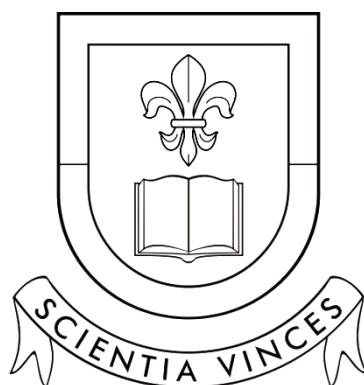


**DAUGAVPILS UNIVERSITĀTE  
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***DAUGAVPILS UNIVERSITĀTES  
60. STARPTAUTISKĀS  
ZINĀTNISKĀS KONFERENCES  
TĒZES***

***ABSTRACTS OF  
THE 60<sup>th</sup> INTERNATIONAL  
SCIENTIFIC CONFERENCE OF  
DAUGAVPILS UNIVERSITY***

DAUGAVPILS UNIVERSITĀTES  
AKADĒMISKAIS APGĀDS „SAULE”  
2018

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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 60. starptautiskās zinātniskās konferences pētījumu tematika ir ļoti plaša – eksaktās, humanitārās, izglītības, mākslas un sociālo zinātņu jomās.

Krājumā *Daugavpils Universitātes 60. starptautiskās zinātniskās konferences tēzes = Abstracts of the 60<sup>th</sup> International Scientific Conference of Daugavpils University* apkopoti materiāli, kas tiks prezentēti konferencē organizētajās darba grupās 2018. gada 26.-27. 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 60<sup>th</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, 26-27, 2018. In the abstracts published in *Daugavpils Universitātes 60. starptautiskās zinātniskās konferences tēzes = Abstracts of the 60<sup>th</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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# VĒSTURE UN KULTŪRAS VĒSTURE

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## HISTORY AND HISTORY OF CULTURE

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**Dmitrijs Artjomovs**

*Daugavpils University, 2.Preču 25, Daugavpils, Latvia, vocatur@inbox.lv*

### **ACTA APOSTOLICAE SEDIS KĀ VĒSTURES AVOTS LATVIJAS ROMAS KATOĻU BAZNĪCAS IZPĒTĒ**

*Acta Apostolicae Sedis* ir oficiālais Romas katoļu Baznīcas Apustuliskā Krēsla izdevums, kura mērķis ir pamata dekrētu, pāvesta un Vatikāna dikastēriju dokumentu publikācija kā arī paziņošana par augstāko hierarhu (piem. bīskapu) nozīmējumiem. To var salīdzināt ar „Latvijas vēstnesi”, kurā tiek publicēti Latvijas Republikas likumi. Šis izdevums var kalpot kā vēstures avots Romas katoļu Baznīcas izpētē, jo atver pieeju pie Apustuliskā Krēsla augstāka ranga dokumentiem, kas nav zem grifa „Sub secreto”. Papildus tam, pateicoties šim avotam, pētnieks var precizēt dažu notikumu datumus, jo dažreiz literatūrā sastopamas neprecizitātes attiecībā uz svarīgiem Romas katoļu Baznīcas notikumiem Latvijā.

Konferences pirmās daļas mērķis ir iepazīstināt klausītājus ar šī izdevuma tapšanu, būtību kā arī pieejamības iespējām. Otrajā daļā tiks aplūkoti un īsi analizēti daži izvilcumi no šī izdevuma, kas tieši vai netieši attiecas uz Latvijas Romas katoļu Baznīcu Latvijā.

Kā pamata avots tiks izmantoti prezentētā izdevuma materiāli. Papildus tam tiks izmantoti to autoru darbi, kuri nodarbojās ar Latvijas Romas katoļu Baznīcas vēsturi.

Konferences un iespējamā referāta struktūra ir sekojoša:

1. Izdevums *Acta Apostolicae Sedis* kā vēstures avots
  - 1.1. Izdevuma tapšana
  - 1.2. Izdevuma būtība un ticamība
  - 1.3. Izdevuma pieejamība pētījumiem
2. Dokumentārie avoti
  - 2.1. Romas Katoļu Baznīcas administratīvā sadalīšana Latvijā
  - 2.2. Augstāka ranga garīdznieku nominācijas Latvijā
  - 2.3. Iekšējās disciplīnas un liturģisko priekšrakstu rīkojumi
  - 2.4. Kloostera dzīves disciplīnas rīkojumi

**Sergejs Kuzmins**

*Daugavpils University, Vienības iela 13, sergejs.kuzmins@du.lv*

### **ARCHIVAL RECORDS ABOUT THE HISTORY OF ENTERPRISE "ELEKTROINSTRUMENTS" IN DAUGAVPILS (1949-1991)**

After the Second World War, the process of Sovietization had been resumed in Latvia, within which the so-called "Soviet industrialization" was to be implemented, envisaging the construction of large industrial enterprises and recruitment of workers from other republics of the Soviet Union. On March 22, 1945, Daugavpils City Executive Committee adopted a decision on the construction of new industrial enterprises – factories and plants in Daugavpils.

According to Soviet authorities' intention to raise the production of electric tools, on May 12, 1949, Council of Ministers of the USSR issued an order Nr. 140 on the establishment of the electric tools enterprise "Elektroinstrument". At the beginning of the 1970s, it was one of the largest industrial enterprises in the city.

In the paper, the author will provide an overview of historical sources - archival documents preserved within the record group no. 866 "Joint Stock Company DAUer" (the present name of the plant "Elektroinstrument") at Daugavpils Regional State Archives (a regional subdivision of the National Archives of Latvia). The archival records provide valuable information about the establishment of the enterprise, its administration and staff, and production. Archival sources also provide an opportunity to study some topical historical aspects of the modern history of Latvia, namely, the process of Sovietization, migration, Soviet command economy, etc.

The aim of the paper is to reveal the range of documents available in the record group under investigation, to determine their informative potential for historical research, and to provide some general guidelines for the scholars who use these sources.

**Henrihs Soms**

*Daugavpils University, Vienības street 13, Daugavpils, henrihs.soms@du.lv*

## **DAUGAVPILS 100 YEARS AGO: ARRIVING OF THE GERMAN ARMY IN THE CITY ON FEBRUARY 18, 1918**

Vācu karaspēks bija sasniedzis Daugavpils apkārtni jau 1915. gada oktobrī, kad tika ieņemta Ilūkste. Krievijas armija Daugavpils kreisajā krastā aizstāvēja pozīcijas – placdarmu apmēram 100 km plašumā (no Glaudāniem Līksnas pagasta pretējā pusē līdz Drūkšu ezeram mūsdienu Latvijas-Baltkrievijas robeža) un ap 25 km dziļumā.

1917. gada rudenī pēc lielinieku apvērsuma Krievijā frontē tika noslēgts pamiers.

1918. gadā pirms vācu uzbrukuma lielinieku kontrolētā 5. armijas vadība izdeva pavēli par pamiera pārtraukšanu un vācu karaspēka gaidāmo uzbrukumu plkst. 12. Karaspēka vienībām bija pavēlēts atkāpties no Daugavas kreisā krasta uz labo krastu, atstāt Daugavpili, uzspridzināt tiltus un muniācijas noliktavas.

Vācu karaspēka 5. kājnieku divīzija vienības vairākās grupās pa 50 – 60 kareivjiem ar bruņumašīnām straujā triecienā ieņēma pilsētu. Apjukumā tilta mīnētāji nepaspēja tiltus uzspridzināt. Vācu karaspēka mobilās vienības ieņēma arī dzelzceļa mezglu ar lokomotīvēm un vagoniem.

Ar to noslēdzās lielinieku varas (ISKOLOTA) laiks Daugavpilī. Vācu vara Daugavpilī pastāvēja līdz 1918. gada 9. decembrim.

Visplašāk par Daugavpils ieņemšanu rakstīja vācu iestāžu laikraksts „Dzimtenes Ziņas”, kurš publicēja 3 plašus rakstus. Par šo notikumu ziņoja arī latviešu laikraksti "Rīgas Latviešu avīze", "Jaunais Vārds" un citas.

**Aiga Bērziņa**

*Mg. hist. Latvijas Universitātes Latvijas vēstures institūta zinātniskā asistente; Latvijas Universitātes Vēstures un filozofijas fakultātes doktorante; Latvijas Nacionālā arhīva Latvijas Valsts vēstures arhīva Dokumentu pieejamības un popularizēšanas nodaļas arhīva eksperte*

## **LATGALES CIETUMI PIRMAJOS GALVENĀS CIETUMU VALDES DARBĪBAS GADOS, 1920-1921**

Referātā aplūkota Latvijas Republikas penitenciārās sistēmas darbība un tās politikas organizēšana Latgalē no laika, kad teritoriju pameta Sarkanā armija un darbu uzsāka Latvijas Republikas Tieslietu ministrijas pakļautībā esošā Galvenā cietumu valde (1920. gads), līdz 1921. gada martam, kad Latvijā pieņēma jauno Instrukciju cietumu darbiniekiem. Nozīmīgākais aplūkoto jautājumu loks saistīts ar ieslodzījuma vietu infrastruktūru un to administrāciju, galvenokārt koncentrējoties uz Galvenās cietumu valdes un atsevišķu ieslodzījuma vietu vadības izvirzītajiem mērķiem un centieniem tos sasniegt. Vienlaikus sniegts ieslodzīto personu raksturojums (kas bija ieslodzītie?) un apskatīti pasākumi, kas vērsti uz ieslodzīto labošanu. Tēmas izpēte ļauj labāk izprast Latgales lomu un stāvokli Neatkarības kara laikā un ielūkoties līdz šim nezināmos faktos par valsts pārvaldes darbību. Referāts galvenokārt balstīts Latvijas Nacionālā arhīva Latvijas Valsts vēstures arhīva dokumentos.

**Laura Kļaviņa**

*University of Latvia, Aspazijas boulevard 5, Riga, Latvia, laura.elizabete.klavina@gmail.com*

## **FORMATION AND ACTIVITIES OF TOWN MUNICIPALITIES IN LATVIA DURING THE PERIOD OF 20<sup>TH</sup> CENTURY 20-30S: EXAMPLE OF SIGULDA MUNICIPALITY**

The subject of this paper is Sigulda municipality in 20-30s of 20<sup>th</sup> century. The objective was to conduct a research about formation of Sigulda municipality and describe its activities from its foundation in 1928 until the occupation of Latvia in 1940, mainly focusing on municipality elections, town council mechanism of work, its economical activities and social policy. This was achieved on basis of town council meeting minutes, the local press materials of this time and other available historical sources. Sigulda in the given time frame was a typical small town with a population of less than two thousand people. However the town administration did not lack

the factions, not the ridiculous agitation of pre-election campaigns and rivalry of the politicians, being very common in Latvian politics at the time. When the elections were over, the real work of the council began – its main areas being development of town infrastructure and townspeople social care.

**Ieva Pigozne**

*Latvijas Universitātes Latvijas vēstures institūts, Kalpaka bulvāris 4, Rīga, pigozne@inbox.lv*

## **ARHIVAL RECORDS OF THE RECORD GROUP: DAUGAVPILS AND GRIVA ASSOCIATION OF CRAFTSMEN**

In Report “Arhival records of the record group: Daugavpils and Griva Association of Craftsmen” looks at crafting field realities in Daugavpils around the end of 1930’s. Using the Latvian State Historical Archives fund “Daugavpils and Griva Association of Craftsmen” materials, more detailed was viewed the creation time of associations flag. Researching the creation, confirmation and other things around the flag, it identifies the source of the information’s potential. It gives an opportunity to cognize that times domestically, socially-economic and a special feature of cultural life. Using the local press publications from that time, got to know the “Daugavpils and Griva Association of Craftsmen” flag celebration conduct and with that related resonance. Study, overall, supporting on fund materials and press publications, presents one of the Latvia’s first republics national economy sectors during the authoritarian regime.

**Agris Pastars**

*Daugavpils University, Parādes street 1, Daugavpils, agris55@inbox.lv*

## **VARAS STRUKTŪRA LATVIJĀ 1991. GADA AUGUSTĀ**

Latvijas vēsturē, nenoliedzami, 1991. gads ir unikāls. Pēc tam, kad 1990. gada 4. maijā, LPSR augstākā padome pieņēma deklarāciju par Latvijas Republikas neatkarības atjaunošanu, taja tika noteikts pārejas periods valsts varas atjaunošanai, kurš noslēgtos ar Saeimas sasaukšanu. 1991. gada 3. marta aptaujā par Latvijas neatkarības atjaunošanu, 73,68 % balsstiesīgo nobalsoja par. PSRS notiekošie demokratizācijas procesi un jauna savienības līguma izveides iespēja noveda līdz tam, ka 1991. gada augustā komunisti sāka gatavot valsts apvērsumu.

Par 1991. gada notikumiem pieejams plašs avotu un literatūras klāsts. Daudzi notikumu dalībnieki sarakstījuši atmiņas un memuārus, tā pat arhīvos pieejams plašs dokumentu apjoms, tomēr tieši pieejamā literatūra spēj dot vispārīgu ieskatu sarežģītajā pārejas perioda situācijā, 1991. gada augusta kontekstā, pirms apvērsuma PSRS teritorijā, Latvijas neatkarības faktisko atjaunošanu un pēc tās.

Pētījuma mērķis – izmantojot pieejamo literatūru, apskatīt divvaldības periodu Latvijas teritorijā 1991. gada augustā un atklāt šī perioda nozīmi Latvijas neatkarības atjaunošanas procesā.

Atslēgvārdi : 1991. gada augusts, pārejas periods Latvijā, 1991. gada augusta apvērsums, Latvijas neatkarības atjaunošana de facto.

**Irena Karsokiene**

*Vilniaus Koleģija, University of applied sciences, Faculty of arts and creative technologies, Lithuania, irena.karsokiene@gmail.com*

## **CULTURAL INTERFACES OF MUSICAL THEATRE TRADITIONS OF LITHUANIA AND THE USA IN THE 20<sup>TH</sup> – 21<sup>ST</sup> CENTURIES**

The musical is considered to be one of the youngest genres of the contemporary musical theatre. America is the native country of this unique genre. There is no doubt that a musical originated in Broadway, New York. This paper is meant to answer the question about the role of the Lithuanian emigrants in establishment of the American musical theatre. Were they able to overcome the majority of American and world famous producers and develop the entire empire or musical theatres due to their talent, progressive insight and intelligence.

The genre of a musical is typical of the theatrical America, and every day it is becoming more and more popular in the world. Americans can not live without jazz the same as the American theatre cannot survive without a musical. The best performances of the genre have been staged in many countries. Their originality, pulsating rhythm, democracy have attracted the attention of many world-famous people of the theatre and its critics. The genre of a musical has deep traditions that have been developing since the theatre of Greece. In Greek and Roman tragedies and comedies there also dominated songs and dances further to the spoken dialogues. In the

Middle Ages theatre troupes transformed themselves into mobile groups of travelling minstrels who introduced musical comedies to the audiences of many cities, and that was the outset of the musical. In the Renaissance times the theatre would discover newer and newer forms of expression, e.g., commedia dell'arte, where the content of a play was revealed through humour. Alongside that the language of music as such became more and more complicated. Meanwhile some changes occurred on the stage: the English ballad opera overlapped the features of the German drama, French comic opera, Vienna operette was substituted by vaudeville, buslesque, shows by minstrels. The latter ones carried the character of entertainment, the repertoire of their performances were of different types: songs, dances, elements of circus were performed. In 1866 the play by George Bickwell entitled *The Black Crook* was staged. It united the elements of a song, melodrama and show.

Traditional musical theatre which relationship with the present Lithuanian musical has been little analysed plays an important role in the discourse of the world culture.

Alike in jazz and cinema history musical theatre was closely connected with the sociocultural development of the society. Though musical genre has been finally formed up in America the question of the 20<sup>th</sup> century commercial musical theatre authorship and cultural ties with the European musical theatre including Lithuanian has not been answered yet.

Nowadays the increasing popularity of musical theatre genre stimulates the search for ties between America musical and the history of Lithuania. The ground for such interest are the works of the well known historians on the world musical theatre genre. Musical became very popular in Lithuania in the 21<sup>st</sup> century. Musicals „Veronika“ composed by G.Kuprevicius, „Eglė“ by L. Vilkoncius cherish the best traditions of Lithuanian, American and European musical. From the very beginning of its existence the Lithuanian musical overtook the best traditions of „the Golden Age“ of America. Classical Lithuanian musical is characterised by theatricality, professional libretto, nice memorable melodies.

**Arina Molčanova**

*Daugavpils University, Vienības street 13, Daugavpils, gatterija@inbox.lv*

## **ФЕНОМЕН КЛЕЗМЕРСКОЙ МУЗЫКИ В РЕЗЕКНЕ**

В культурном пространстве города Резекне появилось такое направление, как клезмерская музыка, его носителей, как таковых, в Восточной Европе практически не осталось.

Понятие «клезмер» пришло из иврита, от слов «змер» (песня) и «кле» (инструмент). Первоначально оно и обозначало только музыкальный инструмент, но с XVI века в Центральной и Восточной Европе еврейских музыкантов стали называть «клезморим».

Клезмеры — еврейские народные музыканты, исполнители традиционных фольклорных песен и мелодий.

Музыканты из Резекне, популяризируют традиционную для этих мест, музыку клезмеров. Их целью является создание нового культурно-туристического продукта, а именно, проведение концертов клезмерской музыки в Резекненской зеленой синагоге. Интересно, что, раньше музыканты с еврейской культурой не были связаны. Считают, что, не обязательно родиться евреем, чтобы играть еврейскую музыку, ведь клезмерская музыка стала уже самостоятельным жанром и частью мировой музыкальной культуры.

Для того, чтобы развиваться, реализовывать творческие идеи и участвовать в малых культурных проектах, музыканты создали свое общество, занимаются изучением традиционной еврейской музыки — клезмера.



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# FILOLOĢIJA: PĒTĪJUMI, AKTUALITĀTES UN DISKURSS

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## PHILOLOGY: RESEARCHES, TOPICALITIES AND DISCOURSE

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**Svetlana Polkovnikova**

*Daugavpils University, Vienības street 13, Daugavpils, svetlana.polkovnikova@du.lv*

### GRAMATISKAIS RAKSTUROJUMS „LATVIEŠU-KRIEVU ILUSTRĒTAJĀ VĀRDNĪCĀ AR KRIEVU-LATVIEŠU VĀRDU RĀDĪTĀJU”

2010. gadā Latvijā tika publicēta „Latviešu-krievu ilustrētā vārdnīca ar krievu-latviešu vārdu rādītāju”, kura, kā minēts tās priekšvārdā, ir pirmais šāda veida izdevums. No citām latviešu-krievu vārdnīcām šo leksikogrāfisko avotu atšķir vairākas būtiskas iezīmes. Vispirmām kārtām jāmin daudzveidīgais ilustratīvais materiāls – pirmoreiz vārdu šķirkļi papildināti ne tikai ar paskaidrojumiem un lietojuma piemēriem, bet arī ar vārda nozīmi skaidrojošām ilustrācijām. Vārdnīcā svarīga vieta ierādīta arī latviešu valodas gramatiskajam raksturojumam, kuru realizē, pirmkārt, konspektīvs latviešu valodas gramatikas apraksts, otrkārt, gramatiskās norādes pie atsevišķiem šķirkļiem.

Gramatikas pielikumā pārskatāmu tabulu veidā ievietota pamatinformācija par latviešu valodas gramatisko struktūru, piemēram, lietvārdu locīšanu, īpašības vārdu salīdzināmo pakāpju veidošanu, tiešo un atgriezenisko darbības vārdu konjugēšanu u. c. Saīsinājumu saraksts atklāj, ka vārdnīcā ir atrodamas norādes uz vārdšķiru (apstākļa vārds, darbības vārds, īpašības vārds, lietvārds), dzimti (kopdzimtes vārds, sieviešu dzimte, vīriešu dzimte) un skaitli (daudzskaitlis, vienskaitlis), savukārt par šķirkļa vārda lietojuma īpatnībām ļauj spriest ilustratīvais materiāls. Divvalodu vārdnīcā gramatiskajam raksturojumam ir būtiska nozīme, īpaši gadījumos, kad tiek atrakstītas specifiskas morfoloģiskas parādības, kas valodas apguvējiem parasti rada vislielākās grūtības. Piemēram, aplūkotajā vārdnīcā ar attiecīgām gramatiskām norādēm konsekventi tiek marķēti dažādu vārdšķiru gramatiskie homonīmi, no kuriem viens ir substantīvs (liet.), bet otrs adjektīvs (īp.v.), sal.: ass 1 lietv. ось, ass 2 īp.v. острый; перен. острый, резкий; bass 1 lietv. бас, bass 2 īp.v. босой; erudīts 1 lietv. эрудит суц.; erudīts 2 īp.v. эрудированный; inteligents 1 lietv. интеллигент, inteligents 2 īp.v. интеллигентный u. c.

Diemžēl aplūkotajā vārdnīcā konstatētas arī dažas nepilnības latviešu valodas leksikas atspoguļošanā, piemēram, 6. deklinācijas lietvārdu marķēšanā, kad pie minētajiem substantīviem trūkst attiecīgās norādes s.– sieviešu dzimte, sal.: auss, debess, pils, telts u. c. Lai izvairītos no šādām nepilnībām un panāktu vienveidību latviešu valodas leksikas atspoguļošanā, vārdnīcas sastādītājiem, izstrādājot šķirkļus, būtu vēlams vairāk uzmanības pievērst vārdu gramatiskajām kategorijām.

