izrādījās 1. Metatarsofalangeālā locītava (1. MTF), kura bija skarta 74 pacientiem. Otrā biežāk skartā bija ceļa locītava – 34 pacientiem. Pacientiem ar podagrisku artrītu nereti bija sastopams arī citas ģenēzes artrīts. No 140 (100%) pacientiem 74 nebija atklāts citas ģenēzes artrīts. Ar reaktīvu artrītu bija slimojuši 39 cilvēki, osteoartrīts bija 12 pacientiem, reimatoīdais artrīts 7, taču psoriātriskais artrīts 8 pacientiem. Pēc veiktā pētījuma redzams, ka no visiem podagriska artrīta pacientiem podagra ar kādas citas etioloģijas artrītu saistās tieši vecumā grupā 40-49 gadi un 50-59 gadi un visvairāk podagriska artrīts kombinējas ar reaktīvu artrītu.

Secinājumi - Podagra var kombinēties ar citas etioloģijas artrītiem kā osteoartrīts, reimatoīdais artrīts, psoriātriskais artrīts. Podagra ar citas etioloģijas artrītiem kombinējas pēc 40 gadu vecuma.

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## **PRE – PREGNANCY BMI AND GESTATIONAL WEIGHT GAINS CORRELATION WITH PREGNANCY OUTCOME**

**Objective:** The purpose of this study is to analyse, how baseline body mass index and gestational weight gain affects delivery outcome, neonatal health and pregnancy complications.

**Keywords:** gestational weight gain, pre – pregnancy BMI, delivery outcome, neonatal health, pregnancy complications.

**Materials and Methods:** A total of 1051 medical history cases of pregnant women and neonates who were delivered between January 2016 and December 2016 in Maternity Hospital of Riga were included in this study. SPSS version 23.0 was used for statistical analyses. Women were divided into 4 groups according to the pre - pregnancy BMI and gestational weight gain.

**Results:** Both pre-pregnancy BMI and gestational weight gain correlated significantly with gestational age at delivery (BMI  $P = 0,015$ ; GWG  $P = 0,003$ ), Caesarean section (BMI  $P = 0,001$ ; GWG  $P = 0,05$ ), uterine dysfunction ( $P = 0,001$ ), mean neonatal weight ( $P < 0,001$ ), macrosomia ( $P < 0,001$ ) and maternal complications during pregnancy, such as gestational hypertension ( $P < 0,001$ ) and preeclampsia (BMI  $P < 0,001$ ; GWG  $P = 0,007$ ). Also pre-pregnancy BMI statistically significantly correlated with gestational weight gain ( $P = 0,002$ ), labor induction ( $P = 0,006$ ), progressive fetal distress ( $P = 0,001$ ), intrauterine infection ( $P = 0,004$ ), neonatal clavicle fracture during delivery ( $P = 0,02$ ), Apgar score at first minute ( $P = 0,007$ ) and after 5 minutes ( $P = 0,002$ ) and gestational diabetes ( $P = 0,001$ ). Gestational weight gain also correlated significantly with preterm birth ( $P = 0,032$ ) and acute fetal distress ( $P = 0,005$ ).

**Conclusions:** Study revealed that baseline body mass index and gestational weight gain had significant correlation with pregnancy complications, delivery outcome and neonatal health. The outcome of the birth, the newborn condition, and avoidance of complications during pregnancy can be improved by following and adjusting the pre-pregnancy weight and gestational weight gain.

## **PREVALENCE OF CARDIOVASCULAR RISK FACTORS AND THEIR DISTRIBUTION BASED ON PATIENT GROUP WITH CEREBRAL INFARCT IN A.CEREBRI MEDIA SINISTRA**

**Background.** Stroke is the second leading cause of death, accounting for 11,13% of total death and it is one of the main reasons of disability worldwide. Ischemic strokes account for about 87% of all strokes.

**Aim.** This study aims to identify the etiologic, demographic risk factors of cerebral ischemic stroke patients and to contribute to cerebral stroke data in our country.

**Materials and methods.** A retrospective study was conducted in ward 20 at Pauls Stradins Clinical University was made. 98 patients with cerebral stroke were included. Data were collected from January 2017 till April 2017. Inclusion criteria were: stroke in a. cerebri media, SKK-10 code I63.3 which refers to cerebral infarct. Statistical analyses were performed by SPSS software.

**Results.** There were 98 people included and analysed for this research.

Analyzing demographic attributes over this dataset showed that 50 (51,9%) were women mean age M=76,9 years SD=9,9 and 48 (48,9%) men mean age M=71,3 years; SD=8,4.

In our study it is the most common risk factor is hypertension (28,4%) following atherosclerosis (25.3%) and atrial fibrillation (17%). Data shows that hypertension have 27 patients and there is no statistically significant association between hypertension and incidence of stroke ( $p>0.05$ ). In our data base heart failure has 16% of all patients and chi-square tests showed that these results were not statistically significant ( $p>0.05$ ). Diabetes mellitus also strong risk factor for CI. In our study only 6 people has diabetes and there is no significant association between stroke and diabetes mellitus. Obesity has diagnosed only 3 of all our patients and there is no strong correlation between obesity and stroke, although we believe obesity may have more patients. Lastly, analyse shows that only 17% of patients has atrial fibrillation. Atrial fibrillation is the main cause of ischemic stroke and there is statistically significant association between stroke and atrial fibrillation ( $p=0,002$ ).

**Conclusions.** In this study the prevalence of stroke incidence was significantly related to comorbid risk factor such as atrial fibrillation ( $p=0.002$ ) but no other risk factors. In literature, atrial fibrillation has described as one of main risk factors for ischemic stroke but our study proves that it is a leading cause only in 17% cases of all stroke patients that is why we have been aware of other risk factors which can lead to stroke. Almost 30% of our patients have hypertension. Blood pressure is a common outcome predictor in acute ischemic stroke and elevated blood pressure has been reported to be associated with poor short-term and long-term outcomes in acute stroke. That is why it is important to maintain blood pressure in normal range.

**Limitations.** There can be few limitations for example establishing patients anamnesis because of aphasia or having financial issues to find out stroke pathogenesis and risk factors.

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## **PREVALENCE OF OBESITY IN PATIENTS WHO DEVELOPED PROSTHETIC JOINT INFECTION FOLLOWING HIP OR KNEE TOTAL ARTHROPLASTY**

### **Introduction**

Periprosthetic joint infections is rare complication but still one of most common sources of morbidity worldwide after total knee and hip joint replacement surgery. Total knee and hip arthroplasty is most cost effective treatment in patients with osteoarthritis. Obesity is well known risk factor for developing of periprosthetic joint infection, due to prolonged surgery time, increased blood loss which is associated with difficult access to joint and positioning of patient during surgery and impaired wound healing after arthroplasty. Accordingly to Eurostat data, that was published in year 2016, almost 1 in 5 adults in Latvia are obese.

### **Materials and methods**

In total 462 patient case records were retrospectively analysed using database of Hospital of Traumatology and Orthopaedics in Riga, Latvia between years 2002 and 2016. 286 met inclusion criteria and case records contained necessary information. Patients were divided in two groups, based on count of pathogens that were identified. Polymicrobial group contained 25 cases and monomicrobial 261 case. All case records with insufficient data were excluded from the study. All information was analysed using IBM SPSS 22.

### **Results**

Mean BMI of all patients with PJI infection was 29.9 kg/m<sup>2</sup> median BMI did not differ greatly and was 29.2 kg/m<sup>2</sup>. Smallest BMI was 18 kg/m<sup>2</sup> and highest BMI 46.1 kg/m<sup>2</sup> with amplitude of 28.1 kg/m<sup>2</sup>. Men and women were analysed separately. Median BMI in men was 28.7 kg/m<sup>2</sup> and median BMI in women was 29.2 kg/m<sup>2</sup>.

### **Conclusions**

86.3% (245/293) patients with PJI after total knee or hip arthroplasty were defined as pre-obese or obese based on WHO BMI classification. It could be speculated, that patients with BMI greater than 25 kg/m<sup>2</sup> are at high risk of PJI.

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## **PROBLEM AREAS IN DIABETES (PAID) SCALE EVALUATION FOR ADOLESCENTS (11 – 18 YEARS OLD) WITH TYPE 1 OR 2 DIABETES MELLITUS IN LATVIA**

**Keywords.** Diabetes mellitus, adolescents, problem areas in diabetes.

**Introduction.** According to Latvian Disease Prophylaxis and Control center there were registered 91571 patients with diabetes mellitus(DM) in 2017. 682 out of these patients were less than 19 years old. PAID is a 20 item self-report questionnaire that assesses a range of emotional problems related to having type 1 or type 2 DM. Diabetes specific stressors were found to be associated with less adequate self-care and impaired glycemic control(Peyrot et al(2005)).

**Aim.** Evaluate PAID score in Latvian adolescent DM patients and search for the association of PAID score with HbA1c(%), Hypoglycemia(times/last week).

**Methods.** This is a cross-sectional study including 48 adolescent patients, diagnosed with type 1 or type 2 DM, in a single university hospital(2018-2019). Patients were given anonymous PAID questionnaire. To evaluate glycemic control of participants anonymous questionnaire of 10 additional questions was designed. Descriptive statistical analysis and Spearman rank correlation was used to evaluate the results.

**Results.** There were 47 patients diagnosed type 1DM and 1 with type 2DM. The mean age 14.04±2.14(mean ± SD). Diabetes duration 4.95±4.07 years, 52.1% female and 47.9% male. HbA1c% 11.09%±4.77; Hypoglycemia(times/last week) 2.51±1.70. PAID score was 22.03 ± 13.80. Association between PAID score and HbA1c(%) was not found(rs=-0.112; p=0.447). Association between PAID score and hypoglycemia(times/last week) was found(rs=0.338; p=0.047). Relation of hypoglycemia(times/last week) and hospitalization times was found(rs=0.364; p=0.032).

**Conclusions.** There were 6 patients who scored over 40 points in PAID scale—which indicates that these patients may be at the level of “emotional burnout”. Association indicating that patients who had more hypoglycaemia episodes during last week scored higher points in PAID scale was found. There was found an association showing that patients who had more frequent hypoglycaemia episodes last week have been hospitalized more often.

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## **PSYCHOSOCIAL RISK FACTORS AT GENERAL PRACTITIONERS WORK ENVIRONMENT**

**Keywords:** Psychosocial factors; General practitioner; family doctor; well being at work;

**Introduction.** Well-being at work is an important aspect of a workforce strategy. Doctors experience high stress levels every day. The aim of this study was to find out the most common psychological risk work factors in a General practitioners (GP) work and their opinion about what could help to improve GP's well being at work.

**Materials and methods.** COPSOQ (Copenhagen Psychosocial Questionnaire 2017) was used. Surveys were back-forward translated to Latvian language and sent electronically to family doctors in Latvia to free access e-mails found on National Health department website.

**Results.** Data from 100 family doctors was obtained. There were 91% female, 8% male. 67.6% of respondents claims, that their job is always emotionally tense. There are 35.3% of respondents, who needs to do an extra work and work overtime, 44.1% are working at least 1 time per week on weekends or holidays, but 91.2% at least 1 time per week works at the evenings after 18.30 or at nights (till 5:00). More than a half of respondents - 52.9% claims, that other people personal problems are often a part of their job; 61.8% of respondents says that their job takes so much energy that it has a negative impact on their personal life in a large extent, 52.9% only sometimes can decide, when to take a break by themselves. Many of doctors- 70.6% -claims that they have possibility to learn something new through a work and 59.9% of doctors often are getting help and support from colleagues, and a half of doctors (50%), are satisfied with their colleagues. Almost 60% (58.8%) of doctors claims, that they are feeling emotionally exhausted quite often. More than a half - 55.9% of GP don't have a clear objectives in their work. About 52.9% of doctors are satisfied with their salary, but 35.3% are worried about decrease of their salary

Suggestions ( answered as open question) for better work environment-less bureaucratic burden for doctors to spend more time with patients; don't make a continuous changes in medicine (instability of political decisions in health care sector); Limit a desinformation about general practitioners work, don't blame these doctors for a large rows to specialists; GP's involvement in a decision making about GP's responsibilities and additional work obligations.

**Conclusion.** General practitioners are facing many psychosocial factors at their work every day. The most common psychosocial work factors are long work hours, emotional exhaustion and a large amount of work. One of the most common problems in General practitioners work is continous changes in medicine, bureaucracy and GP reputation destruction.

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## **QUALITY OF LIFE, DEPRESSION, ANXIETY, LONG-TERM DISABILITY AND FAILURE TO RETURN TO WORK AMONG TEACHER WITH AND WITHOUT MUSCULOSKELETAL PAIN**

**Keywords.** Musculoskeletal pain, depression, anxiety, life quality, disability.

**Introduction.** Musculoskeletal disorders represent one of the most common and important occupational health problems in the teaching profession.

**Aim.** The aim of research was to estimate the depression, anxiety and life quality level of a teacher. To investigate, long-term disability and failure to return to work among teacher with musculoskeletal pain. To analyse the effects of physical activity on pain visual analogue scale (VAS). To determine correlation between long-term disability risk and depression, anxiety, pain intensity.

**Materials and Methods.** The research was carried out in Latvian elementary school. The total number of subjects was 82. Teachers were interviewed with Hospital Anxiety and Depression Scale (HADS), The American Chronic Pain Association Quality of Life Scale, VAS, Örebro Musculoskeletal Pain Questionnaire (ÖMPQ) to investigate long-term disability and failure to return to work. The HADS, ÖMPQ and Quality of Life Scale were translated from English to Russian and back with high coincidence. Statistical analysis was performed with SPSS 22.0. The Shapiro-Wilk test was initially used to verify the normality of the variables and choice of statistical tests. The Mann-Whitney test was used for data comparison for the groups and Spearman test to identify correlation.

**Results.** Among 82 subjects 65 (79,3%) have musculoskeletal pain, 17 (20,7%) don't have pain. Depression level: normal case 68 (82,9%), borderline case 10 (12,2%), abnormal case 4 (4,9%). Anxiety level: normal case 54 (65,9%), borderline case 15 (18,3%), abnormal case 13 (15,9%). Analysis indicated significant higher score of depression for teachers with musculoskeletal pain (mean=5,43; SD=3,1) comparing to ones without pain (mean=2,71; SD=2,6), ( $p=0,002$ ). Analysis indicated significant higher score of anxiety for teachers with musculoskeletal pain (mean=7,31; SD=3,4) than without pain (mean=4,35; SD=2,6) ( $p=0,002$ ). 44 (67,7%) teacher with musculoskeletal pain have low risk of long term disability, 20 (30,7%) have moderate risk and 1 subject (1,6%) has a high risk. Analysis indicated no difference in life quality between subject with and without musculoskeletal pain ( $p=0,76$ ). Among 82 subjects 45 (54,88%) teachers have physical activity and 37 (45,12%) do not have. Analysis indicated significant higher score of VAS for teachers without (median=5) rather than with physical activity (median=2), ( $p=0,019$ ). Correlation coefficient between risk of long term disability and depression level was  $r=0,431$  ( $p<0,001$ ), with anxiety level  $r=0,449$  ( $p<0,001$ ), with VAS  $r=0,649$  ( $p<0,001$ ).

**Conclusions.** Results of this study showed that the risk of long-term disability and failure to return to work among teacher has positive strong correlation with pain intensity, positive moderate correlation with depression and anxiety. Subjects who have physical activity have low pain intensity. Teachers with musculoskeletal pain tend to have more depressive and anxiety symptoms.

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## **REASONS WHY MOTHERS ACCEPT TO VACCINATE THEIR DAUGHTERS AGAINST HUMAN PAPILLOMAVIRUS**

**Keywords:** Human papillomavirus (HPV) vaccine, acceptance

**Introduction:** During last years, the immunization rate with HPV vaccine in Latvia is insufficient – 44.2% in 2016, 50.2% in 2017, 43.7% in 2018 from January to June.

The aim of this study is to evaluate the most common causes why parents accept to vaccinate their daughters against HPV.

**Materials and methods:** Women who have at least one daughter were invited to fill in a questionnaire via internet and in secondary school in Riga. Open question on reasons why mothers agree to vaccinate was included. All answers were coded and codes were reviewed and organized in overarching categories describing parents' opinion about (for)? HPV vaccine.

**Results:** 219 women aged 18-61 filled in the questionnaire. Most of the women had a higher education 183(83.6%) and most of them were employed 111(48.1%), childcare leave 41(17.7%) and selfemployed 37(16%). 75(34.2 %) parents accepted HPV vaccine, 101(46.1%) did not accept it and 43(19.6%) had no opinion in regard to the vaccine.

We did not find any significant correlation between parents' socio economic factors (education, occupation, income) and support for the vaccine.

Reasons for HPV vaccine acceptance are:

43 (58,9%) wants to protect their daughters from HPV infection and the diseases it causes

19 (26%) supports vaccination in general

4 (5,5%) trusts the advice of their general practitioner

2 (2,7%) are going to vaccinate their daughter, as the mother has changes in cervical cancer screening  
2 (2,7%) have relatives, who have died of cervical cancer  
1 (1,4%) the mother has been vaccinated against HPV herself, therefore she is going to vaccinate her daughter as well  
1 (1,4%) think that it is common to have multiple sexual partners nowadays, therefore their daughter should be vaccinated against HPV  
1 (1,4%) the vaccine gives a sense of security

Conclusion:

Results of our study imply that mothers want to protect their daughters from cervical cancer and the negative experiences they have encountered themselves.

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## **COMPARISON OF SOCIAL AND HEALTH ANXIETY LEVELS BETWEEN MEDICAL AND COMMUNICATION STUDENTS**

**Keywords.** Social anxiety, health anxiety, mental health, students

**Introduction.** It is believed that students are subjected to high anxiety levels, especially medical students. Excessive workload, constantly being under a lot of pressure, being sleep deprived – these are just some factors that contribute to rising anxiety levels.

**Aim.** The aim of the study is to evaluate and compare social and health anxiety in two student groups – medical students and communication students.

**Materials and methods.** Cross-sectional study was conducted. A total of 135 students participated in the study – 83 medical students and 52 communication faculty students. Students were asked to fill out a questionnaire consisting of Social Phobia Inventory (SPIN) and Health Anxiety Inventory (HAI-18). Results were obtained in Microsoft Excel 2016 and statistical analysis was done with IBM SPSS Statistics v.25.0.

**Results.** There is a statistically significant difference between medical and communication faculty student social and health anxiety scores ( $p < 0,05$ ). 25% of all students who participated scored as social anxiety sufferers – all were medical students. There was a higher health anxiety mean score in medical students 15,33 (SD=7,6) as compared to communication students 9,63 (SD=2,6).

**Conclusion.** Higher prevalence of social and health anxiety was found in medical students as compared to communication faculty students.

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## **SOCIODEMOGRAPHIC FACTORS AFFECTING THE HIGH LEVEL OF BURNOUT AMONG MEDICAL STUDENTS AND RESIDENT DOCTORS IN LATVIA**

**Introduction.** Burnout is caused by chronic stress, it diminishes quality of life and may lead to depression. There is scarce data on Latvian medical students' and residents' burnout.

**Aim.** To evaluate burnout levels and contributing sociodemographic factors in Latvian medical students and residents.

**Materials and methods.** Present cross-sectional study is conducted at the University of Latvia, Riga East University Hospital and online. By March 2019, 252 medical students and residents have randomly, anonymously and voluntarily participated. Participants were surveyed using the Maslach Burnout Inventory – General Survey consisting of 3 scales – Exhaustion, Cynicism, Professional Efficacy (MBI – GS, Maslach, Jackson & Leiter, 1996, adapted in Latvia by D. Caune, 2004) and sociodemographic survey. SPSS Statistics 22 was used for the statistical analysis of the data. Statistical significance level was set at  $p < 0,05$ .

**Results.** Participants were 18 – 40 years old; 20% ( $n=50$ ) were male, 80% ( $n=202$ ) were female. 72% were students, 28% were residents. 156 individuals worked, with 32% ( $n=81$ ) working more than one job.

High Exhaustion rates were in 105 students (58%) and 46 residents (65%). The sample showed high Cynicism in 48%. Professional Efficacy was high in 28%. Exhaustion and Cynicism was higher in females - 64% and 50% against 42% and 42% in males.

Spearman correlation coefficient analysis showed a statistically significant correlation between age and Cynicism ( $r_s=0,16$ ,  $p=0,01$ ). Using Pearson correlation coefficient weak, positive, statistically significant correlation was found between number of jobs and Cynicism ( $r=0,22$ ,  $p=0,001$ ). Other correlations were not found between burnout and age or employment.

**Conclusions.** High Exhaustion levels (58% - 65%) in students and residents describe high burnout rates in the Latvian medical students' and residents' population. Study suggests that burnout levels are lower in males and older participants working more jobs are more cynical.

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## **STROKE AWARENESS AMONG LATVIAN POPULATION**

**Keywords.** Stroke, Awareness

**Introduction.** Stroke is the third-ranked cause of mortality in Latvia and a major cause of disability. Stroke can induce physical disabilities and cognitive, psychological, and behavioral impairments. This study examined knowledge of stroke warning signs, risk factors and tactic in case of emergency.

**Aims.** To evaluate the awareness of stroke among Latvian population and to understand if the population is needed to be more educated.

**Materials and methods.** Participants completed a ten-item questionnaire about stroke. The obtained data were analysed in SPSS Statistics.

**Results.** The study included 527 respondents 9-86 years of age (mean age 29.05). 95.1% of respondents admitted knowing what stroke is. Majority of respondents (61.5%) called stroke a disease affecting blood vessels in the brain. A great part (60.2) thought that stroke can occur both suddenly and gradually. As the most popular stroke symptoms were named speech disorder in 60.5% and paralysis of one side of the body in 61.7% of the time. As the most common risk factors were named: Stress (58.4%), High blood pressure (59%) and smoking (54.5%). Just 40.8 % of respondents actually knew what acronym FAST stands for. In population over 65 years of age even fewer respondents knew what it means (20.6%). When asked whom to call first when a stroke occurs, 88.4% named ambulance. In the older population, 73.5% of respondents chose to call an ambulance first. Less than half of respondents named thrombectomy (30.7%) as a cure. However, thrombolysis seems to be a better-known method of treatment and was named as a cure in 52.4%. Unfortunately, just 19.7% of respondents named medical staff as a source of information about stroke.

**Conclusion.** Although a great part of respondents admitted knowing what stroke is, the research has shown that just a little bit more than half of the respondents actually are aware of risk factors, signs of stroke and what can be done to treat stroke, especially the older generation.

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## **THE FOOT AND ANKLE DISABILITY INDEX SPORTS MODULE EVALUATION AMONG PROFESSIONAL VOLLEYBALL PLAYERS IN LATVIA**

**Key words.** Ankle injury, occupational medicine, professional volleyball players, the foot and ankle disability index.

**Background.** Ankle injury is one of the most frequent trauma among volleyball players. It includes ankle sprain, luxation, ligament damage and ankle bone fractures. The Foot and ankle disability index Sport module (FADI Sport) is designed to assess functional limitations after foot and ankle trauma in professional sportists. The FADI index Sports module includes evaluation of discomfort level during movements that are essential to sports – landing, running, jumping, cutting et al.

**Aim.** The goal of the research is to evaluate The FADI index Sports Module among professional volleyball players who had ankle injury.

**Materials and methods.** To investigate this matter questionnaire was made and used. It includes questions about ankle injury rate and type; duration of sports in professional volleyball players etc. Respondents aged from 18 till 25 years old. To objectify professional volleyball players discomfort level the FADI Sport index was used. Data were processed using MS Excel 2010 and SPSS 20.

**Results.** In the study were included 101 respondents. From professional volleyball players 83 (82.2 %) had ankle trauma and 18 (17.8%) have not. 76 (92 %) of professional sportists got ankle injury during training or competition time ( $p < 0.001$ ). Classification by trauma type: ankle spains have 78 (77.2%) ; ankle bone fracture have 16 (15.8%); ligament rupture have 31 (30.7 %); ankle luxation have 7 (6.9%). The average sporting time for professional volleyball players is 7 hours per week per week. The biggest injury rate among respondents was seen doing sports 7-10 hours per week (49 %); playing volleyball more than 7 years (55%) and having training more than 4 times per week (49%). The average FADI Sports index for professional volleyball players who have ankle trauma – 74.7 %, but for those who did not have ankle trauma – 85.9%.

**Conclusions.** The higher is injury rate the lower the FADI Sports index got. ( $p < 0.001$ ). No statistical significance evaluating the FADI Sports in professional volleyball players with and without ankle injury. ( $p > 0.5$ )

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## **THE MENTAL HEALTH EVALUATION OF RIGA UNIVERSITIES STUDENTS**

**Keywords.** General distress, Medical students, Non-medical students.

**Introduction.** Medical students have been identified as a group at high risk of poor mental health. If medical students are not effectively dealing with mental health issues that they are experiencing, this may impact their ability to deliver the best possible medical care to their future patients.

**Objectives.** The objective of this study was to examine and compare the mental health of medical and non-medical students.

**Materials and Methods.** In this cross-sectional study, medical and non-medical students from major Riga universities were asked to fill the questionnaire electronically. Questionnaire consisted from several self-assessment tools, including: The Patient Health Questionnaire-9 (PHQ-9), the Alcohol Use Disorders Identification Test (AUDIT) and the Kessler Psychological Distress Scale (K10). Descriptive statistics were done by using Microsoft Excel (v15.26) and SPSS Statistics (v23.0) software

**Results.** From a total of 351 students, who had completed the survey, 320 represented medical students and 31 –non-medical (general population) students. According to the AUDIT 12.0% medical students reported harmful or hazardous alcohol consumption, while among non-medical students this parameter was 2.8% ( $p=0.014$ ). The K10 results show that 36.9% medical and 25.8% non-medical students are likely to have mild to moderate mental disorder, but 15.0% and 16.1%, respectively - severe mental disorder, ( $p=0.478$ ). The PHQ-9 results: 66.3% medical and 64.5% non-medical students presented with mild to moderate depression, but 14.1% and 22.6%, respectively – with moderately severe to severe depression ( $p=0.566$ ).

**Conclusion.** The results of this study show that medical students do not appear to have higher levels of general distress in comparison to the non-medical students. However, rates of hazardous or harmful alcohol consumption among medical students are substantially higher than those in general population

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## **THE PERSCRIPTION AND DURATION OF INSOMNIA PHARMACOTHERAPY IN ENDOCRINOLOGY AND RHEUMATOLOGY PATIENTS IN LATVIA**

**Key words:** Insomnia, pharmacotherapy, benzodiazepines, benzodiazepine analogues, duration of use.

**Background:** The prevalence of insomnia in the world has risen, according to experience of USA and New Zealand there are overuse of hypnotics.

**Main objective:** Determine the insomnia pharmacotherapy in Latvia, its duration and what speciality doctor perscribes the medications.

**Hypothesis:** In Latvia the pharmacotherapy of insomnia is most frequently prescribed by general practitioner and the safe duration of medication use are not kept, which does not match the Europe and world's guideline recommendations.

**Materials and Methods:** This is a cross-sectional study, including all patients hospitalized in single center university hospital, endocrinology and rheumatology ward during 25.10.2017-30.12.2017, an authors made questionnaire were used, it was translated into Russian. Descriptive statistical analysis and Spearman's rank correlation was applied to evaluate the results.

**Results:** Data were obtained from 92 respondents, 37% ( $n=34$ ) were male, 63% ( $n=58$ ) – female. Mean age  $59 \pm 17.5$  years. Sleep disorders were found in 63% of patients, from which 32.6% chronic insomnia. Most frequently used groups of medications were benzodiazepines and benzodiazepine analogues. The medications were perscribed by: 57% family doctor; 17% neurologist; 10% patient can not recall; 7% cardiologist; 3% psychiatrist; 3% rheumatologist and 3% narcologist. Only one patient used medications for one week therapeutic course. 67% of patients used medications all the time.

**Conclusions:** More than half (51%) of the patients used medications and in most cases they were prescription drugs (83.3%). Most of the medications were perscribed by family doctors (57%). Most frequently used groups of medications were benzodiazepines and benzodiazepine analogues. 67% of patients did not discontinue the use of medications.

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## **THE PREVALENCE OF INFLUENZA SEASONAL VACCINATION IN PRE-EPIDEMIC PERIOD AMONG CHILDREN YOUNGER THAN TWO YEARS IN LATVIA**

**Key words.** Influenza vaccination, public health, children, parent opinion, reasons for refusing

**Background.** Influenza is a contagious infectious disease caused by influenza virus. Children are in risk group to get this disease and to suffer from influenza complications. There is available influenza vaccination in Latvia, but it is not included in Latvia Childhood Vaccination schedule mandatory. Despite available influenza vaccination parents refuse from it due to various reasons and there still are lethal cases in Latvia. Hospitalized patient count in 2017 – 2018 influenza season in age group

from 0 till 4 years old were 385 patients, from age 0 till 9 years old two cases were lethal. **Materials and methods.** To investigate this matter, questionnaire was made and used. It included questions about vaccination status, chronic diseases, reasons for refusing from vaccination, parental sources of information about influenza vaccine effectiveness and necessary for their children and others. Respondents were parents whose children are in the age group from 6 months till 2 years. Data were processed using MS Excel 2010 and SPSS 20.

**Results.** Totally 110 children were included to the study - 64 (58.2%) boys and 46 (41.8%) girls. Vaccinated against seasonal influenza were 22 (15.7%). Analysing reasons of refusal from influenza vaccination results were: 10 (9%) were not informed about opportunity to vaccinate the child; 30 (27.3%) parents thought that vaccination will not save their child from the influenza infection; 4 (3.6%) of parents refused from all vaccinations included in Latvia vaccination schedule. 11 (10%) answered that vaccination is too expensive and were not informed that it is totally covered by government for children of age till two years old in Latvia. Main source of information about influenza vaccination necessity for children were general practitioners, pediatricians and personal opinion.