**Oļegs Beļajevs**

*Liepājas Universitāte, Liela iela 14, Liepāja, olegs.belajevs@liepu.lv*

### LES APPROCHES SÉMIOLOGIQUES ET LINGUISTIQUES DE LA DÉSCRIPTION D'UNE RUE PARISIENNE

Nous avons tenté de proposer les approches sémiologiques et linguistiques de la description d'une rue parisienne. On a pris une centaine de mètres de la rue qui sépare deux locaux de la maison n°9 de la rue Lhomond au n°6 de la rue Malebranche en haut du Quartier Latin, derrière le Panthéon. La rue Lhomond se trouve au 5ième arrondissement de la ville dans le quartier du Val-de-Grâce, anciennement appelée "rue des Postes". A peu près cent mètres de rues parisiennes un peu vieilles, moyennement commerçantes et moyennement passantes. Cet espace urbain, à observer attentivement de près, est étiqueté de légendes, de panneaux, de plaques et de graffiti qui se chevauchent et ont la touffeur de la forêt symboliste.

Tout d'abord, on a pensé à l'analyse sémiologique des plaques, des pancartes et de divers panneaux. Lire une partie de l'écrit de la rue est indispensable et fait partie des besoins langagiers élémentaires pour chaque étranger venu en France autrement qu'en voyage organisé. A l'inverse de la presse et du livre, l'écrit de la rue n'apparaît

jamais dans un entourage et sur des supports neutres et standards. La sémiologie de la rue est concentrée sur l'image. dans notre étude, nous analysons les rapports entre image et texte, entre iconique et scriptural. Cependant, l'aspect sémiologique des signes ne se réduit pas à l'iconique qui n'est pas omniprésent. La sémiologie de la rue englobe également le graphique: typographie et disposition des signes dans l'espace et ce que nous appelons ici l'entourage des référents culturels.

Or, si nous voulons enseigner autre chose qu'un lexique pour touristes, si nous continuons à penser que la Tour Eiffel, les châteaux de la Loire, le béret basque et le champagne n'apportent plus grand-chose à la lecture d'une réalité française, il nous faut changer d'azimut et mettre le cap sur l'espace urbain de la ville dans toutes ses dimensions.

### ***Inguna Teilāne***

*Daugavpils University, Vienības street 13, Daugavpils, inguna.teilane@du.lv*

## **LOKĀMIE DIVDABJI NĪCGALES IZLOKSNĒ**

Divdabji ir infinītas verba formas, kas saglabā verba leksisko nozīmi un kas nosauc darbību kā pabeigtu vai kā sasniegtu stāvokli pazīmes veidā. Divdabji kā verbu formas ir lokāmas un nelokāmas, tiem piemīt divas dabas: lokāmie divdabji apvieno verbālos un nominālos elementus, nelokāmie divdabji apvieno verbālos un adverbiālos elementus.

Augšzemnieku dialekta latgaliskās izloksnes, pie kurām pieder arī Nīcgales izloksne, divdabju formu ziņā ir bagātākas par latviešu literāro valodu. Pētāmajā apvidū, vēl saglabājušies tādi divdabji, kas literārajā valodā jau sen zuduši, piemēram, tagadnes lokāmie divdabji ar -s vīriešu dzimtē un -uote sieviešu dzimtē. Referātā tiks aplūkotas divdabju formas, kas ekscerpētas no teicēju monologiem un dialogiem.

Divdabju izpētei izloksnēs pievērsušies daudzi valodnieki, piemēram, J.Endzelīns (Endzelīns 1951), K.Ancītis (Ancītis 1977), I.Ozola (Ozola 1997, 1999), V.Šaudiņa (Šaudiņa 2001) u.c.

### ***Vilma Šaudiņa***

*Daugavpils University, Vienības street 13, Daugavpils, vilma.saudina@du.lv*

## **MĀSAS LĪZES VĒSTULES RAINIM LINGVISTISKĀ SKATĪJUMĀ**

Izpētes objekts – māsas Līzes vēstules Rainim. Epistolārā mantojuma izpētei ir savas īpatnības, jo vēstulē ļoti būtiska komponente ir notikums un konteksts, kurā tas realizējas. Tas nosaka arī referāta mērķi – leksikas savdabības analīzi semantiskā un strukturālā skatījumā, kā arī kontekstuālo pieeju un analīzi. Tā kā šis referāts ir jau aizsāktas tēmas turpinājums par Raiņa un māsas Līzes sarakstes lingvistisko izpēti (pētītas Raiņa vēstules mātai Līzei lingvistiskā skatījumā), tad no tā izriet arī pētāmo lingvistisko jautājumu loks: salikteņu, deminutīvu, senu formu un dialektismu lietojums, vārda nozīmes maiņas, dažu onomastikas un frazeoloģijas jautājumu aplūkojums, citvalodu iestarpinājumu un uzrunas un paraksta īpatnības, kā arī Līzes Pliekšānes vēstulēm raksturīgā savdabība. Māsas Līzes vēstulju analīze rāda kā līdzību ar Raiņa vēstulēs lietoto leksiku semantiskā un strukturālā ziņā, tā arī zināmu savdabību, kas dod iespēju veikt arī sastatāmo analīzi.

### ***Oksana Kovzele***

*Daugavpils University, Vienības street 13, Daugavpils, oksana.kovzele@du.lv*

## **SVĒTKU UZTVERES MAIŅAS FIKSĀCIJA LATGALIEŠU DZEJĀ**

Globalizācijas procesu ietekmē notiek būtiskas pārmaiņas, kas skar dažādas sabiedrības dzīves jomas, līdz ar to īpaši aktuāla kļūst kultūras atmiņas problēma – paaudžu garīgo saikņu, vērtību sistēmas un tradīciju uzturēšana. Svētki kā viena no noturīgākajām garīgās kultūras formām un nācījas veseluma ilgstošas pastāvēšanas garants mūsdienu postindustriālās sabiedrības apstākļos manāmi transformējas. Mainās ne tikai svētku formas, funkcijas un saturs, bet arī cilvēku attieksme pret svētkiem, viņu priekšstati un zināšanas par svētku kultūru un tās līdzšinējo nozīmi. Šādu transformāciju liecības plaši vērojamas ne tikai plašsaziņas līdzekļos, internetvidē, reklāmas industrijā, bet arī daiļliteratūrā.

Pētījumam apzināti ap 30 Latgales autoru darbi, kas abās rakstu valodas tradīcijās ir tapuši laikposmā no 20. gadsimta 20. gadiem līdz mūsdienām. Vecākā dzejnieku paaudze (M. Bārbale, A. Eglōjs, A. Kūkojs, B. Mortuževa, A. Vējāns) svētkus uztver dabas cikliskuma kontekstā, reliģiskās (kristīgās) tradīcijas ietvaros (K. Andžāne, M. Bārbale, A. Kūkojs, B. Mortuževa, A. Slišāns, A. Vējāns) vai kā svarīgu kultūras mantojuma daļu, kas sekmē nacionālo lepnumu un pašidentifikāciju (M. Bārbale, A. Eglōjs, B. Mortuževa, A. Slišāns). Tikai dažī

no autoriem (M. Bārbale, A. Kūkojs) "svētku" tekstos atļaujas kritizēt sava laika negācijas (alkoholisms, izvirtība, vērtību devalvācija, garīgais panīkums), kas viņu darbiem piešķir mūsdienīgu skanējumu. Trimdā (emigrācijā) nonākušo Latgales dzejnieku darbos svētki aktualizēti kā garīgā saikne ar zaudēto dzimteni (M. Andžāne, J. Leidumnīks), kā īslaicīgs portāls uz zelta pagātņi (M. Andžāne, F. Murāns, A. Rode, O. Zvīdris), kas iedvēš cerības uz "Lielo Brīves Dienu" (F. Murāns, O. Zvīdris) vai arī liek vēl dziļāk iegrimt pesimismā (A. Spoģis, P. Zalāne). Svešā realitātē viņi bieži novēro mūsdienu patērniecības sabiedrībai raksturīgā svētku komercializācijas procesa izpausmes un sekas (V. D. Bojārs). Jaunākā dzejnieku paaudze, no vienas puses, turpina savu priekšteču iesākto: raksta reliģiskā satura "svētku" dzeju (E. Astiče, M. Avramčenko, K. Belinska, B. Berga, L. Liepdruviete, P. Meikstums, A. Rancāne, V. Voguls), kurā dažbrīd izpaužas kristīgās un pagāniskās tradīcijas sinkrētisms (A. Rancāne); cenšas dzejot dainu poētiskā un caur svētkiem fiksēt kosmisku dzīves ritmu (A. Rancāne, V. Voguls); aizvien biežāk runā par svētkiem un patērniecību (I. Nagla, A. Rancāne). No otras puses, tieši šajos darbos svētki izmantoti kā dekoratīvs elements negaidītu un ačgārnu metaforu radīšanai (A. Rancāne) vai arī minēti ar to tematiku nesaistītu dzejoļu nosaukumos (J. Skrivļa-Čevere), tādējādi apliecinot mūsdienu dzejas eksperimentālo dabu.

### **Zaiga Ikere**

*Daugavpils University, Vienības street 13, Daugavpils, zaiga.ikere@du.lv*

## **SYNONYMY IN THE PHILOSOPHICAL TERMINOLOGY: NACIONĀLĀ IDENTITĀTE AND/OR NACIONĀLĀ SAVDABĪBA**

One of the principles in the general theory of terminology is the requirement for univocity (i. e. a one to one relationship between concept and term) (RETS 2011:28) or mononymy (Skujiņa 2002:46-48). This requirement means that synonymy in terminology is undesirable and should be avoided. The study of synonymy calls into the question the existence of clearly defined concepts and domains. In the domain of philosophy in real language use the range of the sense of some philosophical concepts designated by definite terms may not always be so clearly delineated. The aim of the author is to transmit the meaning of the intended message. The fuzziness of a concept does not facilitate a distinct representation of ideas and, consequently, the understanding. One such example is the concept national identity and its corresponding term into Latvian. It is noted in the theoretical literature that the term identity, for instance, has become to express such a wide content and used in so many diversiform contexts that it has become an all-purpose term to express a national or individual perception of self-awareness and its uniqueness. The Latvian philosopher Rihards Kūlis argues that the term identity has been so extensively and ambiguously used in theoretical literature that it has become difficult to understand its true sense. (Kūlis 2015:529-533) The philosopher associates the concept of national identity with a nation's culture as an integral system of a society's forms of self-realization and he suggests that nacionālā savdabība is a more appropriate denomination for this concept. In case of synonymy, especially, if there are native language words to be chosen from, there is a question, however, which one of them to give the preference. For instance, for savdabība there are synonyms savdabīgums, savveidība, īpatnība.

### **Inese Zuģicka**

*Daugavpils Universitāte, Vienības iela 13, Daugavpils, inese.zugicka@du.lv*

## **VALODU KONTAKTU ATSPoguĻojums IESaukās**

Atslēgas vārdi: iesauka, onomastika, valodu kontakti, Centrāllatgale.

Iesaukas ir viens no visvairāk lietotajiem neoficiālo antropnīmu veidiem, kas mūsdienās nav zaudējis savu nozīmi cilvēku nosaukšanā. Iesaukas varam analizēt ne tikai no semantikas, onomastiskās darināšanas viedokļa, bet arī novērot dažādu valodu ietekmi to veidošanā.

Centrāllatgales areālu raksturo iedzīvotāju etniskā dažādība. Citvalodu ietekmi uz onomastisko leksiku, t.sk. iesaukām, nosaka nevienmērīgais Latgales novada iedzīvotāju nacionālais sastāvs un ikdienas saziņā lietotā valoda – gan latviešu, gan krievu, gan poļu, gan citas. Jau no seniem laikiem Latgales iedzīvotājiem ir bijuši cieši ekonomiskie un kultūras sakari ar minēto tautību pārstāvjiem.

Referātā tiks analizētas dažādu valodu kontaktu ceļā radušās Centrāllatgales iesaukas, to īpatnības un lietošana ikdienas komunikācijā.

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# DOKTORANTU SEKCIJA „LITERATŪRZINĀTNE”

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## DOCTORAL STUDENTS SECTION „LITERARY STUDIES”

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**Dina Ļecka**

*Daugavpils Universitāte, Vienības iela 13, Daugavpils, dina.lecka@daugvt.lv*

### BĒRNA TĒLS ANDREJA UPĪŠA AGRĪNAJĀ PROZĀ

Bērna tēls un bērnības tematika ir caurviju koncepts un daudzslāņains mākslinieciskās pasaules segments jebkuras tautas literatūrā. Tas ienes būtisku personāžu sistēmas akcentu un ietekmē arī teksta ideoloģiju kopumā. Andreja Upīša bērnības tematika sastatāma ar viņa autobiogrāfisko kontekstu. Rakstnieka bērnība nebija gaišu atmiņu caurstrāvota, ko noteica smagais darbs un agrie ganu rīti, mūžīgais izsalkums un aukstums. Šie motīvi daudzviet lasāmi arī autora tēloto bērnu ikdienas aprakstos. Andreja Upīša agrīnajā prozā (no 1901. gada līdz 1920. gadam) bērna tēlojums papildina pieaugušo pasaules ilustrējumu. Andrejs Upīts netēlo lielus, draudzīgus un pozitīvi domājošus bērnus. Viņš biežāk pievēršas pusaudžu vecuma bērniem, kas mēģina izdzīvot sabiedrībā, kurā bērns nav, autora vārdiem runājot, “cilvēces nākotne”, bet ir “lieka mute” vai darbaspēks. Rakstnieks tēlo bērnu dzīvi sava laika sabiedrībā, rāda kā bērna dzīvi, dvēseli un pasaules uztveri kropļo pieaugušie. Pat šķietami pārtikušās ģimenēs, bērns ir vecāku instruments savu mērķu realizēšanai.

**Sarmīte Buholce**

*Daugavpils Universitāte, Vienības iela 13, Daugavpils, sarmitebuholce@gmail.com*

### LATGALES IDENTITĀTES MEKLĒJUMI Ā. ERSAS DARBOS

Identitātes meklējuma procesi 20. gadsimta sākumā Latvijā iezīmējās ar savdabīgā kultūrreģiona -Latgales atveidojuma aktualitāti. Latgaliešu vēsturiskais nošķirtības laiks ļāvis saglabāt savdabīgās mentalitātes patriarhālo, katoļticības inspirēto dzīvesveidu, neieklaujoties jaunizveidotās valsts kontekstā. Latgales teksts kļuva īpašs daudzu populāru rakstnieku darbos: A. Austrīnam, J. Jausudrabiņam, Ā. Ersam. Literatūrkritiķis E. Aistars (1899-1998) Ersu nosauc par Latgales "atradēju". Ersa biogrāfijā Latgale nozīmīga ar pēcemigrācijas periodu (1911-1914) un dzīvesbiedri, kura, būdama latgaliene, iepazīstinājusi ar autentiskiem materiāliem. Erss latgaliešu esības kodu atšifrējumiem velta trešo daļu savu literāro darbu. Pēc literatūrkritiķa Ā. Brača (1880-1967) domām, Erss ar objektīvu, māksliniecisku izpratni un interesi attēlojis Latgales īpatnējo savdabību. Erss atklāj, ka latgaliešu identitātes pamatā ir ticība, valodas savdabība, multietniskās kopienas dzīvesveids, aizspriedumi, ticība misteriozajam, Latgales ainavas krāšņums. Autors iedziļinās Latgales sarežģītajās dzīves niansēs, izceļot sirsniību, patiesumu, kas robežojas ar naivumu, dzīvesprieku un uzticību katoliskā dzīvesveida noteiktajām tradīcijām.

**Phillip Freeman**

*Daugavpils University, Vienības street 13, Daugavpils, pcf48@yahoo.com*

### MULTI-ARTS THEATRE: AWARENESS AND CONFLICT RESOLUTION IN NATIVE AMERICAN ISSUES

This presentation is a preliminary examination into the effectiveness of theatre as a communication tool for Social Change. As described by Augusto Boal and his Theatre of the Oppressed, interactive theatre presents an opportunity for a public and open dialogue between conflicting viewpoints. That is to say, the Theatre of the Oppressed is community-based education at the local level. Unfortunately, Augusto Boal's Theatre of the Oppressed involves community members to participate in the show by stopping the performance (calling out the word, "stop"), then the 'person for a community voice' must leave the audience to join the actors on stage to improvise their own dialogue. Although an effective tool to create awareness, there is a flaw; all participants must speak the same language, must have the same cultural values, and must have the same approach to discourse and speak-out in public. Augusto Boal's Theatre of the Oppressed does not. However, Community-

Based educational theatre has not stopped experimenting to find a method to open peaceful dialogue that would affect social change. The problem lies in the issue that many "First People of America" would not yell the word "stop" to participate. However, most Native Americans expression of value include staying out of other's affairs and verbalizing personal thoughts or only when asked, viewed as "indifference."

That way the audience, if unwilling, does not have to participate as actors. Therefore, when dealing with a culture that generally does not give to vent their emotion, the presentation explores using constructionism sensitive to Native American culture, and deconstructionism using post-modern methods generally found in conducting live-theatre, and, lastly, a semiotic approach to images, language and music to create a culturally and esthetically sensitive community theatre that would encourage continued peaceful dialogue after the show. Moreover, I believe persuasive communication with a native population that does not traditionally have theatre as an art form should, as the Linguist Ferdinand de Saussure suggest, be sensitive to words usage, and as encouraged by the Non-linguist Claude Levi-Strauss be concerned to the significance of myth and kinship issues, closing, my personal favorite, a platform based on the Narrative theory to create a friendly and familiar stage surrounding to keep on open dialogue for environmental solutions, economic prosperity, and Native Cultural-Rights. There is no question that this presentation is a method for a better educational approach to community-Based issues. In these modern times, all voices are heard, and the loudest and more powerful should not always win. Using Community-Based theatre in as an education tool, storytelling, as in the old-days, is a highly effective tool for hearing, observing, memorizing, and most importantly, observational learning to affect social change.

### ***Inta Genese-Plaude***

*Daugavpils Universitāte, Parādes iela 1, Daugavpils, genese-plaude@inbox.lv*

## **POPULĀRĀS KULTŪRAS EMANCIPĒŠANĀS PILSĒTĀ AUGUSTA DEGLAVA ROMĀNĀ "RĪGA"**

Referāta centrā ir 19. gadsimta populārās kultūras ienākšanas un nostiprināšanās atspoguļojums pilsētas telpā Augusta Deglava romānā "Rīga".

Populārās kultūras līnija rakstniekam ir viens no izdevīgiem paņēmieniem, kā mākslinieciski pārliecinoši risināt 19.gadsimta modernās latviešu sabiedrības veidošanās tēmu. Romānu caurvij jaunā laikmeta tapšanas kolorīts, kurā būtisku vietu ieņem ne tikai dažādu sabiedrības sociālo, ekonomisko un etnisko grupu, un ideju komunikācija, bet arī populārās kultūras dažādas formas un prakses, kam arī ir svarīga loma latviešu ceļā no etniskas grupas uz kultūras nāciju. Caur populārās kultūras emancipēšanās prizmu autors atveido galvenā varoņa urbānās, sociālās un etniskās pieredzes un piederības izjūtas, un nozīmju veidošanos tiklab pilsētas telpā, kā arī latviešu un vācu sabiedrībā, kas tālāk ved un nacionālās pašapziņas emancipēšanos. Autors izgaismo modernās pilsētas sadzīves kultūru, biedrību, pašdarbības kopu dibināšanos, mākslas - triviālās literatūras, teātra u.c.mākslas formu rašanos un popularitāti, mediju (laikrakstu) nozīmi sabiedrībā, u.c. būtiskus kultūras segmentus, kas sekmēja latviešu modernās sabiedrības un kultūras nācijas veidošanos.

### ***Džiāna Ozola***

*Daugavpils University, Vienības street 13, Daugavpils, diana.ozola@du.lv*

## **THE REPRESENTATION OF LATVIAN IDENTITY AND ASSIMILATION IN I. LEITIS' UN U. BRIEDIS' TRAVEL DIARY "IN SEARCH OF LATVIANS IN SIBERIA"**

Key words: travelogue, travel diary, Siberia, cultural heritage, identity, assimilation, collective vs individual.

The image of Siberia has appeared in a number of works by various writers – Latvian, Russian, European and even American. This place has always attracted travellers from different countries due to numerous reasons: its controversial history, the mixture of cultures, quite exotic space, and other.

For the Latvian nation the space of Siberia has been primarily associated with the process of eviction of Latvians in 1937-1938 that was demanded by the Soviet regime and their consequent immigration and settling in Siberia. One of the contemporary Latvian travelogue writers, who is widely known as the one, who describes the life of Latvian immigrants in Siberia in her travel diary "Austrumos no saules un ziemeļos no zemes (2005), is Inga Ābele. Her travelogue bases on the writer's three weeks trip to Bobrovka village in Omsk region, a home of around 150 Latvian immigrants. Ingvars Leitis is another traveller, who in 1975 undertook a trip to Siberia in search of his fellow countrymen. This travel could be regarded as quite unusual for those times: by bicycles from Riga to Vladivostok, which seemed rather complicated and very risky. Many years later, in 2016, the travel diary

by I. Leitis and U. Briedis (a photographer) “In Search of Latvians in Siberia” (“Latviešus Sibīrijā meklējot”) has been published. The travelogue represents not only the two young man adventures during their trip or the description of the places they visit; it focuses on the image of people, the Latvians they meet on their way, on their culture, traditions and the way of life. Thus, the aim of the present article is to reveal the identity of the Latvian immigrants in Siberia, to trace the signs of their assimilation, to analyse the influence of Soviet regime on the destiny of the Latvian nation.

**Vera Gelfande**

*Daugavpils University, Vienības street 13, Daugavpils, veragelfand@inbox.lv*

## **МИФОЛОГИЧНОСТЬ И РЕАЛЬНОСТЬ ПРОШЕДШЕГО ВРЕМЕНИ В РОМАНАХ ЕЛЕНА КАТИШОНОК**

Романы Елены Катишонок «Жили-были старик со старухой» (2006), «Против часовой стрелки» (2009), «Когда уходит человек» (2011), «Свет в окне» (2014) написаны автором в эмиграции на русском языке. Пространство романов – Город, в котором угадывается Рига. Время – Латвия до 40-х годов, времен Второй мировой войны и последующих десятилетий советской эпохи. Все свои книги Елена Катишонок посвящает родине - пространству, связанному с историей ее семьи. Неслучайно первые романы автор называет сагой, семейной сагой. Елена Катишонок пытается восстановить прошедшее время, чтобы рассказать не только о своей семье – своих любимых Ивановых, но и о многих других жителях многонационального города. Город Балтии в романах Катишонок – мультикультурное пространство. Как восстанавливает время и пространство в своих книгах Елена Катишонок? Здесь есть своя закономерность. «Жили-были старик со старухой» и «Против часовой стрелки» - семейная сага о старовеках Ивановых, судьбы которых переплетаются со многими другими драматичными и счастливыми историями людей многонационального Города. «Когда уходит человек» - роман, в котором сконструировано пространство Риги. Балтийский город в романе именуется Городом – название сознательно не произносится, хотя читатель за топографическими деталями легко угадывает Ригу. Таким образом автор сразу актуализирует мифологичность созданного им пространства. Как соотносится мифологичность и реальность в романах Е.Катишонок? Романах, которые вполне можно считать романами реалистического направления.

**Jekaterina Valejeva**

*Daugavpils University, Parādes street 1, Daugavpils, valejeva.j@gmail.com*

## **РИГА НА СТРАНИЦАХ ПРИКЛЮЧЕНЧЕСКОЙ ПОВЕСТИ Л.В. ЖДАНОВОЙ «РЕБЯТА С УЛИЦЫ ЧЕРНОГОЛОВЫХ»**

В тексте Л.В. Ждановой Рига с достопримечательностями и историческими местами становится площадкой, где разворачиваются действия, а точнее моделируется приключенческая структура. Город – это фон для происходящих событий, и часть родины, страны; и отдельно существующий, живущий своей жизнью образ, который является одним из «главных героев». В работе были использованы реальные топографические данные послевоенной Риги, которые позволили произвести сравнительный анализ и составить целостный образ рижского пространства через призму детского приключенческого литературного произведения латвийского автора.

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# MĀKSLA LATVIJĀ: TRADICIONĀLAIS UN LAIKMETĪGAIS

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## ART IN LATVIA: TRADITIONAL AND MODERN

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***Santa Riževska, Viktorija Valujeva***

*Daugavpils University, Parādes Street 1, Daugavpils, Latvia, viktorija.valujeva@du.lv*

### **AESTHETIC POSITIONS IN PAINTING IN THE CONTEXT OF MODERN ART IN LATVIA AND WORLD-WIDE**

Key words: aesthetics, aesthetic experience, beauty, perception of an art work, painting.

The modern era is an intensive period of new aesthetic conceptions and creative search. Interest in beauty as a property possessed by an object rises anew. For a century the essential thing in art is not the beauty, but something connected with sublimity. Aesthetics explores the nature of beauty and reflects a person's tendency to create and experience rich and valuable world. Nowadays there is an attempt to return to the meaning of the aesthetics, which includes not only art philosophy of Baumgarten and Kant, but also aesthetic experience, which is extensive and can be attributed to cognition and nature. Aesthetic enjoyment in a certain sense represents emotions that arise by observing a work of art, sometimes these emotions are melancholic or excited, and they have an influence upon a person. Value of art is subjective for each person.

The 21<sup>st</sup> century society and modern art are in a close interaction. World-wide radical changes in economics, as well as social, political, climate and ecological changes have an influence upon society. In contemporary ambience demand for harmony, balance, safety, positive thinking increases.

The question about aesthetic positions in art is invariably intriguing and in essence does not lose its actuality.

The aim of the research is to study the differences of aesthetic apprehension in painting in Latvia and world-wide, mark the connection of aesthetic ideals with dominant ideas of the epoch.

***Sandra Maskaļova, Zeltīte Barševska***

*Daugavpils University, Vienības street 13, Daugavpils, zeltite.barsevska@du.lv*

### **ANALYSIS OF CHARACTERISTICS OF CROSS-BORDER CULTURAL PROJECTS**

Key words: cultural project, intangible cultural values, international cooperation, integration, innovation.

Objective: to analyse characteristics of cross-border cultural project "Daugavpils and Vitebsk: promoting cultural cooperation".

In the conditions of the increasing globalisation culture cooperation between cross-border nations that share similar history and traditions is one of key factors for sustaining own ethnic identity. Long-term cooperation in the cultural field between the cities of Daugavpils and Vitebsk is crucial for preservation of the common cultural heritage of the Latvian-Belarusian border region. There is a need to improve the knowledge about Latvian and Belarusian traditional culture and its cross-border distribution. Cultural projects also play an important role in integration processes - those promote tolerance and mutual understanding, bring people together and promote communication, help to solve social problems of the society, ensure people's identity, sense of belonging, make culture more accessible to wider and more diverse segments of society, promote cooperation between different sectors and organisations, in a particular case - also at the international level. During cultural projects' activities the achievements and innovations of creative collectives and target groups are demonstrated. The cultural heritage and its preservation are special and important objectives of international cultural projects, which include the preservation of both material and intangible cultural heritage.

During this work, the characteristics of the implementation and management of the cultural project "Daugavpils and Vitebsk: Promoting Cultural Cooperation" have been explored, analysing its cross-border cooperation aspects.

***Sandra Lukjanova***

## **CONCEPTUAL ART PHENOMENA OF THE PAST PERIOD**

Key words: conceptualism, art, phenomena, design.

The artist - in his own language is a monkey, whose behavior is understandable thanks to only a civilized critic. Art rejected visual images and the importance of expressive elements, turned to general concepts and concepts. In conceptualism, the concept of work is more important than physical expression. The purpose of art - the idea of broadcasting. Art objects can be formed and exist in different ways: text, graphics, photographs, audio and video materials. Conceptual art does not rely on a visual aesthetic pleasure, but on introspection, thinking and intellectual effort. The aim of the research is to investigate what conceptual art is, its essence, to look at the passage of time when the conceptual art emerges.

***Valērija Černova***

*Daugavpils University, Vienības street 13, Daugavpils, leracernova@gmail.com*

## **CONTEMPORARY ART FEATURES IN LATVIA IN 2016 – 2018**

Contemporary art is so diverse that it cannot be specifically identified, so some theories about the phenomenon of contemporary art arose. All these theories combine one idea: contemporary art is phenomenal art. What distinguishes contemporary art artifacts depends on the means of expression of the artist (messages, technologies, ideas, concepts, materials used, etc.). An artifact or an art work is a powerful tool by which contemporary Latvian artists exist in Latvian culture.

The aim of the research is to determine how the most prominent representatives of Latvian art express themselves in the content of their work in the modern age.

Keywords: contemporary art, Latvian artists, conceptual art, artifact, artistic message.

***Žanna Vērdiņa***

*Daugavpils University, Parādes street 1, Daugavpils, Latvia, zhanna.verdinja@gmail.com*

## **CONTEMPORARY TRENDS OF MIXED MEDIA PAINTING TECHNIQUE IN LATVIA AND IN THE WORLD**

Key words: mixed media, artists working in mixed media, difference of the mixed media, materials in mixed media.

In the 21<sup>st</sup> century the mixed media has got the most widespread with the expansion of technical capabilities in art, such as methods of processing materials, new adhesives, new materials in general; as well as with the viewpoint changes in understanding of visualization, freedom of choice and acceptability of combining both of them – theme-based as well as respectively material components of the piece of art.

The mixed media painting technique means picture painting by using several different medias. Sometimes this gives an opportunity to create on the canvas the effects that are impossible when using one single media, and sometimes only applying such a mixed media allows to create the desired piece of art by maintaining the idea and the concept of the picture. Contemporary artists are constantly experimenting with various materials in order to achieve new effects in painting, so that their creative work would differ from the others and they would be “visible” in this world. For example, Latvian artists and artists of the world such as Kristaps Gelzis, Kristaps Zarins, Andrejs Amelkovics, Danny O’Connor, Gerard Brok, Nick Henry are experimenting with different materials by combining varied medias. The purpose of the study is to investigate all possible mixed media in painting, as well as the materials used to create the artifact. To analyze the creative activities of contemporary Latvian and world artists working in mixed media.

***Darina Kroitore***

*Daugavpils University, Parādes street 1, Daugavpils, Latvia, darina93@inbox.lv*

## **DESIGN AND ART – COMMON AND DISTINCTIVE**

Key words: design, art.



In the 21<sup>st</sup> century, due to the technological boom, their environmental influence, household, human minds and way of thinking, as well as on design and art, today, clear borders between design and art not very obvious. Often there is no real clarity at which point the designer's work turns into an art object.

Although there is a view that design and art are two inextricably linked concepts, however, other design and art researchers believe that there is a significant difference between design and art.

The study aims is exploring the nature of design and art, looking at the shared and distinctive features of these two areas, illustrating it with the works of Latvian and foreign designers and artists.

**Viktorija Loktionova, Aina Strode**

*Rezekne Academy of Technologies, Atbrīvošanas al. 115, Rezekne, viktorija.loktionova@gmail.com, aina.strode@rta.lv*

## **GAME DESIGN AS AN ADVERTISING TOOL**

Key words: game design, graphic design, advertising, observation, questionnaire.

Nowadays, when technologies continue their fast development, computer games are gaining great popularity. Regardless of competition, classical games or board games do not lose their relevance, as shown by several annual contests and exhibitions that are organized to stimulate the development of this industry. Games are different by their specific. They educate, develop memory, logic, attention. Attractive design improves the impression of the game and also promotes product in the market. Games are effectively used in studying and have good perspectives to become a successful advertising tool.

The aim of research is to analyze the development of games and their influence on people, as well as to explore the possibilities of using game for advertising purposes.

Research methods: theoretical - research of literature and internet resources, analysis of analogues; empirical - observation, questionnaire.

In the framework of research, the informative game design was developed for promotional events of the Rezekne Academy of Technologies (RTA). Game was approbated on the RTA Information Day in 2018. Observation and questioning of the players allow us to conclude that games design and content are binding, create interest and willing to participate in the game. The developed bonus system promotes enthusiasm.

**Silvija Ozola**

*Riga Technical University, Vānes str. 4, Liepāja, Latvia, ozola.silvija@inbox.lv*

## **INFLUENCE OF BUILDING TRADITIONS OF FORTIFIED URBANISTIC STRUCTURES OF BYZANTIUM ON THE ESTABLISHMENT OF THE 13<sup>TH</sup> CENTURY GERMAN ADMINISTRATIVE CENTRES IN THE ORTHODOX LANDS IN LIVONIA**

In 395 the Roman Empire was divided in the Western Roman Empire and the Eastern Roman Empire or Byzantium on whose capital city Constantinople a strong defensive wall was built, creating three-part planning that affected building traditions in Orthodox lands, also in Russia where Christianity was adopted in the 10th century, but in the second half of the 11th century it was introduced in Latgalian lands. In German lands two-part planning was made to Wartburg fortifications (1067–1075) after reconstruction (1140–1172), separating front-castle from Ruler's residence, but in Livonian architectural structures of fortified buildings created by Germans was supplemented with a castle settlement, which in three-part planning developed as a separate structural unit. Current researches: American geographer John Leighly (1895–1986) on the basis of local features grouped fortified complexes of Fellin (now Viljandi), Wolmar (now Valmiera) and Kokenhusen emphasising the link of Livonian castles with town. Estonian historian of architecture Elmo Raadik (1925–1969) together with prof. Dr. art. Voldemar Vaga (1899–1999) worked out a research "Viljandi arhitektuuri ajalugu feodalismi perioodil (XIII–XIX sajandi keskpaigani)" (1960). Latvian historian, archivist Roberts Malvess (1905–1982) compiled "Building History of Kokenhusen Castle. The 13th century–20s of the 17th century, but Dr. hist. Tatjana Berga conducted archaeological research (1988–1996) of Wolmar Castle. Historical, archaeological, architectonic research materials of Livonian fortresses have been included into series "Latvian Medieval Castles" published by Latvia History Institute. Estonian archaeologists Aare Kodar and Dr. Erki Russow published a new research "On Development of Town of Viljandi in Light of Earliest Archaeological Find Complexes" (2013). Impact of

Byzantium fortified urban building structure traditions on the 13th century German administrative centre planning in Livonia has been studied insufficiently.

***Ilmārs Dirveiks***

*Daugavpils Universitāte, Vienības iela 13, Daugavpils, dirveiks@gmail.com*

## **NEW FACTS ABOUT PROBABLY THE OLDEST TIMBER BUILDING IN JĒKABPILS**

A small dwelling house in Jēkabpils on Brīvības Street 125 is considered to be the oldest wooden building in the city. The oldest plan that contains this building, dates back to 1808. On this basis, it was assumed, that the building was built in 1808, but there is no other justification for this date. In order to prove or clarify this hypothesis, architectural research of a building has been conducted. The development of Jēkabpils was influenced by large fires in 1778 and 1878, that destroyed nearly two thirds of the city. The building is a typical dwelling huse of a small town in the 19<sup>th</sup> century. It is a wooden log building with half hipped roof, thereby preserving the original volume, the architectural composition and the finish of the facade. Historical interior decoration fragments have also been preserved. The architecture of the facade of the building dates back to the 19th century. Facades is formed by the tipical elements of the 19th and the first half of the 20th century - windows, doors, eaves, planks and tin roofing. The building is an integral part of the historic center of Jēkabpils and represents an authentic piece of ancient building on Brīvības Street. It is possible that the evolution of the building volume is complicated. This is indicated by differences in the design of the ceiling constructions. Perhaps one part of the building is older. With some changes, the historical layout remains unchanged. The research results allow us to put forward the hypothesis that around 1911, a rebuilding process has taken place when half of the building was renovated, a roof room was built and a new roof structure is at least partially built. Additional information can be obtained during construction work, when the wall structures are more exposed. In general, it can be assumed that the existing building volume was formed in the first quarter of the 19th century, but the exact construction date of the building is still unknown.

***Līga Strode, Aina Strode***

*Rezekne Academy of Technologies, Atrbrīvošanas al. 115, Rezekne, liga\_strode@inbox.lv, aina.strode@rta.lv*

## **POSSIBILITIES OF PROVIDING SUSTAINABLE DESIGN IN RECREATION ZONES IN FLOODING AREAS OF RIVERS**

Key words: sustainable design, recreation zone, flooding areas, triangulation.

In the rapid rhythm of life, more and more people are striving for a good rest, spending time in nature and near water. The ergonomic and attractive recreational areas are a great representation for each community, attracting both locals and guests. The aim of the article is to find out the need for the creation of new recreational green spaces, making the flood areas accessible to people, and to identify the most important problems that may be encountered in providing sustainable design in specific areas. The triangulation of mixed research methods was used as the method of collecting and analyzing data for the article. Research methods: situation analysis, research of analogue situations, questionnaire of potential users and an interview with expert.

The results of the research provide universal and sustainable (both material and economic) solutions that will be used for the planning of recreational green spaces in river flood areas, with the possibility to adapt them to a specific situation. Summarizing the results of the research, information has been obtained that it is significant for people to have qualitative recreational green spaces and how to set up such sites most effectively, increasing the availability of urban green structures in river flood areas.

***Silvija Ozola***

*Riga Technical University, Vānes str. 4, Liepāja, Latvia, ozola.silvija@inbox.lv*

## **TOWER HOUSE – STRATEGICALLY SIGNIFICANT COMPONENT IN LIVONIAN AND PRUSSIAN URBAN FORTIFIED BUILDING COMPLEX DURING 13<sup>TH</sup>–14<sup>TH</sup> CENTURIES**

Coastal territories of Baltic Sea were subjugated applying military power – monk-knights' orders. In conquered Prussian, Livs and Latgalian lands administrative centres were founded, where due to impact of residential building traditions fortified houses were built and building complex created on places appropriate for economic activity, creating formation of medieval urban structures. A strategic building for land conquest was a tower house which originally had quadrangle planning. Residential tower was included in fortified building complex, and construction volume obtained vertical emphasis for defence function. In Livonia by traffic routes market places and a fortress with a tower house formed settlements creating origins for medieval urban planning. In Prussian administrative centres four-building fortresses with a tower were built, but in architectonically spatial environment of trading cities Town Hall with a tower construction dominated. Previous researches: Estonian art hist. prof. Dr. ph. Armin Tuulse (1907–1977) published the first profound research on Livonian fortresses “Die Burgen in Estland und Lettland” (1942), but since 1999 historical, archaeological, architectural research materials of German fortresses have been collated in series “Latvian Medieval Castles” published by History Institute of Latvia and in archaeologist prof. Dr.hab.hist. Andris Caune and Dr. Ieva Ose’s “German Castle Lexicon of Latvia from late 12<sup>th</sup>–17<sup>th</sup> century” (2004). Architect prof. Friedrich Lahrs’ (1880–1964) research on Königsberg Fortress with dungeon is dedicated to Prussian fortress architecture. One of the most recent researches is prof. Dr.hab. Tomasz Torbus’ “The Architecture of Castles in the Prussian State of Teutonic Order” (2016). Evolutionary analysis of Prussian and Livonian fortified housing planning and structure during 13th–16th century has not been carried out in regional and European context and impact of medieval urban planning has not been assessed.

***Santa Miezīte, Diāna Apele***

*Rezekne Academy of Technologies, Atrīvošanas aleja 115, Rēzekne, Latvia, Santa.Miezite3@inbox.lv, Diana.Apele@rta.lv*

## **VISUAL ANALYSIS OF VIĻĀKA MUNICIPALITY MUSEUM WITHIN CONTEXT OF DIGITAL CULTURE**

The main aim of museums is to create an aesthetic experience, to educate, to stimulate thinking and acting; their language of communication with visitors shall be aesthetic, well-informed, promoting study process. The Viļaka Museum collections contain ethnographic materials characteristic to the particular region. Currently the museum has to think about the way its visitors could more easily orient themselves in museum exhibitions and the way museum exhibitions' design and structure impact the visitors' cognitive process. Technologies are the new social and cultural reality, determining lifestyle, forms of communication, professional activity, ethics, politics, culture and human behavior. It allows researchers to speak about creation of new soci-cultural reality – digital culture. Objective of the research – to perform visual analysis for the Viļaka Municipality Museum, which could help to develop museum's graphical design identity in future. The authors of the article have performed visual analysis of the Viļaka Municipality Museum by using methods of visual analysis.

Formal analysis – revision and visualization of topic's physical elements. This is a specific type of visual description, explanation of visual structure, in which separate visual elements are ordered and are acting in composition.

Context analysis – visualization of circumstances, forming setting of events, summary of content ideas and answers to the following questions – what, how, why, where? Context analysis is always started with working at communication plan; then it is necessary to define the essence of initiative, main issues of focusing.

Abstract analysis – topic visualization in an abstract way. Abstract analysis and abstract thinking reveals individual's originality to a certain extent. It is based on a particular language of feature symbols. It allows to go further and to cross boundaries of the real world and to predict outcomes. To transfer information about real objects by use of symbols, in order to find solutions to particular practical problems. By use of various visual analysis methods it is possible to develop creative and new ideas and graphical design for any museum, including the mentioned Viļaka Municipality Museum as well.

***Normunds Kozlovs, Ilva Skulte***

*Riga Stradins University, Dzirciema st.16, Riga, fromnorkoz@gmail.com, iskulte@gmail.com*

## **COUNTERCULTURE SIGNS IN URBAN SPACE: GRAFFITI**

The thematic diversity of the ideology of counterculture is most clearly evident in the alternative media space. For example, as far as the semiotic partisan activity of graffiti is concerned; as a vehicle for a certain socio-critical ideology in which the main ideological themes of counterculture are manifested in visual and laconic

form; from the perspective of interdisciplinary research, we arrive at a point where several academic problems clash, whose three principal thematic blocks are subcultural identity, the creative energy of self-expression and the critical expansion of the vector of street art, which in relative terms, we may refer to as semiotic rebelliousness (i.e. a revolt aided by signs-symbols).