**Conclusion.** Prevalence of vaccination against influenza in research included children was 15.7%. Main cause of refusal from vaccination was parents' opinion that vaccination is not safe for their children and will not prevent the influenza infection. There is strong correlation between parents and children vaccination status ( $p < 0.01$ ). No statistically significant correlation between presence of chronic disease and vaccination status.

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## **THE PREVALENCE OF INSOMNIA AND USED MEDICATION FOR TREATING ENDOCRINOLOGY AND RHEUMATOLOGY PATIENTS IN LATVIA**

**Background:** The prevalence of insomnia in industrialized society is approximately 20%. Chronic insomnia has been reported by 10% of population. Long lasting sleep deprivation is associated with development of other mental and physical problems, as well as lowering health-related quality of life.

**Aim:** To determine the prevalence of insomnia and the most commonly used medication for the treatment of insomnia in endocrinology and rheumatology patients in Latvia.

**Materials and methods:** Overall 92 endocrinology and rheumatology patients were interviewed at the Pauls Stradiņš Clinical University Hospital. All patients in the department who agreed to participate in the study by completing a questionnaire were included in the cross-sectional study between 25.10.2017 and 30.12.2017. All data from 92 questionnaires were analyzed in the study. The presence, duration of insomnia and medication used in the treatment of insomnia were analyzed in each patient.

**Results:** Of all patients enrolled in the study, insomnia was reported by 63% ( $n = 58$ ) of whom 69% ( $n = 40$ ) were women and 31% ( $n = 18$ ) men. Acute insomnia has been reported by 30.4% ( $n = 28$ ) of patients, of whom 55.6% ( $n = 10$ ) were men and 45% ( $n = 18$ ) women. Chronic insomnia has been reported by 32.6% ( $n = 30$ ), of whom 44.4% ( $n = 8$ ) were men and 55% ( $n = 22$ ) women. Pharmacological treatment of insomnia was used by 51.7% ( $n = 30$ ) of patients of whom 80% ( $n = 24$ ) were women, and 20% ( $n = 6$ ) men. Most of the medication were prescription drugs (83.3%). The most commonly used group of drugs was benzodiazepines - 58% ( $n = 24$ ), followed by benzodiazepine analogues - 15% ( $n = 6$ ). The most commonly used medicine was alprazolam 10.90% ( $n = 10$ ).

**Conclusion:** More than half of the patients (63%) had insomnia. Chronic insomnia was reported in 33% of patients. Prescription drugs were most commonly used to treat insomnia. The most commonly used drugs are benzodiazepines and benzodiazepine analogues. The most commonly prescribed medication for insomnia was alprazolam.

**Key words:** insomnia, prevalence of insomnia, benzodiazepines, benzodiazepine analogues, pharmacotherapy, treatment of insomnia.

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## **THE PREVALENCE OF PREVENTABLE STROKE RISK FACTORS AMONG THE LATVIAN POPULATION**

**Keywords.** Stroke risk factors

**Introduction.** Information on CDC webpage states that up to 80% strokes could be prevented by reducing risk factors. Nevertheless stroke is still one of the main reasons of adult disability and mortality. Each year nearly 800,000 people experience a new or recurrent stroke and 2/3 have different degree of disability afterwards. To reduce these numbers it is important to recognize and treat manageable stroke risk factors like elevated blood pressure or obesity.

**Aim.** Aim of this study is to determine the prevalence of reducible stroke risk factor in the Latvian population.

**Materials and methods.** Study was done in 29<sup>th</sup> October, 2018 during "Stroke day" campaign held in Pauls Stradiņš Clinical University Hospital. This was a cross-sectional study. Group of health care professional measured all participants blood pressure, finger-prick glucose level and body mass index (BMI). From all obtained measurements 5 year stroke risk was detected. All data was collected and analyzed via SPSS program.

**Results.** Altogether 103 responses were collected, within these respondents 25 were men and 77 were women. Average age of participants was 66. High blood pressure was detected in 59,8 % (n=61), elevated blood pressure was in 19,6% (n=20) and normal in 20,6 % (n=21). Glucose level within normal level was in 55,3 % (n=39), high glucose level was detected in 55,7% (n=49). Normal BMI was measured in 22,5 % (n=23), but 50 % (n=50) of participants were overweight and 27,5 % (n=28) were obese.

**Conclusion.** Half of participants had elevated blood pressure, blood glucose and most of the participants had increased BMI. Bigger emphasis should be put on elevated stroke risk factor reduction.

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## **THE RISK OF DEVELOPING DIABETES FOR POPULATION OF LATVIA IN THE NEXT 10 YEARS**

**Introduction:** According to World Health Organization data, there are more than 422 billion people around the world, who suffer from diabetes. One of three people over the age of 18 is overweight, but 1 of 10 is obese. 90% of all the diabetes patients have type 2 diabetes. Amount of those patients has significantly grown in past 10 years. In 2007 in Latvia 58534 people were suffering from this disease, however in 2017 – already 91571. According to WHO data, 9% of all the Europe's health care expenses goes to treatment of diabetes patients.

**Study goal:** find out how big is the risk of developing type 2 diabetes for population of Latvia.

**Materials and methods:** As the main instrument of the study was used standard survey form based on questionnaire brought by Public Health Agency of Canada, data compiled and processed using MS Word and Excel tools. Data analysed using descriptive statistical method.

**Results:** 202 questionnaires were analysed for this study. During the research were analysed data about patients in the 18-74 age group, was compiled data about body mass, height, body mass index, physical activity presence and eating habits. According to study data, 18% have very high risk of developing diabetes, as well as 14% high risk or 13 has high risk of getting diabetes. 25% have high or very high BMI. Women are more often (58%) prone to have high or very high risk compared to men (42%). 61% admit that they do not participate in physical activity every day. Patients in the 18-44 age group do not have risk of developing type 2 diabetes in the next 10 years, the highest risk (34%) is in the 45-54 age group. In the 55-74 age group risk is in the interval of 24-28%.

**Results:** People who suffer from type 2 diabetes are relatively young. According to compiled data, one of three people in the 45-54 age group have a high or very high risk of developing type 2 diabetes the in next 10 years. Low physical activity and sedentary lifestyle are important risk factors.

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## **THE RISK OF STROKE IN FIVE-YEARS IN THE LATVIAN POPULATION**

**Keywords.** Stroke risk.

**Introduction.** Although stroke could be prevented in up to 80 percent, it is still one of the leading causes of adult disability and mortality. Stroke is sudden blood flow disruption in the brain and it has multiple risk factors. Some of stroke risk factors are preventable like elevated blood pressure, obesity and high glucose level. But other risk factors like age, race, prior stroke or heart attack can't be changed. By recognizing high stroke risk patients and by helping them to manage their stroke risk factors, stroke rates could be significantly reduced.

**Aim.** Aim of this study is to detect five year stroke risk in general Latvian population.

**Materials and methods.** This cross-sectional study was done in 29<sup>th</sup> October, 2018 during "Stroke day" campaign held in Pauls Stradiņš Clinical University Hospital. Stroke risk for each participant was measured by using Stroke Riskometer™ program. Also blood pressure, finger-prick glucose test and body mass index was measured for each participant. All data was collected and analyzed via SPSS program.

**Results.** Altogether 103 responses were collected. Of all participants 25,2 % (n=26) was men, and 74,8 % (n=77) was women. Participants were from 22 to 90 years old, 34% (n=35) was under age of 65 and 65% (n=66) was over age of 65. More than half of participants have elevated blood pressure (59,8 %, n=61). Above normal glucose level was in 55,7% (n=49). About 50 % (n=50) of participants were overweight and 27,5 % (n=28) were obese. From all respondents 64,1 % (n=66) have significant 5 year stroke risk and 35,9 % (n=37) have low 5 year stroke risk. Average stroke risk in Latvian population compared to healthy individual was 8 times higher.

**Conclusion.** Results of this study shows that five year stroke risk in the Latvian population is significantly increased. More educational work should be done to increase awareness of stroke among Latvian population and to emphasize the importance of risk factor reduction.

## **URINARY TRACT INFECTION INCIDENCE, RISK FACTOR AND INFLUENCE ANALYSIS IN KIDNEY TRANSPLANT PATIENTS**

**Keywords:** *Kidney transplantation, urinary tract infection (UTI), kidney donor, kidney recipient.*

**Introduction:** Urinary tract infection is the most common infection after kidney transplantation, according to American Journal of Transplantation. UTI is associated with the development of impaired allograft function, and recipient death.

**Objectives:** The objective of this retrospective study was to evaluate the incidence and risk factors of urinary tract infections and its influence on kidney function in kidney transplant patients in early postoperative period.

**Materials and methods.** A retrospective study was carried out using the data of 123 patients who had undergone kidney transplantation between the years 2014 and 2016 at the Latvian Transplantation centre. The data were collected from medical records. Data were analysed with IBM SPSS.

**Results.** A total of 123 patient histories were analysed – 66 (53.7%) men and 57 (46.3%) women. Mean patient age was 51.29 (SD 13.32) years. Patients received kidneys from 80 donors – 55 (68.8%) men and 25 (31.2%) women. UTI developed in 35 (28.5%) patients. Donor, recipient and surgical factors were analysed. Out of donor risk factors, only age influenced the development of postoperative UTI – median age for negative UTI was 49 years (Q1=39, Q3=55), for positive – 57 (Q1=47, Q3=63.5),  $p=0.019$ . Recipient sex was found a risk factor, with 42.1% ( $n=24$ ) women and 16.7% ( $n=11$ ) men developing UTI ( $p=0.002$ ). Longer recipient hospital stay was also confirmed as a risk factor for UTI (median negative 14 (Q1=10, Q3=19), median positive – 20 (Q1=13.5, Q3=26.5),  $p=0.002$ ). UTI itself appears to influence kidney function – discharge creatinine differed in patients – in patients without UTI mean creatinine was 0.14 (SD 0.045), with UTI – 0.17 (SD 0.078),  $p=0.006$ .

**Conclusions.** UTI is a common complication after kidney transplantation. Donor age, recipient sex, and longer hospital stay appear to be significant risk factors for developing a UTI. UTI itself influences discharge creatinine.

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## **USE OF MAGNESIUM AND IRON PREPARATION DURING PREGNANCY DEPENDING ON AGE**

**Key Words:** pregnancy, supplementation, iron, magnesium, maternity hospital

**Introduction.** It is known that iron and magnesium is particularly important in pregnancy. Iron plays key roles in oxygen transport by red blood cells, energy production. It is particularly important during the pregnancy and infancy for hematopoiesis, growth and development. Magnesium is an essential mineral required for regulation of body temperature, nucleic acid and protein synthesis and in maintaining nerve and muscle cell electrical potentials. Magnesium supplementation during pregnancy may be able to reduce fetal growth restriction and preeclampsia.

**The aim** of this study was to find out if there is a difference between usage of iron and magnesium supplements between age groups in pregnant women.

**Materials and methods.** The survey was carried out from November 2018 to January 2019 in Rīga Maternity Hospital, in the capital city of Latvia. 224 postpartum women were voluntary and anonymous replied to originally created questionnaire. Obtained data was statistically analyzed in Microsoft Excel 2013 and IBM SPSS software, 20.0 version.

**Results:** Participants were divided in 3 groups. < 20 years old (group 1) – 22.8% ( $n=51$ ), 25-30 years old (group2) -33.5 % ( $n=75$ ), >30 years old (group 3) - 43.8% ( $n=98$ ). 74.6% ( $n=167$ ) of all women used iron supplements. Reasons of using iron supplements were mentioned as anemia during pregnancy- 51.8% ( $n=116$ ), anemia all life long- 6.3% ( $n=14$ ), reason unknown, used by prescription- 8.5% ( $n=19$ ), their own wishes - 8.0% ( $n=18$ ). 58.5% ( $n=131$ ) used magnesium supplements during pregnancy; reasons were cramps in legs 21.4% ( $n=16$ ), abdominal cramps 21.4% ( $n=16$ ), by the wish of their own 7.1% ( $n=16$ ), other reason 8.5% ( $n=19$ ). In Group 3 magnesium supplements were used in 71.4% ( $n=70$ ) cases, which was more common than in group 1 and 2 ( $p<0,001$ ). 84.7% ( $n=83$ ) participants from group 3 and 74.7% ( $n=56$ ) from group 2 used iron supplements, what is more common than in group 1 ( $p<0.001$ )

**Conclusion:** We fixed that iron and magnesium supplement usage during pregnancy is very high, and there is association between age groups- more common that is in group with age > 30 years. There is an increasing need for public health strategies to educate the population as to the need for a healthy diet and iron, magnesium supplementation before conception, or at least at the beginning of the pregnancy. But at the first, need to improve diet before using supplements. A balanced diet that includes the essential biofactors iron and magnesium can prevent an undersupply. Pregnant woman should receive appropriate nutritional advice and supplementation at their first point of contact with healthcare professionals.

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## **WAIT TIMES TO RHEUMATOLOGY CARE FOR PATIENTS WITH RHEUMATIC DISEASES IN LATVIA**

**Background.** The impact and burden of rheumatic diseases (RD) on overall world population health in terms of death and disability are growing. Timely rheumatology care is crucial because it increases early exposure to treatment, improves patient outcomes, therefore, reduces the global disease burden.

**Aim.** The aim of this study was to quantify wait times to primary and rheumatology care and compare them with established benchmarks.

**Methods.** First-time rheumatic out-patients were asked to fill out the questionnaire in order to identify sociodemographic characteristics, duration of each phase of the care pathway and reasons for delayed care. Descriptive statistics and nonparametric tests were used to determine differences in wait times in each phase of the care pathway by patients' gender, place of residence and clinical diagnosis.

**Results.** The total of 45 first-time referral out-patients completed the questionnaires, 34 (75.6%) were female. The most frequent symptoms why patients sought help from rheumatologists were: pain (87%), stiffness (60%) and decreased movement (56%). 28 patients (62%) were not satisfied with the duration of time from symptom onset to rheumatologist consultation. The main reason for delayed first rheumatology care encounter was: long waiting times (89%). The mean age at the time of referral was 56.4 (SD 10.8) years. The median wait time from symptom onset to primary care encounter was 30 (IQR 7-90) days, the median wait time from referral to rheumatologist consultation was 90 (IQR 30-150) days and the median wait time from symptom onset to rheumatology care was 180 (IQR 67-240) days. No statistically significant differences were found in wait times in each phase of the care pathway by gender, place of residence and clinical diagnosis.

**Conclusion.** Wait times to see a rheumatologist in Latvia exceeded established benchmarks. Therefore, improving timely access is critical and pressing, targeted efforts are needed to improve it.

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## **WOLFF-PARKINSON-WHITE REGISTRY: DEMOGRAPHIC AND CLINICAL DATA**

**Introduction:** Wolff-Parkinson-White (WPW) syndrome and phenomenon is a form of pre-excitation of heart ventricles with overall prevalence 0.36/1000 with a peak of 0.61/1000 at the age of 20–24 years. It occurs due to the anatomical substrate – an accessory atrio-ventricular conduction pathway in the heart. Nowadays typical treatment for this condition is catheter ablation and this method has proven to be effective as it lowers the risk of sudden death for these patients.

**Purpose:** The purpose of this study is to summarize and analyze the demographic and clinical information about patients with WPW syndrome and phenomenon in Latvia.

**Methods:** In the retrospective study 316 patients enlisted in the WPW syndrome and phenomenon registry from 01.01.2009 to 31.12.2017 were identified by archive search. 309 patients were selected as the research population by certain inclusion criteria. Following parameters were analysed – age at the time of admission, gender, age at the time of diagnosis, clinical presentation and electrocardiogram (ECG) findings. Descriptive statistical analysis was performed using IBM SPSS v.22 software.

**Results:** Mean age of the patients admitted to hospital was 38.0±15.5 ([95%CI: 36.6-40.2]) and the majority of the patients were 40-49 years old (24.2% [18.5-28.4]). The symptoms of arrhythmia in symptomatic patients and WPW pattern in ECG findings presented for the first time at the age of 0-9 in 12.0% [8.6-16.1] cases, 10-19 in 25.7% [21.2-31.8] cases, 20-29 in 21.4% [16.1-25.0] cases, 30-39 in 14.6% [10.3-18.8] cases, 40-49 in 8.6% [5.1-11.6] cases and later in life in 8.6% [5.5-11.6] cases. 58.9% [51.7-63.0] of patients were male. Regarding ECG findings, mean PQ interval was 111±34 ms [108-115], mean QRS complex was 107±2.5 ms [104-110] and delta wave presented in 72.3% [65.4-76.6] cases. 94.2% [90.2-96.2] of the patients have experienced clinical symptoms of arrhythmia. 91.3% [87.3-93.8] complain of fluttering sensation. It is important to note that 14.5% [11.3-19.5] of the patients suffered from dizziness or loss of consciousness at least once in a lifetime. The majority of them were patients at the age of 30-39 (17 patients, 37.8%).

### **Conclusions:**

WPW syndrome and phenomenon mostly presents in youth. Majority of the patients are male. Findings of ECG correspond to the pattern of WPW phenomenon first described by Wolff L., Parkinson J. and White P.D. in 1930 and others. Almost every patient has suffered some symptoms of arrhythmia, mostly fluttering sensation. Loss of consciousness is not so common, it may be accident-prone, especially in young patients. It is better to evaluate symptoms in prospective study rather than archive search, later it may help to identify these patients earlier.

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# VĒSTURE UN KULTŪRAS VĒSTURE

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## HISTORY AND HISTORY OF CULTURE

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*Soms, H.*

### **1919. GADA 28. MARTA TRAGĒDIJA DAUGAVPILĪ**

1919. gada 28. marta rītā Daugavpilī tika izpildīts nāves sods 98 cilvēkiem. Tas bija asiņainākais lielinieku pastrādātais noziegums Latvijas teritorijā P. Stučka padomju valdības laikā.

Par akciju 30. martā vietējā laikrakstā "Krasnoje znamja" informēja kārtības sargāšanas komisija (tā sevi dēvēja dokumentos), publicējot nošauto divus sarakstus - "baltgvardi un spiegi" (76 personas) un "huligāni, laupītāji, slepkavas" (22 personas). Sarakstā bija arī 16 Asūnes iedzīvotāji un 5 Krāslavas katoļu draudzei piederīgie. Dažiem izdevās izglābties, tostarp diviem Asūnes pagasta zemniekiem Pēterim Gražulim un Vincentam Cirsim, Daugavpils iedzīvotājam, inženierim Eiženam Zinkelam, kurš 20. gadu sākumā kļuvis par Daugavpils pilsētas galvu. Izglābies arī daugavpilietis Mihails Peļuhovs un Mihails Jermolajevs, kuru tomēr atrada un nošāva.

Bojā gājušo vidū bija Jānis Pokulis, zemnieks no Asūnes, Daugavpils Universitātes profesora Jāņa Pokuļa vectēvs, Fjodors Rumjancevs, pareizticīgo mācītājs, Jakovs Movšenzons, inženieris celtnieks, namīpašnieks

Pēc lielinieku iebrukuma Latvijā 1918. gada novembrī sākās Sarkanais terors, kurš prasīja vismaz 2-3 tūkstoš cilvēku dzīvības. Terors jau no pirmajām lielinieku režīma pastāvēšanas dienām tika uzskatīts par neatņemamu sociālistiskas sabiedrības celtniecības sastāvdaļu. Ja sākotnēji terors bija vērst uz varas sagrābšanu un noturēšanu, tad vēlākajā posmā tas tika izmantots galvenokārt kā šķiru kara līdzeklis pret buržuāziju. Līdz ar to terors ieguva masu terora raksturu, kas nozīmēja, ka tas tiek apzināti vērst pret veselām sabiedrības grupām, nevis atsevišķiem indivīdiem.

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### **LĪGO UN JĀŅU TEMATIKAS AKTUALIZĀCIJA LATGALIEŠU DZEJĀ: NO 20. GS. SĀKUMA LĪDZ MŪSDIENĀM**

**Atslēgas vārdi:** svētku kultūra, Līgo, Jāņi, vara, ideoloģija, transformācijas, aktualizācija, latgaliešu dzeja

Pētījuma pamatā ir 40 Latgalē dzimušo autoru 77 Līgo un Jāņu tematikai veltītie darbi, kas tapuši abās valodas tradīcijās – latviešu un latgaliešu. Pētījums tiek veikts ar mērķi atklāt Līgo un Jāņu aktualizācijas specifiku dažādu posmu latgaliešu dzejā, ņemot vērā gan tā laika sociālpolitisko situāciju un varas oficiālo nostāju pret šiem svētkiem, gan arī situāciju latgaliešu literatūrā kopumā. Materiāla analīze ļāva secināt, ka ar Līgo un Jāņu tematikas starpniecību latgaliešu autori raksturo 20. gs. sākuma nacionālās atmodas centienus (F. Kemps) un neatkarīgās valsts izveidi (J. Pabērzs). Rakstniekus saista 20. gs. 40. (Madsolas Jōņs) un 50. (K. Mednis, A. Vējāns) gadu notikumi Latvijā un latviešu kultūras attīstība trimdā (J. Vōskāns). Līgo / Jāņu dzejā izskan padomju varas kritika (1970.–1980. gadi: B. Martuževa, A. Ločmelis, A. Slišāns; periods pēc 1991. gada: B. Martuževa), plaši ienāk 1990. un 2000. gadu krīzes liecības: masu kultūras ietekme un tradicionālās kultūras devalvācija (H. Hansone, J. Ryučāns, J. Tenčs, J. Vagulāne u. c.), darbaspēka migrācija (L. Andronova) un lauku „izmiršana” (H. Hansone, V. Čepuļs u. c.), dažādas politiskās spēles (J. Pelšs, J. Tenčs). Negatīvajām tendencēm mūsdienu dzejnieki aktīvi pretstata senās Līgo un Jāņu svinēšanas tradīcijas un simboliku (M. Bārbale, V. Čepuļs, B. Martuževa, P. Meikstums, A. Šīrone, R. Utrāne u. c.).

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### **NEATKARĪBAS KARA ATSPUGUĻOJUMS LATVIEŠU UN KRIEVU MEMUĀRLITERATŪRĀ: VIEDOKĻU POLIFONIJA**

1918. gads iezīmēja izteiktu pavērsiena punktu Eiropas vēsturē, jo izveidojās virkne jaunu nacionālo valstu, to vidū arī Latvija. Jaundibinātajā Latvijā cīņas par neatkarību sākās drīz pēc valsts proklamēšanas 1918. gada 18. novembrī un beidzās līdz ar Latvijas-Krievijas miera līguma noslēgšanu 1920. gada 11. augustā. Šajā laikā, kas ir viens no sarežģītākajiem un interesantākajiem Latvijas attīstības posmiem, notika sarežģītas militārās un politiskās cīņas, kurās savas intereses aizstāvēja Latvijas Republika, Padomju Krievija, Vācija, Polija, Lietuva, Igaunija un citas valstis. Latvijas teritorijā cīnījās 14 armijas un pastāvēja trīs valdības ar saviem bruņotajiem spēkiem.

Neatkarības kara dalībnieku un liecinieku memuāri atklāj autoru subjektīvo skatījumu uz tā laika sarežģīto situāciju un akcentē autoru dzīvē nozīmīgākus notikumus. Memuārliteratūra šī pētījuma ietvaros tiek apskatīta gan vēstures, gan literatūras, gan

sociokultūras aspektā. Tas ir īpašs literatūras veids, kas, izmantojot daiļliteratūras paņēmienus, atspoguļo autoru izpratni par pagātnes notikumiem, ņemot vērā viņu politisko un sabiedrisko pozīciju. Pētījuma uzmanība centrā ir krievu (Pāvels Bermonts) un latviešu (Andrievs Niedra, Kālis Skalbe) valodā sarakstītie memuāri. Atspoguļojot neatkarības kara notikumus no pretējām pozīcijām, tie ne tikai kontrastē, bet arī papildina viens otru. Caur dažādu autoru pasaules skatījuma prizmu, izmantojot atšķirīgus stilistiskus paņēmienus, memuāros tiek atklāta latviešu tautas garīgā pieredze un kultūras īpatnības.

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## ***RED COLLABORATIONISM: MYTH OR REALITY. COLLABORATIONISM AND ALLIANCE AFFILIATION IN WORLD WAR II***

The issue of collaborationism is particularly pointed in Eastern European countries. In the academic environment the question of whether to consider the subsequent cooperation with the Soviet authorities and especially the law enforcement agencies to be collaborationism is still keenly debated. The ambivalence of the attitude toward the collaboration of the Soviet times contributed to the emergence of the glorification of collaborationism of the times of the German occupation. The goal of this article is the assessment of the existing terminology of "collaborationism" and "collaboration" by the respective criteria. The article provides an analysis of the German occupation. The methodological basis of this research is constructed on the basic principles of modern historical science: historicism and scientific objectivity, as well as the general scientific methods: analysis and synthesis. The author draws a conclusion that the terms "collaborationism", "collaboration", "collaborator" comprise assessment out of a historical context without motivation of the involved persons in a concrete historical situation and significantly distort reconstruction of historical events. The author considers necessary carefully to verify the concept "collaboration". The scientific novelty of this research is defined by its introduction into scientific circulation the new term's "Red collaborationism" and "Alliance affiliation" as a form of cooperation during World War II.

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## ***SECULAR FUNERAL RITES: A CASE STUDY OF LUTHERAN CONGREGATIONS IN JEKABPILS MUNICIPALITY (1960-1965)***

The idea of secular rites necessity was established shortly after October Revolution, in the Constitution of the Russian Socialist Federated Soviet Republic (1918), which declared "the church is to be separated from the state and the school from the church." However, there were experiments that tried to transform traditional ceremonies such as "Red Weddings" and "Red Christenings", but they were not seen as serious threats to communist ideology.

Till J. Stalin's death there was no systematic and leveled anti-religious policy – person's religious freedom was under the control of a repressive mechanism, which differed in various regions of Soviet Union, but used the same method – destroy disloyal citizens. N. Krushev's anti-religious policy was aggressive, but the 1954 decree on scientific-atheist propaganda did not mention the policy of devising secular substitutes for religious rituals and festivals. In mid 60's the control of the religious cults got strengthen and person's life-cycle rites got doubled with similar, secular socialistic rites, even though secular funerals have stayed as one of the least developed secular rites in Soviet Union and The Baltic States.

The aim of the paper is to discover the transformation from religious funeral ceremony to secular funeral rite, by using Lutheran congregation in Jekabpils municipality.

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## ***STRATĒGISKĀS KULTŪRAS STRĀVOJUMU IETEKME UZ POLIJAS ĀRPOLITIKU: GIEDROICA DOKTRĪNA UN LATGALE***

Analizējot valsts ārpolitiku un drošības politiku, ir skaidrs, ka starptautisko faktoru ietekmei ir neapstrīdama loma to veidošanas un īstenošanas procesā, tomēr nedrīkst ignorēt vienības līmeņa aktorus. Viens no būtiskākajiem vienības līmeņa mainīgajiem, kam ir ietekme uz valsts ārpolitiskajām izvēlēm, ir stratēģiskā kultūra. Kopš pie varas ir partija Likums un Taisnīgums, identitātes jautājums spēlē arvien lielāku lomu tajā, kā valsts redz sevi starptautiskajā sistēmā, kā tā rīkojas, lai leģitimizēt savus iekšpolitiskos lēmumus. Pētījuma mērķis ir izvērtēt kā stratēģiskās kultūras strāvojumi ietekmē Polijas ārpolitisko domāšanu un rīcību attiecībā uz teritorijām, kas vēsturiski atradušās Polijas politiskajā un kultūras telpā ("kresy"). Īpašs uzsvars pētījumā likts uz gadījuma izpēti par Latgali (Inflanty Polskie).

Katrai valstij pastāv sava īpatnējā stratēģiskā kultūra, kas nosaka valsts stratēģisko domāšanu un uzvedību. Polijas stratēģiskā kultūra sakņojās tās unikālajā vēsturiskajā pieredzē, tāpēc tai ir izšķiroša nozīme stratēģiskās kultūras veidošanas procesā. Polijas ārpolitiskās izvēles balstās tās drošības dilemmās un uzskatos par Polijas vietu starptautiskajā sistēmā, ko determinē tās uzskati un ideoloģijas. Polijas stratēģisko kultūru ietekmē arī tās valdīšana pār Austrumeiropu, mūsdienu teritorijas tiek dēvētas "kresy", kas apzīmē valsts daļu, kas atrodas tuvu robežai. Polija pēc neatkarības atjaunošanas izdarīja pareizo izvēli,

kuru lielā mērā ietekmēja Ježijs Gedroics (Jerzy Giedroyc) Austrumu politikas doktrīna, kas kļuva par svarīgu ceļvedi neatkarīgajai Polijai pēc aukstā kara beigām.

Viens no galvenajiem Polijas valdošās elites uzstādījumiem ir spēcīgākas Polijas pozīcijas veidošana reģionā un lielāka iesaiste reģiona jautājumos. Polijas-Latvijas attiecībās ir novērojamas līdzīgas intereses starptautiskajā politikā un nostāja drošības jautājumos reģionā, kā arī līdzīga vēsturiskā pieredze, strīdīgo jautājumu trūkums, veicina ne tikai abu valstu attiecību attīstību, bet arī parāda to, ka Polijas ārpolitikā attiecībā uz Latviju ir saredzami stratēģiskās kultūras elementi, kas pastiprina tēzi, ka stratēģiskās kultūras strāvājumi ietekmē Polijas ārpolitisko domāšanu un rīcību attiecībā uz teritorijām, kas vēsturiski atradušās Polijas politiskajā un kultūras telpā. Viens no Polijas identitātes elementiem, kas pastiprina Polijas saikni ar Latgali, ir katolicisms, jo Latgale ir vienīgais no četriem novadiem Latvijā, kurā dominējoša reliģija ir katolicisms. Jāsecina, ka Giedroica doktrīna acīmredzami ir identificējama Polijas ārpolitikā uz Latgali.