The discourse of messages created using the medium of graffiti undoubtedly belongs to subculture, because, even though it is found in the public space - on the façades of surfaces forming urban space, the majority of the public fails to notice it or else interprets it, contrary to culture's ordered world of meanings, as chaotic "dirt" more closely related to nature than culture.

If you don't know the code - you're disqualified. This is how kids play games in which they imagine a pass room where the door opens once the password/code word is spoken. All the attributes of subculture are based on the development of coded signs of difference known only to the "select" few. Thus, although in youth subculture, relatively speaking, the "rapper" and "metal head" try to occupy positions that are radically different from one another, to a neutral representative, let's say, of the older generation, they're both practically identical, i.e. without any discernible differences.

DRAFT

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# MŪZIKAS ZINĀTNE: PĒTĪJUMI UN PIEREDZE

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## SCIENCE OF MUSIC: RESEARCHES AND EXPERIENCE

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**Skaidrīte Ērliha, Natalija Kotona**

*Daugavpils University, Vienības iela 13, Daugavpils, Latvia, skaidrite\_erliha@inbox.lv, nataliacoton@gmail.com*

### **A REVIEW AND COMPARISON OF SOME INTERPRETATIONS OF TATYANA'S LETTER SCENE FROM THE OPERA EUGENE ONEGIN BY PETER TCHAIKOVSKY**

Within the framework of the new century, deep and radical changes in the education, art, cultural and social processes are taking place in the whole world, including Latvia. This brings into focus the question: In what way does an individual (both a performer and a listener), socializing and interacting in the cultural space, acquire values, and knowledge about outstanding composers, artists etc. important for the individual? Peter Tchaikovsky was one of the most prominent Russian composers in the late romanticism period of the 19th century whose multiform creative work had left a profound impact on an international scale. Composer's most essential esthetic principles of the opera art have been perfectly implemented in his opera Eugene Onegin. The opera is based on the lyrical drama story of the girl Tatyana about romantic dreams and happiness, about different states of the soul. In order to determine the performers' artistic quality at revealing the content and drama of the image, the criteria for the performers in the Tatyana's letter scene have been established, and interpretations of different performers have been analyzed and compared in this research. The concept of interpretation has been scientifically underpinned.

**Ojars Tumins**

### **A REVIEW AND COMPARISON OF SOME INTERPRETATIONS OF FIRST CONCERT PIECE IN F MAJOR OP.11 FOR TRUMPET BY WILLY BRANDT**

Key words: W. Brandt, Postromanticism, Concert Piece, interpretation.

Willy Brandt was a German composer and trumpet virtuoso whose compositions marked at the period of Postromanticism. Postromanticism is an art style typical of the last decades of the 19th century and first decades of the 20<sup>th</sup> century it emphasized strong emotional experience including the greatness and majesty of nature.

The most these features are shown up at Gustav Mahler's, Edvard Hagerup Grieg's and Richard Georg Straus's creation. An important role at Willy Brandt's creation takes his methodological textbooks and practice collections for a trumpet, nevertheless for all that two concert pieces for trumpet and piano Op.11 f major is the most remarkable composer's contribution. In my research I will analyse three performers – Timofei Dokshizer, Sergei Nakariakov and Max Sommerhalder's First concert piece for trumpet and piano op. 11 f major interpretations.

**Skaidrīte Ērliha, Katrīna Paukšta**

*Daugavpils University, Vienības street 13, Daugavpils, skaidrite\_erliha@inbox.lv, vivat@inbox.lv*

### **AN ANALYSIS AND COMPARISON OF SOME INTERPRETATIONS OF THE CHERUBINO'S ARIA FROM WOLFGANG AMADEUS MOZART'S OPERA THE MARRIAGE OF FIGARO**

Key words: classicism, opera, aria, interpretation, dramaturgy.

An expert who is specialized in performers (players) of any century will not find a common musical language with baroque sound-arts or electronic music. However, borders are violated sometime, because of the search for new sources of inspiration, new forms of music and languages in which to address the audience.

Each performer implements the code of text and music inserted by the composer, while maintaining his own individuality and style of expression, by deciphering the meaning of composition and sense of deep feelings that make life relevant to their development. Wolfgang Amadeus Mozart has been a great Austrian composer of the 18th century in era of classicism, the greatest reformer of operas, individuality with amazing abilities. His works are well known throughout the world, especially the famous opera *The Marriage of Figaro*, which is still included in the concert repertoire, in particular the Cherubino's aria. In the study are analyzed, compared some interpretations of the performers of Cherubino's aria, defined criteria and defined the concept of interpretation.

### ***Levs Rotbards***

*Daugavpils University, Vienības 13, Daugavpils, levs\_rotbards@inbox.lv*

## **CHARACTERISTICS OF THE COMPOSER VLADISLAV BLAZHEVICH'S CREATIVE WORK**

Key words: Vladislav Blazhevich, trombonist, teacher, composer, art, genres.

Vladislav Blazhevich (Vladislav Blazevich, 1881-1942) is a Russian Soviet composer, trombonist and educator. He graduated from Moscow Conservatory (1900-1905), where he was taught how to play the trombone by the famous Russian trombonist, tuba player and the drums player of the Prussian origin, Christopher Ivanovich Bork (Христофор Иванович Бóрк, 1832-1916). Being the soloist of the USSR Great Trombone orchestra (1905-1922); the soloist of Persimfans (Persimfans is the first conductorless symphonic ensemble) (1922-1932) and a teacher at the Moscow Conservatory (a Professor since 1922), he also taught trombone classes (1920-1942). While working in the conservatory, V. Blazhevich brought up a whole generation of outstanding trombone and tuba players, such as Vladimir Scherbinin (Владимир Арнольдович Щербинин, 1896-1963) and others. His creative heritage is large and varied. Two overtures, 13 concerts for trombones and pianos (1934-1940), 10 marches, including Concert March (1936), composer of sweet-music, quartets, waltzes and etudes (1920-1930), as well as methodical literature - Collective Musical Compositions for School Brass Orchestra (1935), The Sliding Trombone Lessons (1935), Trumpet Lessons (1943). Vladislav Blazevich's versatile and productive work makes an essential contribution to the development of the Russian School Wind Bands.

### ***Gints Ratnieks***

## **CONCERT GENRE BY ALEXANDER ARUTYUNYAN**

The first instrumental concerts took place in the 17<sup>th</sup> century in Italy by Giovanni Bononcini, Jozeppe Torelli and by Antonio Vivaldi, who created both - solos and concertogrosso. Most often, the concert was made in the three-part sonatas cyclical form. Only in the second half of 18th century, stabilized the classical type of instrumental concerts with the double position in the first part. One of the founders of this type was L.V. Beethoven. Armenian composer Aleksandr Arutyunyan plays an important role in the development of the concert genre in the 20<sup>th</sup> century. At the beginning of the 20<sup>th</sup> century, many composers and artists retained their confidence in realism, however, realism in their art gained a different character than in the works of the 19th century master craftsmen, and there were new special nuances. In addition to realism, expressionism existed with its imaginative and neo-classicism, whose purpose was to revive pre-classical and early-classical-style features. Alexander Arutyunyan (1920-2012) is one of the most prominent Armenian composers of the 20<sup>th</sup> century, who is known not only in Armenia but also far beyond its borders. As a composer, he won the popularity directly with the pieces in the concert genre. He has written 13 concerts for various instruments. Interseted with wind instruments, A. Arutyunyan wrote pieces for flutes, oboes, bass, trombones, trumpets, horns and tubas. Particularly, we can mention concerts for various brass instruments with an orchestra. The composer has always attracted the specific sound that he masterfully used in his symphonic works.

### ***Edite Rucina***

*Daugavpils Universitāte, Pārades 1, Daugavpils, edit30@inbox.lv*

## **INTERPRETATION OF RIMSKY-KORSAKOV OPERA "SNOW MAIDEN" IN THE ERA OF POSTMODERN**

Key words: postmodernism, opera art, Russian opera direction, synthesis of arts, musical drama, folklore traditions, fantasy and reality.

Active interest of the modern theater in the beginning of the 21 century after long oblivion to Ostrovsky's "Snow Maiden" and Rimsky-Korsakov's is connected with postmodernist tendencies of a boundary of centuries. It is possible to explain scenographic tendentiousness of modern interpretations by insufficient understanding directors of substantial and musical features of "a spring fairy tale", ignorance of history of its creation and a scenic embodiment. Ostrovsky's contemporaries couldn't consider its ideological essence, ambiguity of a theme and deep lyricism under a fantastic cover of "Snow Maiden" with musical means. He transformed it into the original musical drama, played important role in formation of Russian opera direction.

***Svetlana Blaževića, Ēvalds Daugulis***

## **INTERPRETATION OF THE JEKABS MEDINS POEM FOR VIOLIN AND ORCHESTRA**

Key words: Jekabs Medins, Poeme, style, interpretation, music for violin.

Jekabs Medins (1885-1971) is one of the most well known Latvian composers of the 20 century. In his creation, Jekabs Medins focused on different types of genres (symphonic music, vocal music, piano music, chamber music for different instruments), between which, music for violin takes an important place. For violin he has composed such compositions as: Romance, Legend, Polka, Poeme and others. Poeme for violin and orchestra is one of the Jekabs Medins most popular and often performed works for violin. This piece of music is in the best Latvian performers repertoire.

***Gatis Supe***

*Daugavpils University, Parādes street 1, Daugavpils, gatissupe7@gmail.com*

## **INTERPRETATIONS OF „ROMANCE FOR TROMBONE AND PIANO” BY CARL MARIA VON WEBER**

Key words: Carl Maria Weber, romanticism, romance, interpretation.

Music in Romanticism era is a search for new colours of sound, particularly by creating new musical forms, harmonies and instrumentation techniques and “Romance for trombone and piano “ by the first german romanticist Carl Maria von Weber mirrors this brilliantly. This piece includes the most characteristic features of the genre of romance, especially a singing, flowing and emotionally saturated melody. In my thesis I am going to analyse interpretations by Alexander Nyankin, Nicolas Moutier and Alain Trudel.

***Kristīna Taraņenko, Ēvalds Daugulis***

*Daugavpils University, Vienības street 13, Daugavpils, kristinesinavska@inbox.lv, evalds.daugulis@du.lv*

## **JOHANN SEBASTIAN BACH INTERPRETATION COMPARISON OF SUITE FOR SOLO CELLO NO.2 D MINOR PRELUDE**

Key words: Bach, suite, Prelude, interpretation.

Johann Sebastian Bach (1685–1750) is a great composer of the baroque epoch, organist, harpsichord and polyphonic. Bach collected in himself the most valuable from predecessors creative achievements and his composed cello suites nowadays are great unchanged examples for musicians. Composition interpretation depends on style of era, artist's technical skills, previous musical experience and tastes. Interpreting Bach Suite for Solo Cello should focus on dynamics, stih line, a phrase, articulation and vibration.

Suite No.2 d minor for Solo Cello was written in 1721. From the mentioned Suite, Prelude part was chosen for the closer look in three interpreted performances: Pablo Casals (1876-1973), Jacqueline du Pre (1945-1987) and Mario Brunello (1960).

***Ilona Kiruka***

*Daugavpils University, Vienības street 13, Daugavpils, Latvia, ilonakiruka@inbox.lv*

## **LAURETTA'S ARIA FROM THE OPERA GIANNI SCHICCHI BY GIACOMO PUCCINI**

Giacomo Puccini is an outstanding Italian opera composer, the representative of a verismo style at the end of the 19<sup>th</sup> and the beginning of the 20<sup>th</sup> century. Despite his growing popularity, the composer's personality is still heatedly discussed and difference of opinions remains. Gianni Schicchi is the only comic opera written by the composer. For a vocalist who performs G. Puccini's compositions it is vital to know the specific features of the composer's style, as well as those vocal-methodological techniques which contribute to a stylistically precise interpretation of opera arias created by the composer.

***Arnita Tāraude***

*Daugavpils University, Vienības street 13, t.arnita@inbox.lv*

## **LUDWIG VAN BEETHOVEN'S PIANO SONATA NO.31. OP.110 FIRST MOVEMENT INTERPRETATIONS**

Key words: L. van Beethoven, classicism, sonata, interpretation.

Ludwig van Beethoven (Ludwig van Beethoven) was an excellent classicism period composer. Classicism is 18<sup>th</sup>-19<sup>th</sup> century style of arts beauty perfection of which can be found in clarity and lucidity. Most vividly these characteristics occur in Venniese classicists – Joseph Haydn's (Joseph Haydn), Wolfgang Amadey Mozart's (Wolfgang Amadeus Mozart) and L. van Beethoven's works. 32 piano sonatas have a significant spot amongst L. van Beethoven's works, especially 31<sup>th</sup> one. In this sonata a conflict between the bright memories and given reality is particularly felt. In this work I will analyze three pianist's – Sviatoslav Richter's (Святослав Рихтер), Daniel Barenboim's (Daniel Barenboim) and Helena Grimaud's (Hélène Grimaud) interpretations.

***Zita Nitisa***

*Daugavpils University, Vienības street 13, Daugavpils, zita.nitisa@gmail.com*

## **MOTETS IN WOLFGANG AMADEUS MOZART'S ART**

Wolfgang Amadeus Mozart is one of the most notable composers of the classicism time period. Alongside Joseph Haydn and Ludwig van Beethoven, Mozart is considered the most notable representative of the First Viennese School. Regardless of his short-lived life, Mozart has created many various music compositions of different genres that we listen to nowadays as well. Alongside symphonic and chamber music masterpieces, W.A. Mozart created vocal- instrumental music pieces: opera, mass, requiems and motets.

Classicism in music was the leading music style in Europe during the time period from year 1750 to 1820, even though sometimes it is considered to be the leading music style before and after the above mentioned time period. Composers tried to bring clarity and simplicity to music, moving away from the prevailing counterpoint at the time. Balance is the main value in reflecting classicism. Genres such as symphony, sonata and quartet had a significant role in music during Classicism. Not being very common, the genre of motet was still preserved.

Motet as a separate genre appeared in the 13th century France. Motets had a certain unique voice positioning and combined gregorian coral melody, current songs of the time in native language and even humoristic or rhythmic folk melody. Consequently, the content of the song was not easy to perceive and musical regularities took place. Motet was the first form of polyphony of our time, the development of which later appeared in folksong intonations, the role of chromaticism became more important along with imitation elements, instrumental accompaniment was added. Motet examples can be seen also in the 18th century as expanded compositions similar to spiritual cantata.

In W. A. Mozart's art five motets can be found, meant for solo singer as well as choir with orchestra accompaniment. Great examples of motets are Ave verum corpus, Veni Sancte Spiritus and Exsultate , Jubilate. Biblical text and characteristic musical expression means of classicism are skillfully combined in motets.

***Margarita Livanoviča, Ēvalds Daugulis***

*Daugavpils University, Vienības iela 13, Daugavpils, ritajapina@inbox.lv, evalds.daugulis@du.lv*

## **PECULIARITIES OF FELIX MENDELSSOHN BARTHOLDY PIANO CREATIVE WORK**



Jakob Ludwig Felix Mendelssohn Bartholdy, 1809–1847, was a German composer, conductor, educator, pianist, music performance illuminator of the early romantic period. Mendelssohn's studied piano with Ludwig Berger and composition with Carl Friedrich Zelter. Composer's musical activity was centered to music development in Germany, strengthened national traditions in music. Composer's creative works were varied and includes various genres, should be mentioned here oratorio, symphonies, concert overture, sonata, concerto for violin and piano, chamber works (trios, quartets, quintets, sextets). The form of the compositions strictly conforms to the classicism style, though beautiful melody and lyrical mood and impersonation of fantastic folklore image and natural landscapes that associated with romantic aesthetics. In the foreground of his piano style one can notice brilliance of melody, colourful opportunities in piano sound, virtuosic pianism.

Key words. Mendelssohn, romanticism, piano music, style of piano

***Kristīne Galvāne, Edgars Znutiņš***

*Daugavpils University, Parādes street 1, Daugavpils*

## **PETER TCHAIKOVSKY AND PECULIARITIES OF HIS OPERA ARTISTRY**

Peter Tchaikovsky (1840–1893) is a Russian composer, conductor, educator, musical social activist, music journalist who worked in the second half of the 19th century. Peter Tchaikovsky is one of the greatest representatives of Russian realistic art, the successor of the ideas of the founder of Russian classical music Mikhail Glinka. The operas Yevgeny Onegin and The Queen of Spades, the ballets Swan Lake, Sleeping Beauty, Nutcracker are considered to be the best works of his creativity. Peter Tchaikovsky's contribution to symphonic and chamber music is also immeasurable. The period of Peter's Tchaikovsky's work is connected to the second half of the 19th century, a time when Russian music had a great rise. During this time, Russian social life was rapidly flourishing and the national democratic music culture was particularly intensive. Its development simultaneously took place in various fields, such as composition, performing arts, music science, journalism and education. Opera and romance reached the unsurpassed flourishing of vocal music, intensive development of symphonic and instrumental chamber music, the ballet genre began. The creative group The Mighty Handful (or The Five) became the symbol of the thriving of Russian music. Innovation in the creative work of Peter Tchaikovsky is a genre of lyrical and psychological operas. Tchaikovsky was the first Russian composer who looked so deeply into the soul of his contemporary in difficult psychological states. Tchaikovsky's musical pieces express the tense feelings of the age, in his music, along with the heated protest's complete pathos, which is the basis of the emotional tension of the creative work, the desire of man for happiness, the struggle with obstacles on his way is reflected. The main features of Peter Tchaikovsky's style are melodiousness, possibility to sing, broad music with dances features, especially the waltz and folk dances rhythms. However, the instrumentation is characterized by a diverse timbral expression that is subjected to the joint psychological purpose of the piece: each instrument group is usually associated with a range of definite human experiences (for example, strings – the sounds of lyrical feelings, bassoon – evil sketches, etc.). Peculiar features belong to P.Tchaikovsky's harmonic language, which is especially developed in the dramatic expression of altered subdomain harmony.

***Vita Avotiņa, Skaidrīte Ērliha***

*Daugavpils University, Vienības street 13, Daugavpils, vita.svilpe@gmail.com, skaidrite\_erliha@inbox.lv*

## **STYLE AND TIME CHARACTERISTICS OF GEORGE FRIDERIC HANDEL'S OPERAS**

The topicality of music art with all its diverse types, genres, styles, drama, and figurativeness influences not only the existing creations in the world, but also individual's personal development, enrichment of society's individual experience and its integration into socio-cultural environment.

Furthermore, creative works and operas of the German composer George Frideric Handel brought new trends in compositions of different genres, including themes, ideas, style and compositional techniques of the Baroque period. He emphasized different musical cultures, promoting their development, since 17th century could be viewed as a certain boundary line in cultural history of music: it combines all the accumulated heritage of the ages and starts up many new types of music, genres and styles.

The research is devoted to the composer's style and time characteristics, which points out the composer's artistic form of creation, individual style, genre; personal initiative, thoughts and emotional experiences.

**Skaidrīte Ērliha, Jurijs Murņikovs**

*Daugavpils University, Vienības street 13, Daugavpils, skaidrite-erliha@inbox.lv, jurrar0990@inbox.lv*

## **THE SIGNIFICANCE OF ALEXANDER GLAZUNOV'S PROFESSIONAL AND SOCIAL ACTIVITY IN THE DEVELOPMENT OF MUSICAL CULTURE IN RUSSIA**

Key words: activity, romanticism, culture, musical culture, development, Belyajev's community.

The function of music in society can express in different human activities – work process, everyday life, creativity, culture.

Musical culture is a system of various components and levels. It includes the sound as the material, perfect phonation, musical experts, composers, types and genres of music, the learning and ways of passing of music tradition.

It's important to admit that all aspects of musical culture exist simultaneously in certain society and establish common musical culture of community.

Alexander Glazunov was one of Russian classical music representer in romanticism in the end of the 19<sup>th</sup> century and the beginning of the 20<sup>th</sup> century, he was one of the first who created musical culture in Russia. His professional and artwork heritage is very large, it covers almost all genres except opera. He helped to confirm international cultural relations in Europe.

The most important components of stimulating development of musical culture, mechanisms and regularity are reviewed in research.

**Edgars Znutiņš, Olga Pankova**

*Daugavpils University, Vienības street 13, Daugavpils, edgarszn@inbox.lv, o.pankova@inbox.lv*

## **THE SPECIAL FEATURES OF THE VOCAL ART OF JANIS IVANOVŠ**

Key words: Janis Ivanovs, special features, vocal.