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## ***THE INCREASE OF COMPETITION IN ESTONIAN FOREIGN POLICY IN RELATIONS WITH OTHER BALTIC STATES: 1995-2004***

The historical development of three Baltic countries – Estonia, Latvia, and Lithuania – during the beginning of the 20th and 21st century was generally similar. The three countries are also geographically connected (although Estonia and Lithuania do not have borders with one another), similar in main foreign policy concepts, relatively small population and minimal territory; and had the similar perception of outside countries on the Baltic's as a single region, especially in the beginning of 1990s.

Considering these connecting factors, one of the foreign policy tactics of the Baltic countries is possibility to carry out the common action – cooperation with one another. In such case, a question arises – what about the basic ideas as a general ground for need to cooperate between these small states? Is there more support or criticism prevailing for cooperation between the neighbors?

The goal of this article is to analyze the ideas of Estonia's politicians and researchers on the necessity to carry out a closer foreign policy cooperation amongst the Baltic countries before their joining of the European Union and to identify the reasons why so much critical ideas appeared.

The article will try to answer 2 possible assumptions:

- 1) the criticism of the Baltic direction means Estonia's strong departure from the cooperation between the Baltic states,
- 2) "Estonia as a Nordic country" - a smart tactical step to facilitate Estonia's faster accession to the European Union.

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## ***THE INFLUENCE OF AMERICAN AND EUROPEAN MUSICAL THEATER ON LITHUANIAN MUSICAL DEVELOPMENT***

The American musical developed out of the intermingling of a number of musical – theatrical traditions of the late nineteenth century. The light and comic opera traditions of Paris, London, and Vienna ("operetta") were especially important in the development of American musical theater for a number of reasons and in two principal ways. Each of these traditions was at a point of full development in the second half of the nineteenth century, achieving some degree of aesthetic sophistication and commercial success just when its influence on American developments might be most strongly felt. More subtly, these types offered visions of European life that eventually became important for American representation.

Today, hit shows such as "The Phantom of the opera" may run for twenty years of more on Broadway, delight millions of people worldwide, and generate billions of dollars.

The history of the Broadway musical is littered with them. Broadway continues to succumb to the pull of mass culture. Musical theater may have come relatively late to North America and the European countries as a distinct form of cultural practice.

Operetta traditions were the principal European sources for models and topics as the American musical took shape. "The Black Crook" has tenaciously held on to its oft-claimed historical position as the "first American musical", even if it's spectacular run of revivals did not, like Gilbert and Sullivan best work.

Classical Lithuanian musical overtook the best traditions of American and European musical traditions.

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# TIESĪBU ZINĀTNE

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LAW

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## ***KORELĀCIJA STARP IZZINĀŠANU UN PIERĀDĪŠANU***

Savstarpējā saistība starp kriminālprocesuālo izzināšanu un pierādīšanu ir tik cieša, ka šos jēdzienus nav iespējams izskatīt un izvērtēt atsevišķi vienu no otra. Savukārt advokāta (aizstāvja) izzināšana, no vienas puses, tiek pilnībā iekļauta kriminālprocesuālās izzināšanas jēdzienā, bet no citas puses, tai ir dažas kopējas pazīmes ar pierādīšanu. Acīmredzami, ka aizstāvja izzināšana, kas tiek izskatīta pierādīšanas jēdziena kontekstā, ietver sevī pagātnes notikumu izzināšanu un apliecinājumu, kam ir liela nozīme, pierādot aizstāvības pozīciju konkrētajā lietā. Aizstāvja pierādīšanas darbībai ir raksturīgas visas īpatnības un pazīmes, kas piemīt jebkurai izzināšanai kā darbībai. Tā ir vispārīga raksta tēze, kura tiks pamatota un attīstīta šajā rakstā.

Ir jāatzīmē un jāatzīst, ka pastāv atšķirība starp aizstāvja izzināšanu un izzināšanu, kuru veic procesa virzītājs. Šādas atšķirības iemesls ir juridisks, un var pat teikt, mākslīgs. Šajā rakstā tiks vispusīgi izanalizēti “izzināšanas” un “pierādīšanas” jēdzienu nošķiršanas iemesli.

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## ***3-PARTY REPO***

Technology development, high level computerization in all areas are changing the pattern of the modern life. These changes are affecting all areas of business including the transaction persons entering. Evolution of the classical repo into new more complicated forms such as try party repo or repo with central counterparty could be explained by beforementioned. Despite the fact that the official “name” of the transaction is 3-party repo, it is still 2 party: transaction between two counterparties – obliged to deliver securities and money under repo transaction, but third party is an agent chosen by counterparties and ensuring settlement under repo transaction. Thus, the transaction became safer and risk to lose property in case of the default of the counterparty is less. The role of the 3-rd party in 3-party repo may be compared with the role of the bank ensuring payments under sale purchase transaction of the real estate, when purchaser provided to the bank money necessary for the transaction and seller may receive this money only in exchange of the title transfer documentation. Similarly, is in repo: purchaser receives securities only if he transferred money into possession of the 3-rd party, seller receives money if he transferred securities into possession of the 3-rd party. It means that settlement occurs if both parties performed their obligations. So, the control over the property during all period of the transaction consisting of two legs (purchase and repurchase) is exercised by 3-rd party. There exist two options in 3 party repo: the control over the execution of obligations by both counterparties (payment/settlement) on settlement dates or control over the collateralised securing during all period of repo which accomplished with control of execution of obligation on settlement dates. Latvian market practise are not familiar with 3-party repo, and as shows our research only one third of questioned market experts heard and may explain the nature of 3-party repo.

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## ***A VICTIM OF TRAFFICKING IN HUMAN BEINGS: VICTIMOLOGICAL PROBLEMS***

Nowadays one of the topical issues of criminology is a victim of a crime. If, in the past, the emphasis was placed on the research of a criminal in the criminological studies, then, in recent years, attention has also been paid to a victim of the criminal offense. As a result of criminal activity, there is a significant impact on the sense of security of the individual and the society. One must accept the view that one of the most extreme forms of victimization is the slavery that is nowadays called human trafficking. Trafficking in human beings is not a new phenomenon, it was legal in the early stages - the presence of socially and legally illegal human beings or slaves possessed by other persons. Professor Julia Davidson points out that the modern form of slavery is often crueller and more dangerous than it was in the past, legal slavery in the US and elsewhere in the world which gave the slaves some autonomy. Modern human trafficking is an illegal activity and therefore has a high latency level (Davidson, 2010).

Today, human trafficking is a topical, global, complex social and criminal problem. Moreover, as a result of the global economic development and migration processes demand generates supply. The aim of the study is to reveal the victimological

problems of victims of trafficking in human beings. It must be acknowledged that the victimological research of victims of human trafficking is as important as the criminological studies of this crime. This issue is particularly important in Latvia.

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## ***ADMINISTRATĪVĀ ATBILDĪBA PAR PATVAĻĪGU BŪVNICĪBU LIETUVAS UN LATVIJAS REPUBLIKĀS***

Latvijas Republikā (turpmāk – Lv) no 01.10.2014. spēkā ir jauns Būvniecības likums. Arī Lietuvas Republikā (turpmāk – Lt) 01.01.2017. stājies spēkā jauns Būvniecības likums.

Darba mērķis ir salīdzināt abās valstīs noteikto atbildību būvniecībā, kura ir definēta nesen, un salīdzināt, kāda ir administratīvā atbildība par pārkāpumiem būvniecībā abās valstīs.

Vienlaikus tiek apskatīts arī likumprojekts par grozījumiem Lv Būvniecības likumā, pamatojoties uz kuriem, administratīvā atbildība tiks noteikta Būvniecības likumā, bet no 01.01.2020. Lv stāsies spēkā jauns Administratīvās atbildības likums un Latvijas Administratīvo pārkāpumu kodekss zaudēs spēku.

Iegūti secinājumi, ka patvaļīgas būvniecības definējums un ēku iedalījums 3 grupās Lt un Lv ir līdzīgs.

Būvniecības kontroli Lt veic Lietuvas Vides ministrijas Teritoriālās plānošanas departaments un Valsts Būvinspekcija, bet Lv pašvaldību būvvaldes un noteiktos gadījumos Būvniecības valsts kontroles birojs.

Lai novērstu patvaļīgu būvniecību, Lt ir tiesības sagatavot projekta dokumentāciju un, samaksājot neatļautās būvniecības apstiprināšanas iemaksu, kuras apmēru ietekmē patvaļīgi veikto būvdarbu vērtība, saņemt būvniecības atļauju. Lv būvvalde vai birojs pieņem lēmumu par iepriekšējā stāvokļa atjaunošanu vai atļauju veikt būvniecību pēc būvniecību regulējošu normatīvo aktu prasību izpildes.

Par patvaļīgo būvniecību noteikta administratīvā atbildība naudas soda veidā. Lv sods fiziskām personām no 70 euro līdz 700 euro (par pārbūvi, vienkāršotu atjaunošanu) un no 140 euro līdz 1400 euro (par patvaļīgu būvniecību), juridiskām no 200 euro līdz 4300 euro un par patvaļīgu būvniecību no 700 līdz 7000 euro.

Lt pārkāpumu sankcijas un naudas sodi ir noteikti atkarībā no ēkas grupas un darbu veida, secināts, ka naudas sodi Lt kopumā ir lielāki nekā Lv, pat līdz 60 000 euro.

Turklāt, ar likumprojektu par grozījumiem Lv Būvniecības likumā, naudas sodus Lv paredzēts samazināt, kas var negatīvi ietekmēt atbildību būvniecībā nākotnē.

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## ***ATBILSTĪGA ATLĪDZINĀJUMA PROBLEMĀTIKA***

Zaudējumu atlīdzība Latvijas tiesībās ir primāri regulēta ar Latvijas Republikas Satversmes 92.panta trešo teikumu, proti, nepamatota tiesību aizskārums gadījumā ikvienam ir tiesības uz atbilstīgu atlīdzinājumu. Ir pamats nošķirt atlīdzības prasības pret privātpersonām civilprocesa un kriminālprocesa ietvaros, un atlīdzības prasības pret valsti, kuras, savukārt tiek regulētas administratīvā procesa ietvaros.

Jāatzīst, ka atbilstīga atlīdzinājuma problemātika tiek bieži analizēta judikatūrā un ir daļēji jāpiekrīt Latvijas Republikas Augstākās tiesas nostājamai, proti, ka ir nošķirama virkne principu, kas ir jāievēro atlīdzinājuma noteikšanā. Lai atlīdzinājums būtu atbilstīgs Latvijas Republikas Satversmes 92.panta izpratnē, tam ir jābūt efektīvam tiesiskās aizsardzības līdzeklim (sk. 2007.gada 1.marta sprieduma lietā Nr.SKA-54/2007 8.punktu). Jēdziens atbilstīgs atlīdzinājums nozīmē, ka atlīdzinājumam ir jābūt taisnīgam. Atlīdzinājumam ir jāsniedz gandarījums personai, kuras tiesības ir tikušas aizskartas (sk. 2011.gada 18.februāra sprieduma lietā Nr.SKA-161/2011 16.punktu).

Taču autores prāt tiesiskās aizsardzības efektivitātē un atbilstīgs atlīdzinājums, bieži vien nav jēdzieni, kuri pārklājas. Tiesības var būt efektīvi aizsargātas, bet vai dotā aizsardzība ir taisnīga, samērīga un visbeidzot atbilstīga un kā to pierādīt, vai kā noteikt atlīdzinājuma apmēru, jautājumi judikatūrā tiek atstāti atklāti. Kaut arī juridiskajā literatūrā ir minēts, ka izšķirošs ir tieši atlīdzinājuma līdzeklis, kurš nodrošina efektīvu tiesisko aizsardzību konkrētajam tiesību aizskārumam, visbiežāk atlīdzinājums tiek saprasts naudas izteiksmē, bet katras personas izpratne par naudas apmēru, kurš rada gandarījumu, viennozīmīgi ir atšķirīgs un pat nesalīdzināms.

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## ***ATLĪDZINĀJUMS NAUDĀ PAR ZAUDĒJUMIEM UN NEMANTISKO KAITĒJUMU PĒC SATVERSMES TIESAS SPRIEDUMA***

Tas vien, ka Satversmes tiesa ir atcēlusi kādu likumu (likuma normu), atzīstot to par neatbilstošu augstāka juridiskā spēka likumam (likuma normai), vēl nenozīmē, ka personai, kuras tiesības bijušas nepamatoti aizskartas, ir ticis nodrošināts efektīvs tiesību aizsardzības līdzeklis. Efektīvs tiesību aizsardzības līdzeklis šai personai būs nodrošināts tad, kad tiks izpildītas visas uz konkrēto tiesību pārkāpuma gadījumu attiecināmās tiesību aizsardzības līdzekļa funkcijas, tostarp arī tiks izpildīta

kompensācijas un samierināšanas funkcija. Tieši kompensācijas un samierināšanas funkciju izpilde parasti ir pamatojums tam, lai piešķirtu personai atlīdzinājumu naudā. Retāk atlīdzinājums naudā var kalpot sodīšanas funkcijas izpildei, taču tikai tajās valstīs, kur tiek atzīta sodošā rakstura kompensācija.

Latvijas tiesību sistēmā ir pierasts atlīdzinājumu naudā piešķirt par zaudējumiem un nemantisko kaitējumu. Atlīdzinājums naudā par zaudējumiem tiek piešķirts, lai izpildītu kompensācijas funkciju, bet atlīdzinājums naudā par nemantisko kaitējumu – samierināšanas funkciju. Šī priekšlasījuma ietvaros tiks izvērtēts, kādos gadījumos pēc Satversmes tiesas sprieduma, kurā konstatēts personas tiesību nepamatots aizskārums, valstij var būt nepieciešams atlīdzināt uz prettiesiskā likuma (likuma normas) pamata radītos zaudējumus un nemantisko kaitējumu, kādi ir šāda atlīdzinājuma piešķiršanas pamatnoteikumi un kādas juridiskās atbildības ietvaros atlīdzinājums naudā tiek piešķirts, ņemot vērā, ka juridiskās atbildības ietekmē to, pēc kādām tiesību normām tiks piešķirts atlīdzinājums naudā.

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## **BALANCED LEGAL FRAMEWORK FOR INSOLVENCY PROCEEDINGS OF LEGAL PERSONS, A PRERECONDITION FOR A STABLE BUSINESS ENVIRONMENT**

National Development Plan of Latvia for 2014–2020 in its predefined priorities stated, that one of the priorities is “Growth of the National Economy”. Besides aforementioned priority, one of the strategic objectives propose Outstanding business environment, as coherent regulatory framework, the operation of a stable state support and monitoring system, public services oriented towards the needs of businesses, clear and competitive environment for the start-up and development of business activity aiming, that anyone willing to do so could establish a business, work and live in Latvia. In the research author propose to look upon the business environment not from the point of it's outstanding, but from the perspective of stability.

Considering authors thesis, incorporated in the abstracts and proceedings, presented at the 59<sup>th</sup> and 60<sup>th</sup> International Scientific Conference of Daugavpils University, author continues the research of the insolvency process of legal persons. Analyzing legal framework, both the functional and institutional levels, author emphasize, that the improvements and amendments to the laws and regulations, made by legislator changed whole sphere of insolvency proceedings, especially of legal persons.

To make conclusions and proposals of the research there are used general scientific and interpretation of legal norms methods. General scientific methods: Descriptive – identifying the key terms and definitions of the research. Analytical – studying political planning documents, laws and regulations. Dogmatic – conducting a comprehensive analysis of the legal framework that defines priorities and strategic objectives, set by the planning documents, insolvency proceedings and their impact on the stability of business environment. The methods of interpretation of legal norms have been also used in the research. Grammatical – by examining the meaning and substance of the notions included in legal norms, assessing legal norms from the grammatical aspect. Systematic – by examining legal framework of insolvency proceedings. Teleological – by examining the intention of the legislator when adopting improvements and amendments to laws and regulations, in relation to reaching balanced business environment in correlation with objectives, set by the political planning documents.

**Natalja Saratova**

## **CIETUŠĀ CIVĒKTIESĪBAS UN TO AIZSARDZĪBA KRIMINĀLPROCESĀ**

Cietušā cilvēktiesības saistītas ar krimināltiesisko attiecību taisnīgu noregulējumu un tā stāvokļa atjaunošanu (iespēju robežās), kāds pastāvējis pirms noziedzīgā nodarījuma. Līdz ar cietušā iesaistīšanos procesa norisē, ir svarīgi apzināt un nodrošināt viņa cilvēktiesības, jo noziedzīgā nodarījuma rezultātā izmainās juridiskie un faktiskie apstākļi, kādos persona atrodas.

Cietušā spēja integrēties sabiedrībā pēc noziedzīgā nodarījuma nav tikai cietušā problēma. Visas sabiedrības interesēs ir tas, lai noziedzīgā nodarījuma sekas pēc iespējas mazāk ietekmētu tālāku cietušā ikdienu. Valstij jārada atbalsta sistēma cietušās personas pilnvērtīgai atgriešanai sabiedrībā, nodrošinot savlaicīgu emocionālu, materiālu un juridisku palīdzību.

Raksta mērķis ir kriminālprocesa jautājumu, kas saistīti ar cietušā cilvēktiesībām apzināšana uz analīze.

Analizējot nacionālo tiesību aktu normas, to piemērošanas praksi un ņemot vērā tiesību doktrīnas atziņas, autore identificē problēmjautājumus cietušo cilvēktiesību nodrošināšanā kriminālprocesā, ka arī sniedz to iespējamus risināšanas priekšlikumus normatīvā regulējuma uzlabošanai.

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## **CONTROL OF THE LEGALITY OF THE PROCESSING OF DATA RESULTING FROM OPERATIONAL ACTION**

The effectiveness of legal rules in general and the rights of data subjects in particular depend to a large extent on appropriate mechanisms for their implementation. In the digital age, data processing has become comprehensive and increasingly difficult to understand. In order to reduce the imbalance between data subjects and controllers, individuals have been given a certain right to exercise greater control over their personal information.

Irrespective of the importance of taking operational action measures, the data subject is also entitled to the protection of his or her data, even to a limited extent, in this processing.

Operational subjects are not obliged to inform data subjects in the framework of the Investigatory Operations Law regarding operational measures taken against them in a general manner. However, this does not mean that the data subject is thus denied access to information on the processing of their data in the context of an operational activity if the measures are to be taken in a general manner.

If any of the restrictive conditions for access rights occur and operational measures have been taken against the data subject in a general manner, the individual is entitled to refer the lawfulness of his or her data processing to the prosecutor's office or immediately to the court (administrative court).

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## ***CRIMINAL RESPONSIBILITY FOR CRIMES AGAINST INTELLECTUAL PROPERTY UNDER THE LEGISLATION OF EUROPEAN COUNTRIES***

Keywords: intellectual property, criminality, the criminal legislation, copyrights, invention rights, European legislation. The article is devoted to the issues of criminal law ensuring the protection of intellectual property in some European countries. The author explores the European legislation on responsibility for violation of intellectual rights. Special attention is paid to the structure of legal regulation of criminal liability for these offenses. The analysis of the criminal legislation of Latvia on the protection of intellectual property and the law enforcement practice shows that at the moment it requires serious legislative changes. This situation is explained by the relatively recent history of intellectual property protection in Latvia. In this context, it seems appropriate to refer to the legislation of other European countries that have a wealth of experience in dealing with encroachments on intellectual property.

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## ***CYBERCRIME AGAINST GOVERNMENT: COMPARATIVE ANALYSIS OF LATVIA AND THE WORLD COUNTRIES***

Keywords: cybercrime, cybersecurity, government, computer crimes

The age of technologies has brought to our lives a lot of interesting things and opportunities. Technologies helps us to communicate easy all over the world, to send and receive useful information, to look through and pay bills quickly using online banking systems, even to use state institution's opportunities. As a result of worldwide digitalisation process, crimes on the Internet became topical.

Government as well as individuals is in danger. There are a big range of cybercrimes connected with the government. One of the priorities of legislative and law enforcement activities is the protection of citizens' rights and legitimate interests against computer crimes, as well as ensuring the security of information of state and legal persons.

The aim of the paper is to analyse cybercrimes against government and to compare Latvia and other countries approaches to fight with it.

Main tasks of the paper are to study and analyse legislative documents and scientific literature on the topic, to make a comparative analysis of Latvia and the world countries actions against cybercrime, to draw conclusions.

Main methods are scientific literature analysis, legal literature and policy analysis, analysis of findings.

The paper has mostly theoretical knowledge that can be used also in practice when dealing with cybercrime problems against government.

**Jeļena Fedotova**

## ***DYNAMICS OF PRISONERS' EMPLOYMENT IN DETENTION FACILITIES OF LATVIA AND ITS INFLUENCE ON THEIR RESOCIALISATION CHANCES***

Employment in detention facilities is one of the greatest problems in Latvian prisons, which is indicated both by previous studies in our country and by experts and professionals working in detention facilities. Employment in a place of detention should be considered not only as one of elements of the complex prisoners' social rehabilitation system, but also as a set of measures, as a result of which the number of offences in detention facilities is being reduced, the probability of recidivism is getting lower, prisoners' self-esteem and sense of responsibility is increasing, as well it gives a social-economic input into state development is received. Prisoners' employment is a positive element of detention facility management, training and sentence, and a part of prisoner's resocialisation process. Accordingly, insufficient prisoners' employment problem can be considered as the most fundamental in the process of prisoners' resocialisation.

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## **EMOCIONĀLĀS VARDARBĪBAS ĢIMENĒ PIERĀDĪŠANAS PROBLEMĀTIKA**

Ģimenes attiecību specifika izpaužas ikdienas saskarsmē, kopdzīvē, kopīgās mājsaimniecības vešanā, intīmās attiecībās, radnieciskās attiecībās, sociālās kontroles stingruma neesamībā, utt. Tuvas ģimenes attiecības ļauj varmākai piemērot tādas vardarbības izpausmes formas, kas var izpausties ne tikai fiziskā spēka piemērošanā. Emocionālā vardarbība ir viena no vardarbības ģimenē izpausmes formām, kas bieži sastopama ģimenēs. Sabiedrībā vairāk pievērš uzmanību fiziskai vardarbībai un tās negatīvajām sekām, bet emocionālās vardarbības sekas dažreiz ir daudz smagākās. Dzīvojot pastāvīgā emocionālajā stresā, var novest pie psiholoģiskām traumām, persona var zaudēt dzīves orientierus, zaudēt vēlēšanās kaut ko darīt, nespēt priecāties par dzīvi, just vainas, kauna, vilšanas, bailes sajūtas utt.

Juridiskajā autoru praksē sievietes bieži kļūst par emocionālās vardarbības upuriem un vērsās pēc palīdzības, lai saņemtu atbalstu, atjaunotu drošību un vairākos gadījumos šķirtu laulību un norobežotu bērnus no negatīvas ietekmes. Taču, lai iesniegtu pieteikumu par pagaidu aizsardzību pret vardarbību, ir nepieciešami pierādījumi, kas apstiprina emocionālās vardarbības esamību. Turklāt personai jāpierāda, ka tas nav vienīgais gadījums, bet sistemātiskā vardarbības piemērošana. Šajā rakstā autori analizē šīs vardarbības formas pierādīšanas problemātiku no praktiskās puses.

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## **EMPLOYER'S RIGHT TO TERMINATE THE EMPLOYMENT RELATIONSHIP WITH THE EMPLOYEE FOR AN IMPORTANT REASON BY BRINGING AN ACTION TO COURT**

The first part of Section 101 of the Labor Law (LL) set 11 cases in which the employer may terminate the employment contract in writing on the basis of the circumstances related to the employee's behavior, his abilities or the carrying out of economic, organizational, technological or similar measures in the enterprise.

According to Section 101 (5) of the LL, the employer may exceptionally, within one month, bring an action for termination of employment relations in cases not mentioned in Section 101, one of the LL, if there is an important reason for him. Any such circumstance which, on grounds of morality and mutual justice, prevents the continuation of the employment relationship shall be recognized as such. The issue of the existence of an important reason is determined by the court at its discretion.

Section 101 (5) of the LL does not provide for observance of the written form of the notice of dismissal by the employer, as a result of which the circumstances underlying the termination of the particular employment contract are not mentioned. Also, before the termination of the employment contract, the employer is not obliged to ascertain whether the employee is a member of the Trade Union, as provided for in Section 101, section six of the LL. Thus, in this case, the special legal provision according to Article 110 of the LL is not applicable.

The Senate has already indicated that in order to terminate labor relations in accordance with Section 101, paragraph five of the LL, there must be a completely independent basis, which cannot be related to the cases specified in Paragraph one of this Section. In addition, unlike Section 101, paragraph one of the LL. The court decides whether there is an important reason for the employer to demand termination of the employment relationship with the employee. Therefore, the task of the court first is to check whether there is any other ground for termination of the employment contract laid down in the Labor Law, and only then to assess the issue of an important reason (Senate judgment of 14 May 2008 in case No. SKC-211/2008 and No. SKC-1219/2013 of April 8, 2013).

Taking into account the above, the author concludes if an employer applies Section 101, paragraph five of the LL, the employee becomes aware of the willingness of the employer to terminate the employment contract only upon receipt of a letter from the court regarding the provision of explanations. Also, the employer does not need a Trade Union permit in case of a notice of dismissal, as a result of which the employee has the opportunity to have less protection.

**Arija Vitte**

## **INTERCOUNTRY ADOPTION DEVELOPMENT TRENDS IN LEGAL SYSTEM**

The institute of adoption includes complicated problems of ethical and legal character requiring considering the interests of the child as the legal relations between persons that are not consanguine become analogous to the relations of parents and children in the result of adoption.

Latvia has joined the UNO Convention of November 20, 1989 on children's rights. Accordingly, in the legal acts it has declared the rights and interests of children and their protection. Still, not all countries have ratified this convention; therefore, also the bilateral or multilateral contracts between countries, which stipulate collision norms for solving family issues in the sphere of legal relations, are of great importance.

The adoption process is regulated by the law in the country, in the territory of which it takes place. Therefore, it is essentially important to adapt the normative acts of separate countries in compliance with the international legal norms as it facilitates and unifies the process of adoption on the international level.

The European Convention of April 24, 1967 on adoption of children has to be used as the basis for approximation of the legal norms. It declares that in the member countries of the European Council there are different views on the principles of adoption, procedure and legal consequences. Hence, recognition of common principles and practice on the issues of children adoption will help reduce the difficulties caused by these differences and at the same time will favour the welfare of the adopted children.

As regards foreigners, there is a limitation in the selection of the adoptees in Latvia as the Civil law determines that at the request of a foreigner, who does not have a residence permit in Latvia, a child can be adopted having a permit of the responsible minister and only in case, if it is not possible to ensure upbringing in a family and adequate care. Solving of this issue in Latvia is based on the Hague Convention of May 29, 1993 on protection of children and cooperation in foreign adoption issues, the Article 28 of which defines liberty of the countries resolving specific issues.

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## **IZZINĀŠANA UN PIERĀDĪŠANA TIESAS DARBĪBĀ**

Tiesa ir tā iestāde, kas izzina procesuālo pierādīšanu un uz iegūto zināšanu pamata piemēro tiesību normas. Ideālā, sacīkstes procesā tās darbība nedrīkstētu skart pierādīšanu, ko veic attiecīgais pierādīšanas subjekts. Tā varētu skart pierādīšanu, ko veic pierādīšanas subjekts, vienīgi izzināšanas aspektā. Tiesas iekļaušana pierādīšanas subjektu skaitā padomju tiesībās vispār neparedzēja nule minēto pieeju un tikai likumdevēja atteikšanās no izmeklēšanas procesa un tās ietekmes uz procesuālo procedūru kopumā ļauj pa jaunam, vadoties no sacīkstes principa un pierādīšanas subjektu līdztiesības pozīcijām, raudzīties uz procesuālo pierādīšanu.

Ja izzināšana veido tiesas darbības, kas balstīta uz procesuālām interesēm, jēgu, tad pierādīšanas subjektam izzināšana ir tikai tās darbības sastāvdaļa. Tas ir saistīts ar to, ka pierādīšanas subjekta gadījumā izzināšana ir tikai daļa no tās darbības. Pierādīšanas subjekta gadījumā izzināšana apvienojas ar savas procesuālās darbības „attaisnošanu” un pamatošanu, un tā (izzināšana) ir fakultatīva attiecībā pret norādītajām aktivitātēm.

Autore secina, ka tiesas loma attiecībā pret pierādīšanu – tā ir izzināšana un novērtējums; attiecībā pret tiesību piemērošanu – tā ir tiesas procesuālā pamatfunkcija. Jebkura tiesas iejaukšanās tiesas pierādīšanā, ko veic attiecīgais subjekts, automātiski iekļauj tiesu procesuālās pierādīšanas subjektu skaitā, līdz ar to rupji pārkāpjot tādas tiesvedības principus un pamatus kā sacīkste, pušu līdztiesība, likumība, taisnīgums utt.

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## **KRĀPŠANA UN KIBERKRĀPŠANA: KOPĪGAIS UN ATŠĶIRĪGAIS**

Tehnoloģiskās iespējas arvien vairāk ļauj personām noziedzīgos nodarījumus veikt interneta vidē. Viens no noziedzīga nodarījuma veidiem, ko var izdarīt interneta vidē un kuru skaits pašreizējā laikā pieaug, ir krāpšanas. Krāpšana praksē ir viens no izplatītākajiem un sarežģītākajiem mantas nolaupīšanas veidiem. Šo noziedzīga nodarījuma veidu klasiskā (tradicionālā) izpratnē pieņemts saistīt ar noziedzīgajām darbībām fiziskajā vidē, kad vainīgā persona, izmantojot cietušās personas uzticību vai ar viltu panāk to, ka cietušais labprātīgi atdot savu mantu vai tiesības uz šo mantu. Taču pieaugot digitālo tehnoloģiju izmantošanas iespējām, palielinās to noziedzīgo nodarījumu skaits, kas tiek paveikti interneta vidē, un krāpšana ir uzskatāma par vienu no visizplatītākajiem kibernetizētajiem. Rakstā tiks analizēti Krimināllikuma 177. pantā paredzētā noziedzīga nodarījuma objekta, subjekta, objektīvās puses un subjektīvās puses elementi, norādot uz kopīgām un atšķirīgām pazīmēm krāpšanas un kiberkrāpšanas vidū. Tas ļaus izprast kiberkrāpšanas saturu, paredzēt iespējamās krimināltiesiskos riskus un pilnveidot Krimināllikuma 177. pantā ietvertā noziedzīga nodarījuma sastāvu.

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## **KREDITORU INTEREŠU AIZSARDZĪBA KAPITĀLSABIEDRĪBU REORGANIZĀCIJAS PROCESĀ**

Civiltiesiskajās attiecībās ir būtiski nodrošināt tiesisko līdzsvaru starp kreditoru un parādnieku tiesībām. Reorganizācijas process kapitālsabiedrībā ir ne tikai veids kā veikt kapitālsabiedrību sadalīšanu, pārvairošanu vai pievienošanu, bet arī veids kā parādniekam iegūt lielāku labumu kā kreditoram. Proti, kapitālsabiedrību reorganizācijas gadījumā tikai daļēji tiek nodrošinātas tiesiskais līdzsvars starp kreditoru tiesībām un parādnieka pienākumiem. Tomēr reorganizācija ir efektīvs tiesiskais mehānisms, lai nodrošinātu kapitālsabiedrības komercdarbības saglabāšanu. Taču nav šaubu, ka ir nepieciešams mehānisms kā efektīvi aizsargāt kreditoru likumiskās tiesības. Referātā tiks skartas problēmas, kas saistītas tieši ar kreditoru tiesību aizsardzības mehānismu izveidošanu kapitālsabiedrību reorganizācijas procesā.

## **ĻAUNPRĀTĪGĀ NEPAKĻAUŠANĀS POLICIJAS DARBINIEKA LIKUMĪGAM RĪKOJUMAM VAI PRASĪBAI**

Atbilstoši likumam "Par policiju" 1.pantu, policija ir apbruņota militarizēta valsts vai pašvaldības institūcija, kuras pienākums ir aizsargāt personu dzīvību, veselību, tiesības un brīvības, īpašumu, sabiedrības un valsts intereses no noziedzīgiem un citiem prettiesiskiem apdraudējumiem. Savukārt likuma "Par policiju" 3.pantā ir noteikts, ka viens no policijas uzdevumiem ir garantēt personu un sabiedrības drošību. Policijas funkciju realizācijai, katram policijas darbiniekam tiek piešķirtās speciālās pilnvaras, tajā skaitā pieprasīt no citām personām izbeigt vai pārtraukt pretlikumīgas darbības, kuras apdraud valsts aizsargātās intereses. Šādu pilnvaru realizācija katram pārkāpējam uzliek par pienākumu uz tiem reaģēt un pārtraukt pretlikumīgas darbības. Tomēr, analizējot vairākas prakses situācijas, kā arī tiesu praksi, ir pamats uzskatīt, ka dažreiz pārkāpēji nereaģē uz policijas darbinieku rīkojumiem, izradot klāju necieņu pret tiem. Bez tam šāda nepakļaušanās var būt saistīta ar vardarbības draudiem vai vardarbības pielietošanu pret policijas darbiniekiem. Lai disciplinētu un audzinātu personas, kuras apzināti neievēro policijas darbinieku rīkojumus, Latvijā ir izstrādāts tiesiskais mehānisms, kas paredz piespiedu ietekmēšanas līdzekļus pret minētajām personām. Balstoties uz esošo normatīvo regulējumu, policijas darbiniekam ir tiesības pielietot fizisko spēku, speciālos cīņas paņēmienus vai speciālos līdzekļus, lai panāktu rīkojuma izpildi. Bez tam Latvijas Administratīvo pārkāpumu kodeksā 175.pantā (Ļaunprātīga nepakļaušanās policijas iestādes darbinieka, robežsarga vai zemessarga likumīgam rīkojumam vai prasībai), Krimināllikuma 269.pantā (Uzbrukums varas pārstāvim un citai valsts amatpersonai) un Krimināllikuma 270.pantā (Pretošanās varas pārstāvim un citai valsts amatpersonai) ir paredzēta administratīvā un kriminālatbildība par pretošanos vai nepakļaušanos policijas darbinieka likumīgajām prasībām. Minēto mehānismu pielietošana ir vienmēr aktuāla, jo saskaroties ar situācijām, kuru atrisināšanā ir jāpiedalās policijas darbiniekiem, dažreiz tiek novērotā pretdarbība, kas nereti pārveidojas agresīvajā rīcībā. Nonākot šādās situācijās, policijas darbiniekiem ir jābūt spējīgiem pareizi izvērtēt notikumu un precīzi izvēlēties tiesisko mehānismu, jo pretējā gadījumā var tikt apdraudēta uzskatās lietvedības izskatīšanas mērķi un uzdevumi.

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## **METHOD OF USING OF DACTYLOSCOPIC POWDERS FOR VISUALISATION OF PAPILLAE PATTERN PRINTS FROM DEAD BODIES**

In order to develop an approach of using dactyloscopic powders for visualization of papillae pattern prints from dead bodies, the author conducted a series of experiments where 1419 latent papillae pattern prints were deposited onto the skin of 43 dead bodies. 33 of them were men aged 25 to 81 years and 10 women aged 37 to 95 years.

Experimental papillae pattern prints were deposited in the time frame from 24 to 96 hours after the death onto such parts of the body: neck, shoulders, upper arm and forearm, thigh and shin, ankles, chest, abdomen and hips. Prints were deposited by simulating the mechanism of formation of grip and pressure prints. The length of the contact was from 10 to 180 seconds. Depositing them the variable crushing force was used. Papillae pattern prints were deposited onto the skin of a dead body in the natural way. Prints were deposited on the dead body by the donor's natural sweat and grease substance without artificially adding sweat and grease substance from other donor's body parts, for example, neck. It means that the formation of papillae pattern prints was close to natural print formation circumstances.

During a series of experiments dominant adhesive agents - Swedish Black, Black Special and Special Blower Black and dominant recovery agents – dactyloscopic foil Gelantin Lifters White and Latent Print Tape 3"x 360" LP-300, as well as silicone paste White silicone with paste hardener.

Basing on the results of a series of experiments the author has developed her own method of using of dactyloscopic powders for visualisation of papillae pattern prints from dead bodies in accordance with the existing laws and regulations and the requirements of the article 5 „Methods of Forensic Expert-examination and Their Register” of the „Law on Forensic Experts”.

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## **MILITĀRĀS DROŠĪBAS NODROŠINĀŠANAS UN TĀS ADMINISTRATĪVI TIESISKĀ MEHĀNISMA PILNVEIDOŠANAS JAUTĀJUMI**

Rakstā tiek sniegta militārās drošības galveno draudu analīze, aplūkota Baltijas reģiona (Reģions) militārās drošības sistēmas esošā struktūra un tās pamatelementu stāvoklis, analizētas attīstības perspektīvas un militārās drošības nodrošināšanas sistēmas iespējamie administratīvi tiesiskā mehānisma pilnveidošanas virzieni.

Mūsdienu pasaulē notiekošās pārmaiņas ģeopolitikas, sociālekonomiskajā un garīgi tikumiskajā sfērā, kā arī austrumu kaimiņu tiešā klātbūtne īpaši saasina Lietuvas Republikas nacionālās drošības nodrošināšanas problēmu. Pēc Lietuvas, Latvijas un Igaunijas neatkarības atjaunošanas un Reģiona demilitarizācijas, kas bija saistīta ar padomu karaspēka izvešanu no Lietuvas,

Latvijas un Igaunijas teorijas, pasaule nav kļuvusi drošāka, bet tās vienpolaritāti un karaspēka potenciālu joprojām uzskata par pasaules politikas visefektīvāko faktoru. Šie aspekti tā laika tālredzīgajiem vadītājiem deva papildu stimulu meklēt jaunus dialogus un vēlmi šo Reģionu pievienot Ziemeļatlantijas blokam, kam sekoja iestāšanās Eiropas Savienībā.

Dažu valstu politiskās elites politiskās spēles un to viduslaiku centieni 90.-o gadu beigās un XXI gadsimta sākumā priekšplānā izvirzīt „vispārcilvēciskās vērtības“, parādīt Reģionu „sabiedroto“ un „draugu“ lokā neguva īpašus panākumus, bet radīja Baltijas valstu pozīciju pavājināšanos pasaules politikas arēnā un to ietekmes sfēru mazināšanos. Izveidojušās situācijas īpatnība militārās drošības nodrošināšanas jomā un tās attīstības nenoteiktība dažādu valstu zinātniekiem, politiķiem un militārajiem pārstāvjiem liek atkal pievērsties nacionālo interešu aizsardzības ar bruņotas vardarbības palīdzību problēmai. Potenciālajām kara briesmām un reāliem kara draudiem mūsdienās ir ļoti daudzveidīgas izpausmes: no hibrīdveida līdz konvencionālajām. Tā ir varas institūtu darbības viena no visprioritārākajām problēmām. Mūsdienu situāciju pasliktina Reģiona sarežģītais ekonomiskais stāvoklis, masveida emigrācija, zems dzimstības līmenis un augsts mirstības rādītājs, kā arī citi sociālie faktori, kas ietekmē iepriekš minēto Reģiona stāvokli.

Militārās drošības nodrošināšana un sakārtotas darbības tās administratīvi tiesiskā mehānisma īstenošanai ir jebkuras valsts vissvarīgākais darbības virziens. Militārās drošības nodrošināšanas galvenais mērķis ir kara draudu prognozēšana, novēršana, lokalizēšana un neitralizēšana. Ikvienai valstij savas militārās drošības nodrošināšana būtu jāaplūko demokrātiskas un tiesiskas valsts veidošanas, sociālekonomisko reformu īstenošanas, savstarpēji izdevīgas sadarbības un labu kaimiņattiecību starptautiskajās attiecībās, tālākas kopīgas un visaptverošas starptautiskās drošības sistēmas veidošanas, un pasaules saglabāšanas un nostiprināšanas kontekstā.

*Darba mērķis* ir veikt Reģiona militārās drošības galveno draudu analīzi, aplūkot militārās drošības nodrošināšanas administratīvi tiesiskā mehānisma sistēmas elementu pašreizējo stāvokli un noteikt iespējamo virzienu tās pilnveidošanai.

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## ***MINORS CRIMINAL TENDENCIES IN LATVIA***

Having a child in your life is an indescribable happiness and a responsibility for the rest of your life. In today's dynamic life, the time passes, children grow and parents often don't have time to talk with their children as a friend because parents are too busy after their work and they want to relax. As a result, parents don't have time to talk with their children as well as their relatives because they are too busy with their everyday problems. It cannot be forgotten that our children is our key to the future but child that is left alone can become a criminal because of its criminal behaviour. The author of this article will research minors criminal tendencies, their dynamic and character in Latvia from 2016 till 20.

***Ginta Krišcūne***

## ***NĀKOTNES PERSPEKTĪVAS LATVIJAS BĀRIŅTIESU SISTĒMĀ***

Atslēgvārdi: Reformas, Bāriņtiesas, Likums

Šobrīd Latvijas pašvaldības ir lielu pārmaiņu priekšā, jo jau šī gada laikā būtu jāpārņem konceptuāla vienošanās par administratīvi teritoriālās reformas pabeigšanas pamatprincipiem, bet jauns administratīvo teritoriju un apdzīvoto vietu likums Saeimā būtu jāpieņem līdz nākamā gada jūnijam. Šāds redzējums izriet no Vides aizsardzības un reģionālās attīstības ministrijas (VARAM) informatīvā ziņojuma “Par turpmāko rīcību administratīvi teritoriālās reformas pabeigšanai”, kas tika sagatavots, pamatojoties uz deklarācijā par Artura Krišjāņa Kariņa vadītā Ministru kabineta iecerēto darbību noteikto valdības darba prioritāti – administratīvi teritoriālās reformas (ATR) īstenošanu.

Šīs Deklarācijas 223.punktā norādīts, ka līdz 2021.gadam tiks īstenota vietējo pašvaldību reforma, apvienojot pašvaldības ilgtspējīgās un ekonomiski spēcīgās vienībās, kas spēj nodrošināt likumā minēto pašvaldību autonomo funkciju izpildi salīdzināmā kvalitātē un pieejamībā.

Šīs būtiskās pārmaiņas jeb reformas skars visas 119 pašvaldības Latvijā, kā arī visas pašvaldību izveidotās iestādes, tajā skaitā – bāriņtiesas, jo bāriņtiesa ir novada, vai republikas pilsētas pašvaldības izveidota aizbildnības un aizgādības iestāde un tās darbības teritorija ir attiecīgā novada vai republikas pilsētas administratīvā teritorija.

Pētījums ir par nākotnes perspektīvām Latvijas Bāriņtiesu sistēmā.

Pētījuma mērķis – noskaidrot atbildes uz vairākiem būtiskiem jautājumiem kā, piemēram: kādu pārmaiņu priekšā ir Latvijas bāriņtiesas? Kāda būs administratīvi teritoriālās reformas ietekme uz bāriņtiesu darbības efektivitāti? Kādus labās prakses piemērus varam pārņemt no citām Eiropas Savienības valstīm?

Pētījuma galvenais secinājums – ir būtiski mainījusies Bāriņtiesu loma (jēga un saturs) Latvijā, tāpēc ir nepieciešama bāriņtiesu reorganizācija.

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## ***SCRAP METAL AS A TOOL FOR VALUE ADDED TAX FRAUD***

Darba mērķis ir izpētīt un analizēt Latvijas tiesu praksi par komersanta iesaistīšanos krāpnieciskās darbībās ar nolūku gūt fiskālās priekšrocības atskaitāmā nodokļa veidā darījumos saistībā ar metāllūžņu iegādi un piegādi. Analizējot Latvijas tiesu praksi, autors konstatēja, ka komersanti deklarē metāllūžņu iegādes darījumus no komersantiem, kuri atbilstoši nodokļu administrācijas pieejamajai informācijai ir fiktīvi uzņēmumi, un faktiski nav spējīgi veikt metāllūžņu

piegādes, secīgi šo metāllūžņu piegādes ir noformētas tikai dokumentāri un par tām tiek atskaitīts priekšnodoklis. Ļoti bieži šādi secinājumi tiek izdarīti, ņemot vērā informāciju, kas raksturo darījuma partneri un tā spēju piegādāt metāllūžņus. Tāpat šādos darījumos komersanti daudzos gadījumos nepārliecinās par uzņēmumu personu pilnvaru apjomu un rīcības tiesiskumu, tostarp arī gadījumos, kad metāllūžņi tiek transportēti uz komersanta metāllūžņu pieņemšanas punktu gadījumos, kad sadarbības līgums nav noslēgts. Šādus darījumus raksturo licences neesamība metāllūžņu tirdzniecībai, kas pierāda to, ka komersanti nevarēja veikt metāllūžņu piegādes, trūkumi grāmatvedības attaisnojuma dokumentos, proti, tiek norādītas adreses, kas nav uzņēmuma juridiskā vai struktūrvienības adrese, līdz ar to tiek izdarīts secinājums, ka darījumi faktiski nav notikuši tādā veidā kādā to atspoguļo komersants. Atbilstoši Augstākās tiesas Administratīvo lietu departamenta judikatūrai ir svarīgs vērtējums, kāda rīcība, slēdzot darījumus, tostarp attiecībā uz darījuma partnera izvēli, konkrētos faktiskajos apstākļos būtu sagaidāma no komersanta kā rūpīga saimnieka, lai šādus darījumus varētu atzīt par ticamiem, iespējamiem un notikušiem. Ņemot vērā minēto, autors analizēja tiesu praksi attiecībā uz pievienotās vērtības nodokļa krāpšanas apkarošanas problēmām Latvijā saistībā ar metāllūžņu iegādēm.

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## ***SEPARATE TYPES OF CRIME INVESTIGATION METHODOLOGY***

The purpose of the investigation is not only to expose the perpetrators and to prosecute, not only to compensate for the damage caused by the crime, but also to clarify and eliminate the circumstances that have contributed to the crime and concealment of the foot. Crime investigation materials should provide recommendations for the prevention of similar crimes. In order to achieve a specific type of crime investigation methodology, to ensure its efficiency and effectiveness, forensics investigates criminal offenses. Criminals' attention is mostly drawn by the mechanism of crime and its component, such as crime and hiding techniques. Without knowledge of these techniques, the signs of using these techniques cannot be a crime. In principle, there is a principle in forensic science: the way of committing a crime to detecting a crime. That is why data on the method and type of crime are the starting point for the development of a specific type of crime investigation methodology. In addition to the techniques, this group will also contain general information describing other aspects of the crime, including the specific characteristics of a typical criminal, a typical victim, and the typical circumstances of a specific crime. Collaboration with operative staff, investigators, specialists (experts), citizens, mass media in the investigation process facilitates the search for suspects, ensures all possible information from material sources, effective conduct of individual investigative measures, detection of well-disguised episodes, investigation of crime conditions and crime. discovery of acquired property

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## ***SHAREHOLDERS' RIGHT OF LIMITED LIABILITY COMPANY TO INFORMATION***

Article 194 of the Commercial Law has defined certain shareholders' right of limited liability company (further – Ltd) to receive the information from the board of directors as to the company activities and to have an access to all company documents. Such a member's rights, however, are not absolute, but the legislator has indicated that it can be limited in each particular case by decision of shareholders' meeting, if there is a suspicion that one of its members might use the acquired information contrary to the company aim, causing essential harm or losses to the company, or to one of the members within the company, or the third parts.

Besides, the right to receive the information, as written in Article 194 of Commercial Law, in its broader sense envisages the right of the company member, included in Article 194 of Commercial Law, to receive the information on convening a meeting, agenda for the meeting (issues of discussion), and the right to draft decisions.

An important problematic issue to be analysed is the legal basis as to the right of information limitations and what might be the consequences of a breach of rights, which could affect either the subject who by realizing his/her personal rights has requested information, or by the effect of information on the further commercial activity of the company due to an unauthorized disclosure of information to the competing companies, or to the rights of the rest of the participants.

Implementation of such rights into life, conflict situations, refusal of company board to show the documentation and other important agreements to minority members, solution of conflict situations in legal proceedings, the results and the experience of other countries in this context, or the decision of company members meeting is a qualitative and fast legal instrument to limit the rights to information, taking into account the order of convening the meeting – 14 days being mandatory. Thus, it calls for a separate legal research.

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## **TAISNPĀRĀTĪGAS UN SAUDZĪGAS SERVITŪTA TIESĪBAS IZLIETOŠANAS IZPRATNE CIVILLIKUMA UN TIESU PRAKSES IETVARĀ**

Civillikumā jēdzieni "taisnpārāti" un "saudzīgi" nav definēti, kas bieži apgrūtina to izpratni un piemērošanas robežas. Bet pareizai minēto jēdzienu izpratnei, risinot ar servitūtu izlietošanu saistītus jautājumus, ir būtiska nozīme un katrā atsevišķā gadījumā tie jāpiepilda ar noteiktu saturu, jo pēc būtības šie jēdzieni atzīstami par ģenerālklausulu. Līdz ar to autores pētījums vēltīts padziļinātāminēto jēdzienu apskatam, to īpatnību atspoguļošanai, praktiskās piemērošanas problemātikai, kā arī tiesu prakses analīzei pētāmo jautājumu ietvaros. Atslēgas vārdi: servitūts, taisnpārāti, saudzīgi.

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## **THE DUAL NATURE OF PATIENT LEGAL PROTECTION IN THE MEDICAL TREATMENT RISK FUND**

A patient's regarding harm related to medical treatment and the compensation for this harm has a civil nature. Still the patient may employ their legal protection from harm related to medical treatment in two ways – in the civil procedure in court, and in an administrative procedure in the Medical Treatment Risk Fund (hereinafter – the Fund). When creating the Fund in Latvia, the understanding of it in the world practice has been transformed.

No consensus exists in the legal practice and the legal science on the application of the patient protection measures – the court or the Fund. Since the normative regulations do not provide a clear answer, different interpretations of the application are possible – different order of the court and the Fund, as well as their alternative application. The opinion expressed in the legal science on the Fund as an obligatory pre-trial stage is not supported unequivocally.

The principles for patient compensation from the Fund provided for in the normative regulations violate the patient's right to legal protection in case of harm related to medical treatment. These drawbacks of the normative regulations are also confirmed by the legal practice that has formed in relation to this issue.

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## **THE LEGAL DEFINITION OF CRYPTO ASSETS**

Cryptocurrencies or Crypto Assets appeared due to technological progress and the evolution of money as a completely liquid medium of exchange. Indeed, originally money fulfilled a function of exchange of goods. It was then assigned to gold as the universal equivalent. The next stage - transition to paper money, until the emergence of electronic money. The past ten years have seen the creation of a new class of digital instruments that are not issued by a sovereign institution or commercial bank, are not denominated in a sovereign unit, and do not have physical counterparts. Since these instruments may be used as a currency, they are variously labeled "electronic cash", "digital currency", "virtual currency", "cryptocurrency" or "Crypto Asset".

The Crypto Assets is a cryptographically protected decentralized digital currency used as means of exchange. Due to development of new technologies and innovations, the rate of using of cryptocurrency is rapidly increasing throughout the globe, replacing not only cash payment and payments by bank transfer, but also electronic or virtual payments. There are more than 2524 kinds of Crypto Assets in the world, and this data is changing every second. The law scholars have not yet reached a consensus regarding the nature and legal status of the Crypto Assets. The Crypto Asset possesses both the nature of obligations rights and property rights, since it may be both a commodity and means of payment. In some countries the approach to definition of Crypto Assets is different. The purpose of the article is to evaluate the legal status of Crypto Assets.

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## **THE OBJECTIVE OF PROTECTION OF PERSONAL DATA AND THE HISTORICAL DEVELOPMENT OF THE LEGAL FRAMEWORK**

Nowadays, the right to privacy is indispensable in every democratic society and inclusion of such rights in the constitution, guarantees legally the freedom of action of a natural person and, at the same time, the implementation of the other human rights, established in the fundamental law of the state. The institute of personal data protection was established by expanding the understanding of the content of the right to privacy in the 70s of the 19<sup>th</sup> century, when the government of several European country's initiated information processing projects, such as population census etc. For the development of information technology, more and more information on persons was kept and processed in electronic form. One of the legal problems was

the gathering of information on natural persons and the right to privacy. In order to ensure the protection of privacy, separate European countries, on their own initiative, established a laws on data protection. The first laws on the protection of personal data in Europe were established in the Federal Republic of Germany, then in Sweden (1973), Norway (1978) and elsewhere. Not all countries adopted laws on data protection at the same time, so the Council of Europe decided to elaborate a convention to unify data protection rules and principles.

Modern technology development and globalization have changed the importance of the protection of personal data by making it a priority. As a result of the entry into force of the General Data Protection Regulation, a new, unitary legal framework in all European Union was created. In order to understand the objectives of the processing of personal data and the specific characteristics of the legal framework enforcement, it is necessary to analyse the historical development of the legal framework for the protection of personal data.

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## ***THE PROBLEM OF LEGAL REGULATION OF SCIENCE EXPERTISE MANAGEMENT FOR EVALUATION OF EFFICIENCY OF INNOVATION POLICY IN RUSSIA***

While innovation policy is on huge demand nowadays, its efficiency remains an issue. Identification of science reformation problems is the result of the analysis of the legal regulation, which conducted in order to fulfil the national policy of science and technology in Russia. An administrative and legal regulation of scientific examination is an important topic for efficient stage regulation of science and technology policy, which is due to scientific, technological and innovative activities at state and non-governmental organisations.

Thus, the analysis of the legal problems of state activities in scientific examination pointed out importance of improvement of scientific examination mechanisms for prioritised directions of development of science and technology and machinery. Such mechanisms includes among the most important such as the problem of legislative foundation of development patterns for a scientifically based system of state scientific and technological evaluation of the quality of innovations. The present work provides indepth inside the the legal problems and best practise of evaluation of such projects in Russia.

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## ***THE SETTLEMENT OF SOME ISSUES OF OPERATION MECHANISM OF THE FIRST DEMAND GUARANTEE IN LITHUANIAN LAW***

Key words: first demand guarantee, personal security, enforcement of obligations, abstract obligation, Lithuanian civil law.

Effective enforcement of obligations is actual issue in order to protect confidentially business interests, considering harmful effects of constantly recurrent World's Economic Crisis experienced until now. So, first demand guarantee is a top priority solution on this question provided by international commerce practice. Also, national legal systems of neighbouring countries of Latvia, i.e. Lithuania, Russia have stepped further in regulation of this, but national legal systems face with numerous issues regarding a proper regulation of this and one of the biggest one is guarantor's refusal to pay to the creditor under the first demand guarantee, as well as Latvian law that does not provide special regulation on this question. The aim of the research is to reveal the content of validity as base for guarantor's refusal to pay under the first demand guarantee according to international commerce practice and legal doctrine, while evaluating legal regulation of this in Lithuanian and Russian laws. The research was carried out by employing the logical, the comparative legal methods, the system analysis, the linguistic, the synthesising methods and the analysis of legal documents. The results of the analysis showed the complicated variety of approaches of international commerce practice towards the validity as basic for guarantor's refusal to pay and the necessity to set clearly this basics in analysed national laws.

**Doc.,Dr.iur.,Arvīds Ozerskis**

## ***TIESU SISTĒMA LATVIJĀ – ŠODIEN UN RĪT (ATTĪSTĪBĀS PROBLEMĀTIKA)***

Katras demokrātiskas valsts pamatā līdzās likumdevēja varai un izpildvarai jāpastāv neatkarīgai tiesu varai, kura ir garants, ka jebkurš cilvēks var savas aizskartās tiesības aizstāvēt kompetentā un objektīvā tiesā. Bet tiesa ir tik demokrātiska, cik demokrātiski ir normatīvie akti, kurus tiesa arī piemēro, tiesas spriedumi ir tik objektīvi, cik neatkarīga ir bijusi tiesa, izskatot lietas.

Demokrātiskā sabiedrībā tiesu vara ieņem īpašu vietu. Tai ir jāizšķir strīdi, kuru izšķiršanu nevar atstāt un kas nav atstājami nepolitisko atzaru, ne indivīdu ziņā. Tā atbalsta likumu visiem – un tādējādi garantē indivīdu un visu veidu minoritāšu grupu tiesības pret vairākuma pārspīlējumiem. Tādēļ tiesnešiem reizēm nākas saskarties ar politisko atzaru vai ietekmīgu indivīdu savtīgām interesēm, bet tāpēc, ka tiesneši netiek demokrātiski ievēlēti, viņu autoritātei un leģitimitātei ir jānāk no citiem avotiem, kas atšķirtos no politisko atzaru avotiem: viens no tiem ir neatkarība.

Neatkarība ir būtiska tiesu sistēmas kā tiesību un brīvības garanta leģitimitātei. Ja tiesu vara nav neatkarīga no izpildvaras un lēmējvaras, tā nespēj attiecīgi ierobežot šo atzaru patvaļu attiecībā pret indivīda un sabiedrības tiesībām un brīvībām. Tiesu

varas neatkarība svarīguma ziņā pārspēj politisko. Individīdiem un institūcijām jāspēj paļauties uz prognozējamu taisnīgumu, kas būtu brīvs no politiskās iejaukšanās vai ekonomiskās ietekmēšanas iespējām no abām pusēm, viņu prasību spriešanā. Tiesu varas neatkarība palielina pārliecību, drošību un prognozejamību taisnīga un objektīva tiesas lēmuma pieņemšanā.

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## ***UZ SABIEDRĪBU VĒRSTA POLICIJAS DARBA IEVIEŠANAS PROBLĒMAS UN RISINĀJUMI***

Ņemot vērā, ka Valsts policija ir apbruņota militarizēta valsts institūcija, kuras pienākums ir aizsargāt personu dzīvību, veselību, tiesības un brīvības, īpašumu, sabiedrības un valsts intereses no noziedzīgiem un citiem prettiesiskiem apdraudējumiem, jāatzīst, ka bez sabiedrības vēlmes sadarboties un ziņot par noziedzīgiem nodarījumiem nevar sākt identificēt un efektīvi reaģēt uz lielāko daļu likumpārkāpumu, kas ir izplatīti un ikdienā ir iespējams redzēt to izdarīšanu vai pašam kļūt par šāda nodarījumu upuri. Policijas darbiniekiem svarīga ir iedzīvotāju aktivitāte, ziņojot par likumpārkāpumiem, lai varētu tos reģistrēt un veikt nepieciešamās darbības to novēršanai vai izmeklēšanai. Bez iedzīvotāju līdzdalības liela daļa no likumpārkāpumiem paliktu neatklāti, vai pat neregistrēti, jo ne vienmēr tieši notikumu vietas tuvumā ir iespējams atrasties policijas darbiniekiem vai norīkojumam, kas var ierasties un uzreiz sāk likumpārkāpuma novēršanu vai pārtraukšanu. Vidusmēra iedzīvotājs savu ikdienas laiku nepavada skatoties informācijas apkopojumus par Valsts policijas darba efektivitāti. Vajag mudināt iedzīvotājus arī nākamajā reizē sazināties ar policiju un ziņot par noziedzīgiem nodarījumiem. Pretējā gadījumā tiek palielināts neregistrēto noziedzīgo nodarījumu skaits, un palielinās latentās noziedzības līmenis valstī.