Janis Ivanovs is one of the most noteworthy Latvian composers of the 20<sup>th</sup> century. The compositions created by Janis Ivanovs were of a great importance and had become a great contribution to the musical culture. The composer became a valuable part of 50 years of development of Latvian culture, especially, in relation to symphonic music – his achievements in this genre can be put in line with world's best pieces. There was a particular trend in the Latvian music in the middle of the 20<sup>th</sup> century, that prior developed due to the achievements of the classical music of Russian realism as well as Western romanticism during the 19<sup>th</sup> century. However, increasingly, such classical national trend was being supplemented by an interest to subjectively psychological expressionism in music. This was particularly so in relation to behaviour of a personality of a human being in the centre of attention. The exceptional Latvian composers, such as Janis Ivanovs, Margeris Zarins, Arvids Zilinskis, Lucija Garuta, Janis Kepitis made a considerable contribution to the development of various musical genres. These people achieved excellence in its highest manifestation and discovered absolutely novel expression tools in their art. Janis Ivanovs enters Latvian culture with a pronounced Latgalian mentality, emotional directness, depth of experience and the beauty of the native landscapes. Janis Ivanovs, apart from symphonies, instrumental concerts and chamber music, composed 15 vocalisations, which, in contrast to former, amaze with their fragility and introversion. These programmatic miniatures, poetic, sincere and although very different and contrasting, generally are nostalgic. Without any words they tend to 'draw' particularly refined images, landscapes in a mind. Janis Ivanovs saved and passed these, very typical tools of expression, in a few Latgalian folk song variations, songs for the mixed choirs and those who performed individually with the help of musical accompaniment. Most of the vocal works, which were created during the years of war, were lost or left in the handwritten versions in the possession of certain performers. The best vocal works are The songs for individual performance, such as Zeme, zeme Daugavina, Latgales lidumos, Supla dziesma, Manas dzimtenes puse are seen as ones of the best vocal works.

**Anna Grigorjeva**

*Daugavpils University, Vienības street 13, Daugavpils, anna4407@inbox.lv*

## **UKRAINIAN MUSIC IN THE SECOND HALF OF THE 20<sup>TH</sup> CENTURY**

Key words: music, style, neofolklorism, innovation.

Like in the whole Europe, in the second half of the 20<sup>th</sup> century, new means of expression and new concepts for performing music were introduced into Ukrainian music and art. During this time, a new repertoire for the accordion and the bayan appeared, which was composed by Ukrainian composers Vladimir Zubitsky (Владимир Зубицкий), Sergey Berinsky (Сергей Беринский), Vladimir Runchak (Володимир Рунчак), Victor Vlasov (Виктор Власов), etc. The main innovative factor was folklore combination with jazz rhythms and contemporary music expression. For this style characteristic were atonality, aleatory, minimalism and different percussion effects. This tendency is very well seen in the compositions of Ukrainian composers like V. Vlasov, V. Zubitsky, Anatoly Beloshicky (Анатолий Белошицкий), Jury Shamo (Юрий Шамо) etc. In contrast, in other composer's works, we can see features of neofolklorism style.

***Jeļena Gedjune, Edgars Znutiņš***

*Daugavpils University, Vienības street 13, Daugavpils*

## **VIENNA CLASSIC – WOLFGANG AMADEUS MOZART – THE GREAT REFORMER OF MUSIC**

Mozart is a genuine Austrian composer-classic who worked in the second half of 18<sup>th</sup> century. Following his style, he was a classic of the Vienna School. He was acted in such classical genres as symphony, sonata, and chamber ensemble and, of course, opera. Mozart is a great innovator. His operas, symphonies, chamber music, concerts, scandal pianos are an excellent contribution to the development of humanity's cultures. Mozart's music has its own bright features and characteristics. Mozart's music language is simple, clear and expressive. The melody is the main means of expression in the composer's works. Mozart is an opera genre reformer. The first plan puts music (vocal), not the content, but content also is important (as opposed to Gluck). Mozart's opera music gathers and generalizing the centuries-old musical tradition development. Writing operas in different genres (opera seria - Idomeneus, The Clemency of Titus, opera buffa - All women do that, The Marriage of Figaro; singspiel - The Abduction from the Seraglio; synthesis of opera genres - Don Juan, The Magic Flute); Mozart updated and enriched each of them. In terms of innovative musical theatrical principles - the opera The Marriage of Figaro - is a completely new phenomenon in the history of the 19th century musical theater. The composer here skillfully united the best achievements of the Austrian and Italian theaters and created a realistic comedy.

***Ēvalds Daugulis, Anna Sazonova***

*Daugavpils University, Vienības street 13, Daugavpils*

## **WOLFGANG AMADEUS MOZART VIOLIN CONCERTO SPECIFICITY**

As we now Wolfgang Amadeus Mozart is one of the most prominent representatives of the Viennese classical school. Composer composed works in various genres: opera, symphonic music, chamber music, concerts, etc. A special place in the composer's work is the violin concerto genre. In total, Mozart composed eight violin concertos and interesting fact is a one concerto was created between April 1775 to December 1775. This period of writing violin concerts takes one year. Binding is the Sixth Violin Concerto in B-flat major in three parts, where is the first part allegro, second part adagio and the third part again allegro.

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# MATEMĀTIKA

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# MATHEMATICS

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**Diana Ogorelova**

*Daugavpils University, Parades street 1, Daugavpils, dian4ik1601@inbox.lv*

## CRITICAL POINTS IN A DIFFERENTIAL SYSTEM ARISING IN NETWORK THEORY

Two-component gene regulatory networks are described by the differential system

$$x_1' = f(x_2) - x_1,$$

$$x_2' = f(x_1) - x_2,$$

where  $f(x)$  is a sigmoidal function.

Definition: A function is called sigmoidal if the following is true:

\*  $f(x)$  monotonically increases from 0 to 1,  $x$  is a real number;

\* it has exactly one inflection point.

Lemma: Any critical point is of the form  $(x, x)$ . Therefore, the coordinate  $x$  of a critical point is defined from the equation  $x = f(x)$ .

Theorem: There are four cases:

\* The system has exactly one critical point. Then a critical point is stable node.

\* The system has unique critical point with the first characteristic value negative, but the second characteristic value is zero. It is stable degenerate critical point.

\* The system has exactly two critical points, one of them is stable node, another one is stable degenerate critical point.

\* The system has exactly three critical points. Side critical points are stable nodes, middle point is a saddle.

**Anita Kirichuka**

*Daugavpils University, Vienības street 13, Daugavpils, anita.kirichuka@du.lv*

## DETERMINATION OF SOLUTIONS FOR SOME NONLINEAR BOUNDARY VALUE PROBLEM USING THE LEMNISCATIC FUNCTIONS

The differential equation  $x'' = -p(t)x - 2q(t)x^3$  is considered together with the boundary conditions  $x(-1) = 0 = x(1) = 0$ , where  $p(t)$  and  $q(t)$  are step-wise functions. The number of nontrivial solutions for the problem is estimated using representation of solutions through the lemniscatic functions.

**Valentin Sengilejev**

*Daugavpils University, Parādes street 1, Daugavpils, valentin.sengilejev@gmail.com*

## ON INHIBITORY TWO-COMPONENT NETWORK

In the theory of gene regulatory networks the following system arises

$$x_1' = f(x_2) - x_1,$$

$$x_2' = f(x_1) - x_2. \quad (1)$$

The function  $f(x)$  is supposed to be sigmoidal for the case of activation.

A function  $f(x)$  is sigmoidal if

1.  $f(x)$  is strictly monotone;

2.  $f(x)$  changes convexity to concavity.

3.  $f(x) \rightarrow 1$  as  $x \rightarrow +\infty$ ;

$f(x) \rightarrow 0$  as  $x \rightarrow -\infty$ ;

A function  $\varphi(x)$  is antisigmoidal if  $\varphi(x) = 1 - f(x)$ , where  $f(x)$  is a sigmoidal function.

The system for antisigmoidal function  $\varphi(x)$  for the case of inhibition is the following

$$x'_1 = \varphi(x_2) - x_1,$$

$$x'_2 = \varphi(x_1) - x_2, \quad (2)$$

where  $\varphi(x) = 1 - f(x)$ .

We study a set of critical points for system (1) and system (2).

Proposition 1 There exists at least one critical point of the form  $(x, x)$  for system (2).

Proposition 2 System (2) either has one or three critical points (no exactly two critical points).

It is possible that system (1) for some  $\mu$  and  $\theta$  has exactly two critical points but the respective inhibitory system (2) has exactly three critical points.

**Armands Gricans, Inara Yermachenko**

*Daugavpils University, armands.gricans@du.lv, inara.jermachenko@du.lv*

## **ONE-DIMENSIONAL PERIODIC SOLUTIONS OF A CLASS OF THE SECOND ORDER HAMILTONIAN SYSTEMS**

We consider  $n$ -dimensional the second order asymptotically linear Hamiltonian systems in a case when the respective potential function is the difference of a nondegenerate quadratic form and a function with another positively definite quadratic form as an argument. We assume that the conditions, under which nonzero critical points of the potential function exist, are satisfied. We prove that nonzero critical points have a specific form, namely, exactly one component is different from zero. We provide the conditions for existence of one-dimensional periodic solutions of the system under consideration near the critical points of the potential function using the Lyapunov's Center Theorem and the period function.

**Amosova Anna**

*Moscow Aviation Institute, Moscow, kolos4020@mail.ru*

## **THE MANAGEMENT CONCEPT OF NORMATIVE-BACKGROUND INFORMATION IN PROCESSES OF CONSTRUCTURE-TECHNOLOGICAL PROJECTING OF ROCKET-SPACE TECHNOLOGY COMPONENTS**

The task of normative and reference information (NRI) management is traditionally considered from the standpoint of the development and functioning of database management systems, including intellectual ones. The details of the formation of the databases themselves from the point of view of the necessity, sufficiency and convenience of their use in the practical activities of aerospace enterprises were not considered in detail.

An attempt was made to consider the issue of forming the NRI structure from the viewpoint of ensuring a level of its effectiveness that will allow achieving a given level of the enterprise's performance as a measure of its ability to satisfy the demands of real and potential consumers of the enterprise's products.

The consideration of the issue is built from the standpoint of the effectiveness of the data itself and the management system, from the point of view of ensuring a given level of the enterprise's performance, as a measure of its ability to satisfy the demands of the external environment.

Based on the results of the conceptual and meaningful analysis of normative and reference documents, the conceptual image of the specialized segment of the NRI was formed.

**Andrejs Radionovs**

*Daugavpils University, andrejs.radionovs@du.lv*

## **APPLICATION OF FUZZY AHP WITH INTERVAL TYPE-2 FUZZY SETS IN THE ASSESSMENT OF IMPORTANCE OF RISK FACTORS OF INVASIVE SPECIES IN LATVIA**

Due to the available facts on the spread of invasive species in the territory of Latvia, it is necessary to identify and evaluate the connected with it risk factors. As the existing statistical data is pretty poor, the only possible method of such kind of evaluation are the subjective standpoints of experts. Because of not enough experience

in this field, the experts face difficulties in providing the required assessments in a clear and unambiguous way. In this paper it is offered to use the fuzzy AHP method with type-2 trapezoidal interval fuzzy sets to calculate the existing uncertainties by ranging risk factors in accordance with their importance.

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# ĶĪMIJA UN BIOANALĪTIKA

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## CHEMISTRY AND BIOANALYTICS

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**Evita Romanovska, Jelena Kirilova**

*Daugavpils University, Parādes street 1, Daugavpils, evita.romanovska@gmail.com, jelena.kirilova@du.lv*

### **SYNTHESIS OF 3-N-(2-CHLOROACETYL)BENZANTHRONE DERIVATIVES**

Benzanthrone and its derivatives have been intensively studied because of their bright fluorescence and high photostability. These dyes are well known as luminophore dyes that emit from yellow-green to red-purple.

Many monosubstituted benzanthrone derivatives with various functional groups are described in literature. Despite the fact that some benzanthrone derivatives are widely used as fluorescent dyes and probes there is still need to obtain new stable benzanthrone luminescent derivatives and to study their chemical properties.

In this connection our work is devoted to study of new heterocyclic benzanthrone compounds with potential luminescent properties. The results reported in this paper are concerned with the preparation, characterization and structural studies of the new 3-N-(2-chloroacetyl)benzanthrone derivatives. Nucleophilic substitution reactions of the chlorine atom with various heterocyclic amines were used for synthesis of new substances. The obtained compounds have been characterized by spectroscopic and chromatographic methods.

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**Vineta Kiseļeva, Jelena Kirilova**

*Daugavpils Universitāte, Latvija, jelena.kirilova@du.lv*

### **ORGANISKU KRĀSVIELU TERMOSTABILITĀTES PĒTĪJUMI**

Termiskā stabilitāte ir svarīgs rādītājs organisko vielu fizikālu īpašību vidū, īpaši praktiskiem pielietojumiem. Termisko analīzi izmanto, lai noteiktu termodinamiskās īpašības, kas ir būtiski, lai izprastu materiāla īpašības pie dažādām sildīšanas un dzesēšanas temperatūrām: pie inertas, reducēšanās vai oksidēšanās atmosfērā vai pie dažādiem gāzes spiedieniem. Lai noteiktu termo-fizikālās īpašības, tiek izmantotas vairākas metodes: diferenciāli termiskā analīze (DTA), diferenciāli skenējošā kalorimetrija (DSC), termogravimetriskā analīze (TGA), dilatometrija (DIL), izdalījušās gāzes analīze (EGA), dinamiski mehāniskā analīze (DMA), dielektriskā analīze (DEA). Darbā veikti DTA un TGA pētījumi virknei organisku luminiscējošu savienojumu, lai izanalizētu to izmantošanas iespējas elektroluminiscējošu materiālu izveidē. Iegūtie rezultāti rāda, ka pētīto krāsvielu termostabilitāte ir atkarīga no aizvietotāju dabas. The authors are grateful for the financial support from of the ERAF project Nr. 1.1.1.1/16/A/211

**Aleksandrs Orlovs, Sergejs Osipovs**

*Daugavpils Universitāte, Latvija, sergejs.osipovs@du.lv*

### **IZEJVIELAS SAGATAVOŠANA BIODEGVIELAS RAŽOŠANAI IZMANTOJOT ESTERIFIKĀCIJAS METODI: PIEMĒROTĀKO KATALIZATORU MEKLĒŠANA**

Biodegviela ir viens no atjaunojamiem energoresursu veidiem. Atjaunojamie energoresursi ir tādi energoresursi, kuri nav izsmeljami. Ir pazīstami vairāki atjaunojamo enerģijas veidi: vēja, ūdens, saules, ģeotermāla enerģija un biodegviela. Mūsdienās vispopulārākais biodegvielas veids ir bioetanols un biodīzelis. Viens no svarīgākajiem Biodegvielas izejvielas rādītājiem ir skābes skaitlis eļļā, jeb brīvo taukskābes daudzums (FFA). Pastāv dažādas metodes, ka pazemināt FFA daudzumu eļļā. Viens no iespējamām metodēm ir FFA esterifikācijas reakcija (ER), kura rezultātā rodas glicerīdi. Tālāk glicerīdus var viegli pārveidot par biodegvielu. Ir zināms, ka dažas ķīmiskas

reakcijas prasa katalizatora klātbūtni. It sevišķi runājot par rūpniecisko ķīmiju – ir plaši izmantoti visādu veidu katalizatori, kuri atvieglo reakcijas nosacījumus un padara pašu ražošanas procesu efektīvāko, drošāku, lētāku un dažkārt vispār par iespējamo. Darbā tika detalizēti analizētas ER metodes un tika atrasti piemērotākie katalizatori reakcijas norisei. Šim nolūkam tiek veikti vairāki mēģinājumi ar dažādiem katalizatoriem bet pie vienādiem apstākļiem. Rezultāti tiks vērtēti pēc dažiem parametriem. Viens no svarīgākajiem rādītājiem ir galaprodukta skābes skaitlis, kurš parāda cik FFA ir atlikušas pēc reakcijas. Tiek ņemts vērā arī galaprodukta ārējais izskats - nokrāsojuma izmaiņas, izveidots nogulsnes vai pūtas, kas liecina par nelabvēlīgām blakus reakcijām esterifikācijas reakcijas gaitā.

***Violeta Kļadere, Aleksandrs Pučkins, Sergejs Osipovs***

*Daugavpils Universitāte, Latvija, sergejs.osipovs@du.lv*

## **CIGAREŠU FILTRA IETEKME UZ TABAKAS DŪMU KAITĪGUMU**

Smēķēšana pašlaik saglabājas kā būtisks Latvijas iedzīvotāju veselību ietekmējošs riska faktors, bet tendence liecina, ka smēķētāju īpatsvars pēdējo gadu laikā ir samazinājies un pēc 2016. gadā informācijas sasniegusi zemāko reģistrēto īpatsvaru pētījumu vēsturē. Var droši apgalvot, ka cilvēka organismā nav neviena orgāna vai orgānu sistēmas, kuras neciestu no saindēšanās ar tabakas sadegšanas produktiem, līdz ar to nikotīna jeb tabakas smēķēšanas atkarība ir otrais galvenais nāves cēlonis pasaulē. Tabakas dūmi satur vairāk nekā 4000 ķīmisku savienojumu. No tiem vairāk nekā 250 vielas ir toksiskas un organismam kaitīgas. Cigarešu filtrs ir cigaretes sastāvdaļa, kas parasti tiek izgatavota no celulozes acetāta, papīra, aktivētās kokogles, kokvilnas vai korķa. Tomēr visbiežāk cigarešu filtrus izgatavo no celulozes acetāta, pievienojot tam kā plastifikatoru glicerīna triacetātu. Šāda tipa filtrs relatīvi efektīvāk aiztur darvas un citu kaitīgo vielu ieelpošanu. Viennozīmīgi, ka cigarešu filtri tiek izmantoti, lai samazinātu tabakas dūmu kaitīgumu un ietekmi un cilvēka organismu, jo tie aiztur ieelpoto ķīmisko vielu daudzumu, kā arī aiztur sodrējus un samazina ieelpoto tabakas dūmu temperatūru. Bet pašreizējie tehnoloģiskie risinājumi nav ideāli, mūsdienās joprojām eksistē liels pieprasījums pēc jaunajiem un efektīvākajiem izgudrojumiem cigarešu filtru jomā.

***Anželika Medvedeva, Andrejs Bulanovs, Jeļena Kirilova***

*Daugavpils Universitāte, Latvija*

## **LUMINOFORU FOTOBALINĀŠANAS PROCESU IZPĒTE**

Daudzsološais virziens mūsdienu materiālzinātnēs ir jaunu funkcionālu materiālu izstrādē no organiskiem luminofooriem, kuriem piemīt intensīva gaismas absorbcija un efektīva luminescence. No tādiem materiāliem konstruē perspektīvus gaismas reģistrējošus sensorus, jaunus koncentrētākus informācijas nesējus, optiski jutīgas vides saules bateriju enerģētikā. Sīs pielietošanas sfēras ir saistītas ar izmantotu luminoforu spēju saglabāt savas optiskas īpašības intensīvā starojuma ietekmē, proti ar fotostabilitāti. Dotajā darbā ir pētītas tādas praktiski nozīmīgas īpašības kā vielas gaismas absorbcijas koeficienta atkarība no lāzera apstarojuma intensitātes un laika. Ar spektrofotometriskām metodēm tika uzņemti UV-Vis absorbcijas spektri, no kuriem tiks rēķināti pētāmu vielu molārās ekstinkcijas koeficienti un to izmaiņas pēc apstarošanas ar argona lāzeru. Iegūtie fotobalināšanas dati ir salīdzināti ar komerciāli izmantotu luminoforu raksturlielumiem. Darbā atrasts, ka izpētītie jaunie organiskie luminofori ir optiski stabilāki nekā plaši pielietotais fluoresceīns.



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# FIZIKA

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# PHYSICS

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**Vadims Kolbjonoks, Vjačeslavs Gerbreders**

*Daugavpils University, Parādes street 1, Daugavpils, vadims.kolbjonoks@du.lv*

## **CHALCOGENIDE THIN FILM SURFACE MODIFICATION BY FOCUSED ELECTRON BEAM**

Research explores chalcogenide  $As_{38}S_{18}Se_{44}$  and  $Ag_2S$ ,  $Ag_2Se$ ,  $Cu_2S$ ,  $Cu_2Se$  thin films interaction with a focused electron beam. Describes work on micro and nanoscale surface patterning, towards features such as periodic structuring.

Presented results on amorphous chalcogenide  $As_{38}S_{18}Se_{44}$  thin film etching selectivity in the organic amine-based non-aqueous developer. Areas of the sample exposed by focused electron beam reveal a significant (up to 10 times) decrease in the sensitivity to the etchant.

Also, studied the process of modifying  $Ag_2S$ ,  $Ag_2Se$ ,  $Cu_2S$ ,  $Cu_2Se$  thin films surface by focused electron beam without wet etching stage. Explore surface modification processes depending on the initiating radiation power and exposure time.

**Valdis Mizers, Irēna Mihailova, Andrejs Bulanovs, Vjačeslavs Gerbreders, Marina Kraskovska**

*Daugavpils University, Parādes street 1, Daugavpils, pro100vald@gmail.com, irena.mihailova@du.lv, vjaceslavs.gerbreders@du.lv, marina.krasovska@gmail.com*

## **LASER INDUCED HYDROTHERMAL GROWTH OF ZNO MICROSTRUCTURES ON THIN CR FILM**

Recent studies shows growing interest in ZnO microstructures and their properties. Usually ZnO microstructures are obtained on a substrate by hydrothermal growth in thermostat. During this process, all surface of the substrate is covered by ZnO microstructures. It is possible to localize the growth of ZnO by using laser to heat the substrate instead of thermostat. ZnO microstructures will form and grow only in the region where substrate is heated by laser, thus leaving most of the substrate surface clean. The authors of this research has achived laser induced hydrothermal growth of ZnO microstructures on thin Cr film. Authors had shown, that by changing laser ray parameters, as well as exposure time and growth solution concentration, it is possible to control the size and shape of resulting ZnO microstructures. Authors had obtained microrods and microneedles, with length varying from 1 to 50  $\mu m$ , width from 60nm to 5  $\mu m$ , and spot diameter from 50 to 150  $\mu m$ , and also had shown the growth dynamics of such structures over time.