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## ***VARDARBĪBA POLITIKĀ. /IDEJĀM NAV NEPIECIEŠAMAS VĪZAS/***

Vardarbīgās metodes politiskajos procesos plaši izmantotas cilvēces vēsturē. No senatnes līdz mūsdienām vardarbība tiek uzskatīta kā viena no mērķa sasniegšanas metodēm politikā. Nevar noliegt, ka vardarbības pielietošana var rezultēties ar nopietnām postošām sekām. Divi pretēji viedokļi par vardarbības pieļaujamību un efektivitāti politisko problēmu risināšanā:

- Daudzi politiķi un arī zinātnieki uzskata vardarbību kā ļoti efektīvu līdzekli, lai sasniegtu mērķi.
- Viņiem tas ir drošāks un galīgais politiskās problēmas risinājums, jo paredz noslēgumā objekta likvidāciju.
- Cita viedokļa pārstāvis noteikti nosoda vardarbību politikā kā destruktīvu un antihumānu.

Kuriem taisnība? Uz šo jautājumu gadsimtiem cenšas atbildēt filosofi, politologi, sociologi, vēsturnieki. Joprojām spēkā uzskats, ka vardarbība ir "politikas lielā mīkla".<sup>1</sup>

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## ***MEDIATION AS AN ALTERNATIVE PROCEDURE IN THE CRIMINAL PROCESS***

The article examines the legal nature of mediation proceedings in European countries and the Russian Federation and practice of conflict resolution. Based on the concept of "restorative justice" and taking into account the possibilities of this alternative way of conflict resolution and, proceeding from the purposes of criminal proceedings, the conclusion about the necessity of legal application of mediation in criminal proceedings.

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# MATEMĀTIKA

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# MATHEMATICS

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## ***BOUNDARY VALUE PROBLEM FOR LINEAR - QUADRATIC ORDINARY DIFFERENTIAL EQUATION***

Ordinary differential equation combining quadratic nonlinearity with linear behaviour is considered together with the boundary conditions. The existence of multiple solutions is studied.

The problem of finding the initial values of solutions to the boundary value problem is considered also.

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## ***ON LASER DYNAMICS MODELLING WITH A PLANAR SYSTEM OF DIFFERENTIAL EQUATIONS***

We consider a system of two first order differential equations modelling laser gain dynamics. We study a phase portrait of the system depending on system's parameters.

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## ***PERIOD ANNULI FOR AN EQUATION WITH MULTIPLE WELL POTENTIAL***

We consider the second order conservative equation with multiple well potential, assuming that all singular points of the equation are nondegenerate. We are looking for the periodic solutions of this equation and study their phase trajectories. We introduce a planar graph based on the phase portrait of the equation and discuss the number of period annuli using the Euler's formula for planar graphs.

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## ***THE OPERATOR METHOD FOR SOLVING ORDINARY DIFFERENTIAL EQUATIONS***

The differential operator method and its techniques are considered, solving ordinary linear differential equations and their systems with constant coefficients. The advantages of this method over the well-known method of undetermined coefficients are shown for finding a particular solution of nonhomogeneous linear differential equation when the nonhomogeneous term is any possible product of a polynomial function, exponential function and trigonometric functions.

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# MŪZIKA

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# MUSIC

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## ***THE FANTASY THROUGH THE CENTURIES***

Key words: the fantasy, evolution of the genre, the most popular composers.

The fantasy is a musical piece, that stems from the practice of improvisation and is written in a way, that is not bound to any particular musical form and allows the composer to be free and imaginative.

The term was first introduced during the 16th century, referring to the compositions of Luis de Milàn. During the 16th and most of the 17th century the Fantasy tended to be mostly a contrapuntal piece, often consisting of many smaller sections either varying the existing musical material or introducing a new theme. Composers known for this genre include Girolamo Frescobaldi, William Byrd, Johann Jakob Froberger, Jan Pieterszoon Sweelinck and others. Towards the end of the 17th century and the beginning of the 18th century, which is known as the later Baroque period, the fantasy takes on an even more spontaneous and improvisational style, losing its orderly contrapuntal style and is often followed by a fuge or a sonata. On such example is the Chromatic Fantasy and Fuge of Johann Sebastian Bach. This also applies to the classical era and the fantasies composed by Wolfgang Amadeus Mozart.

In the 19th century the term Fantasy was also used to refer orchestral compositions such as Ludwig van Beethoven's Choral Fantasy. They were often paraphrasing themes found in operas and balets.

In the 20th century the Fantasy genre lost its widespread use, however still found in the repertoire of some composers such as Arnold Schönberg.

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## ***ARIA'S ERBARMEN DICH OF JOHANN SEBASTIAN BACH MATTHÄUS PASSION REVIEW AND COMPARISON OF SOME INTERPRETATIONS***

Key words: Johann Sebastian Bach, aria, passion

Throughout the new century, the world is undergoing deep, radical transformations in education, art, culture and social processes. Thus, the question is raised: as each individual (both performer and listener) socializing and interacting in the cultural space, gain personally important values, knowledge of excellent composers, artists, etc.?

Johann Sebastian Bach (1685-1750) - outstanding German composer, organist, music teacher, polyphonic master. The composer encompassed almost all of his time-known genres in his work, except the opera. Bach's work includes more than 1000 pieces of different genres.

Bach - a bright national artist who was able to combine the traditions of Protestant Koral with the traditions of Austrian, Italian and French music cultures. The Bach is an unsurpassed master of polyphony, characterized by a unity of polyphonic and homophonic, vocal and instrumental thinking, thus explaining the deep, close, interconnectedness of different genres and styles in his work.

Matthäus Passion is one of the most monumental and influential pieces of Bach that has survived to this day. By genre, it is an oratorio with all the characteristics of this genre, a complex storyline, graceful arias, advanced chorus scenes and serious drama.

Aria *Erbarme dich*, which reads after Peter's abandonment of Christ, is one of the most outstanding works of Bach. It is the emotional summit, where Peter's main feelings are concentrated, the aria is prepared by the previous musical-dramatic development.

Erbarme dich aria (Mercy for me) is the end of the dramatic scene of Christ's disciple, Peter's abandonment. On the basis of theoretical knowledge, the model of interpretation concept was created.

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## ***DEVELOPMENT OF THE ITALIAN OPERA GENRE IN ROMANTICISM***

Romanticism is an ideological and artistic direction throughout the European art culture which began in fine arts at the end of the 18th century and expanded in literature, music and drama in the first part of the 19th century, hardly touching architecture. Romanticism emerged as a protest against the Rationalism of Classicism and the excessive efficiency of Enlightenment.

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The philosophical thought of Romanticism was related to Europe's most important philosophers. Immanuel Kant's German metaphysical idealism, which preached absolute spirit domination over matter, serves as the basis for aesthetics of Romanticism across Europe. The philosophical reflections of Kant gave the rise to the doctrine of Georg Friedrich Hegel, who glorified idealism, identified the rational and the real and looked at the development of the absolute spirit. Friedrich Nietzsche was connected with the philosophy of life, which was the opposite of the interpretation of a man and the world in classical Rationalism.

The change of the philosophical platform found its brightest reflection in music (especially in the opera – a genre in which a word and music are synthesized, the genre which is characterized by drama and emotional dominance over rational). Vivid national spirit is typical for Frederic Chopin, Vincenzo Bellini, Hector Berlioz's works, folklore images are typical for Carl Maria von Weber, Felix Mendelssohn-Bartholdy, Hector Berlioz, natural ones – for Franz Schubert and Franz Liszt, human inner world experiences – for Vincenzo Bellini and Robert Schumann.

The most prominent representatives of the romantic Italian opera are Gioachino Rossini, Gaetano Donizetti, Vincenzo Bellini and Giuseppe Verdi. In the romantic opera, the unity of music, text and stage activities became more intense and was promoted by the system of musical characteristics and leading motive, as well as the inclusion of speech intonations and the use of the rich possibilities of the symphony orchestra.

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## ***FOLKSONG ADAPTATION IN PETERIS PLAKIDIS CREATIVE WORK***

The second world war and the associated addition of Latvia to the Soviet Union brought major changes to the cultural life of the country. Like other areas of art, music was exposed by socialistic ideology and censorship. Regime-glorifying jobs were supported, but the possibility of freely expressing your thoughts and opinions was denied. At this time were demand great and monumental musical works. Despite the Iron Curtain, however, the world's pop and rock-music breeze reached Latvia in the sixties. In the middle of the 20 th century, music from all sorts of genres developed and stabilized including symphony, ballet, opera, cantata, oratorium, etc.

Peteris Plakidis writing-creation covers a wide range of musical genres. In his fiction – choir music, symphony music, vocal music. The composer is characterised by a balance of neo-classicism, a baroque-speaking sense of form, a melodic intonation close to Latvian folk music, acknowledging variation as a favorite in music development over time.

Latvian folk songs are short four lines that include the ancient wisdom of the Latvian people. The folk songs came from more than a thousand years ago and were sung both at festivals and everyday, including reflections on the lives stored in oral form. Folksong adaptation is folksong harmonisation when additional voices or accompaniments are added.

The folksong adaptations have a major role in Plakidis works. He wrote many folksong adaptation, most of them for the choir. He also have a folksong adaptations for solo voices. Strong is the individuality of the folksong adaptation the exact and deep alignment in the text, great craftsmanship in the formation of an instrumental lot.

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## ***GENRE OF PIANO SONATA HISTORICAL EVOLUTION***

Key words: piano sonata, style, form, peculiarities.

*Sonata* is a instrumental piece of cyclic form and is the one main instrument music genres solo or chamber ensemble. *Piano sonata* is musical cyclic composition for the piano. In the 17th century has evolved sonata as a genre and the first tributes can be the composer Domenico Scarlatti.

The most prominent piano samples of the 18th century classicism are found in the Vienna's composers Joseph Haydn, Wolfgang Amadeus Mozart and Ludwig van Beethoven works. The 19th century piano sonatas is characterised by individualisation and a musical imagery of the music – Carl Maria von Weber, Franz Schubert, Ferenc Liszt, Robert Schumann, Frederic Chopin etc. But the innovation characteristic of the Russian composers in the imagery and the musical language Sergei Rachmaninoff, Alexander Scriabin, Nikolai Medtner, Sergei Prokofiev. The French composer Impressionist music Sonata is a special color harmonic language, in ancient tracks, Poliritmia and Pentatonics Claude Debussy, Maurice Ravel, Gabriel Fauré, Paul Dukas etc.

The piano sonata genre of composers also topical in the 20th century.

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## ***MUSICAL-THEORETICAL ANALYSIS FOR JOSEPH HAYDN'S COMPOSITION PIANO SONATA NO. 33 HOB. XIV: 20 C MOLL PART I***

Key words: classicism, Haydn, sonata, genre evolution.

Joseph Haydn (1732–1809) – representative of the Vienna classic school, has composed piano pieces in different genres. The Sonata genre occupies a special place in the composer's work. Both in sonatas (from the 20th to 38th sonatas), symphonies and

quartets, Haydn insisted on his own style, sought out a new musical expression in the field of forming and in the structure of the theme.

Despite its external simplicity, Haydn's piano music figure world is wide and filled with outstanding and brand new instrumental genres of the time. *Piano Sonata No. 33 Hob. XIV: 20 c moll* was the first of Haydn's pieces that he called "sonata" himself, because composer called his earlier pieces *divertimentos* and *partitas*. This sonata stands out between Haydn's early piano works with complexity, dynamic contrasts and dramatic musical language intensity. The aim of the study is to perform musical theoretical analysis for the first part of Sonata for *Piano Sonata No. 33 c moll*, characterize the musical form of the composition and peculiarities of the composer's music language.

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## **PECULIARITIES OF THE SOLO SONG GENRE IN THE GEORGE GERSHWIN'S WORK**

At the beginning of the 20th century, various areas of the country's cultural life are being activated as a result of the pragmatism ideas of the USA. People's desire for something unprecedented led to the emergence of new musical trends. Influenced by European culture, uniting with the traditions and cultures of USA local residents and immigrants, a national school of composers is emerging, revealing to the world many new musical talents, including new, peculiar and masterful composers.

George Gershwin's work covers a wide range of musical genres. His works contain various musical works of the classical genres, piano works, music for cinematographic films, theatre performances and shows, as well as numerous solo songs. Gershwin is the author of the first national American opera. In his musical works, he successfully synthesized elements of jazz music with the forms of classical music. Gershwin's music is characterized by directness, colour, sharp humour and grotesque.

The origins of the genre of the song reach back into antiquity when music and poetry were still indivisible (songs of troubadours or trouvères, Minnesänger and minstrel). Going through the epochs, especially in romanticism, the genre of the song evolves, expands and diversifies, is classified by genre (revolutionary, romance, choral, chanson), textures (unanimous, polyphonic), type of play (solo, choir songs) and other features.

Solo was also one of the most important genres of George Gershwin's work. Gershwin composed hundreds of songs for Tin Pan Alley, Broadway stage and Hollywood films, and very simple tunes for singing to a wide audience. Songs are characterized by diatonic, sudden modulation, chromatic and unexpected jumps. Gershwin discovered a new rhythmic opportunity that was relaxing, soothing, but at the same time moving and active as Afro-American dances. It is peculiar that the author of Gershwin's lyrics was his older brother Aira Gershwin. J. Gershwin's songwriting style is shown at the highest level in the compositions - *The Man I Love, Swanee, I Got Rythm*, whose popularity and fame has not disappeared even today.

**Marija Vadišute, Ēvalds Daugulis**

## **SVĪTAS ŽANRS AKORDEONA MŪZIKAS VĒSTURĒ**

Atslēgvārdi: svīta, akordeons, bajāns, komponisti.

Viens no izplatītākajiem izvērsta formas žanriem mūzikā ir svīta. Tās aizsākumi meklējami 17. gadsimtā. Laika gaitā svīta kā žanrs ir pārdzīvojusi vairākas izmaiņas gan formveidē, gan instrumentācijā un žanriskumā. Tas viss ietekmēja svītas žanra attīstību un mainīja sākotnējā jēdziena *svīta* nozīmi.

Svītas žanru var raksturot pēc dažādiem kritērijiem, piemēram, pēc stila – baroka svīta, klasiskā svīta, džeza svīta, mūsdienu svīta, vai pēc instrumentācijas – svīta simfoniskajam orķestrim, sīgu kvartetam vai klavieru svīta. Viens no jaunākiem svītas paveidiem ir svīta bajānam un akordeonam.

Šodien mēs vērojam arvien vairāk jaunu skaņdarbu akordeonam un bajānam svītas žanrā. Šajā nozarē visaktīvāk darbojas bajānisti-komponisti no Krievijas un Ukrainas. Spilgtākie pārstāvji no Krievijas ir Jevgēnijs Derbenko, Vjačeslavs Semjonovs, Aleksandrs Dorenskis, Aleksandrs Korobejnikovs, bet no Ukrainas Viktors Vlasovs un Vladimirs Zubickis. Šo mūziķu daiļrade stipri ietekmēja akordeona mūzikas attīstību un ieņēma vadošo vietu akordeona mūzikas vēsturē. Savukārt Latvijā šo mūzikas žanru pārstāv mūsdienu komponistes Gundega Šmite un Indra Riše.

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# PEDAGOĢIJA

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# PEDAGOGY

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## ***CIVIL PARTICIPATIONOM PRESCHOOL TO SECONDARY SCHOOL: MY CONTRIBUTION - MY FUTURE***

Keywords: Citizen, civil participation, preschool, secondary school.

In today's rapidly changing world, it is essential to be able to preserve the traditions and values of the family as well as the traditions of the nation. The common goal of each teacher, every family, and the whole society is to contribute to bringing up a person who is able to make decisions, act and collaborate with others to achieve a result. Becoming an active citizen brings changes to outdated systems and paradigms. Unfortunately, survey data shows that today's youth does not believe in both national and personal power, and does not consider how important their contribution to society can be.

In the framework of the series of events devoted to the centenary of the Latvian state, "Marathon of Civil Participation and Good Deeds", a teacher training course "Promotion of Civil Participation in the Educational Process" was organized. The National Center for Educational Content in cooperation with the association "Institute of Lifelong Learning and Culture "Vitae" has prepared a collection of materials for educators "Support Materials for Promoting Civil Education and Civil Participation", which raises questions about the implementation of civil education in educational institutions once again. The aim of civil participation is to promote the participation of children and young people in their preschool institution, school, local community and state by promoting independence, responsibility and decision-making (Valsts izglītības satura centrs, 2018).

It is necessary to start shaping a citizen since the preschool age. The achievable result of civil education is revealed in the attitude of the learners towards themselves, people, society, country. In order to raise awareness of citizenship, a survey on civil values was conducted in pre-school, as well as on contemporary family values based on the above-mentioned support materials.

By updating the age group of young people, it is a crucial stage of personality building, in which stabilizes the identity, sense of the world, civil responsibility, system of convictions and positions that express the subjective attitude towards the world, social processes, political issues, values and their importance in the individual's life. (Auziņa, 2008). European and Latvian values, values of today's youth. In order to find out the attitudes of contemporary youth towards citizenship, a study was conducted in which young people were interviewed about the European Parliament, civil and personal values, and the value orientation of young people was also clarified. In conclusion, the civil experience of preschool and secondary school is analyzed, comparing the beginnings of value orientation in preschool and the final result, ending at secondary school.

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## ***DEVELOPMENT OF THE SOCIAL COMPETENCES***

Competence-based and outcome-oriented studies are essential for higher professional education innovation process. Students' professional and personal competencies are of great importance to integrate in the local and international labour market. This article discusses students' preferences, evaluating most significant competencies for the competitiveness and college opportunities to provide education environment for promotion of contemporary skills. Results of the study show that the college education process possesses a good capacity to contribute to students' learning activity, but still more variable and cooperative educational approaches are necessary to develop social and cooperative skills for successful work in the health care.

## ***EDUCATION FOR SUSTAINABLE DEVELOPMENT: VALUES AND VIRTUES OF GENERATION Z IN THE CONTEXT OF A COMPETENCY-BASED APPROACH IN THE ANTHROPOCENE AGE***

Keywords: sustainable education, competency-based approach, pupil values, Z generation.

Global changes in society have fundamentally changed the social habits of children and young people, they are radically different in their day-to-day activities, in the sense of values, in life goals. Starting from the 2018–2019 school year, Latvia will begin a gradual transition to the improved curriculum within the framework of the project “Competency-Based Approach in the Curriculum” of the NCE (National Centre for Education) of the Republic of Latvia. As a result, pupils are envisaged to acquire value-based skills, knowledge, attitudes and habits that are necessary in the 21st century. Thus, values are one of the basic components of a new curriculum. However, it is very important to understand whether the values and virtues defined in the documents correspond to the real situation at schools and to the progress towards sustainable development.

The theory of generations, which is being increasingly discussed at present, especially in the context of the labour market, has become a very topical issue. Schools also include individuals of different generations, teachers of different ages and pupils. Hence, there is a great difference between generations. Based on the theory of generations, each generation has its own values and beliefs that are changing over the years. Each new generation has a different environment and lifestyle, which have largely changed as a result of globalization and the evolution of society. In Latvia, the issue of youth values has become increasingly topical nowadays.

The study uses a different value model and the defined values that are not based on the theory of generations as a whole, but help determine whether the values and virtues defined in the new curriculum correspond to the value system of pupils and educators. Consequently, a number of topical issues are considered within the framework of the study.

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## ***IMPORTANCE OF EVALUATION OF PHYSIOTHERAPY STUDENTS CLINICAL PRACTICE***

Keywords: physiotherapy, clinical practice, practice supervision, self-assessment.

Background

Professional qualification practice in the professional bachelor's study program "Physiotherapy" is an integral part of the study process, which gives students both theoretical and practical knowledge. Clinical practice evaluation is very important part of the educational system of physiotherapists. Correct supervisory process plays a big role in students professional development and is an important and distinct part of health care education. Therefore students themselves may face problems during practice period, and have their own opinion about possibilities to improve the process of practice based on their experience. Thus, this study aimed to explore students' experiences and the practice leader's assessment of the students' practical skills.

Methods

This study analyzed data received from self-assessment questionnaires filled by professional study program “Physiotherapy” 3<sup>rd</sup> and 4<sup>th</sup> study year students after each of three practices. Additionally an analysis of student assessment submitted by the practice supervisor - the physiotherapist was performed. Clinical practices were assessed with a score of 10 points by the practice leader. The practice leader's assessment criteria were based on the requirements of the profession standard. The same criteria were included in the student self-assessment questionnaire.

Results

Student gets acquainted with the duties of the physiotherapist in various health care institutions and carries out them independently under the supervision of a physiotherapist or other qualified medical professionals. Students independently carry out a physiotherapeutic examination and assessment of the patient; draw up a rehabilitation plan; perform physiotherapeutic manipulations; complete the documentation according to the specifics of the institution; carries out educational activities with patients.

The assessment of the practice supervisors depended on their professional qualities, personalities, and institutions of medical treatment. Sometimes students had objections to the practice assessment that was considered at the internship conference. Analyzing the self-assessment questionnaire revealed that the student does not always objectively evaluate their practical skills and knowledge. But overall, students note that their skills are increasing from the first to the 3<sup>rd</sup> practice. After the first practice, skills such as draw up an appropriate treatment plan corresponding to the patient's condition, choose and justify appropriate treatment methods, presenting the patient history in the correct physical therapy terminology were the least appreciated.

Self-assessment of the practice allows students to evaluate the progress in their professional skills development and gives them the possibility to improve their knowledge and skills through evidence based approach to study process.

## ***KRITISKĀS DOMĀŠANAS VEICINĀŠANA VIDES IZGLĪTĪBĀ 5-6 GADUS VECĪEM BĒRNIEM PIRMSSKOLAS PEDAGOĢISKAJĀ PROCESĀ***

**Maģistra darba tēma:** Kritiskās domāšanas veicināšana vides izglītībā 5-6 gadus veciem bērniem pirmsskolas pedagoģiskajā procesā.

**Pētījuma objekts:** kritiskās domāšanas veicināšana pirmsskolas pedagoģiskajā procesā.

**Pētījuma priekšmets:** rotaļnodarbībās izmantojamie materiāli un metodes vides izglītībā kritiskās domāšanas veicināšanai 5-6 gadus veciem bērniem.

**Pētījuma mērķis:** izpētīt rotaļnodarbību un metožu iespējas 5-6 gadus veciem bērniem kritiskās domāšanas veicināšanai.

**Pētījuma jautājums:** ar kādām metodēm un materiāliem veicināt kritisko domāšanu vides izglītībā 5-6 gadus veciem bērniem?

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## ***NOVICE TEACHERS' BELIEFS AND KNOWLEDGE ABOUT EDUCATION FOR SUSTAINABLE DEVELOPMENT***

**Keywords:** novice teachers, education for sustainable development, teachers' beliefs, knowledge, understanding.

Incorporating education for sustainable development (ESD) into the curriculum is one of the main priorities of educational policy in both Latvia and internationally. Implementation of ESD relies greatly on individual teachers' beliefs, enthusiasm, theoretical knowledge and practical expertise. It is widely recognized that teachers' beliefs influence their decisions about curriculum, pedagogy and assessment. While teachers' beliefs and general pedagogical knowledge receive considerable attention in teacher education research worldwide, novice teachers' beliefs and knowledge regarding sustainability and ESD are not widely discussed despite the widespread assumption that teacher's preparedness and intention to teach ESD tend to be motivated by the beliefs and knowledge a teacher holds. Some education researchers argue that novice teachers tend to have limited understanding of sustainability and ESD. The aim of the research described in this article was to reveal the range of ways in which a sample of 32 volunteer novice teachers in Latvia perceive, understand and experience ESD, as well as how ESD relates to their professional practice. A phenomenographic approach is applied in this study. Data collection methods include semi-structured interviews, written questionnaires, and focus group discussions. The study revealed a range of ways in which the novice teachers conceptualize sustainability and ESD. The insights from this research might serve to inform teaching and learning practices in the undergraduate and postgraduate teaching courses to more adequately prepare teachers to implement ESD.

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## ***PERSECUTION OF BELIEVERS THROUGH THE VIEW OF PRIMARY SCHOOL TEACHERS IN SOCIALIST CZECHOSLOVAKIA***

The contribution focuses on everyday situations in which teachers had to comply with the Czechoslovak Communist Party's regulations supporting the atheization of society. It is an issue that has not yet been paid much attention to socialist education research. At the same time, the role of the school, and in particular of its teachers, was very important in this period. Teachers should become a tool to promote socialist ideas. These were to be passed on to future generations, thereby raising "new" individuals sharing the ideas of Marxism-Leninism, including the idea of a society made up of people without any religion. The paper is based mainly on data obtained by authors through oral history interviews. In total, there are 53 interviews with 37 witnesses, who are teachers, but also former headmasters of primary schools in former socialist Czechoslovakia. The oral history method was supplemented with the study of archival materials and period legislation. These sources were studied in several archives of the Czech Republic. These are the National Archive of the Czech Republic, the Archive of the City of Brno and the Moravian Land Archive. The research results, on the one hand, represent teachers as a "political tool" of the ruling Czechoslovak Communist Party, but at the same time reveal their difficult position in carrying out the tasks assigned to them. This stems from the expectation of the ruling regime that teachers will conscientiously and unreservedly follow its instructions, as well as the teachers' efforts to minimize the negative impact on the life of pupils or their parents.

## **PERSONALISED LEARNING APPROACH TO MATHEMATICS FOR SECONDARY SCHOOL**

**Keywords:** personality, individuality, development, self-regulation, personalised learning.

The topicality of the article is related to the essence of personalisation, which highlights the development of each student's talents and abilities.

The aim of the article is to offer a personalised learning approach that would ensure the development of each student's personality, taking into account his or her individual characteristics, opportunities, attitude and *self-regulation*.

The theoretical basis of the article is based on the personalisation approaches of the pedagogical process, which are based on the theory of learning cognition and constructivism.

In the author's proposed learning approach each student can develop his / her individuality based on the diversity of the core subjects and the organisation forms of learning.

In the research, student tests and questionnaires with open questions were used for data acquisition. In the study, a triangulation method of diverse data sources was used for data processing.

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## **RECONSTRUCTING PROFESSIONAL IDENTITY OF PEDAGOGUES IN MASS MEDIA**

**Keywords:** pedagogues, identity, mass media

During last decades mass media transformed image and reputation of pedagogues in Baltic countries. Enormous opportunities of television, mass press and growing informational portals are showing news about educational aspects that form step by step opinion of the society. According to this the identity of pedagogues became prestige-less, unpopular and supported negative image of educational contexts. Seeking to rise prestige of pedagogues, to form adequate to reality identity and to enhance clever and motivated students to choose pedagogical studies in universities, there should be reconstructed popular mass opinion about education and leadership.

The results show that there is too much negative information about pedagogues in mass media. This overload creates simulative reality and forms static negative opinion of society. To change the situation there could be chosen positive alternatives; one of them is reconstruction of pedagogue's image. Reconstructing pedagogical image and identity in mass media should be a political prerogative because it highlights the schedule of communication. This can lead to the decision of management and control of this process. According to this, media and press could explore more positive information about good cases. There are lots of things to show that form a tendency constructing positive responses and reflections of society. Also, education based internet platform could be created free of charge for all society. Platform would contain professional cases of good teaching and learning practice and suggestions for students, parents, every learner could be published as scientific popularity works. Close scientific word with the society members could enhance more popularity of education among parents who also reflect pedagogical prestige.

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## **THE ASPECTS OF A CAREER CHANGE AT THE MATURE ADULT AGE**

Few decades ago life was defined as led by simple phases- childhood, study, work and retirement. What used to be the norm, now days is not. As the time goes, a contemporary society grows older. These processes were caused by a modernization process, and an average life expectancy is getting higher and the birth rates are getting lower. As the medicine develops, people are leading more healthy life styles, an average life expectancy is getting higher, and that's why people can work longer. And, since they can work even after they are 60, people often want to change something in their lives. The focus of this research is 40-65 year old people who are changing their professional work. The aim of this research is to choose the options available for changing ones professional life, and to explore which factors determine the process of change, and which obstacles the adults at the maturity age may encounter while changing their career. The research method employed in this study is a questionnaire of respondents with the aim to identify the determinants of their career change.

**Key words:** adults, maturity, career change, professional career.

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# ***THE CONCEPT OF EDUCATIONAL QUALITY IN GENERAL EDUCATION SYSTEM IN LATVIA IN ITS UNDERSTANDING BY THE MULTIPLE STAKEHOLDERS***

Quality of education is taking important role within public debate, particularly about qualitative and quantitative indicators. The public discourse represents a variety of visions and views on the issue of quality of education. The author considers that there is no common understanding about the concept of what those involved in education (teachers, parents, pupils, state and local government, etc.) consider to be the quality of education, particularly when looking at qualitative educational indicators. School 2030 project and changes in assessment models will create more important our view on education quality and how we measure it. The format and rating system does not provide a complete understanding of the quality of education that is relevant to the needs of today's labour market. If we analyse the quality of education with quantitative indicators. There is a huge understanding what is missing within qualitative indicators. The subject of the study is topical and necessary for raising awareness and a more detailed understanding of quality of education. Ensuring sustainable development of education processes is possible if all shareholders understand the purpose and outcome of education and the way in which these results are assessed. The author asserts that the existing results of the quality assessment of education is a format that does not reflect the understanding of the quality of education therefore this research is needed. The author study the views of the various social partners involved in ensuring the quality of education.

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## ***THE ESSENCE AND NECESSITY OF INTEGRATION IN THE TEACHING AND LEARNING PROCESS***

Key words: integration, process of teaching and learning, lifelong education, multidisciplinary approach, interdisciplinary approach, transdisciplinary approach.

The basis of the 21st century education is thinking skills, use of information technologies and awareness of the need to foster a sustainable development of society. As the world today is characterized by globalization, also the rapid development of information technologies, diverse values. The era in which we live is becoming more and more unpredictable and richer than ever, the challenge for today's educational institutions and educators is to prepare learners for a successful future in a changing world. In essence, create the future of our country. We do not know what economic, political, social and cultural conditions, environments and situations will be for current learners. Challenges arise as technology evolves, so it is important to realize that today's educator is a 'product' of the digital age and old methods, approaches will not work. Educational institutions should gradually move to a competence-based approach. Therefore, the teacher should get rid of the narrow view of his subject, giving preference to an integrated approach.

There is a need to change philosophy - from the teacher who teaches, to the one who organizes the learning process and the learner who learns – acquires systemic knowledge, skills useful for life – such as problem solving, critical and creative thinking, independence, co-operation, etc., creates attitude towards himself, the environment, the world. Learners need to acquire not only knowledge and skills to use them responsibly, but also to develop ability, willingness to continue learning. Currently, in our country there is a re-planning of educational content based on the following principles: the learner is denied the opportunity to go into the subject to be studied, to discover and develop his / her interests, because a large number of subjects must be mastered (~ 20). Learning integration is one of the ways to solve this problem.

The theoretical part of the research reflects the authors' vision of developing the concept of 'integration' in the theory of pedagogy and the practice of organizing the learning process. The methodological part analyzes the need for integration in the learning process, the content of secondary education and the results to be achieved in different fields of study (mathematics, natural sciences, etc.) were analyzed in order to find out which topics duplicate and could harmonize the content of the subjects so that the knowledge is systemic rather than fragmented, saved time could be devoted to deepening knowledge and skills. In the empirical part of the study the authors have gathered students, educators views on the implementing the idea of integration. Concluded are made on the need for integration in sustainable education.

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## ***THE TECHNIQUES OF VISUALIZATION AND CONTEMPLATION WITHIN THE CONTEXT OF Z GENERATION'S LEARNING NEEDS***

Key words: Z generation, visualization, contemplation and the choice of a learning type.

The research addresses an acute educational problem: the use of visualization and contemplation methods for the organization of education of the present younger generation, called now the Z generation.

The theoretical frame of the research, which the practical research is based on, is studying the scientific literature on the Z generation and exploring the affect of visualization and contemplation on the educational process. The characterization of the Z generation has been studied, the features typical of this generation have been identified and the affect of contemplation and visualization methods and techniques on this generation's specific way of learning has been revealed.

During the practical part of the research, at visual art lessons with the Z generation learners, visualization was used in combination with contemplation.

The data obtained in the qualitative research with experimental situations have been analyzed qualitatively and quantitatively. The research provides an opportunity to have an insight into the Z generation's reaction to the use of visualization and contemplation methods.

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## ***TRUST OR DISTRUST PHENOMENA OF WITHOUT PARENTAL CARE REMAINING CHILDREN IN THEIR SUSTAINABLE LIFE EXPERIENCE ACQUISITION***

Keywords: child orphan, trust / distrust, sustainable life experience, foster family

The balance of the child's trust or distrust determines the relationship between positive and negative emotions and their general attitude towards themselves and the world. Children left without parental care are already subjected to negative experiences from their childhood - creating a basic mistrust for people and the world. They have often experienced psychological trauma, sometimes not only one. The authors see the topicality of the problem that children who are left without parental care lose their foundation of trust, and they do not develop productive relationships with their peers because of lost confidence. Children who are left without parental care often have to change their living conditions when they come to care centres, boarding schools, orphanages and, at best, are immediately placed in a foster family. These children live in fear. Due to their experience of leaving the person they trust, it gives negative impact on gaining a sustainable life experience. Trust builds on the quality of past life experience, relationships with relatives, other adults, friends, foster family, and other people. Trust is very important; it is very difficult to create but very easy to kill. For these children trust means the belief that the world and the people are predominantly good, and the belief that the world is in need of him/her. The authors selected a sample of targeted participants for the study of the interaction between the study, action, evaluation and comparison of the results obtained in order to find out how the phenomena of trust or unbelief affects the future experience in the development of children left without parental care.

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## ***VISUAL AIDS AS A PART OF SECOND LANGUAGE LEARNING STRATEGIES***

The article analyses the notion of implementation of visual aids as a part of second Language learning strategies. Moreover, the article highlights the implementation of visual aids via multimedia in teaching the second/foreign languages at the Military Academy of Lithuania. The analysis of the advantages of this method implementation is presented in the article as well as the requirements for authentic audio-visual materials on the basis of multimedia applied for educational purposes. In addition, the technology of methodological development of authentic video or audio material for its use in a foreign language course is also described in the article. The object of the research is based on the usage of visual aids as a part of second Language learning strategies alleviating and facilitating the second language learning and acquisition by implementing visual aids as a part of second Language learning strategies. The aim of the research is to apply visual aids as a direct and indirect strategy in the language learning process as a part of second language learning strategies used in the acquisition of a foreign language. Based on the theoretical second language learning approach of direct and indirect learning strategies, the method of visual aid was chosen as the best means to accomplish the objective: to achieve the best effect of the second language learning and acquisition via implementing visual aids on the basis of multimedia as a part second Language learning strategies. In order to conduct the research and to test the hypotheses of the research, the closed ended questionnaire was used to collect the required data. The analysis of the data indicated that the majority of the teachers and students had positive perceptions of the use of visual aids such as multimedia and other visual aids or technologies. Therefore, the study concluded that the use of visual aids and multimedia can facilitate the language learning and the acquisition of the students to absorb the content and become interactive in the ambient classroom with no fear and frustration. The authors assert the importance of implementation of methods economizing learning and acquisition time by intensifying the educational process of the second/foreign language.

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# FILOLOGIJA

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# PHILOLOGY

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## **CONCEPT BRACK IN GERMANIC LANGUAGES**

Different traditions investigate the notion of a concept from various points of view. The Russian school understands the concept as a cultural unit (Wierzbicka 1980), (Stepanov 2007), and the Western school investigates the concept as a mental unit (Frege 1892), (Fodor 1998). On the basis of a theoretical study of the concept by different schools from Aristotle till recent days the author of the present research has collected some empirical material and investigated a word *Brack* in selected Germanic languages such as English, German, Danish, and Dutch with examples from Latvian, Russian, and French, using a structural approach and comparative method, as well as applying elements of synchronic and diachronic analysis what revealed all the meanings of the word *Brack* in the Dutch language (the language of origin, 1510, *brak*) with the main direct meaning "worthless" in old Dutch and additional meanings of the word *Brack* in modern Dutch.

The aim of this research is to compare a semantic field created by the word *Brack* in the Dutch language with semantic fields of *Brack* in the analyzed languages. The comparative analysis of their meanings in different languages has revealed the idea that a shared component of meaning - "worthless" - present in all analyzed Germanic languages and new additional numerous meanings in investigated languages are related.

The database collected consists of 15 meanings of the word *Brack* from 7 languages, thus the analyses of the related meanings show a close semantic relationship between these words in different languages.

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## **DZIMTĀS VALODAS TERMINU KĀ ATBILSTOŠO INTERNACIONĀLO TERMINU SINONĪMU LIETOJUMS FILOZOFIJĀ**

Filozofija rosina domāt par cilvēka dzīvei būtiskiem jautājumiem. Lielie jautājumi nav pazuduši no filozofu pētījumu mērķa. Pētījumu centrā pievēršoties cilvēkam un viņa appasaulei, uzrunātā mērķauditorijā ir papildināta ar plašākiem sabiedrības slāņiem. Paplašinoties mērķauditorijai, tiek ietekmēta arī filozofijas valoda un teorētiskās domas izklāsta stils.

Filozofijas kā zinātnes vērētība uz nespeciālistu ietekmē arī filozofiskās domas jēdzieniskā aparāta veidojošo elementu – terminoloģiju. Termini izsaka un nosauc teorētiskās domas iekšējo loģiku. Pievēršoties terminoloģiskajai leksikai, referātā tiks aplūkots jautājums par dzimtās valodas terminu lietojumu filozofijas tekstos.

Šinī referātā apskatītais jautājums attiecas uz tiem dzimtās valodas terminiem, kuriem ir internacionāli termini kā sinonīmi. Vai to lietojums dos pozitīvu vai negatīvu rezultātu lasītāja izpratnes veicināšanā? Pietuvinot teorētiskās atziņas visparastākā lasītāja izpratnei, rodas nepieciešamība izteikt domu iespējami skaidri, to nesarežģījot, izteikties ar dzimtās valodas vārdiem, aizvietojošot svešvārdus. Internacionālie termini tiek aizstāti ar dzimtās valodas terminiem. Šeit var rasties problēma, ka atbilstošais dzimtās valodas vārds, iespējams, ir daudznozīmīgs.

Šādai parādībai ir gan labās, gan sliktās puses. Aktualizējoties daudznozīmīga vārda semantiskajam laukam, lasītāja apziņā rodas niansētāka izpratne par nosaukto jēdzienu vai parādību. Tās dēļ lasītājs jeb kognīcijas subjekts rod dziļāku priekšstatu par apskatāmā koncepta vai parādības jēgu. Negatīvais faktors šeit ir tāds, ka, paplašinoties izpratnei, koncepts zaudē konkrētās definitīvās robežas, ko nosaka terminā ietvertais jēgas izskaidrojums, kas ietverts termina definīcijā.

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## **FORMAS NOTEIKTO MAIZES VEIDU NOSAUKUMI LATVIEŠU VALODĀ**

Maize kopš seniem laikiem ir bijusi latviešu, zemkopju tautas, pamatēdiens, kuru lietojuši gan svētku reizēs, gan ikdienā, pošoties kāzām vai dodoties tālā ceļā. Maize ir produkts, ko cep biežāk no raudzētas mīklas īpašā maizes krāsni, piešķirot tai noteiktu formu – apaļu vai garenu; tā var būt cieta vai mīksta, kļūt par pamatu citiem ēdieniem. Ja maizi cepa uz krāsns pamatnes, tad tā ieguva klona maizes nosaukumu. Maize nav bijusi pārtikas produkts vien, tai piedēvēja simbolisku, sakrālu nozīmi, uzskatot par mājas un ģimenes svētību, pret kuru izturējās ar īpašu godbijību. Maize ir arī kultūras vērtība, ko apliecina rudzu maizes iekļaušana Latvijas Kultūras kanonā, jo produktu apzīmējošam vārdam ir konceptuāls jēdziens, kurā ietverts tautas darbs, radošums, zināšanas, kultūras atmina, dzīvesziņa un pasaulaina.

Dažādos dzīves gadījumos maize ir bijusi dažāda – baltmaize vai rupjmaize, kukulis vai klaips, svētku reizēs karaša vai rausis, arī plācenis vai pīrāgs. Šāda maizes diferenciācija atbilstoši formai ir vērojama jau Bībelē, kuras tekstā ir minēts, ka ēd miežu karašu un nes trīs klaipus maizes, bet Tam Kungam pienākas trīs maizes veidi: kukulis maizes un plācenis eļļas cepuma un vēl plānie rauši no neraudzētas mīklas. Tādējādi, aplūkojot maizes veidu nosaukumus latviešu valodā, var runāt par to diferencī atkarībā no produkta formas. Ja maize ir cepta no rupja maluma kviešu vai miežu miltiem un tai ir apaļa forma, tad šādu izstrādājumu dēvē par karašu. Ja cepamā produkta forma ir garena, retāk apaļa, neminot miltu veidu, tad šādu maizi sauc par klaipu vai kukuli, bet plakans balto kviešu miltu izstrādājums tiek saukts par plāceni vai rausi. Laika gaitā daži maizes nosaukumi ir sinonimizējušies, piemēram, klaips un kukulis, daži ir saglabājušies kā individuāli formas noteikto maizes veidu nosaukumi.

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## **LE FRANÇAIS CHEZ LES ENFANTS BILINGUES FRANCO-LETTONS EN LETTONIE : POURQUOI ET COMMENT APPRENDRE UNE LANGUE AU STATUT LOCALEMENT MINEUR**

La Lettonie est le terrain d'un conflit diglossique entre les langues lettone et russe où l'enseignement/apprentissage de l'anglais langue étrangère prédomine dans les écoles du pays (Durandin, 2011 ; Kibermane et Kļava, 2016a et 2016b). Nous cherchons actuellement à comprendre comment, dans ce contexte, les enfants de familles franco-lettones vivant en Lettonie perçoivent leur bilinguisme, le letton et le français.

La communication que nous proposons présente les premiers résultats de travaux sur les représentations sociales (Abric, 2003 ; Jodelet, 2003 ; Moliner, Rateau et Cohen-Scali, 2002) du français chez ces enfants. En nous appuyant sur les apports de la linguistique énonciative (Bakhtine, 1977 ; Benveniste, 1974, 1966) et en considérant le bilinguisme dans une acception ouverte (Myers-Scotton, 2006), nous nous intéressons notamment aux pratiques langagières des enfants, aux rôles qu'ils attribuent à eux-mêmes et aux autres personnes dans ces pratiques mais aussi aux facteurs qui influencent leurs représentations du français. Cela nous permet plus généralement de considérer le sens que les enfants donnent aux rapports qu'ils entretiennent avec cette langue dans le contexte letton.

D'après l'analyse d'entretiens effectués par leurs parents auprès de deux enfants de huit ans scolarisés en letton, nous envisageons des représentations du français qui s'organisent autour de deux thèmes principaux : l'acquisition et le statut du français. Ces représentations témoignent de deux rapports au français différents, l'un subi, l'autre construit, qui permettent d'ouvrir des pistes de réflexion sur les moyens que peuvent développer les individus et les groupes socioculturels concernés pour soutenir l'acquisition ou l'apprentissage d'une langue 2 au statut majeur au niveau mondial mais mineur localement.

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## **LIETUVAS PIEROBEŽAS SĒLISKĀS IZLOKSNES: SOCIOLINGVISTISKĀS UN KULTŪRVIDES PĀRMAIŅAS 21. GS.**

Referāta mērķis ir analizēt sociolingvistiskās un kultūrvides pārmaiņas konkrētā areālā noteiktā laikposmā – Lietuvas pierobežas sēliskajās izloksnes 21. gs. Raksturojot sociolingvistisko situāciju pierobežā, akcentēts stabilais un mainīgais sociālo, vēsturisko, etnisko faktoru ietekmē un līdz ar to arī kultūrvides maiņa, kā arī šī areāla intralingvistiskā un ekstralingvistiskā situācija un valodu mijiedarbe.

Referātā iekļauti izpētes materiālu salīdzināmās analīzes rezultāti, kas rāda pierobežas sēlisko izlokšņu 20. gadsimta sociolingvistiskās un kultūrvides pārmaiņas, kuras fiksētas dažādos avotos, piemēram, *Latviešu dialektu atlants. Leksika*, kam materiāli vākti 1942–1962 (galvenokārt 1960, 1961), 1972–1989 notikusi savāktā materiāla pārbaude, bet bez pārbaudes ir palikusi virkne sēlisko izlokšņu, piemēram, Bebreņes, Demeņes, Kurcuma, Lašu, Raudas izloksnes; atlantā ir izloksnes, par kurām vispār nav materiālu no dažām pierobežas izloksnēm (Sventes, Laucesas, Silenes), kur laika gaitā bija mainījies iedzīvotāju sastāvs un pēc 2. pasaules kara izlokšņu pratēji netika atrasti. K. Ancītis monogrāfijā par Aknīstes izloksni minējis aknīstiešu kaimiņus gārseniešus un atzinis, ka Gārsenes izloksnē nav patstāvīgas izloksnes un ka 20. gs. 20. g. te mājas valoda pamatā ir bijusi lietuviešu valoda, bet ārpus mājas latviešu literārā valoda (ar augšzemnieku intonācijām un plato e) vai tuvākā kaimiņu izloksne. Kā atzīst K. Ancītis, gārsenieši ir nesen pārlatināti lietuvieši.

Salīdzinājums ar 21. gs. situāciju rāda, ka līdzīgi procesi norisinās arī mūsdienās, taču lielākā mērā tas ir saistīts ar ekonomiskajām un kultūrvides pārmaiņām. Spilgts piemērs tam ir, piemēram, Raudas, arī Lašu izloksne.

Līdzīgus secinājumus izteikuši Lietuvas dialektu pētnieki, piemēram, D. Mikulieniene atzīst, ka Lietuvā tradicionālās izloksnes zūd, rodas jauni veidojumi, mainās izlokšņu robežas, paplašinās to lietuviešu valodas teritoriālo veidojumu skaits, kuri ir ārpus izlokšņu sistēmas.

Ne visas izloksnes mūsdienās Lietuvas pierobežas sēliskajās izloksnēs ir identificējamās; iespējams, patstāvīgas izloksnes dažviet pierobežā pat nav bijis, ko izraisījusi virkne ekstralingvistisko faktoru. Literārās valodas ietekmē vietumis noticis daļējs izlokšņu īpatnību zudums (izloksnes kļūst līdzīgākas), dažkārt izlokšņu mijiedarbības rezultātā vienas izloksnes īpatnības pāriet citās izloksnēs, t.i., notikusi izlokšņu nivelēšanās.

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## **VALODNIEKU RECENZIJAS: LINGVISTISKAIS UN PRAGMATISKAIS ASPEKTS**

Pēdējos gados zinātnes valodas stilam pievērsta arvien lielāka uzmanība, tomēr joprojām vairāki zinātniskā stila aspekti un zinātnisko tekstu veidi nav kļuvuši par izpētes objektu. Bez šaubām, šādi pētījumi ir aktuāli un lietderīgi, jo, no vienas puses, ļauj izprast konkrētu zinātnisko tekstu uzbūves specifiku un veidošanas principus, no otras puses, apgūt un pilnveidot akadēmiskās rakstīšanas prasmes un iemaņas. Īpaši noderīgi tādi darbi ir jauniem zinātniekiem, jo, kā rāda pētījumi, efektīvāk ir mācīties nevis no atsevišķiem paraugiem, bet gan no plašiem teorētiskiem atzinumiem, kas balstās plašā lingvistiskā materiālā.

Šī pētījuma mērķis ir aplūkot valodnieku recenzijas lingvistiskajā un pragmatiskajā aspektā, īpašu uzmanību pievēršot zinātniskā stila raksturojošām pazīmēm un subjektīvās modalitātes īstenošanas iespējām. Lingvistiskajā literatūrā galvenokārt atrodami pētījumi par zinātniskajiem rakstiem un studentu zinātniski pētnieciskajiem darbiem, valodnieku recenzijas kā zinātnisko tekstu veids lingvistiskajā un pragmatiskajā aspektā līdz šim nav tikušas analizētas.

**Inguna Teilāne**

### **VERBU VARIANTI DIVU PAAUDŽU VALODĀ**

Ne viens vien dialektu pētnieks ir pārliecinājies par J.Endzelīna vārdu patiesumu, un proti, ka izloksnes „... jo dienas jo vairāk izsīkst”. Literārās valodas ietekmē daudzas dialektam raksturīgās īpatnības pārveidojas, zūd vai blakus tām rodas jaunas. Tomēr darbojas arī pretējs process – dialektu tieksme saglabāties. Nīcgales izloksnē abu procesu mijiedarbību apliecina fakts, ka pastāv vairāki verba formu varianti. Verba formas variējas gan viena teicēja, gan dažādu paaudžu teicēju valodā. Runātājs kādu variantu izvēlas pēc ieraduma vai arī tam ir gadījuma raksturs. Tomēr laika gaitā iekšējo vai ārējo faktoru ietekmē, iespējams, nostiprināsies viens no variantiem. Valodas pamatus, valodas izjūtu cilvēks apgūst jau bērnībā, un tā nesaraucjami saistīta ar vidi, kurā katrs audzis. No vecākiem pārņemtā leksika saglabājas visu mūžu, paši runātāji to var pat neapzināties. Tomēr valoda resp. izloksne mainās nepārtraukti. Katra nākamā paaudze vecāku ģimenē apgūto valodu nodod tālāk saviem bērniem jau nedaudz izmainītā formā, – tas arī ir valodas pārmaiņu un attīstības process. Atšķirības paaudžu valodā pastāv vienmēr. Nikolajs Vahtins, apkopojot krievu un ārzemju valodnieku pieredzi, nonāk pie secinājuma, ka normālos valodas attīstības apstākļos par valodas „standartu” ir uzlūkojama vidējās paaudzes valoda. Jo jaunākās paaudzes valodā vairāk ir jauninājumu, vecākās – arhaismu, vārdu, kas iziet no aprites. Bet vidējā paaudze runā tajā valodas variantā, kurš sabiedrībā tiek uzskatīts par normu. Protams, dialektam resp. izloksnei ir nerakstītas normas, kuras nosaka ūzuss. Tādēļ katrs noteiktas izloksnes runātājs zina „kā pie mums runā un kā pie mums nerunā”. Referātā tā tiek salīdzināts verbu lietojums divu paaudžu valodā – vecākās un vidējās.

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### **НАЗВАНИЯ УЛИЦ ПАРИЖА: ОТ "АББАТОВОЙ ДЕРЕВУШКИ" ДО УЛИЦЫ "ЮШЕТ"**

Изучение названий улиц Парижа на французском языке выбрано автором предлагаемой статьи в связи с исследованием национально-культурного своеобразия лексики, обозначающей названия улицы. Слово "улица" на всех языках мира встречается нам постоянно: начиная с адреса на конвертах и документах различного рода, заканчивая табличками на домах. Хотим мы этого или нет названия улицы, фигурируя в форме слова или словосочетания находится в трёхмерном пространстве измерения естественного языка (синтактика, семантика, прагматика) и с точки зрения её прагматического измерения может оказывать на людей определённое воздействие. Название улицы в чём-то напоминает фамилию человека. Оно может нам рассказать её историю, поведать о занятиях людей, которые здесь жили и работали. Указать нам, куда эта улица ведёт. Или никуда не ведёт, и это тупик (cul-de-sac). За каждым названием улицы скрывается либо эпизод истории Франции, либо живописная деталь парижской повседневности, либо уже забытый пласт истории французского языка. Наименование улиц - это своеобразный сгусток всех топонимических типов: гидронимы, оронимы и топонимы населённых пунктов и дорог, поскольку названия всех этих объектов, так или иначе, участвовали в формировании топонимии улиц Парижа. В данной работе предполагается показать названия некоторых наиболее известных улиц столицы Франции, раскрыть их смысловую сторону при помощи перевода на русский язык. В зависимости от мотивировки названий парижских улиц были выявлены следующие группы урбанонимов: трудовая деятельность и каждодневная жизнь парижан, отражённая в названии улицы; наименования улиц по тем названиям городов, к которым они вели; наименования по известным внутригородским сооружениям, по названиям старинных вывесок, физико-географических объектов, по названиям церквей и церковных реалий и наименования улиц в честь монархов, членов королевской семьи, известных полководцев. Все улицы Парижа уникальны по своему, и у каждой из них своя история. А прогулка по ним должна быть продолжена и может быть продолжена в рамках диалога культур разных народов и языков. Переводчики, историки и культурологи должны помочь нам превратить этот "мёртвый язык" названий улиц в "живой язык",

передающий смысл этих названий. Читая книги, смотря фильмы, путешествуя по городу, мы попадаем в хитросплетения названий его улиц, бульваров, проспектов и переулков, которые предполагают их понимание и прочтение на родном языке.

DRAFT

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# FIZIKA

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# PHYSICS

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## **CHANGES OF PROPERTIES OF ZNO:CR THIN FILM COMPOSITES DURING THE ANNEALING PROCESS**

The method of simultaneous sputtering of material from two neighboring magnetrons was used to produce ZnO:Cr thin-film composites with different contents of Chromium atoms. Studies of the structure of samples showed the randomness of the location of chromium atoms in films, which make the composite structure amorphous. In the process of annealing, the structure of the film becomes more orderly. Monocrystal formations are created on the top of surface and in the film array, which leads a change in the optical properties of the composite.

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## **DEVELOPMENT OF A NIO NANOSTRUCTURE-BASED SUPERCAPACITOR**

The main purpose of the work was to create a hybrid super capacitor with pseudo-capacity. This is due to the search of new opportunities for the fast accumulation of electrical energy, which is especially important in recent years. The authors managed to improve significantly the capacitive properties of the long-known super capacitor with a double electric layer.

One of the electrodes was replaced by an electrode containing hydrothermally obtained Ni(OH)<sub>2</sub> nanostructures with further calcination at 350°C with aim to obtain NiO nanospheres. The obtained powder NiO consists of microspheres, the surface of which is nanostructured, so the area of interaction with the electrolyte is huge. The density of the powder is very small, which will allow to create lightweight hybrid super capacitors.

Second electrode contained crushed activated carbon.

The resulting NiO powder was mixed with activated carbon powder in 80: 15: 5 proportions, respectively. (NiO / C / NMP). N-Methyl-2-pyrrolidone (NMP) was used as a binding substance with aim to increase total conductivity.

Electrochemical properties of NiO/C/NMP were studied by Cyclic voltammetry.

Redox peaks were detected, indicating a process of energy storage.

The energy in such a capacitor is stored due to oxidative-regenerative reactions. The results obtained by the authors on the capacitance 185 F/g, and on the energy accumulation speed of 1470 W/kg open new possibilities for the modernization of existing super capacitors.

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## **EFFECT OF LASER SYSTEM PARAMETERS ON WELDING SEAM QUALITY INDICATORS**

The effects on the welded seam from different parameters of the laser system are being studied. The main energy characteristics of laser welding are the density of the laser radiated power and the duration of its impact. In the case of continuous radiation, the parameters are determined depending on the length of exposure, but in the case of pulse radiation - from the pulse duration. When changing these parameters, the materials of different structures may be welded with a thickness from several micrometers to tens of millimeters. The impact of the laser beam trajectory on the welding result is analysed.

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## **FEASIBILITY OF ELECTRIFICATION OF THE ROAD TRANSPORT**

Climate change caused by the development of human civilization is now becoming increasingly topical. To mitigate it, the automotive industry pays increasing attention to electric cars. However, a lot of energy is required for the production of rechargeable batteries and the operation of electric vehicles. In this research, we studied how justified is the transfer from internal combustion engine vehicles to electric vehicles from the point of view of ecology, particularly, CO<sub>2</sub> emissions. It is

known that for internal combustion engines CO<sub>2</sub> emissions are 120 - 160g / km. Using natural gas in thermal power stations, CO<sub>2</sub> emissions are 70 g / km, but burning coal in power plants increases CO<sub>2</sub>emissions to 140 g / km. In this case, the transition to electric cars is not cost-effective.

The study discusses the data of electricity production in various countries in terms of the feasibility of switching to electric vehicles.

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## **FORMATION OF REVERSIBLE SUBMICRON STRUCTURES ON THE SURFACE OF NITINOL THIN FILMS BY ELECTRON BEAM IRRADIATION**

Nitinol is an alloy of nickel (Ni) and titanium (Ti), mainly known for its shape memory properties, superelasticity, corrosion resistance and biocompatibility. It is widely variety used in industrial and medical fields. Formation of nitinol structures at micron and submicron scales is an area of research of great interest for medical and microelectromechanical (MEMS) applications.

In this work we present a method of forming nitinol structures at submicron scale by using electron beam irradiation. Nitinol thin film was sputtered on Si substrate at 650 C temperature from Ni and Ti sources by direct current (DC) magnetron sputtering method. Submicron structures were created by deforming the surface of nitinol thin film by electron beam irradiation in scanning electron microscope. Obtained structures were measured by atomic force microscopy (AFM). After AFM measurements nitinol thin film was heated to 60-70 C. Repeated AFM measurement revealed that the surface of nitinol thin film had partially reverted to flat shape after the heating.

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## **GLYPHOSATE DETECTION IN PLANTS USING ELECTROCHEMICAL METHODS**

Keywords: glyphosate, electrochemical methods, sensor, PCB electrodes.

Glyphosate is a widely used herbicide, which is considered to have low toxicity, and is widely used in agriculture. However, several researches reports, that ingestion of glyphosate leads to large number of health issues including increased cancer risk, and death. As glyphosate is hard to detect and, therefore, it's use is loosely controlled, it can be ingested by human with agricultural food products. So, it is necessary to develop a reliable glyphosate detection method.

The aim of this study was to produce a cheap and fast method for detection of glyphosate, using electrochemical analysis. In this study, a Printed Circuit Board (PCB) electrodes were used to detect small amounts (1 mmol/l) of glyphosate in distilled water, using Square Wave Voltammetry (SWV). Such electrodes are cheap to mass produce, and allow direct, in-field control of glyphosate concentrations.

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## **LATTICE DYNAMICS OF WHITE PHOSPHORUS**

Phosphorus exist as white, black and red allotropes at ambient conditions. White phosphorus at ambient conditions ( $\alpha$  form) consists of P<sub>4</sub>tetrahedra arranged in the body centered cubic crystalline lattice.