**Jānis Sņikeris, Vjačeslavs Gerbreders**

*Daugavpils University, Parades street 1, Daugavpils, janis.sņikeris@du.lv*

## **NANOSTRUCTURE FORMATION ON CR THIN FILM SURFACE BY ELECTRON BEAM IRRADIATION AND WET ETCHING**

Cr nanostructures can be used for several applications, including X-ray masks, diffractive optical elements and microelectromechanical systems (MEMS). Development of methods of Cr nanostructure fabrication has potential of advancing these applications.

When thin Cr films, which are deposited on glass substrate, are irradiated with electron beam (EB), the profile height of irradiated are can either increase or decrease, depending on conditions of EB irradiation. The height of surface profile of irradiated areas was measured by atomic force microscopy. The largest increase of height was measured to be around 500 nm. It was discovered, that when subjected to wet etching treatment in

K<sub>3</sub>[Fe(CN)<sub>6</sub>]:2%NaOH solution, irradiated areas are etched slower compared to non-irradiated areas. This allows modification of surface profile of obtained Cr nanostructures and to further increase their height/width ratio.

***Pāvels Sarajevs, Vjačeslavs Gerbreders, Edmunds Tamanis***  
*Daugavpils University, Parades street 1, Daugavpils*

## **PECULIARITIES OF OBTAINING OF ZnO:Ag THIN-FILM SYSTEMS BY METHOD OF SIMULTANEOUS MAGNETRON SPUTTERING**

Study of the distribution of impurity atoms in the thin-film systems ZnO:Ag was carried out. Samples were obtained by method of simultaneous magnetron deposition of ZnO and metal with followed annealing. Silver atoms were displaced on to the film surface during the process of annealing and were collected in particular clusters. Impurity atoms were not incorporated into the crystal lattice of the base material and did not have a significant impact on it. Cluster size of impurities depends on the amount of the impurity substance.

***Marina Krasovska, Vjaceslavs Gerbreders, Irena Mihailova, Andrejs Ogurcovs, Eriks Sledevskis***  
*Daugavpils University, Parādes street 1, Daugavpils, marina.krasovska@du.lv, vjaceslavs.gerbreders@du.lv, irena.mihailova@du.lv, andrejs.ogurcovs@du.lv, eriks.sledevskis@du.lv*

## **SURFACE MORPHOLOGY EFFECT ON THE WETTING BEHAVIOR OF NANOSTRUCTURED ZnO**

It is well known that nanostructured ZnO surface can show both hydrophilic and hydrophobic wetting behavior depending on nanostructure size and orientation. Peculiarities of wetting process in case of each surface are mainly determined by two factors: surface fill and morphology of nanostructures. Here surface fill determines a contact area of solid phase and liquid (or size of air graves between nanostructures) but morphology-amount of active adsorption bonds. 6 morphologies were chosen for the determination of the specific wetting processes of the ZnO nanostructures: nanoneedles, small diameter rods, large diameter rods, tubes, plates and a homogeneous magnetron sputtered 150 nm layer. During the measurement 3 μL of distilled water was dropped to the surface of sample and an image of drop was taken every 1 min. As result a “wetting angle-time” curve for each morphology was constructed. As an alternative method for the description of the wetting properties of nanostructures our experiment proposes the use of impedance spectroscopy. At the expense of the resistivity change which occurs when the water fills the graves between nanostructures, impedance spectroscopy with great accuracy allows to describe not only surface wetting but also processes occurring at the volume of the nanostructured sample. This method makes it possible to describe a dynamics of wetting process and allows determining the saturation value (time moment, when nanostructures are completely wetted. Experiment shows that impedance spectroscopy results are with good agreement with optical wetting angle measurements which proves that electrochemical measurements is a valid and effective alternative method for wetting behavior description in case of nanostructured surfaces.

***Amosov Alexey Germanovich, Kuprikov Mikhail Yurievich***  
*Moscow Aviation Institute (National Research University), lamosov@yandex.ru*

## **THEORY OF CURVILINEAR MOTION OF MULTI-LINK ROAD TRAINS**

The improvement of the fit ability in certain requirements is achieved by increasing the agility of long-legged semi-trailers that take the transport aggregates up. We understand the agility of the semitrailer as the qualitative peculiarity of the turning system of the wheels, thanks to which the semitrailer moves on the trajectory while turning, maximally closing to the trajectory of the tractor. It's necessary to consider that good turning ability of the semi-trailer should be in harmony with the cheap costs, simplicity of the technical realization and high reliability of the turning wheel control system. Aside with the turning ability, one of the most important quality is the course sustainability, on which the component scheme creates a great influence on, mass parameters of the auto train, tire characteristics, that are quite difficult to be varied. Thus, the provision of the good turning ability and course sustainability of the transport aggregates is the technical issue, which could have been solved easily,

if certain accurate and producing methods of the influence assessment of the parameters of the controlling system of the tire turning the semi-trails and other characteristics of the details on the way of movement as whole. Modern aggregates are created by the sitting auto trains schemes, that consist of the tractor and one or several semi-trails, and that is why their projecting should include the necessity and the opportunity of the result considering, that were sum up during automobile movement theory and the applied theory of the movement of a road train and other vehicles.

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# VESELĪBAS ZINĀTNES

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## HEALTH SCIENCES

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**Anna Krīgere, Linda Mežmale, Dr. habil. med. prof. Aija Žileviča**

University of Latvia, 19 Raina Blvd., Riga, anna.kriger@gmail.com, mezmale.l@gmail.com, aija.zilevica@lu.lv

### PREVALENCE OF STAPHYLOCOCCUS AUREUS NASAL AND DERMAL COLONIZATION

Key words: *Staphylococcus aureus*, microbiology, dermatology.

Introduction. *Staphylococcus aureus* is a common microorganism that causes suppurative infections and toxinoses, *S. aureus* carriage has long been known to be one of the most strongly associated risk factors for subsequent infection. Approximately 30% of healthy humans carry *S. aureus*, 20% of them are persistent carriers.

Aim. To identify the factors affecting *Staphylococcus aureus* colonization.

Materials and methods. Samples were taken from nasal mucosa and the dorsal surface of the hand and grown in Petri dishes on Baird-Parker agar. Results were obtained by quantitatively counting the visible black colonies. Statistical analysis was performed with Microsoft Excel and SPSS 22.0 by using *Fisher's exact test*. The level of statistical significance was set at  $p < 0.05$ .

Results. 150 samples from 75 individuals were obtained. Carriage of *S. aureus* in nasal mucosa and on the hand was found in 33% of all respondents. 44% from these were female and 56% – male. 40% of all respondents were smokers, 33% of them carry *S. aureus* in nasal mucosa and on the dorsal surface of the hand. 29% of all respondents carry *S. aureus* only in nasal mucosa; 32% of them were male and 28% – female. 9% of respondents carry *S. aureus* only on the dorsal surface of the hand. 26% of all respondents do not carry *S. aureus* neither in nasal mucosa or dorsal surface of the hand.

Conclusions. Most individuals that carry *S. aureus* in the nasal mucosa are also carriers on the dorsal surface of the hand. *Statistical analysis* proved ( $p = 0.0096$ ) that men are more likely to be *S. aureus* carriers and they carry *S. aureus* in nasal mucosa. When comparing the carriage of *S. aureus* between smokers and non-smokers statistical analysis suggests ( $p = 0.8075$ ) that the carriage is not affected by smoking.

**Anete Bērziņa, Matīss Vecumnieks**

Riga Stradins university

### THE CHARACTERISTICS OF THE DEVELOPMENT OF GONARTHROSIS AND COXARTHROSIS DEPENDING ON THE PATIENT'S OCCUPATION

Key words: Coxarthrosis, gonarthrosis, etiological factors, occupation.

Introduction. Gonarthrosis and coxarthrosis are common disorders of the elderly patients. Osteoarthritis prevalence increase among patients older than 50 years. This disease has many etiological factors, but most important of them are- age, obesity and heavy physical work.

Aim. The aim of our study is to find out and analyze how many patients have hazardous work risk factors what could be cause of gonarthrosis and coxarthrosis.

Materials and methods. We conducted a retrospective cohort study using a questionnaire with a sample size of 100 subjects. The questionnaire contained various questions about risk factors in patient's lives. Data was analyzed using SPSS and Microsoft Excel.

Results. There are 27% of man of which 40,7% with gonarthrosis and 44,4% with coxarthrosis, but with both – 14,8%. And there are 73% of women of which 54,8% with gonarthrosis, 38,4% with coxarthrosis, with both – 8,8%. Hazardous work risk factors have 85% of the respondents: weight lifting, vibration, frequent leaning, working in a tense posture, doing heavy manual work while standing, working in very cold or very hot environments. Other noteworthy factors are obesity (some patients have diabetes mellitus) and age (older than 50 years).

Shift job worked 18%. Before is being done a joint endoprosthesis, 93% of respondents have been treated with medication, physiotherapy or sanatorium. Occupational disease is arranged 16% of respondents. Conclusion. Our hypothesis was confirmed – 85% of the patients had work risk factors for osteoarthritis. More attention must be paid to hazardous work risk factors which could be one of the causes of deforming osteoarthritis.

***Dārta Nīmane, Laura Grava, Mārtiņš Blumbergs, Assoc. Prof. Igors Solomatins***

*University of Latvia, Faculty of Medicine, Raina bulvaris 19, Riga, dartanimane@gmail.com  
The Dr. Solomatin eye rehabilitation and vision correction centre, Elizabetes street 75, Riga,  
contacts@acucentrs.lv*

## **EFFECTIVNESS OF FEMTOSECOND LASER-ASSISTED CATARACT SURGERY**

**Background.** Cataract surgery is the most commonly performed surgical procedure in the world. Methods of cataract surgery are continuously improved. Femtosecond laser–assisted cataract surgery (*FLACS*) has been introduced into phacoemulsification cataract surgery to perform corneal incisions, capsulorhexis, and nuclear fragmentation.

**Purpose.** Examine and compare the effectiveness of cataract therapy, comparing visual acuity and intraocular pressure among patients after conventional cataract surgery and *FLACS*.

**Materials and methods.** The study was conducted at the Dr. Solomatin eye rehabilitation and vision correction center. The study included 140 patients (140 eyes). The average age of all the patients was  $64,2 \pm 3$  years. Visual acuity and intraocular pressure was measured in three phases- first day, two weeks and one month after the surgery. The obtained data have been analysed applying analytical and comparative statistics methods, using SPSS software.

**Results.** Comparing visual acuity changes after conventional cataract surgery first day average visual acuity was 0,3, but after *FLACS*- 0,5. Similarly after two weeks of surgery visual acuity respectively was 0,5 and 0,6. One month after surgery average visual acuity using conventional method was 0,5, but using *FLACS*-0,7. Comparing intraocular pressure changes after conventional cataract surgery on a first day average intraocular pressure was 22,9 mmHg (CI 95% 21,0-24,9), but after *FLACS*- 19,7 mmHg (CI 95% 17,6-21,8). Comparing intraocular pressure statistically significant difference between these two groups was found only first day after surgery.

**Conclusion.** During postoperative period comparing conventional method of cataract surgery with *FLACS* method, visual acuity after *FLACS* method improved significantly. More studies with long-term visual outcomes need to be performed to properly evaluate the efficacy of *FLACS* compared to the conventional cataract surgery.

***Dārta Nīmane, Laura Grava, Assoc. Prof. Igors Solomatins***

*University of Latvia, Faculty of Medicine, Raina bulvaris 19, Riga, dartanimane@gmail.com  
The Dr. Solomatin eye rehabilitation and vision correction centre, Elizabetes street 75, Riga,  
contacts@acucentrs.lv*

## **ORTHOKERATOLOGY TO CONTROL MYOPIA PROGRESSION**

**Introduction.** Myopia or short-sightedness is the most common refractory disorder in the world. Myopia control options have been studied and compared in many scientific works. In most studies, orthokeratology(Ortho-K) has been proved to be as one of the most effective methods. Ortho-K is a non-surgical procedure that eliminates the need for glasses or daytime contact lenses.

**Objective.** Evaluate the effectiveness of Ortho-K in myopia stabilization, measuring eye axial length changes before and 18 months after the treatment.

**Materials and Methods.** The study was conducted in the Dr. Solomatin eye rehabilitation and vision correction centre. The study included 100 patients (200 eyes). Two patient groups were created. The first group used Ortho-K contact lenses to correct myopia, but the second group used ordinary monofocal(-) glasses. The eye axial length in millimetres (mm) was measured, using *Zeiss IOL Master* manual keratometer, before starting the treatment, also 12 and 18 months after. The obtained data have been analysed applying analytical and comparative statistics methods, using SPSS software.

**Results.** The study included 51 boys and 49 girls, the average age of all the patients was  $11,4 \pm 1,9$  years. In Ortho-K group the average eye axial length(mm) before treatment was  $24,66 \pm 0,77$ , but after 18 months period-  $24,78 \pm 0,78$ . The study showed, that the eye axial length, in 18 months' period, had grown only about 0,12mm.

Children who used, monofocal(-) glasses, average eye axial length before treatment was  $24,23\pm 1,1$ , but after 18 months-  $24,88\pm 1,01$ , eye axial length was lengthened by 0,65mm.

Conclusions. Our research results were statistically significant. Using Ortho-K contact lenses, in 18 months' period, eye axial length increases by 0,53mm less than using monofocal(-) glasses. We can conclude that Ortho-K is effective method to control the myopia progression, by slowing the eye ball growing. Using Ortho-K it is possible to improve the quality of life, relieving the patient from the need to use glasses or contact lenses during the day.

***Inesa Timšāne, Irina Kazakeviča***

*Daugavpils University, Parādes street 1, Daugavpils, inesik\_15@inbox.lv, kazakevi4a@inbox.lv*

## **PAREIZĀS STĀJAS VEIDOŠANA SĀKUMSKOLAS SKOLĒNIEM MĀCĪBU PROCESĀ IETVAROS SADARBĪBĀ AR SKOLOTĀJIEM UN VECĀKIEM**

Within the framework of the work was conducted elementary school learning process observation, determining the physical condition of pupils; teachers, pupils and pupil's parents questionnaire in order to determine their competence on the matter of creating a correct posture and how the posture influence on human's health. On the basis of this questionnaire were organized lectures for teachers, pupils and pupil's parents, as well as was offered methodological recommendations for correct posture development in the learning process and at home.

Developed methodological recommendations already provide first results, but to increase results we need more teachers' and parents' awareness of on the matter of correct posture development, teachers', pupils' and pupil's parents' continuous cooperation and interest in correct physical posture modeling.

***Arnita Vārna, Assist. Līga Kozlovskā***

*Rīga Stradiņš University, Faculty of medicine, Department of family medicine*

## **THE MOST RECOMMENDED AND USED CONTRACEPTIVE METHODS, AND KNOWLEDGE ABOUT SEXUAL TRANSMITTED INFECTIONS IN PRIMARY HEALTH CARE OF PEOPLE AGED 13–25, BASED ON PLACE OF RESIDENCE**

Key words: Contraception, Sex.

Introduction. Nowadays there is a wide variety of contraceptive methods, therefore everyone can choose the most appropriate for themselves. The choice can be affected by age, social conditions, economic conditions, as well as the persons place of residence in Latvia. Important to find out of how informed they are about the wide variety of contraceptive methods and the differences in their usage.

Aim. To research the most commonly used contraceptive methods, knowledge about the among young people aged 13-18, comparing between people in Riga and rural areas of Latvia.

Materials and methods. We used a standardized survey to establish young people aged 13-18 in Riga and rural areas of Latvia. Statistic data has been processed in Microsoft Excel and SPSS v22.0 software.

Results. 206 people, aged 13–18, took part in the survey, of which 94 live in Riga and 112 in rural areas of Latvia. In Riga 54% male and 46% female. In rural areas 45,5% male and 54,5% female.

The contraceptive methods which are known about equally in both regions are male condoms (Riga 100% CI 99.02-100.98, rural areas 99,18% CI 98.2-100.16), female condoms (Riga 43,05 % CI 42.07 -44.03 and rural areas 44,52% CI 43.54 - 45.5). The methods which are known in different amounts are spermicides (Riga 32,76% and rural areas 7,52%), emergency contraception ( Riga 88,33% CI 87.35-89.31 and rural areas 62,84% CI 61.86-63.82).

The means of finding out about contraceptive methods are different among young people, in Riga the main ones are internet (86,78%), the difference between genders is that females acquire more information from parents (34,88%), but males only (7,84%). In rural areas the information is acquired at school(77,22%).

25,5% of young people in Riga have had sexual intercourse. In rural areas 21,4%. In both Riga and rural areas of Latvia, the male condoms are used equally 92,31%. However, the interrupted intercourse method is used about four times more often in Riga (22,03%) than in rural areas (7,69%).

The most important criterion on which the choice of the contraceptive is made is its effectiveness to prevent pregnancy (Riga and rural areas 100%). In rural areas one of the most important criteria is the cost (32,17%).

Conclusion. Knowledge about contraceptive methods is basically equal in Riga and rural areas of Latvia, however the knowledge about lesser used methods differs among young people. The source of information is different, in Riga it is mainly internet, in rural areas- school. The amount of young people who have had intercourse is equal and the most commonly used contraceptive is the male condom. In Riga the main criteria for the contraceptive method used is pregnancy prevention and protection against HIV/AIDS. But in rural areas the cost of it is also important.

***Liene Rucka, Santa Smilga, Sandija Skribāne, Ilze Meldere***

*Rīga Stradiņš University, Dzirciema street 16, Rīga, liene.rucka@gmail.com, santasmilga@gmail.com, sandija.skribane@gmail.com*

*Children's Clinical University Hospital, Neonatal intensive care unit, Vienības gatve 45, Ilze.Meldere@rsu.lv*

## **A RARE CASE OF N. PERONEUS DAMAGE AS A COMPLICATION OF BIRTH INJURY**

Introduction. Neurological injuries during labor may occur because of traction, compression or vascular injury. Compression or traction can result in compromised perineural blood flow and resulting ischemia, which can cause focal demyelination and conduction block. *N. peroneus* injury due to compression during the labor is a rare complication (0.92%) and typically is associated with an instrument-assisted delivery or prolonged time spent in a certain position, though clinician applied traction may also be the cause of injury. *N. peroneus* injury may result in foot drop and diminished sensation on the dorsum of the foot. Most of the nerve injuries spontaneously resolve, but in more serious cases it can cause permanent impairment of nerve function.

Case presentation. Male infant was born as second twin at 25<sup>th</sup> week of gestation. Internal rotation of the fetus and breech extraction was done (i.e. feet are grasped by the operator and the fetus is extracted from the uterine cavity through the vagina). Afterwards the patient had an edema and extensive subcutaneous hematomas on the right hand, corpus and legs, especially on the right leg. The patient was transferred to Neonatal Intensive Care Unit due to his overall condition. Cyanosis and necrosis was observed on the right foot and toes during the first day. Diagnosis of thrombosis was considered, but amputation as a treatment option was not made due to patient's overall condition. At the age of one month a difference in length of both legs, as well as contracture of the right ankle joint and internal rotation of the right leg was seen, indicating a damaged *n. peroneus*. A treatment was started with cast immobilization, but was interrupted due to progressing edema of the right upper thigh, therefore it was continued with orthosis.

Conclusions. Internal rotation and extraction can be traumatic and cause *n. peroneus* injury during the delivery. Infants born before 37<sup>th</sup> week of gestation are in the risk group for birth injuries.

***Santa Borisāne, Evija Miglāne***

*Rīga Stradiņš University, Dzirciema street 16, Rīga, Latvia, santaborisane@gmail.com*

*Pauls Stradiņš Clinical University Hospital, Pilsoņu iela 13, Rīga, Latvia, evija.miglane@stradini.lv*

## **AN ACUTE CEREBRAL INFARCTION LESION SIZE CORRELATION WITH CLINICAL OUTCOMES IN PATIENTS WITHOUT DOCUMENTED ARTERIAL OCCLUSION**

Key words: Acute ischemic stroke. Thrombolytic therapy. Stroke volume.

Introduction. Cerebral infarction size measured by computed tomography (CT) is used by clinicians to assist in prognosis, even though evidence linking lesion size to prognosis is limited.

Aim. The aim of this research was to determine the clinical and radiological outcomes of acute stroke patients, who had no arterial occlusion on CT angiography (CTA) and to evaluate correlation between lesion size and functional outcome.