In our work, the dynamics of the crystalline lattice of white phosphorus is studied. The calculations of the crystal lattice vibrations were made using the molecular dynamics calculation program GULP. The parameters for the interaction of phosphorus atoms were obtained using the experimental IR and Raman spectra and the theoretically calculated lattice vibration frequencies. Theoretical vibration frequencies were obtained in DFT calculations using the CRYSTAL14 program. There are several characteristic areas in the spectrum of variations: the internal vibrations of the P<sub>4</sub> molecule at 360 cm<sup>-1</sup>, 460 cm<sup>-1</sup> and 600 cm<sup>-1</sup> and the lattice and libration vibrations below 120 cm<sup>-1</sup>.

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## **NANOSTRUCTURE-BASED ELECTROCHEMICAL SENSOR FOR DETERMINATION OF CHANGES IN RYE DNA CAUSED BY GLYPHOSATE**

Glyphosate, commonly known by its original trade name Roundup™, is the world's most widely used herbicide. It has well known environmental effects: polluting of soil and groundwater, negatively influencing plant health and breaking an ecological balance. Even at low concentrations it can have profound impacts on microorganisms, plankton, algae, earthworms and beneficial insects.

Despite of earlier mentioned low acute toxicity rate of glyphosate for humans latest research articles shows long-term toxicity risk including cancerogenity, genotoxicity, endocrine disruption at concentration levels too low to have a herbicidal effect. Glyphosate and its metabolites persist in food, water, and dust, potentially indicating that everyone may be exposed ubiquitously. Therefore, the detection of these pollutants in low concentrations is an actual and important task. To increase the sensitivity of the sensor, nanostructures were used. The nanostructured electrode can be characterized by an increase in the working surface area and the total number of active bonds compared to a smooth film. To analyze the presence of glyphosate and its metabolites in rye juice, two groups of samples were selected. In the first case, glyphosate was added to the water for irrigation on the first day at concentrations from 0 to 100 ul / 50 ml, and then the samples were watered with pure water for 7 days. Then the juice containing glyphosate metabolites was squeezed from the obtained samples. In the second case, rye was watered with pure water for all 8 days, and glyphosate in the same concentrations as in the first case was artificially added just before the measurement. The obtained samples were studied by the DPV method employing an electrode containing CuO nanostructures. To analyze changes in the DNA sequence, a PCR product obtained from samples of the first group was electrochemically studied using an electrode containing ZnO nanostructures. To confirm the results obtained, an electrophoresis method was also applied. The results indicate that the DPV signal obtained from the juice of plants with artificially added glyphosate has significant differences compared to the signal obtained from the juice of plants absorbing glyphosate in a natural way during growth. However, in both cases, CuO nanostructure based sensor based detects the presence of glyphosate or its metabolites compared with the control sample. The experiment also found significant changes in the DNA of rye caused by exposure with glyphosate during growth process of plant.

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## **SENSOR BASED ON FLUORESCENCE OF METAL OXIDE NANO-STRUCTURES**

Currently, the investigation and development of the optical biosensors, which are based on the metal oxide has driven the attention.

As one of the best metal oxides for the above mentioned application may be used a ZnO – n type semiconductor, because of band gape in 3,37 eV, a high isoelectric point pH= 9 – 9,5 and because of intense photoluminescence at the room temperatures. There are known and available good technologies for the creation of different types and morphologies of ZnO nano-structures with different characteristics. It is possible to create structures such as tubes, rods, needles and plates.

During the studies there were investigated three different types of ZnO nano-structures with different morphologies: tubes, rods and needles. The given structures were grown on the substrates which consisted of the glass plates covered by thin Cr layer.

The analysis of the obtained luminescence spectrums was focused on the study of deep level emission (DLE) intensity pike, because there is an assumption that DLE intensity pikes of different morphologies may have significant differences.

As a result of the studies there were obtained luminescence spectrums for various morphologies ZnO nano-structures.

There were also obtained luminescence spectrums for the same ZnO nano-structures that were covered by methylen blue and distilled water solution. The luminescent spectrums were also obtained after evaporation of the water from solution, which covered the nano-structures.

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# PSIHOLOGIJA

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# PSYCHOLOGY

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## **YOUNG PEOPLE'S CAREER CHOICE SOCIAL AND PSYCHOLOGICAL REASONS**

There are wide career opportunities in today's world and choosing a profession among young people is very popular problem. The choice of profession is influenced not only by the interests of young people but also from many other factors - social and psychological.

The wide career opportunities nowadays often make it difficult for young people to choose a profession. Because of this in schools are career counselors which helps students - tells about different professions and invites representatives to school so students can ask questions and discuss. It helps young people get know profession much better.

Many young people's career choices are also influenced by the social situation - place of residence, marital status and financial opportunities.

Not less important role - psychological reasons. Interests, general and cognitive abilities like learning ability, verbal aptitude, numerical aptitude, spatial aptitude, form perception aptitude, reaction time and making decision potential.

Another important psychological indicator personality type - realistic, investigative, artistic, social, enterprising, conventional. All these personality types are different so it's important to know it to make career choice easier.

### **KEY WORDS:**

CAREER, YOUTH, PERSONALITY

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## **BURNOUT OF TEACHERS IN CONNECTION WITH PSYCHOLOGICAL WELL-BEING**

Darba mērķis ir izpētīt kāpēc pedagogiem ir augsts izdegšanas līmenis saistībā ar psiholoģisko labklājību. Problēma ir aktuāla, jo pedagogi ikdienā sastopas ar augstu stresa līmeni, kurš bieži noved pie personības disfunkcijas, kura veidojas pazeminoties personības psiholoģiskās labklājības faktoriem. Veidojas šis izdegšanas līmenis pie augsta emocionālā izsīkuma, depersonalizācijas un personīgo sasniegumu redukcijas. Pētījumā vērtēta ir darba resursu pieejamība un labklājības faktoru izmantošana vai izvairīšanās no tiem, kas nepieciešama personības resursu atjaunošanai.

Daudzi psihologu pētījumi atklāj vairākus simptomus, kas liecina par skolotāju izdegšanu – izjūta, ka nav vēlme doties uz darbu, ir grūtības koncentrēties pienākumu izpildei, rodas izjūta, ka ir nepiemērots pienākumu izpildei, attālināšanās no kolēģiem un iesaistīšanās konfliktējošās attiecībās ar skolēniem, ir vispārēja aizkaitinājuma izjūta pret skolu, bezmiegs, gremošanas traucējumi, galvas sāpes. (Hinton & Rotheiter, 1998; Troman & Woods, 2000)

Piedāvātais pētījums tika veikts dažādās skolās, kurās tika aptaujāti 46 pedagogi, kuri māca 1-9 klasi. Pētījumā tika izmantota standartizētas aptaujas: Maslačas profesionālā izdegšanas aptauja un Kerolles Rifas psiholoģiskās labklājības aptauja. Pētījumā tika noskaidrots, ka pedagogu izdegšanu ietekmē pedagoga vecums un personības emocionālais izsīkums, kā arī depersonalizācija un personīgo sasniegumu redukcija

Atslēgvārdi: psiholoģiskā izdegšana, izdegšanu veicinošie faktori, emocionālais izsīkums, psiholoģiskā labklājība, psiholoģiskās labklājību veicinošie faktori.

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## **CONTENT OF PSYCHOLOGICAL WELL BEING OF PRISONERS**

Keywords: psychological well being, prisoners, factors of psychological well being.

Psychological well being is very important in human life, affect the quality of life, the ability for positive changes. Psychological well being is a phenomenon that affects both human inner feelings and interpersonal relationships, well being is especially important for people who face life difficulties. When a person gets into prison, he loses not only freedom, they face separation from the family, friends, the usual environment and has to adapt to new circumstances, all of which affects the individual's psychological well being. The study focuses on prisoners psychological well being content and is there a

connection between psychological well being and social – demographic factors. Participants in the study were 100 prisoners of Daugavgrivas prison.

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## ***CORRECTION WORK FOR DEVELOPMENT OF COGNITIVE ABILITIES AND REGULATION OF ANXIETY FOR SIX –YEAR-OLDS***

One of the most essential aspects of development at preschool age is intellectual development - such as thinking abilities and formation of skills which not only allow to acquire new knowledge but are also useable as need arises in different situations and creativity.

Condition of anxiety is inevitable in the process of learning. There is a belief that learning anxiety starts to develop at preschool age. It may be enabled by the educator's style of work as well as by high demands brought forward the child and constant comparing with other children.

In some families the whole year before enrolment in school parents discuss the "respectable" schools and "prospective" teachers (etc.) at the presence of their child. As a result, the worries of parents are impressed on their child.

The objective of the research is to study the relation between the level of anxiety of six-year-olds and the features of development of cognitive abilities.

In the research were used 2 methods: Temple R., Dorki M., Amen V. children anxiety a test "Choose the face" and a test for detection of cognitive abilities - correction tasks "Listen! Think! Find!" There were two groups formed – control group and experimental group. For the experimental group was organised correction work twice a week for 25-30 minutes to stimulate cognitive activity and to regulate the level of anxiety. The results acquired show that increased cognitive activity boosts anxiety, so in order to prevent destructive changes in child's personality it is necessary to control and regulate the level of anxiety in the process of learning.

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## ***DEVELOPMENT OF ATTITUDE TOWARDS AGING PROCESS QUESTIONNAIRE***

**Introduction:** One of the World Health Organization priorities (Global action plan on physical activity 2018-2030) is to reduce the effects of aging, promoting active and healthy aging (WHO, 2018). Approximately 22,2% of Latvia's population is 65 years and older (*Centālās statistikas birojs [CSB]*, 2018). Attitude towards aging can be defined as the expectations, experiences or feelings (Hess, 2006) or how one imagines aging (Kornadt & Rothermund, 2015). Long-term attitudes towards aging have an impact on people's health and well-being (Wurm, Diehl, Kornadt, Westerhof, & Wahl, 2017).

**We aimed to** develop the Attitude towards aging process questionnaire.

**Materials and methods:** A literature search in databases EBSCO, Pubmed, SCOPUS and Science Direct using keywords "attitude towards aging questionnaire", "definition of attitude of aging" was conducted. After literature review was done, a focus group consisting of four participants aged from 63 to 71.

**Results:** A preliminary version of the questionnaire consists of three scales: "biological aspect", "psychological aspect", "social aspect" and 29 items in total.

**Conclusions:** The preliminary version of the Attitude towards aging process questionnaire has been developed. In the future, thorough psychometric analysis and validation of the questionnaire should be conducted.

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## ***DIFFERENCE BETWEEN EPISTEMOLOGICAL ATTITUDE IN STUDENTS FROM ERASMUS UNIVERSITY ROTTERDAM (NETHERLANDS) AND IN STUDENTS FROM DIFFERENT HIGHER EDUCATION INSTITUTIONS OF DAUGAVPILS CITY TOWARDS THE SOURCES OF KNOWLEDGE***

**Abstract:** Aim of the present research is to *identify epistemological attitude* towards sources of knowledge among students from *Netherlands* and to *verify the hypothesis* that there exist differences among epistemological attitudes in students from Latvia towards different sources of knowledge, scientific literature and articles, a lecturer in a higher education institution as a source of knowledge, popular science magazines and newspapers, popular science television, internet resources. Epistemological attitude is a *construct of a student's orientation reflecting formal and substantial evaluation* of a source of knowledge. The present theoretical construct allows studying *psychological and epistemological mechanisms* which determine imprinting the source image as significant one.

Students from different faculties of Erasmus University Rotterdam (Netherlands) (n=100; M=21,52 years, SD=3,75 years) participated in the present study held in 2017 in addition to students from different higher education institutions of Daugavpils city (Latvia) (n=102; M=23,08 years, SD=5,87 years) who participated in the study in 2014.

A result of the present research showed that epistemological attitude towards different sources of knowledge in students *from Netherlands depends on a type of a source*; the dependence was identified among Latvian students. Students showed that for *high cognitive value* it is significant to have emotionally prognostic value for all sources of knowledge, in its turn the *low prognostic meaning was reflected as separated component of significance*. Dutch students highlighted a difference in *formal use* of the scientific literature, articles, a lecturer's knowledge and internet.

**Epistemological significance of content** students has been found in the scientific literature, articles and a lecture's knowledge. Erasmus students showed higher meaning of criticism as substantive quality at the same time. Television, magazines and newspapers of popular science type and internet sources do not display the image of a source as a reliable one. Erasmus students see higher prognostic potential in the knowledge of these sources but in their turn Daugavpils students - functionally academic use. The highest personal and adaptive characteristics have been found towards internet source. All sources were reflected as significant, but this significance is not equivalent in content.

**Keywords:** cognition, knowledge, sources of knowledge, epistemology, attitude

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## ***EMOTIONAL INTELLECT AND WELL-BEING FOR THE INTERNET USERS***

Key words: internet users, emotional intellect, psychological well-being.

Current research is devoted to the study of interconnectedness of emotional intellect and psychological well-being among the internet users. At this moment the use of internet has become a mass disease. This is clear that the research about this issue is well discussed among the practitioners and theoretical thinkers (Correa, T., Hinsley, A. W., & De Zuniga, H. D. (2010.), Engelberg, E., & Sjöberg, L. (2004), Boyd DM, Ellison NB. (2007), Castells, M. (2004.), etc.). This research is related to the components of emotional intellect and to some degree with the psychological well-being, but there is no research on the interrelatedness of emotional intellect and psychological well-being. This particular research has a focus on the relatedness of these two categories. The respondents of the research represent diverse age groups. The research method is a questionnaire about the use of a internet, as well as Kerola Riffa scale of psychological well-being and Bar – On questionnaire about emotional intelligence.

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## ***LATVIAN RESIDENTS' S ATITUDE TOWARDS FEMINISM AND IT'S PREDICTORS***

Key words: feminism, attitudes, factors

Feminism has always been actual movement and direction of life perception nowadays, not only in America, but also in Europe and Latvia. Feminism concept has various meanings and is hard to determine one and most important meaning of them. Latvian residents are ambiguous in defining the meaning of this concept, one part of them perceive it like equality between women and men, others perceive it like obsolete and not relevant movement in modern society. Understanding of the concept affects on people attitudes about feminism.

The aim of the research was to find out factors, that affects on the respondents attitude about feminism, and also determine meaning of the feminism term in Latvian residents respondents.

The object of the research was Latvian residents women and men with different demographic indicators of life.

A theoretical study method was the analysis of scientific literature, researches and other sources.

The adapted Levant's (2007) Femininity Ideology Scale (FIS) was used in this study for Latvian residents for the first time in Latvian language.

The preliminary results are discussed.

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## ***MUTUAL RELATIONSHIP FORMATION IN A FOSTER FAMILY***

Foster families often face psychological difficulties such as the friendly relations in the family, family psychological climate improvement, children's peg formation, attention to each child individually etc. These problems provoke foster parents' burnout syndrome, adverse situations in families, as well as the child's psychological difficulties of adaptation period. For such topical issues foster parents are willing to discuss various organizations, associations and custody court sittings, in psychologist consultations.

Taking in a foster child, a variety of problems (hitherto unknown) become topical, including theft, competition, fights for parental attention, jealousy, lies, intrigue ... Family psychological atmosphere may become unfavorable, not only for children but also their parents. Then a question arises, doesn't the number of family members equate to one of the child care organizations? Is foster family status and mission losing its relevance?

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## ***PEER VIOLENCE, PREDICTING VIOLENCE FACTORS RELATED TO THE STATUS OF THE GROUP AGED 14-17 YEARS***

People adapting to age and changing social status is an important and complex problem. Our society is characterized by poor age adaptation and socialization of age. Many are not prepared for their actual age. The social behaviour of an individual, community, institute, or organization depends not only on their social status, but also on the environment, which consists of the same social subjects. They expect certain social behaviours according to their needs and "orientation to others". In this case, social behaviour acquires a social role. Occasionally, in role situations, a person can focus on himself - this often leads to conflict situations that are the subject of the author's research. After summarizing the results of the research, it is planned to develop preventive measures for the reduction of violence.

Thanks to the socialization, the individual faces social life, acquires and changes his social status, social role. Social status is the position of an individual in a society with certain rights and responsibilities. In small social groups, the personal status of a person, which is formed by its individual qualities, is of great importance. In the process of teenage socialization, there are significant changes in personal growth.

Research question: Is there correlation between peer violence and different dimensions of social status in school classes? What dimensions of social status in school classes' best predict peer violence within a classroom?

115 respondents participate in the study, aged 14-17 years: 56 boys and 59 girls.

In the process of socialization, the acquisition of social experience through transformational activity is essential. It is social experience that plays a major role in adolescence and the place in the formal / informal groups.

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## ***PLAY AS INTEGRATED LEARNING FOR PROFESSION EXPLORATION OF PRIMARY SCHOOL***

Keywords: play, integrated learning, primary school, primary school age, cognition, profession, career guidance.

The study is devoted to exploring and organizing integrated play as a complex and creative tasks, the implementation of which should take into account the peculiarities of the development phase, the abilities of the children and the progress towards creative thinking.

In the course of the research, it was possible to discuss the topic of finding professions and providing career guidance to primary school children in the educational institution by including play in the active learning process.

As a result of the research, the methodology developed by the author would be a tool for others, as one of the possibilities for this age group to develop this notion of professions.

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## ***QUANTITATIVE ASPECTS OF FRIENDSHIP***

Keywords: Friendship, number of friends, friendship length.

Without a doubt, today's world is getting larger when it's about social interaction. Modern technologies and the mobility provided by various means have enlarged a person's opportunities to make friends all over the world. It seems like a list of friends on a social network or a mobile phone never stops growing and there are always companionship and a sense of belonging. On the one hand, the current research focuses on how many friends do respondents think they have and on the other, on how many friends in respondents' opinions, their best friend has. Additionally, the present research focuses on the difference between how many friends do respondents think they have and how many friends in respondents' opinions their best friend has, to moreover, how these changes differ across the lifespan as respondents age and friendship length transforms into something significant.

Participants (N=128; M=43.52) of the research voluntarily filled out an open-ended research questionnaire.

The questions of the research are how many friends do respondents' think they have and how many friends in respondent's opinion, their best friend has and is there a correlation between respondent's age, number of friends and best friend's age, respondent's perceived number of friends that best friend has and friendship length?

Research findings reveal that respondents believe that their best friend has more friends than the respondents have on their own. According to the pieces of evidence of correlative analysis, a few points are worth mentioning. Firstly, there is a significant negative correlation between the respondent's age and the perceived number of friends that their best friend has. Secondly, there is a significant positive correlation between the respondent's age and friendship length. Thirdly, there is a significant positive correlation between the respondent's number of friends and the perceived number of friends that their best friend has. Finally, there is a significant negative correlation between friend's age and the perceived number of friends that their best friend has.

## **RELATION OF TEACHERS' EMOTIONAL INTELLIGENCE WITH PROFESSIONAL BURNOUT**

The 21<sup>st</sup> century, with the rapidly changing demands in the society life, creates a demand for rapid change in education as well. The modern education process puts high demands on the teaching profession. The teacher should be able to perform not only the duties set out in the job description, but to continuously acquire new knowledge and improve the existing skills. These high, fast and changing demands create an overload and risk of professional burnout, leading to a reduction in the quality of the pedagogical work. The results of the work are getting closer to the personality traits, and the phenomenon of emotional intelligence (EI) becomes important. It is impossible to expect an emotionally unstable personality to support the process of developing an emotionally stable personality. Therefore, the author considers that this topic has a global topicality in the context of education and sustainability.

The aim of the research is to study the relationship between educators' EI and professional burnout.

The following research questions were defined: 1. What is the EI level of educators? 2. Is there a link between EI indicators and professional burnout rates? 3. Do / How do EI Factors: intrapersonal, interpersonal, adaptation, stress management and general mood affect teachers' burnout levels?

The Bar-On Emotional Intelligence Inventory (The Bar-On EQ-i) and Maslach Professional Burnout Inventory (Maslach Burnout Inventory) were used.

The results obtained provide an opportunity to analyze the link between EI and professional burnout factors. It has been found that there are different definitions of EI for several researchers; it is important in pedagogical work to understand and manage emotions; the level of EI is connected with the appearance of a professional burnout symptom.

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## **SPIRITUAL INTELLIGENCE AND ITS' ENHANCEMENT IN PRIMARY SCHOOL**

The paper aims to conceptually analyze the term of spiritual intelligence in a context of psychology and substantiate the development of spiritual intelligence by means of psycho-pedagogical intervention programs in primary school. Spiritual intelligence is an essential requirement for one's psychological health and social functioning. Moreover, the urgency of presented topic is determined by the fact that nurturing and developing harmonious personality is among the central goals of educational systems in many countries, including Latvia. In this context psychology can serve as to study the mechanisms, requirements and developmental potential of spiritual intelligence. At the beginning of the paper multiple definitions of spiritual intelligence are provided following by an insight into spiritual intelligence as a psychological phenomenon in educational process. The essential features of intervention programs are described and the concept of psycho-pedagogical intervention program is discussed as well as variety and efficiency of such programs. Seven variously oriented psycho-pedagogical intervention programs for primary school students are described, including psycho-pedagogical intervention programs for the development of spiritual intelligence. According to literature research and the author's practical knowledge, psycho-pedagogical intervention programs can be considered as one of the most efficient tools for enhancement of spiritual intelligence in primary school.

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## **TEACHER'S LIFESTYLE AND ITS REALATION TO JOB SATISFACTION**

Teacher's have already expressed their dissatisfaction with their working conditions several times by holding rallies-accenting the pay, overload, contemptuous attitude tendencies of the society-this way demanding appropriate pay and change of the attitude. Although the teacher's job is not the easiest one, people still choose this profession. Why do people choose such profession if it is know for unsolved problems for years?

The objective of the research is to study the aspects of characterization of teacher's lifestyle and its relation to their job satisfaction.

The tasks of the research: to ascertain what is teacher's lifestyle and their feelings; if there is relation between lifestyle and job satisfaction; if lifestyle affects the ability of the individual to maintain positive environment and personal feeling at their workplace; what guarantees job satisfaction.

Teacher's job satisfaction depends of demographic aspects, age and gender, length of service, personal resources and ability to provide positive communication with administration and colleagues.

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## **TESTING FIVE-DIMENSIONAL IDENTITY MODEL AND DERIVING PERSONAL IDENTITY STATUSES AMONG LATVIAN EMERGING ADULTS**

Emerging adulthood is a period of identity exploration, and identity formation is one of the main developmental tasks of emerging adulthood. Marcia's identity status paradigm theory was based on two identity dimensions exploration and commitment. Unpacking commitment and exploration identity dimensions new model has been proposed – Five dimensional identity model. This model describes identity formation in five dimensions - exploration in breadth, commitment making, ruminative exploration, exploration in depth and identification with commitments. Exploration in depth has two sub-dimensions reflective exploration in depth and reconsideration of commitment. The purpose of this study was to improve adapted Latvian version of Dimensions of Identity Development Scale (DIDS) and using cluster analyses empirically derive identity statuses. The study included emerging adults (total N = 101, 65% women) age between 18 – 25 ( $M=22,19$ ,  $SD=2,31$ ). Through confirmatory factor analysis results showed that the best model fit for DIDS was six factor model  $df = 257$ ,  $\chi^2 = 443,73$ , CFI = 0,85 un RMSEA = 0,09. Two step cluster analysis results indicated seven identity statuses – diffused and carefree diffusion, searching and ruminative moratorium, two subtypes of foreclosure early closures and closures, and achievement. Suggestions for future research are discussed.

Keywords: emerging adulthood, personal identity, identity dimensions, identity statuses

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**Aija Šmukste**

## **THE CONNECTION BETWEEN PECULIARITIES OF SPEECH DEVELOPMENT AND COMMUNICATION SKILLS IN FORM 1**

The youngest school age is the stage when children improve speech as a communication skill. In order to extend their vocabulary, increasingly difficult grammatical structures are acquired. Exactly speech is a means of people's interaction – people can communicate with each other. If the development of speech is impeded, it crucially influences the formation of social contacts.

Therefore, the aim of the research is to investigate peculiarities of speech development and communicative skills for pupils in Form 1.

Two groups are highlighted in the research – an experimental (17 pupils) and a control group (13 pupils). With the help of participants of the experimental group, the correction work has been organized for the development of speech and communication skills.

It has been found that the connection between the development of speech and communication skills exists for pupils in Form 1.

**Līga Rože-Reimate<sup>1</sup>, Malgožata Raševska<sup>2</sup>**

## **THE IMPACT OF POSITIVE EMOTIONS ON CREATIVE THINKING OF 7 AND 10 YEAR OLD CHILDREN: AGE AND GENDER DIFFERENCES**

This study explored the impact of positive emotions on children's creative thinking, and to find out if there is age and gender differences in this impact.

Previous studies mostly point to positive effect of positive emotions on creative thinking measured with different kinds of tasks of creative thinking, though, studies about the topic with children's samples have been relatively rare (Davis, 2009). Recently proposed Broaden-and-build theory explains the mechanisms of cognitive flexibility and openness facilitated by positive

emotions (Fredrickson, 1998). Some research point to the 4th grade slump in creativity measures for children aged 10 – 11 years. As regards gender differences in creative thinking, mostly research does not reveal them, however, boys and girls have different strengths in the spectrum of creative thinking abilities and boys tend to have greater variability in the results of creative thinking tests.

**Method.** Sample of research consisted of 142 children aged 7 years ( $M = 7,37$ ;  $SD = 0,67$ ) and 116 children aged 10 years ( $M = 10,31$ ,  $SD = 0,60$ ) (boys 50%). Children of each age group were assigned to experimental and control group. The study was carried out in school setting. For the experimental group, the positive affect was induced using a false positive feedback technique in group after doing a cognitive task, including oral statement and certificate, whereas the control group received neutral feedback about the results. Before and after manipulation children of both groups completed emotional valence scale designed for the purposes of the study to check the manipulation effect. The creative thinking was measured with “Test for Creative Thinking – Drawing Production” (Urban & Jellen, 2010).

**Results.** Positive impact of positive emotions on creative thinking was found in 7 year-olds, but not 10 year-olds. It was also found that emotion regulation and emotional reactivity had different mediating tendencies for the impact of positive affect on creative thinking. Gender differences were found in the sample of 7 year-olds – positive emotions facilitated creative thinking in boys but not girls. In the sample of 10 year-olds, gender differences were not found.

**Conclusions.** The study uncovers the importance of positive affect in creative thinking facilitation for younger children, but not for older children, as well as gender differences point to positive emotions as facilitator of creativity in boys, but not girls. Results should be considered in the light of emotion-cognition interaction from the developmental perspective, as well as a resource of positive emotions in creativity of boys in educational settings.

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## **UNEMPLOYER'S INDIVIDUAL ANOMIE PECULIARITIES**

Key words: unemployers, individual anomie

Anomie term was first time described by Émile Durkheim in his work *The Division of Labour In Society (1893)*. Durkheim's use of the term anomie was about the phenomenon of industrialization–mass–regimentation that could not adapt due to its own inertia – its resistance to change, which causes disruptive cycles of collective behavior e.g. economics, due to the necessity of a prolonged buildup of sufficient force or momentum to overcome the inertia.

Individual Anomie first was described by Latvian psychologist Ļevina, Mārtinsone and Kamerāde (2015, 2016). Individual anomie structure include three components – normlessness, social isolation and pointlessness.

The aim of this research was to find out factors, that affect on respondents individual anomie sense. And also adapt Latvian individual anomie questionnaire (Ļevina, Mārtinsone, 2017).

The object of the research was unemployers of Daugavpils district, who are in social risk group.

A theoretical study method was the analysis of scientific literature and other sources.

Latvian individual anomie questionnaire (Ļevina, Mārtinsone, 2017) was used in this study.

The preliminary results are discussed.

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# VIDES ZINĀTNES

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## ENVIRONMENTAL SCIENCES

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### **RESULTS OF GEOLOGICAL AND GEOPHYSICAL FIELD SURVEY OF RING-SHAPED HILL NEAR PUŠA, LATGALE UPLAND**

In this paper, results of geological and geophysical field survey of ring-shaped hill near Puša, Latgale Upland are reviewed. To obtain the data, series of tasks were realized and conventional geological and geophysical methods were applied. Geological studies first of all include shallow drilling of surface deposits by AMS Mud auger, allowing to identify types and to map distribution of Quaternary sediments in the study area. Secondly, survey of peat thickness in the central part of ring-shaped hill occupied by bog was carried out along several transect lines following the procedure described by Saas et al. (2010). Accordingly it was done on intervals 10 m by pressing a steel probe through the peat to the point of refusal. In addition, for identification of peat thickness distribution in the bog geophysical survey was applied using ground-penetrating radar (GPR) for this purpose. The alternate application of three transmission frequencies, using shielded 300 MHz antennae, as well unshielded 150 MHz and 75 MHz antennas, was tested to elucidate the best recognition of boundary between peat and bog bottom sediments. Exact location of all the sediment drilling and peat probing points, as well as GPR transect lines was recorded by GPS. The results indicate differences in geological structure of ring-shaped hill. The highest parts of ring-shaped hill in its south-eastern section are composed of medium- to coarse-grained glaciofluvial sand and gravel sediments, whilst lower parts and north-western section are composed of loamy glacial diamicton. The peat thickness values in central part of bog exceed 8 m, reaching max. 13 m in south-eastern part of central depression. Results of GPR geophysical survey demonstrates, that due to the strong attenuation of electromagnetic waves by peat, the reflections from deeper layers have low intensity, hence causing a strong reduction in depth penetration and avoiding the identification the boundary between peat and bottom sediments.

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### **ANALYSIS OF GRANULOMETRIC AND MICROMORPHOLOGICAL INDICATORS OF QUATERNARY SEDIMENTS FOR DISCRIMINATION OF SUBAQUEOUS DEPOSITIONAL ENVIRONMENTS**

Clastic Quaternary sediments were transported and deposited in subaqueous environments during the development of the Augšdaugava spillway valley. These sediments, particularly glaciofluvial, glaciolimnic and alluvial fine to coarse materials are the important constituents of the geological structure of the spillway valley slopes and terraces. Distinguishing these clastic sediments from each other and from other similar deposits, e.g., aeolian sand is an essential task in field survey and developing of large-scale geological maps. Hence the goal of this study was to assess the applicability of two laboratory methods – analysis of granulometric composition and micromorphology of quartz grains as indicators for identification of subaqueous depositional environments, which in turn can be used for discrimination glaciolimnic, glaciofluvial and alluvial sands. The granulometric composition of clastic sediment samples were determined by analyzer Malvern MASTERSIZER 2000, with subsequent visualization of data as grain-size distribution frequency diagrams. Data on micromorphological indicators, i.e. roundness, relief and surface microtextures of quartz grain surface was obtained by scanning electron microscopy (SEM). The data obtained in the result of granulometric studies of sand samples indicate that plots of grain size distribution can be used for the discrimination of different sediments. The alluvial sediments show mainly unimodal grain size distribution determined by fluvial deposition in a relatively slow and steady flow, whilst glaciofluvial and glaciolimnic sediments tend to a bi- or polymodal grain size distribution. Evaluation of SEM as a method for distinguishing alluvial from glacioaquatic, i.e. glaciofluvial and glaciolimnic material reveal, that despite the expected, results of the micromorphological analysis indicate that neither microtextures, nor roundness or relief of quartz sand grains differ significantly for analysed three types of Quaternary sediments.

## **APPLICATION OF LIDAR DERIVED DIGITAL ELEVATION MODEL IN GEOMORPHOLOGICAL STUDIES OF MALTA-ANDRUPENE ESKER**

The interlobate zone between the Malta depression and the Feimaņu hummocky area, the Latgale Upland, is amongst those in Latvia where glaciofluvial landforms like eskers and their systems are typical landforms. The information given in scientific literature reveal that the analysis of airborne laser altimetry or LiDAR data is the most appropriate method to study geomorphometry and geographic distribution of relief features in the aforementioned post-glacial landscape. Airborne laser altimetry is one of the remote sensing techniques that recently provides the most reliable high spatial and vertical resolution data on the topography of the landscape both for delineation of individual landforms and detailed studies of specific relief elements. Considering that, examination of LiDAR derived digital elevation model was applied in geomorphological studies of Malta-Andrupene esker. The LiDAR elevation raw data used in this study were collected by Latvian Geospatial Information Agency by fixed-wing aircraft in 2018. After filtering ground reflections and processing point cloud data, the development of digital elevation model of the esker and surrounding area was done. After that, the identification and delineation of esker foothills, crest line, planform shape and orientation and other geomorphological elements was performed following the procedure described by Smith and Clark (2005) and Evans (2012). The extraction of geomorphometric parameters of esker and the measurements performed in GIS environment indicate that obtained results provide much more information than those previously obtained from analysis of topographic maps and manual digitizing of contour lines, particularly in terms of interpretation of local morphology of glaciofluvial relief features.

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## **ASSESSMENT OF THE GREEN AREAS USING GIS METHODS IN DAUGAVPILS CITY**

*Keywords: green areas; vegetation index; ArcGIS; NDVI; EVI;*

The city's green areas are parks, squares, sports areas, alleys, forests and others green spaces. The main objective of the green areas is to reduce the negative impact on the environment, ensure the physical health of people and reduce human stress from the surrounding environment. The aim of the research is count up the green areas in Daugavpils city and assesses using vegetation indexes. The Daugavpils city count up used Esri ArcGIS Map 10.6 software and orthophoto of 2017. To assess the green area in Daugavpils city used satellite images and calculated Normalized difference vegetation index (NDVI) and enhanced vegetation index (EVI). The research used cartographic, geomatic, mathematical and statistical methods.

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## **CHANGES OF SPHAGNUM SPECIES, CALLUNA VULGARIS AND FEATHER MOSSES PERCENTAGE COVERAGE DEPENDING ON DISTANCE TO DRAINAGE DITCH IN RESTORED RAISED BOGS**

Raised bogs are unique ecosystem, but in recent centuries it has been transformed by drainage. After drainage bog develop conditions suitable for the growth of species specific to the forest ecosystem. The most drastic changes are in the ground vegetation cover (moss layer), where *Sphagnum* species are replaced by other mosses like *Pleurozium schreberi*, *Hylocomium splendens*, *Dicranum polysetum* and *Dicranum scoparium*. Similarly *Calluna vulgaris* percentage coverage is increasing thus growing conditions become suitable for tree growth. After restoration water no more is drained from the bog, as a result vegetation in the vicinity of drainage ditches changes as follows: *Sphagnum* species percentage coverage increases, the number of species specific to the forest ecosystem decreases.

The study has been carried out in three nature reserves- "Aizkraukles purvs un meži", "Rožu purvs", "Aklais purvs" where the LIFE project "Restoration of Raised Bog Habitats in the Especially Protected Nature Areas of Latvia" was implemented. As part of this project, drainage ditches was blocked in the bogs in 2012. Monitoring of vegetation was carried out before and after the blocking of ditches. During this study, vegetation in the area from the drainage ditch to 28 metres away from the ditch was determined visually as percentage cover of each species in 81 plots with a radius of 2 m. The plots were surveyed for the fifth time in 2018.

Study analysis how percental coverage of *Sphagnum* species, *Pleurozium schreberi*, *Hylocomium splendens*, *Dicranum polysetum* and *Dicranum scoparium*, *Calluna vulgaris* changes depending on distance to the ditch. Comparison of all

plots with ONE-Way Anova test shows that there is no significant difference between groups and the arithmetic mean of the groups is the same. The obtained results showed that the factor- the distance to the drainage ditch, does not have a significant impact on the percentage coverage of researched species.

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## **DETERMINING FOLK AND WARD GRANULOMETRIC INDICATOR VARIATIONS OF ALLUVIAL SAND DEPOSITS IN THE RIVER POGUĻANKA USING LASER DIFFRACTION METHOD AND BIVARIATE SCATTER PLOTS**

The examination of grain size distribution is among those methods, which provide data on the most indicative properties of sediments. Such studies ensure insight into history of transportation and conditions of deposition. Hence the application of granulometric analysis is very relevant in research of river valleys in Latvia where we can observe the sequential development of hydrographic network at the end of the Last Ice age and the beginning of the Holocene. For this purposes 59 samples of sand were obtained in the course of field expeditions performed in the Poguļanka River. Samples were taken from accumulative elements like mid-channel bars and point bars. After physical and chemical treatment, samples were analysed by Malvern MASTERSIZER 2000 analyser. Post processing of laser diffraction data allowed to determine the Folk & Ward (1957) indicators, i.e. mean grain size (Mz), sorting ( $\sigma$ ) and skewness (Sk). In order to elucidate the regularities in variation of Folk and Ward granulometric indicators along the longitudinal profile of the Poguļanka River, the mean grain size, sorting and skewness values were plotted in diagrams depending on distance of sampling points from the river estuary. Bivariate scatter plots have been also employed into the interpretation of data. Obtained results indicate large scattering of mean grain size and sorting values along the longitudinal profile. Despite the expected, the downstream fining was not observed clearly. This discrepancy can be explained by the assumption that Folk and Ward granulometric indicators not only reliably reflect differences in the river streamflow mechanism of sediment transportation and deposition depending on variations in channel gradient, but also reflect the influence of other controlling factors, e.g., difference in sediment mobility, bed roughness and local morphology, presence of knick points in the profile, as well as the input of non-fluvial material by side gullies and valley slope failures.

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## **EVALUATION OF CLOVEN-HOOFED ANIMAL CONDITION IN TEIČI AND KRUSTKALNI NATURE RESERVES**

Aim of this study is to estimate occupancy of cloven-hoofed animal population to the territory and their count dynamics in Teiči and Krustkalni nature reserves from year 2000 to year 2018.

Occupancy of the population to the territory is a count of animals that lives in specific territory.

To detect a count of cloven-hoofed animals usable methodologies are – winter foot tracking, stool tracking and pollination tracking. Each methodology is different but they all are simillary efective.

Results of tracking shows information about the amount of current species living in the territory of study and their amount balance year after year.

Since year 2012 hunting in Teiči and Krustkalni nature reserves is prohibited and from this research it is possible to make conclusions that the amount of cloven-hoofed animals is not rising extremely fast and there is no need to allow hunting.

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## **EVALUATION OF IMPACT OF FOREST FERTILIZATION ON PHYTOBENTHOS DIVERSITY IN SURFACE WATER**

To respond to increasing demand of wood resources, in addition to drainage and thinning, the forest fertilization may enhance increment of trees and future harvest rates. Nonetheless excessive input of nutrients may increase eutrophication risk of freshwater ecosystems. Diatoms are sensitive to alterations in aquatic environment, including pH level and inorganic nutrients. Therefore they can be utilized as indicators for environmental changes like acidification and eutrophication. The purpose of the research was to estimate, how the application of wood ash and mineral nitrogen fertilizer affects the ecological quality of rivers, in particular, the composition of phyto-benthic species. The trial objects were established in two stands – pine stand on dry mineral soil (*Myrtillosa*) next to Rusinupe River and spruce stand on drained organic soil (*Myrtillosa turf. mel.*) near the Age River. The ammonium nitrate was applied in *Myrtillosa* stand in June, 2017 and wood ash was applied in experimental

site of *Myrtillosa turf. mel.* in February, 2018. Phytobenthic samples were collected in May, July and November, 2017 and May, July and October, 2018. The samples were collected in sections of Rusinupe River before and after experimental site, and samples were collected in sections of Age River before and after the inflow of the drainage ditch flowing from the treated site. Shannon-Wiener index values for phytobenthic species from Rusinupe River indicate that the composition of species was less diverse and dominance of particular species was more definite in 2018. Similar tendency was observed in phytobenthic samples of Age River. However, according to Shannon-Wiener index values in general there was lower level of diversity in samples from Age River after the inflow of drainage ditch. There was an increase in diatom deformities in samples collected from both rivers in 2018, although only increase in deformities of diatom samples from Age River was significant. Teratologies of the valves might be caused by prolonged dry period resulting in atypically low water level in river and eliminated discharge in 2018, as well as the observed activities of beavers.

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## **GEOSPATIAL ANALYSIS OF FOREST LANDSCAPE FRAGMENTATION IN LĪVĀNI MUNICIPALITY**

Keywords: GIS, forest, landscape, fragmentation, Līvāni

The definition of fragmentation, basically, is to split something into small parts. It can be relevant not only to the basic everyday life but also to the landscapes. Landscape fragmentation is not a new process – it has been going on for a very long time. Process is mainly due to the changes that human makes – land-use changes, urbanization increase and forest management.

Forest landscape fragmentation can leave negative consequences on forest biotopes. Forest can lose some of habitats and unique habitat species and forest itself can lose potential for survival.

In time when technologies are developing so rapidly, it only makes sense to use them in scientific studies. Geographic Information Systems and remote sensing have many tools to help analyze forest landscape fragmentation. In fact, the number of scientific studies on this topic increased during the last couple of years.

The study area is Līvāni municipality. It is located in the Southeast of Latvia. In municipality is very developed manufacturing, agriculture, also extraction of resources. There is some protected nature territories, which protect rare species and their habitats. This kind of study is the first of its kind in this field. Study is quite important for awareness raising and it obtains specific data, also it is in use for control and management of biodiversity.

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## **GRANULOMETRIC COMPOSITION OF AEOLIAN SEDIMENTS IN THE DVIETE FOREST**

The area of late Pleistocene and Holocene aeolian sediments, documented in maps of Quaternary geology, is located in the Dviete forest, northward from Dviete village. This area, belonging to the north-eastern part of 'European Sand Belt' (Zeeberg, 1998), remains insufficiently studied in comparison with the territories of aeolian sediments distribution in Western and Central Europe. Hence the studies of granulometric composition of aeolian sand deposits were performed in order to obtain data on the mean grain size and other Folk and Ward indicators, i.e. sorting, skewness and kurtosis. For the obtaining of data, 26 samples of sand were collected. These samples were collected from the crests of inland dunes. Sand samples were air-dried and after that sieved with a 2 mm geotechnical mesh to remove organic matter like fragments of roots. Subsequently samples were soaked in a  $(\text{NaPO}_3)_6$  solution ( $5 \text{ g L}^{-1}$ ) to break cohesion and then were analyzed with a laser diffraction analyzer Mastersizer 2000 equipped with Hydro 200MU dispersion unit. Sand samples were suspended in deionised water until optimal obscuration range between 10% and 20% was reached. Then, the suspension was subjected to 60 s long ultrasonic displacement at stirrer speed 2800 rpm to achieve homogenous dispersion. For the calculating the particle size, a refractive index of 1.333 for deionised water and 1.55 for the particles were used. For each sample 6 repetitions of measurement per aliquot were done, the duration of each measurement cycle was 30 s. Data processing on granulometric composition was carried out by GRADISTAT module, which can be integrated with MS Excel environment. The analysis of granulometric composition indicates that medium size of aeolian sand grains varies from 127  $\mu\text{m}$  to 208  $\mu\text{m}$ . The grain size distribution frequency diagrams of analyzed samples have the unimodal and symmetric bell-shaped pattern, only some samples have asymmetric pattern indicate a presence of finer fractions.

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# **IDENTIFICATION AND GIS-BASED MAPPING OF LANDFORMS FROM AIRBORNE-LIDAR DATA: CASE STUDY OF THE INLAND DUNE FIELD TO THE NORTH OF DVIETE VILLAGE**

The geomorphological formation described in this study is represented by inland dune field located near to Dviete village and stretches northward and north-westward from the residential area. This dune field covers 112 km<sup>2</sup> of the south-western part of the Jersika Plain. The dune field recently is almost completely covered by canopy vegetation, mainly represented by coniferous and mixed forests. The presence of tree cover hinders the identification or mapping of dunes by aerial photography or by conventional geomorphological desk-based methods. Considering that, authors performed a case study based on identification and GIS-based mapping of landforms from airborne-LiDAR data. The LiDAR data used in this study were provided by the Latvian Geospatial Information Agency as \*.LAS format cloud point data. For optimization of DEM constructing process, firstly the \*.LAS files were converted into \*.LAS dataset covering entire dune field. Then LiDAR point cloud was filtered with ArcGIS software by classification code "ground", thus extracting from \*.LAS dataset only points representing the bare earth as the relief surface. Subsequently ESRI regular grid raster format DEM with spatial resolution 1 m was created from pre-processed data by ArcGIS tool 'LAS Dataset to Raster'.

In order to provide visual identification of dunes, hill-shaded relief model was derived from DEM. Considering that interpretation of landform features from single hill-shaded map usually is biased by the direction of illumination, four thematic raster layers were created with a constant sun altitude of 45° and variable sun azimuths of 45°, 135°, 225° and 315° following the procedure described by Evans (2012). Finally, in the process of visual interpretation, combining raster layers with variable azimuths, boundaries of dunes were manually digitised as polygon features and map of dune geographic distribution was developed. Hence the detailed geomorphological framework for further studies was established.

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## **IMPACTS OF BROWNFIELD FORMATION IN NAUJENE PARISH**

Degraded territories, which are known as brownfields, are territories, which have been previously industrialized or under other human use and are now abandoned.

This study is about inventory of abandoned buildings in Naujene parish, the causes of brownfield formation and to acknowledge the impact on the landscape and human safety.

Naujene Parish is situated just next to city of Daugavpils on the East. The border between the two is overlaying, there is no clear margins in between. So the most number of abandoned properties of Naujene parish, which clearly impacts the quality of the surrounding environment and safety of cityzens, lay on the boundaries with Daugavpils city.

These abandoned places should be conserved in accordance with law, so that they do not cause any danger to human life or health. That conservation also means that, the image of those brownfields appear much more acceptable.

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## **INVASIVE SPECIES IN LATVIA – VIEW FROM REGULATION (EU) NO 1143/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON THE PREVENTION AND MANAGEMENT OF THE INTRODUCTION AND SPREAD OF INVASIVE ALIEN SPECIES**

18 species of the EU list of invasive alien species (49 species) are found in Latvia. Seven of them are plant species - three are found in the wild and four can be purchased as ornamental plants. Other 11 invasive species are animals - seven are found in the wild and four are kept as pets.

Besides five of the listed plants and animals species are not detected in the wild in Latvia at the moment, but they are found in some other countries of the Boreal biogeographical region (Sweden, Finland, Estonia, Lithuania), thus theoretically there is a possibility that they could be introduced in the territory of Latvia in the future.

According to the existing legislation of Latvia, there is only one invasive alien species in Latvia - *Heracleum sosnowskyi* (MK noteikumi Nr. 468 (30.06.2008.)). Despite of the aforementioned normative regulation, a much larger number of alien species should be defined as invasive species in Latvia.

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## ***ISSUES OF FORMATION AND EVOLUTION OF POSSIBLE RELIC PINGO NEAR PUŠA: INTERPRETATION OF GEOMORPHOLOGICAL AND GEOLOGICAL DATA***

The ring-shaped hills, which possibly are relic periglacial features, have been described across Europe and North America in scientific literature since the second half of the last century and their formation have been attributed to cold climate conditions towards the end of the glacial period or Younger Drias. Such circular ramparted depressions or ring-shaped hills have been documented in Latvia already in 1970-ties. However, the issues of formation and evolution of these landforms continue to remain among those problems of Quaternary geology of Latvia which have not found their generally accepted solutions yet. Considering that, the interpretation of previously obtained geomorphological and geological data from studies of ring-shaped hill near Puša was done in order to elucidate the matters of origin of similar landforms. The most likely formation and evolution of this relief feature occurred during several phases of morphogenesis. Initially it was formed as ice-cored hill or pingo within subaerial environment, in area of discontinuous permafrost determined by periglacial landscape. During the growing phase of pingo, expanding of ice core caused formation of several radial dilation cracks. The remnants of these cracks can be identified as gully-like features on the slopes of the landform. Climate warming caused the thawing of ice-core and gradual collapse of pingo. During this phase, the process of subsidence of hill summit resulted in formation of crater-like depression. This depression was filled with ice thawing water and precipitation, thus leading to formation of small residual lake in the summit part. Sudden releasing of water stored in the lake resulted in high-erosive flush-flood stream, which formed valley-like feature in the NE sector of hill. After the complete degradation of ice core, the lake formed at lower elevation terrain in the central part of ring-shaped hill. In Holocene, due to succession this lake gradually was transformed into peat bog.

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## ***MONITORING AND CONTROL OF ODOUR EMISSIONS IN THE BALTIC STATES***

People are experiencing disturbing odors in many countries in the world, as evidenced by the growing number of publications. Disadvantageous emitters are most often encountered by residents living relatively close to industrial sites, waste water treatment plants, landfills, farms and other objects. The control and monitoring of odor emissions requires modern techniques and equipment such as field olfactometer, electrochemical, metal oxide and photoionisation detectors and others. In Latvia, the monitoring and control of odor emissions is carried out by the State Environmental Service, in Estonia by the Environmental Protection Department of the Environmental Inspectorate, and in Lithuania by the National Public Health Center, which is subordinate to the Ministry of Health. Of all three Baltic States, the highest number of complaints is in Latvia, where more than 2000 complaints are received annually. In Estonia, the average number of complaints per year is around 1200, while in Lithuania only a few hundred, for example, in 2018, 209 complaints were received. The number of complaints depends to a large extent on building characteristics and specifics of emission sources.

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## ***THE 2ND INTERNATIONAL DRIFT EXPEDITION ON THE MIDDLE DAUGAVA RIVER DURING THE SPRING FLOODS***

On March 27, 2019, the 2<sup>nd</sup> International Drift Expedition was conducted on the Daugava River in Daugavpils region between Krauja and Līksna by the Department of Geography and Chemistry, Daugavpils University (Latvia), and the Department of Hydrology and Climatology, Vilnius University (Lithuania). The expedition was conducted at the peak of the spring floods by applying the 4-manned drifting research platform “Aventura” specially designed and constructed at Daugavpils University in 2007 and equipped with various instruments and devices for a continuous real-time tracking, monitoring and sampling of the moving flood water masses during their downstream transport.

The drift experiment was based on the Lagrangian research strategy. It was started at 08:00 at Krauja village and continued until 18:00. During the drift, various hydrological, hydrophysical and hydrochemical parameters of the moving flood water masses were recorded at regular time intervals, and two types of water samples were collected at different depths. Geographical position, average drift speed, depth and width of the main channel of the river as well as selected physical and chemical properties of the moving water column at its surface and bottom were recorded manually each 30 minutes. In addition, the subsurface water sampling for the zooplankton and the depth sampling for the suspended matter were performed each 60 minutes.

It total, the distance of about 30 km was drifted while the selected hydrological, physical and chemical parameters were recorded at 19 sites. In addition, 10 zooplankton samples (100 l each) were collected from the surface of the water column, and 10 samples of the suspended matter were obtained from the depth of 3 m. In result, certain downstream trends in several physical and chemical parameters were stated during the drift.

This expedition was already the 13<sup>th</sup> successful real-time Lagrangian drift experiment conducted within the Middle Daugava river-floodplain system since 2007.

## **THE SURVEY'S RESULTS OF DAUGAVPILS RESIDENTS IN THE CONTEXT OF THE CITY CYCLE INFRASTRUCTURE'S DEVELOPMENT**

The article materials are the part of the scientific paper "The Use of GIS in Planning Bicycle Infrastructure's Development in Daugavpils".

Cycling infrastructure planning is the important component of cycling promoting, which, in turn, is the European strategic objective of enhancing the use of environmentally friendly transport and reducing CO<sub>2</sub> emissions.

In the initial research and analysis of the current situation, there is a need to involve all interested parties, both self-government specialists and cyclists, whose experience and personal observation will allow to fully analyze the situation, identify the strengths and weaknesses, to formulate the main tasks of the bicycle infrastructure's development in Daugavpils. The materials contains a data analysis from Daugavpils residents' survey about the city's bicycle infrastructure. The survey was conducted in 2018 and displays information, the opinion of 312 respondents about the frequency, seasonality, the preferences of the road surface and the type of the road, the reasons of cycling refusal.

The information on the main routes of cyclists' movement is summarized, which must be taken into account, identifying priorities for the construction of new bicycle lanes, as well as the proposals of Daugavpils residents to improve the city's bicycle infrastructure.

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## **TOWARDS REAL-TIME AEROBIOLOGICAL MONITORING AND FORECASTING MODELLING**

The high intensity of multi-branch research in the field of aerobiology proves the necessity and importance of the discipline. As being mostly grounded by airway diseases, aerobiology known as a discipline solving the issue by monitoring, modelling, analyzing and forecasting pollen and spore concentration in outdoor air. Development of the measurement technique allows to implement new monitoring method, however pre-evaluation as calibration of new instrument is required.

First, solving the problem monitoring data shifting, during the recent years several European companies started to produce real-time instruments (known as monitors). Before introducing of Europe-wide real-time network, feasibility study has to be performed. Challenge of the calibration for unknown device is stated on international level.

Second, real-time data analysis gives new opportunities for the forecasting modelling, providing high resolution data directly from the device. In case of successful implementation of the network, pollen forecasts will become more accurate, however, next challenge on data size and model development have to be stated.

Since 2012 aerobiological forecasting modelling has been developing in Latvia. Forecasting of pollen concentration, personalized forecasts of pollen-related allergy are main directions for discipline advancement. Recently produced software Pasyfo is one of the examples of successful international cooperation as well as platform for further achievements based on completely new data set as real-time pollen data.

The study was performed within the scope of the project of EC ERDF and PostDoc Latvia No 1.1.1.2/VIAA/2/18/283 "Development of Pollen data fusion and assimilation: Real-time Monitoring and Modelling for public health PREMIuM

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## **WATER QUALITY ASSESSMENT OF THE SMALL STREAMS OF THE LAKE MEDUMA**

This study consists of the water quality assessment of the small streams of the Lake Meduma by applying the common instrumental methods and macrozoobenthos sampling in small rivers that enter the lake, as well as the one that drains it. The Lake Meduma is located in the Nature Park "Medumu ezeraine" and the Specially Protected Landscape Area "Augšzeme" which is situated in the south-western part of the Daugavpils region. There is no current data about the water quality in the Lake Meduma. However, according to previous studies, the lake is eutrophicated, and its acceleration by nutrient pollution from the drainage area can be harmful for the rare EU species living within the lake. Therefore, the aim of this study is to assess the physical-chemical and biological quality of the small streams of the Lake Meduma drainage area by applying common instrumental methods as well as by sampling the stream macrozoobenthos communities and calculating the saprobity indexes. Attention was paid also to the Medumu village, which is located near the Lake Meduma. Operation of its central wastewater treatment system was reviewed and final quality of the wastewaters that enter the lake was analysed.

To achieve the goal of the study, 5 field expeditions were conducted and 7 locations were explored in 2018 and 2019. During each expedition the common physical and chemical parameters of the running water (temperature, pH, oxygen (DO), conductivity and mineralization) were recorded by using the multiprobe *YSI Professional Plus*. In addition, the

macrozoobenthos examples were collected in one sites by applying the standard operative qualitative assesment method for running waters in Latvia. For cameral data processing and summarizing of the results and calculation of the saprobity indexes the *Microsoft Office Exel 2007* software was used.

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# SPORTS

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# SPORT

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*Jānis Jarāns, Eridiāna Oļehnoviča, Valērijs Dombrovskis*

## ***DEVELOPING TRANSVERSAL SKILLS IN HEALTH AND PHYSICAL ACTIVITY LESSONS IN PRIMARY SCHOOL***

Key words: competencies, cooperation, physical activity lessons, primary school, transversal skills.

The research aim is to investigate the opportunities of competency-based learning for developing transversal skills for cooperation in primary school students during health and physical activity lessons.

During the research: the student survey was conducted; the analysis of the implementation of the new competency-based approach in health and physical activity lessons in primary school was performed; the criteria for lesson observation were designed; health and physical activities that promote competency building were designed.

The author points out that the research aim will only be achieved if during the lessons designed the students are able to understand that a productive outcome of the task depends on the contribution of each classmate; on their ability to put forward common primary values; on their ability to learn to maintain a positive mood among their classmates for a prolonged period of time; on their ability to cooperate and help each other. The research can be useful for the teachers of physical activities.

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## ***THE STUDY OF THE INDICATORS OF BREATHING OF 4TH GRADE PUPILS FROM DAUGAVPILS WITHIN THE FRAMEWORK PROJECT "PHYSICAL READINESS AND PHYSICAL ACTIVITY OF PRIMARY SCHOOL CHILDREN" OF DAUGAVPILS UNIVERSITY'S CHAIR OF ANATOMY AND PHYSIOLOGY AND DAUGAVPILS CITY'S EDUCATION'S COUNCIL***

Key words: primary school age, children, breathing, respiratory frequency, duration of breath retention, lung vital capacity, physical activity

Introduction. The experts of the World Health organization indicate that the main problems are sedentary lifestyle, indoor life and obesity. This negatively influences the development of a whole body and its functions, particularly, the respiratory system.

In 2014, Daugavpils City's Education's council has signed a cooperation agreement with Daugavpils University's Chair of Anatomy and physiology about the joint research: „Physical readiness and physical activity of primary school children” in all Daugavpils comprehensive schools. This report reflects a part of the research data. The aim of the study is to explore breathing indicators of 4th grade pupils and its relatedness to pupils' physical activity. Material and methods. The research will take place from 2014 until 2018. Total number of research participants were 456, from whom 236 were girls and 220 boys. Pupils represented the age group from 10 until 12. Research methods were anthropometry, bioimpedance analysis, respiration frequency determination, spirometry, functional breath test -duration of breath retention, observation of the child's posture, physical activity PAQ-A and others. The research was carried out by the 2nd year “Physiotherapy” program students' under the supervision of their mentors.

Results. As a result, the researchers have gained data on 4th grade pupils' respiratory frequency, breath retention, lung capacity, height, body weight, and BMI indicators. The focus of the research also was pupils' posture, body fat, physical fitness, daily physical activity and other indicators. Respiratory frequency, lung vital capacity and duration of breath retention for all pupils reach the norm. Body height, weight and fat indicators are within the normal range. Almost for all children, except of four, have posture issues. Physical fitness rates are low for most pupils, daily physical activity is normal or medium. Conclusion. Physically active pupils have higher lung vital capacity and breath retention rates. For less active pupils, the decrease in physical activity and disorder may have a negative impact on the development of the respiratory system in puberty.

## Layout of Manuscripts for the collection

### “Proceedings of the 61<sup>st</sup> international scientific conference of Daugavpils University”

“Proceedings of the 61<sup>st</sup> international scientific conference of Daugavpils University” publishes original papers, based on the presentations at the international conference, held in Daugavpils, 11–12 April, 2019. Proceedings of the scientific international conference of Daugavpils University are published electronically on [www.dukonference.lv](http://www.dukonference.lv) since 2010. It is not issued in paperback.

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# IMPROVEMENT OF QUALITATIVE RURAL LIVING ENVIRONMENT IN LATVIA IN LEADER PROGRAM FRAMES

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## Abstract

**Improvement of qualitative rural living environment in Latvia in LEADER program frames**

### Key Words:

Abstract text.....

## Kopsavilkums

**Kvalitatīvas lauku dzīves vides uzlabošana Latvijā LEADER programmas ietvaros**

### Atslēgvārdi:

Kopsavilkuma teksts .....

Body text.....

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