Materials and methods. We selected patients without CTA proved arterial occlusion at admission. All patients (n=174) were divided into 2 groups: intravenous tissue type plasminogen activator IV tPA (IV tPA group) - patients who received tPA (n=87) and control group-patients who did not receive tPA therapy (n=87). From these patients we selected patients who had followed up CT scans within 48 hours of stroke onset and had ischemic lesion. On discharge National Institutes of Health Stroke Scale (NIHSS) scores and discharge modified Rankin scores (mRS) were obtained.

Results. Ischemic lesions in IV tPA group were obtained to 29 patients and in control group to 28 patients. In IV tPA group median lesion size was 2,3cm<sup>3</sup> (range=0,01-9,8 cm<sup>3</sup>) compared with control group it was significant

higher - 2,9 cm<sup>3</sup> (range=0,08-11,6cm<sup>3</sup>). In IV tPA group n=18 (62.1%) patients were functionally independent (mRS score  $\leq 2$ ) but in control group it was significantly smaller, only n=7 (25,0%). NIHSS score  $\geq 4$ -point reduction was observed in n=14 (48,3%) patients in IV tPA group, versus n=4(14,3%) in control group. Conclusions. Patients who received IV tPA in 4.5 hours after the onset of stroke had smaller infarct volumes and better clinical outcome despite of absence of proved arterial occlusion.

**Lizete Kļaviņa, Beate Ulmane, Lāsma Milgrāve**

Rīga Stradiņš University, Dzirciema street 16, Rīga, Latvia, lizete.klavina@gmail.com, ulmanebeate@gmail.com, lasma.milgrave@gmail.com

## ASSOCIATION OF HbA1c LEVEL WITH LIPID RATIO IN DIABETIC PATIENTS

Key words: Diabetes, HbA1c, total cholesterol, LDL cholesterol, triglycerides.

Introduction. Diabetes mellitus is a common disease in the whole world and the number of diabetes patients is rapidly increasing. Dyslipidemia is one of the most risk factors for cardiovascular disease which is more prevalent among adults with diabetes than in the general population.

Aim. To study the correlation of diabetes patients glycated hemoglobin (HbA1c) with lipid ratio.

Materials and methods. Samples were collected from 101 diabetic patients (aged 19-86 years; male 51, female 50). Retrospective study included data from outpatient's cards such as age, gender, type of diabetes, HbA1c, total cholesterol, LDL cholesterol and triglyceride from family medicine doctor's practices. According to the HbA1c level, the patients were divided into three groups, group A (HbA1c <7%, n=58), group B (7%  $\leq$  HbA1c <10%, n=37) and group C (HbA1c  $\geq$ 10%, n = 6). The correlation of HbA1c with lipid ratios were analyzed.

Results. In the group A the mean HbA1c was 6,1  $\pm$  0,5%, mean age - 60,6 years, total cholesterol - 4,7 mmol/L, LDL - 2,8 mmol/L, triglycerides - 1,6 mmol/L. In the group B the mean HbA1c was 7,7  $\pm$  0,6%, mean age - 64,0 years, total cholesterol - 5,7 mmol/L, LDL - 3,1 mmol/L, triglycerides - 2,2 mmol/L and in the group C the mean HbA1c was 11,2  $\pm$  1,0%, mean age - 48,7 years, total cholesterol - 4,9 mmol/L, LDL - 2,7 mmol/L, triglycerides - 1,7 mmol/L.

Conclusion. From all groups highest total cholesterol, LDL cholesterol, triglycerides have patients in the group B. In others two groups lipid profile changes were without any significant differences and there was no association with HbA1c.

**Zanda Arājuma, Anna Romanova, Elīza Liepiņa, Juris Dzenis**

Faculty of Medicine, University of Latvia, Rīga, Latvia

Clinic of Neurosurgery, Pauls Stradiņš Clinical University Hospital, Rīga, Latvia

## BACK PAIN AMONG MEDICAL STUDENTS

Introduction. Back pain (BP) is one of the most common complaints among working-age population. It is a *major medical, social and economical problem. The overall low muscle tone and stiffness or muscle strain due to hypodynamia is one of the most common causes of BP.*

Aim. The aim was to find the prevalence of BP among medical students and importance of physical activities in BP development.

Material and Methods. A self-delivered questionnaire survey was carried out among 1.-6. year MS. The questions included: "Do you exercise? Did you experienced any back pain before studying in medical school? Did back pain start during the studies in university? How long can you last in lectures until back pain starts to disturb?" The results were analyzed using SPSS IBM v. 20 and a P-value of 0.05 was considered to be statistically significant. Continuous variables were examined using independent t-test.

Results. 363 MS participated in the questionnaire. Demographics: 292 MS were women, 71 MS were men.

Exercise. 228 MS admitted to exercising regularly and the rest 135 students denied it. 46 MS denied having BP. 96 MS (26%) admitted having BP that manifested before studying at the university. 221 MS admitted having BP that started while studying. MS who exercised could last longer in lectures: mean = 68.60  $\pm$  64 min/day; and those who didn't exercise couldn't last as long: mean 48  $\pm$  45 min/day. It shows that there was a statistically significant difference (p=0.001) between the groups.

Conclusions. There is a significant amount of students who had back pain before beginning studies in university, which means problems with the back can start much earlier, probably in middle school or high school. The majority of MS noted that the back pain started while they were studying at the university. MS who exercise can



last longer sitting in lectures than MS who don't exercise, which means they have better ability to concentrate while studying.

**Agate Lūse, Dr. med. Laura Liepiņa, Prof. Gaida Krūmiņa, Dr. med. Roberts Stašinskis**

*Riga Stradiņš University, Dzirciema street 16, Riga, Latvia, luseagate@gmail.com*

*Riga East Clinical University Hospital, Department of Diagnostic Radiology, Hipokrāta street 2, Laura.Liepina@rsu.lv, Gaida.Krumina@rsu.lv*

*Riga East Clinical University Hospital, Toxicology and Sepsis Clinic, Hipokrāta street 2, Roberts.Stasinskis@aslimnica.lv*

## **BRAIN MAGNETIC RESONANCE IMAGING, CARBOXYHEMOGLOBIN LEVEL AND NEUROLOGICAL SYMPTOM COMPARISON IN PATIENTS WITH CARBON MONOXIDE POISONING**

Key words: carboxyhemoglobin, neurology, magnetic resonance imaging, toxicology, relationship.

Carbon monoxide is an odorless, colorless, tasteless and nonirritant gas, which globally remains as one of the most significant unintended non-medical toxicological cause of morbidity and mortality. Symptoms of carbon monoxide poisoning are nonspecific, and therefore diagnosis is difficult to detect. Although carboxyhemoglobin (COHb) is a convenient laboratory finding, individually it is insufficient to detect severity of intoxication or prognosis of sequelae. The aim of this study was to assess relationship between neuroimaging findings in MRI, neurological symptoms and carboxyhemoglobin level in blood in patients with carbon monoxide poisoning. A cross-sectional study was done, analyzing 19 patient's medical history data and MRI examination findings, admitted to Riga East Clinical University Hospital Toxicology and Sepsis Clinic during period from April 2017 till February 2018 with diagnosis of carbon monoxide poisoning. Although mean COHb was higher in a group with positive neurological symptoms 23.3% (SD± 10.9) versus group without neurological symptoms 11.8% (SD± 5.6) (p=0.30) and COHb level was higher in a group with positive findings in MRI 21.1% (SD± 11.7) versus group without any findings in MRI 14.6% (SD± 7.5) (p=0.33) there was no relationship found. Also no statistically significant relationship was found between MRI and neurology (p=0.07), although majority of patients (n=10) had both - positive findings in MRI and neurological symptoms.

**Alise Visocka, Artūrs Pētersons, Vladimirs Voichevskis**

*Riga Stradins University, Faculty of Medicine, Riga, Dzirciema street 16, visocka.alise@gmail.com, petarturs@gmail.com*

*Riga Stradins University, Department of Internal Diseases, Riga, Latvia, voiceh@me.com*

## **CARDIAC DEPRESSION SCALE: VALIDATION OF LATVIAN VERSION**

Key words: depression, cardiac depression scale, heart disease, validation

Introduction. In literature there are many reports of depression (D) among heart disease patients<sup>1,2</sup> and cardiovascular diseases still remain main cause of morbidity and mortality in the World as reported by World Health Organization. The Cardiac Depression Scale (CDS) by Hare and Davis is a self-report 26-item Likert scale based instrument measuring D severity particularly in adult cardiac patients<sup>3</sup>. There is currently no available Latvian version CDS.

Aim of the study. The aim of the study was to translate and validate the Latvian version of CDS.

Methods. Translation and back-translation of the CDS was made following the validation procedures. Latvian version of CDS (CDS-LAT), valid Latvian versions of GDS-LAT (30-item) and Q-LES-Q-SF-LAT were administered to 106 cardiac inpatients of Latvian Cardiology Centre (P.Stradins Clinical University Hospital, Riga, Latvia) age 70.7 ± 8.1 years, 50 females, 56 males. Statistical analysis was done by IBM SPSS. Chronbach's  $\alpha$  ( $C\alpha$ ) score was calculated by exploratory factor analysis with polychoric correlations. Receiver operating characteristics (ROC) curves were analysed to evaluate CDS-LAT utility at different degrees of D. Cut-off scores were assessed for mild to moderate and severe D. Concurrent validity was tested with Pearson's correlation coefficient between the CDS-LAT, GDS-LAT and Q-LES-Q-SF-LAT.

Results. CDS-LAT showed an adequate cultural relevance and content validity. The factor analysis revealed a satisfactory internal consistency ( $C\alpha = 0.82$ ). A cut-off score of >92 in CDS-LAT predicts mild to moderate D in cardiac patients with 83% sensitivity and 71% specificity as indexed in GDS. A cut off score of >120 in CDS-

LAT had 100% sensitivity and 99% specificity for severe D. ROC curve showed that CDS-LAT is an excellent diagnostic test for severe D (AUC = 0.99,  $p < 0.001$ , 95% CI, 0.99 – 1.00) and a good diagnostic test for mild to moderate D (AUC = 0.84,  $p < 0.001$ , 95% CI, 0.76 – 0.91). Excellent concurrent validity correlating with GDS-LAT ( $r = 0.72$ ,  $n = 106$ ,  $p < 0.01$ ) and Q-LES-Q-SF-LAT ( $r = -0.61$ ,  $n = 106$ ,  $p < 0.01$ ).

Conclusions. CDS-LAT is valid, reliable, effective and acceptable measure of D in cardiac patients demonstrating more accuracy in diagnosis of D than GDS-LAT and Q-LES-Q-SF-LAT.

**Kateryna Bulavkina, Laima Caunīte**

*Rīga Stradiņš University, Rīga, Dzirciema str. 16, Latvia, katja\_bulavkina@mail.ru, laimacaunite@inbox.lv*

## **CARDIOVASCULAR RISK FACTORS IN PATIENTS UNDERGOING PERCUTANEOUS CORONARY ANGIOPLASTY IN LATVIAN CARDIOLOGY CENTER**

Key words: Cardiovascular risk factors, PCI.

Introduction. Cardiovascular disease is the most common cause of mortality. When cardiovascular risk factors add up and critical stenosis of coronary arteries develops, percutaneous coronary intervention (PCI) can be used to prevent myocardial infarction. Approximately 200-400 stents per million of population per year are placed in Latvia.

Aim. To determine the most common cardiovascular risk factors among elective PCI patients in Latvia and compare to statistics of Europe.

Materials and methods. In a cross-sectional study, 188 patients were interviewed and the data analysed via Microsoft Excel.

Results. 188 patients aged 39 – 87 years (mean age 67.1), 63% male patients. 49.5% of all had previous myocardial infarction: 57.9% previous PCI and 6 (3.2%) coronary artery bypass grafting. Most common cardiovascular risk factors in patients undergoing an elective PCI in Latvia were age (males over 45 and females over 55 years) – 96%, elevated body mass index (BMI) – 80% (38% had a BMI >30), arterial hypertension – 71% (poorly controlled – 39%), abdominal obesity – 65%.

Conclusion. Most common cardiovascular risk factors of the patients undergoing a plan PCI in Latvia were age (96%), elevated BMI (80%), arterial hypertension (71%), abdominal obesity (65%), male sex – 63%, low physical activity (56%) and high stress levels (51%).

63% already have two non-modifiable (age and gender) risk factors, therefore it is crucial to reduce the modifiable risk factors (body weight, blood pressure and physical inactivity).

According to EUROASPIRE IV data, the incidence of BMI >30 in Latvia and Europe is the same (38%). There are more smoking patients in Latvia – 20% (16% in Europe), but blood pressure is better controlled (39% vs 52%).

**Rīta Partojeva, Līta Jēkabsons, Līva Strucinska, Viktorija Serova, Guna Laganovska**

*Rīga Stradiņš University, Dzirciema street 16, Rīga, Latvia, rita.parto@gmail.com*

*Department of Ophthalmology, Pauls Stradiņš Clinical University Hospital, Pilsoņu street 13, Rīga, Latvia*

## **CHANGES OF SUBJECTIVE AND OBJECTIVE VISUAL ACUITY AND SYMPTOMS AFTER CATARACT SURGERY**

Key words: visual acuity, cataract surgery, postoperative complaints.

Introduction. Cataract is the leading cause of blindness and low vision worldwide. The only currently available method of restoring vision for cataract patients is phacoemulsification. The gain from this surgery is demonstrated clinically by changes in visual acuity, but only few studies have been conducted to assess cataract surgery impact on subjective visual function and postoperative complaints.

Aim. To evaluate patient's visual acuity, subjective quality of vision and complaints after cataract surgery.

Materials and methods. This study was conducted at the Pauls Stradiņš Clinical University Hospital. 46 patients after cataract surgery were included and surveyed about their postoperative complaints and subjective visual functions. The best corrected pre- and postoperative visual acuity was obtained from medical records. Collected data was analysed using IBM SPSS 25.0.

Results. Total of 46 patients (59 eyes) were included in this study from which 39.3% ( $n = 18$ ) were male and 60.87% ( $n = 28$ ) were female. The mean age was  $73.11 \pm 2.70$  years. Mean best corrected visual acuity before and after cataract surgery was  $0.25 \pm 0.06$  and  $0.70 \pm 0.07$ , respectively. The average improvement was  $0.45 \pm 0.07$

( $p < 0,001$ ). Mean subjective visual rating before and after the surgery was  $4.65 \pm 0.53$  and  $8.26 \pm 0.39$ , respectively, and average improvement was  $3.61 \pm 0.61$  ( $p < 0,001$ ). In 49.15% cases there was at least one disturbing subjective symptom in operated eye. The most common symptoms after the surgery were photophobia 33.9%, foreign body sensation 18.64% and dryness 13.56%.

**Conclusion.** Objective and subjective visual acuity improved after cataract surgery. Many patients have at least one disturbing subjective symptom in operated eye after the surgery. The most common complaints were photophobia, foreign body sensation and dryness of the eye.

**Gundega Ķauķe, Sofja Kauškale, Zane Ozolniece, Evija Miglāne, Vita Lāčplēse**

Rīga Stradiņš University, Dzirciema Street 16, Rīga, Latvia, mf.gundega@gmail.com, sophie.kaushkale@gmail.com, zane.ozolniece@gmail.com, v.lacplese@gmail.com  
Pauls Stradins Clinical University Hospital, Pilsonu street 13, Rīga, evija.miglane@rsu.lv

## CLINICAL OUTCOMES OF PATIENTS WITH ACUTE POSTERIOR CIRCULATION CEREBRAL INFARCTION

**Key words:** POCI, clinical outcome.

**Introduction.** Posterior circulation infarctions (POCI), especially brainstem infarctions, often has more serious consequences than anterior circulation infarction (ACI). (Bähr et al., 2012)

**Aim.** To evaluate treatment efficiency and clinical outcomes in patients with confirmed diagnosis of POCI and to assess intrahospital, 30-day mortality rate and 90-day functional activity.

**Materials and methods.** Study included 278 cases of POCI selected from "Stroke register" data 2016- 2017 in tertiary care centre in Latvia. All patients were evaluated using NIHSS and modified Rankin Scale (mRS). All cases were divided in groups based on NIHSS: no symptoms to minor stroke ( $\text{NIHSS} \leq 4$ ) and moderate to severe stroke ( $\text{NIHSS} \geq 5$ ). Clinical improvement was defined by a  $\geq 4$ -point reduction in NIHSS. Based on mRS patients were classified as functionally independent ( $\text{mRS} \leq 2$ ) or dependent ( $\text{mRS} > 2$ ). Information on 30-day mortality and 90 functional outcome was obtained by phone interview. Comparison was made between patients who received (Group I) and patients who did not receive (Group II) reperfusion therapy.

**Results.** The most common ischemic stroke subtypes were large-artery atherosclerosis (LLA) in 36,4% and cardioembolism in 35,4% of cases. 25,9% of patients with POCI received reperfusion therapy. On admission  $\text{NIHSS} \geq 5$  was found in 54,6% of cases. Clinical improvement was observed in 58,3% of Group I and 12,6% of Group II patients on time of discharge.

On admission  $\text{mRS} > 2$  in 86,1%, on discharge – 48,6%;  $\text{mRS} 6$  in 6,8%

Group I:  $\text{mRS} > 2$  in 51,4%;  $\text{mRS} 6$  in 9,7%

Group II:  $\text{mRS} > 2$  in 47,6%;  $\text{mRS} 6$  in 5,8%

Day 90 outcomes ( $n=144$ ):  $\text{mRS} > 2$  in 33,6%;  $\text{mRS} 6$  in 2,1%

Group I:  $\text{mRS} > 2$  in 13,9%

Group II:  $\text{mRS} > 2$  in 26,9%;  $\text{mRS} 6$  in 2,1%

30-day mortality rate was 1,4%

**Conclusions.** Cardioembolism is less frequent etiologic factor in POCI compared to ACI. Group I had higher NIHSS on admission and worse intrahospital outcomes, but 90-day outcomes have shown greater independence rate comparing to patients in Group II.

**Gundega Ķauķe, Zane Ozolniece, Sofja Kauškale, Evija Miglāne, Gundega Akuratere**

Rīga Stradiņš University, Dzirciema Street 16, Rīga, Latvia, mf.gundega@gmail.com, zane.ozolniece@gmail.com, sophie.kaushkale@gmail.com, g.akuratere@gmail.com  
Pauls Stradins Clinical University Hospital, Pilsonu street 13, Rīga, Latvia, evija.miglane@rsu.lv

## CLINICAL PRESENTATION OF ACUTE POSTERIOR CIRCULATION CEREBRAL INFARCTION: AN ASSOCIATION WITH NEUROIMAGING FINDINGS

**Key words:** POCI, signs and symptoms, neuroimaging.

**Introduction.** Posterior circulation infarctions (POCI) represent approximately 20% of all ischemic strokes. Diagnosing POCI can be challenging, as the vascular anatomy can be variable, and presenting symptoms are often non-specific and fluctuating (Schulz et al., 2017)

**Aim.** To evaluate the frequencies of signs and symptoms in patients with POCI and to compare clinically determined location of the ischemic lesion with neuroimaging findings.

**Materials and methods.** A retrospective study included 280 cases of POCI selected from “Stroke register” data from 2016 to 2017 in one tertiary care centre in Latvia. Data on clinical presentation and neuroimaging findings were collected from patients` medical reports and Radiology Information System AI\_RIS database and analysed with programs MS Excel and IBM SPSS, using descriptive statistical methods.

**Results.** Common presenting symptoms were vertigo (33,8%), imbalance (33,1%) and headache (10,3%). The most frequent signs were ataxia (61,1%), limb (52,7%) and facial (31,8%) weakness, dysarthria (39,2%), nystagmus (28,6%), oculomotor disturbances (24,6%), alterations of consciousness (22,8%) and homonymous hemianopsia (17,0%). On admission clinical localization of the site of the lesion was stated in 66,8% of cases, POCI (without specifying site of the lesion) in 23,2% and POCI as a differential diagnosis in 9,6% of cases. Site of the lesion or occlusion was correctly determined in 62,9% of cases: 90,3% of Basilar artery occlusion, 63,6% of lesions located in cerebellum and 52,6% of lesions in ACP territory (76% had homonymous hemianopsia). 90,0% and 80,0% of lesions located in pons and medulla oblongata were detected only by using MRI.

**Conclusions.** Due to the variability of clinical symptoms in POCI, clinical determination of localization of ischemic lesion can often be inaccurate, therefore, neuroimaging is vital to ensure accurate localization and extent of cerebral infarction.

**Lelde Logina, Anete Granovska, MD Artūrs Ancāns**

*RSU, Latvia, Riga, Dzirciema 16, leldelogina@gmail.com, anetegranska@gmail.com*

*RSU Psihosomatiskās medicīnas un psihoterapijas klīnika, Latvia, Rīga, Kristapa iela 30*

## **COMPARISON OF DEPRESSION AND ANXIETY LEVELS AMONG RIGA STRADINS UNIVERSITY 1ST AND 6TH YEAR MEDICAL FACULTY STUDENTS**

**Key words:** Depression, Anxiety, Psychosomatics.

**Introduction.** Medical students are at higher risk for depression and anxiety compared to other university students. Depression and anxiety is highly associated with burnout syndrome and suicidal tendencies in medical physicians.

**Aim.** The aim of this study is to compare depression and anxiety prevalence and levels among RSU 1<sup>st</sup> and 6<sup>th</sup> year medical students.

**Materials and methods.** This was a cross-sectional study of 1<sup>st</sup> and 6<sup>th</sup> year medical students. In this study Patient Health Questionnaire (PHQ-9) and Generalized Anxiety Disorder Questionnaire (GAD-7) were used. SPSS v.25 for Windows was used to perform all statistical analyses.

**Results.** A total of 211 students (111 – 1st year, 100 – 6th year) completed the questionnaires. Overall 81,5% were female (92 – 1st year, 80 – 6th year), 18,5% were male students (19 – 1st year, 20 – 6th year). The prevalence of major depression (PHQ-9 $\geq$ 10) was higher in the 1st year students compared to last year students (44% vs. 25%). There is a statistically significant difference between 1st and 6th year student major depression levels (p=0,014). From 1st year students 14,4% had minimal, 34,2% mild, 25,2% moderate, 14,4 moderately severe and 11,7% severe major depression level. From 6th year students 30% had minimal, 34% mild, 25% moderate, 5% moderately severe and 6% severe major depression level. The prevalence of generalized anxiety (GAD-7 $\geq$ 10) was higher in the 1st year students compared to last year students (30,6% vs. 22%). There is a statistically significant difference between 1st and 6th year student generalized anxiety levels (p=0,012). From 1st year students 24,3% had minimal, 39,6% mild, 25,2% moderate and 10,8% severe generalized anxiety level. From 6th year students 44% had minimal, 32% mild, 13% moderate, 11% severe generalized anxiety level.

**Conclusion.** A higher prevalence of anxiety and major depression was found in 1<sup>st</sup> year medical students as compared with 6<sup>th</sup> year students.

**Zanda Arājuma, Leila Geibijeva, Ritvars Kalniņš, Juris Dzenis**

*Faculty of Medicine, University of Latvia, Riga, Latvia*

*Clinic of Neurosurgery, Pauls Stradins Clinical University Hospital, Riga, Latvia*

## **COMPARISON OF STROKE RISK FACTORS BETWEEN PATIENTS WITH DIFFERENT LEVEL OF PHYSICAL ACTIVITIES**

Introduction. Stroke is leading cause of mortality and morbidity worldwide. The role of physical activities is the primary prevention of stroke. The risk of stroke is assessed by the arterial blood pressure, heart rhythm disorders, smoking, cholesterol, glucose, body mass index, inheritance and the level of human activity.

Aim. Prove that a city with more activity opportunities will have a lower risk for stroke and its rates.

Material and Methods. We used anthropometric methods, tonometry, glucose, cholesterol measurements (on an empty stomach) and we did survey, for people to calculate risk factors. We used people data from 3 different Latvia cities -Sigulda (1.gr.), Bauska (2.gr.) and Riga (3.gr.). All analyses were performed using SPSS IBM v. 20 and a P-value of 0.05 was considered to be statistically significant. Continuous variables were examined using analyses of variance and chi-square test for categorical variables.

Results. A total of 486 individuals have been included. 1.gr. 150 live in a city with a large selection of activities, 2.gr. 180 with medium-level activities and 3.gr. 156 with low-activity choices for older people. Diastolic blood pressure( $p<0.000$ ): 1.gr. mean(M)= $82\pm 12$  mmHg, 2.gr. M= $82\pm 15$  mmHg, 3.gr. M= $88\pm 9$  mmHg. Cholesterol( $p=0,03$ ): 1.gr. M= $4,7\pm 1$  mmol/L, 2.gr. M= $5\pm 1$  mmol/L, 3.gr. M= $5\pm 1$  mmol/L. Glucose( $p=0,03$ ): 1.gr. M= $5,6\pm 1$  mmol/L, 2.gr. M= $5,9\pm 1$  mmol/L, 3.gr. M= $5,7\pm 1$  mmol/L. Physical activity( $p<0.000$ ): 1.gr. 93 people have high level of activity, 2.gr. 45 people, and 3.gr. 39 people. The risk among the groups ( $p = 0.005$ ), the lowest risk is in the group with higher activity is in the Sigulda city 52% ( $n = 78$ ) and the highest risk is in the Riga city with a low activity range 38% ( $n = 69$ ) and the average range of activities is 45% ( $n = 72$ ). Conclusions Physical activity are beneficial to prevent stroke in general population. Cities which have the highest risk of stroke should increase the availability of physical activities.

**Jūlija Pozņaka, Sabīne Grīnberga**

*Rīga Stradiņš University, Dzirciema street 16, Rīga, pozņaka.julija@gmail.com*

*Rīga Technical University, Kronvalda boulevard 1, Rīga, sabine.grinberga@rtu.lv*

## **COMPUTER VISION SYNDROME PREVALENCE AND ASSOCIATED RISK FACTORS AMONG THE MEDICAL STUDENTS AT RIGA STRADIŅŠ UNIVERSITY**

Introduction. Computer vision syndrome (CVS) encompasses ocular and extraocular symptoms related to the use of computers, tablets and cell phones. Nearly 60 million people suffer from CVS globally, resulting in reduced productivity at work and reduced quality of life. Until now there has been no similar study in Latvia to compare with.

Aim. To describe the prevalence of CVS and its associated risk factors among the medical students.

Materials and methods. 126 medical students fulfilled an anonymous questionnaire. It included 26 questions about socio-demographic data, symptoms of CVS and its associated risk factors. Statistical analysis was done by using IBM SPSS.

Results. The study involved 126 students - 16,7% male, 83,3% female. Mean age was  $22,4 \pm 2,5$  years. The prevalence of CVS was 83,3%. The most common complaints when viewing digital screens were: eye strain (63,5%), neck, shoulder and backache (50,8%), dry eyes (38,1%) and blurred vision (31,7%). Less common complaints were: difficulty refocusing the eyes (29,4%), headaches (23,8%), light sensitivity (19,8%), eye redness (14,3%), excessive tear secretion (11,9%), grittiness (6,3%), double vision (3,2 %) and changes in color perception (3,2 %). Using a smartphone appeared to be statistically significant associated risk factor for eye strain ( $p=0,02$ ) and double vision ( $p=0,02$ ). Astigmatism was found statistically significant associated risk factor for light sensitivity ( $p=0,02$ ).

Conclusion. This study proved that CVS prevalence is high among the medical students since 83,3% of the respondents suffered from one or more CVS symptoms both ocular and extraocular. Risk factors need to be studied in order to develop some prophylactic measures to reduce CVS. Further studies with larger population group need to be conducted.

**Iveta Račko, Ieva Kārklīņa-Kravale, Assoc. prof. Z. Ābola, Dr. med. I. Meldere**

*Rīga Stradiņš University, Latvia*

*Children's Clinical University Hospital, Department of Paediatric Surgery, Latvia*

*Children's Clinical University Hospital, Clinic of Neonatology, Latvia*

## **CONGENITAL DIAPHRAGMATIC HERNIA – ANALYSIS OF POSSIBLE PROGNOSTIC FACTORS PREDICTING THE OUTCOME**

Key words: Congenital diaphragmatic hernia, Prognostic factors, Outcome.

Introduction. Congenital diaphragmatic hernia (CDH) - a relatively rare developmental defect due to a failure of the pleuroperitoneal canal to close. The size of the defect between the abdominal and thoracic cavities may be variable and it may have a significant impact on the clinical manifestation and prognosis. In this study we set out additional factors to determine if they affect the outcome.

Aim. To investigate and analyze the influence of selected postnatal prognostic factors for predicting the outcome. The primary outcome measure was survival.

Materials and methods. Retrospective study with data collection and analyze from medical documentation of patients with CDH born between 2012 and 2017, admitted and treated in the Children's Clinical University hospital. The selected prognostic factors included antenatal diagnostics, additional congenital abnormalities, Apgar at 1' and 5', need of an early intubation ( $\leq 3$  h after birth), initial blood gases in the first 24 h, time interval between delivery and surgical therapy, stomach and liver presence in the thorax, type and duration of invasive ventilatory support. The outcome parameters were compared between survivors (S) and non-survivors (NS). Data were summarized and analyzed with MS Excel and IBM SPSS Statistics.

Results. 19 patients (pts) were identified, of whom 14 S, 5 NS. Total mortality rate - 26%. 17/19 had left sided, 2/19 - right sided CDH. 17/19 pregnancies were monitored, prenatal diagnosis was made in 8 pts - 3 of them NS. The mean Apgar score at 1' in S group was 5,5, NS 5,0. At 5' - 6,7 and 5,6. Need of an early intubation was 64% for S, 100% NS. Initial blood gases in S (n=11) and NS (n=5) showed a median pH value of 7,18 and 7,02. The median PaCO<sub>2</sub> - 62,92 and 77,42 mm Hg. 16/19 underwent the operation. 2 pts died before and 3 after the surgical therapy. The average time interval between delivery and surgery in S (excluding 2 cases who presented beyond the neonatal period) was 31,6 hours (r.: 11,1 - 59,3), NS 73,7 h (r.: 46,6 - 100,9). Intrathoracic liver observed in 3 pts (2 of them died), intrathoracic stomach - 2 (none of them died). 14/16 pts had a primary surgical repair (PR), 2/16 - Silo closure before PR. 2/14 S and 4/5 NS had additional congenital defects - 5/6 cardiac anomalies. The average required conventional ventilation time in S (n=9) 175,9 h, NS (n=3) - 25,7 h. High-frequency oscillatory ventilation for S (n=6) was applied for 255 h, NS (n=5) 157, 3 h.

There was a significant relationship between the outcome and additional abnormalities ( $r(17)=.623, p=0.04$ ) and a timing of repair ( $r(11)=.768, p=.002$ ).

Conclusions. The possible predictors of outcome were additional abnormalities and interval between delivery and a surgical treatment.

**Olga Jermakova, Larisa Umnova**

*Rīga Stradiņš University, Dzirciema iela 16, Rīga, jermakovaolga5@gmail.com, Larisa.Umnova@rsu.lv*

## **CONTROL AND MANAGEMENT OF GLYCEMIA IN ACUTELY HOSPITALIZED DIABETES MELLITUS PATIENTS IN SURGERY DEPARTMENT**

Key words: diabetes mellitus, surgery department, glycemia management.

Introduction. Nowadays diabetes mellitus (DM) is one of the most widespread diseases. DM patients have higher risk to develop acute surgical diseases such as purulent infections, lower limb ischemia, cholecystitis etc. Acutely hospitalized DM patients don't receive adequate preoperative evaluation and arrangements. Furthermore, surgical procedures, anaesthesia and fasting can cause unstable glycemia levels and that is why good perioperative management of glycemia is extremely important for these patients.

Aim. to investigate control and management of glycemia in acutely hospitalized diabetes mellitus patients in surgery department.

Materials and methods. In this retrospective research were enrolled 100 patients with DM and control group of 60 patients without DM. All patients were acutely hospitalized in Pauls Stradiņš Clinical University Hospital general surgery departments during 2014-2017. From medical histories were obtained information about their diagnoses, therapy, glycemia levels and further DM management recommendations.

Results. In group of DM patients major part (60%) had normal glycemia levels during hospitalization, 32% had hyperglycemia above 10 mmol/l, 7% had hypoglycemia under 3 mmol/l and two patients didn't have any data about glycemia levels.

56% of DM patients didn't have any anti-diabetic therapy prescriptions mentioned in their medical histories, despite 14% of them were found with hyperglycemia.

In surgically treated patient's prevalence of hyperglycemia was approximately 3 times bigger than in patients who received conservative therapy (56% and 18%) and prevalence of hypoglycemia was almost 2 times bigger (7% and 4%). Prevalence of hyper and hypoglycemia was also more common in insulin dependent patients - 51% and 17% respectively, comparing to insulin independent patients - 23% and 2% respectively.

54% DM patients didn't receive any recommendations about necessary further DM management, 28% of recommendations were partly satisfying and only 18% had full recommendations which included medications with precise dosage, reminder about DM diet and regular glycemia control.

In control group only 2 patients were found with hyperglycemia above 10 mmol/l and both received short term insulin therapy and 5 had glycemia under 4 mmol/l.

Conclusion. Management of hyperglycaemia in acutely hospitalized DM patients in surgery department still isn't satisfying. However, prevalence of hypoglycemia is sufficiently low. According to acquired data special attention need patients who undergo surgical treatment and those who are insulin dependent because these two groups showed more labile blood glucose levels.

***Evija Tropiņa, Liene Sauša, MD Artūrs Miksons***

*Rīga Stradiņš University, Latvia, Riga, Dzirciema street 16, tropina.evija@gmail.com, liene.sausa@gmail.com  
Rīga Stradiņš University, Department of Psychosomatic Medicine and Psychotherapy, Latvia, Rīga, Kristapa iela 30, pmpk@rsu.lv*

## **CORRELATION BETWEEN ALEXITHYMIA AND SOMATISATION, ANXIETY, DISTRESS AND DEPRESSION AMONG MEDICAL STUDENTS**

Key words: Alexithymia, Somatization, Distress, Anxiety, Depression.

Introduction. Alexithymia is an emotional deficit characterized by cognitive and affective deficits in recognition of subjective emotional states. Lately alexithymia has been brought to doctor's attention because of its newfound association with medical conditions like cardiovascular, gastrointestinal disorders and psychiatric disorders and somatization. In this study our focus was on somatization and psychiatric disorders such as anxiety, distress, depression, because of its high prevalence in the general population. All these mentioned disorders are included in Four-Dimensional-Symptom Questionnaire (4DSQ).

Aim. The aim of this study is to find out if there is correlation between alexithymia and elements of Four-Dimensional-Symptom Questionnaire (4DSQ – Somatization, Distress, Anxiety and Depression) among medical students.

Materials and methods. In this cross-sectional study, medical students from 1<sup>st</sup> till 6<sup>th</sup> year were asked to fill the self-report questionnaire electronically on voluntary basis. Questionnaire consisted from internationally validated TAS 20 (Toronto Alexithymia Scale) and 4DSQ. We also included questions about current diseases and use of medication to exclude other health problems. SPSS for Windows was used to perform all statistical analyses.

Results. Altogether responded 224 medical students (MS). Of all medical students 42,4 % (n=95) had alexithymia. From 4DSQ results 55 % (n=123) of MS had somatization; 48,2% (n=108) had depression; 24,1% (n=54) MS had anxiety and 80% (n=179) had distress. Correlation coefficient (CC) between alexithymia and somatization was 0,377 (p<0,001), with depression 0,439 (p<0,001), with anxiety 0,490 (p<0,001) and with distress 0,512 (p <0,001).

Conclusion. Results of this study showed that alexithymia has weak correlation with somatization, depression and anxiety and moderately strong correlation with distress among medical students.

***Beāta Zaļaiskalna, Artūrs Miksons***

*Rīga Stradiņš University, Dzirciema str. 16, Rīga, beatazalaiskalna@gmail.com*

## **CORRELATION BETWEEN EMOTIONAL SUPPORT IN SPOUSAL RELATIONSHIPS AND ANXIETY LEVELS IN PRETERM INFANT MOTHERS**

Introduction. Anxiety is disturbing tense feeling which is characterized with inability to relax, nervousness, worrying or anxiety about something with an uncertain outcome. Approx. 13% women postpartum feel anxious or depressed [WHO, 2018].

Emotional support is an ability to show sympathy, empathy and care for others. Emotional support is an important part of healthy relationships. Studies show that people with healthy relationships have better emotional well-being, have reduced mental and physical illness incidence and even have longer life expectancy [Umberson D., Montez J.K., 2010].

Preterm birth is defined as a birth before 37 completed weeks of gestation. Every year there are approx. 15 million preterm births worldwide and around 1100 preterm births in Latvia.

Anxiety risk in preterm infant mothers are 2,7 times higher than in term infant mothers. Anxiety in preterm infant mothers occurs in 26,5% while in term infant mothers only 11,5% of cases [Bener A., 2013]. Psychosocial factors such as marital status and satisfaction with spousal relationship can reduce or intensify anxiety. Aim. To determine correlation between emotional support in spousal relationship and anxiety in preterm infant mothers.

Materials and methods. Cross-sectional study with anonymous survey which includes questions about demographic data, The State Trait Anxiety inventory (STAI), Evaluation and nurturing relationship issues, communications and happiness (ENRICH) scale. All data was analyzed using SPSS 22.0 and Excel 2010. Results. The study included 25 preterm infant mothers aged from 21 to 39. Mean age was 30,64 years. 68% (n=17) of women had higher education, 32% (n=8) of women had secondary education. 52% (n=13) were married, 48% (n=12) were in a relationship. 9% (n=2) had high stress level, 23% (n=6) of women had moderately high stress level, 55% (n=14) average stress level, 13% (n=3) moderately low stress level. 72% (n=18) were satisfied with their spousal relationship. Spearman correlation coefficient  $r_s = -0,178$  showed no significant correlation between anxiety of preterm mothers and emotional support in spousal relationship ( $p > 0,05$ ). There also were no significant correlation between mother's age and anxiety  $r_s = 0,258$  ( $p > 0,05$ ) as well as no significant correlation between mother's education and anxiety  $r_s = -0,009$  ( $p > 0,05$ ). Conclusion. There was no significant correlation between anxiety of preterm born infant mothers and emotional support in spousal relationship.

**Vita Lāčplēse, Gundega Akuratere, Gundega Kauķe, Signe Tomsone**

Rīga Stradiņš University, Dzirciema str. 16, Rīga, v.lacplese@gmail.com, g.akuratere@gmail.com, mf.gundega@gmail.com, signe.tomsone@rsu.lv

## **CORRELATION BETWEEN PHYSICAL ACTIVITY AND MENTAL HEALTH OF YOUNG ADULTS**

Key words: Physical activity, depression, young adults.

Introduction. Nowadays young adults have a lot of duties that can contribute to the emergence of depression. Depression is the most common psychiatric disorder and is thought to affect 121 million adults worldwide (Moussavi et al. 2007). Many studies show that exercise can improve symptoms of depression. An inverse relationship between high physical activity and lower risk of depression or *vice versa* has been established (Schuch et al. 2017).

Aim. Evaluate the level of physical activity in young adults and assess its relation to mental health.

Materials and methods. 209 adults in age group 18-30 years completed a questionnaire that included questions about anthropometric data, a short form of International Physical Activity Questionnaire (IPAQ) and Patient Health Questionnaire (PHQ-9) for assessment of depression severity. Collected data were analyzed with SPSS using descriptive statistical methods with confidence interval (CI) of 95%.

Results. 209 adults from which 78 (37,3%) were male, 131 (62,7%) were female. Mean age was 24.61 [95% CI= 24.30-24.93], median age 24.

Mean respondents body mass index was 23.3 [22.8-23.8]. 13 (6.2%) participants were underweight, 141 (67.5%) had normal weight, 42 (20.1%) was overweight and 13 (6.2%) were obese.

96 (45.9%) respondents were doing sedentary work, 28 (13.4%) - physical, but 85 (40.7%) respondents were involved in both types of work.

According to IPAQ, respondents were graded as having low (39 or 18,7%), moderate (87- 41,6%) or high physical activity (83 or 39,7%).

Data from PHQ-9 scale showed that 93 (44,5%) participants don't have depression, 75 (35,9%) have mild depression, 25 (12,0%) have moderate depression, 10 (4,8%) have moderately severe depression, but 6 (2,9%) - severe.

No significant correlation ( $p > 0,05$ ) was found between level of physical activity and depression.

Conclusion. There was no significant correlation between level of physical activity and depression.

**Indra Lipska, Dr. Violeta Celma**

Rīga Stradiņš University, 16 Dzirciema Street, Rīga, indralipska@inbox.lv  
SIA "VPVAC", Republikas iela 5, Liepāja

## **CORRELATION OF CHILDREN EATING HABITS WITH BODY MASS INDEX (BMI) OF CHILDREN WITHIN THE RANGE FROM 7 TO 10 YEARS**



Key words: children, BMI, eating habits.

Introduction. We all know that full nutrition is principal basis for the good health. For wholesome growth and development, each child must have full nutrition. Child gets the knowledge on healthy food in the family that is why both adults and children need to be educated regarding this issue. Nowadays a lot of information is available on full nutrition, but we do not often realize it in real life and parents pay too little attention to the daily menu of their children. It results in stating the increased weight for children in early age that creates the risk to get a lot of chronic diseases, which affects the quality of further life. By this research, I would like to specify the eating habits of children and the way how they correlate with BMI of child.

Results. In total 20 children and one of their parents took part in the research. Weight (kg) and height (cm) was stated for children and BMI was calculated due to those data. After, the child together with one of parents was interviewed in order to clarify the daily eating habits of child. For 10 (50%) out of 20 children BMI was appropriate to their age and for 10 (50%) children, BMI was increased. 5 (50%) parents of children with increased BMI, answered that they consider that their child daily gets healthy food. In total only 8 (40%) parents follow-up the food, got by the child daily in school, 7 (35%) parents do not follow-up the food, got by the child in school and 5 (25%) – only sometimes follow-up the food, got by the child in school. Children with BMI appropriate to the age rate – 6 (60%) of them eat more than 15 various vegetables, but only 2 (20%) of children with increased BMI eats more than 15 various vegetables. Children with increased BMI more often eat the bread, that is, 5 (50%) of them eat the bread several times per day, but only 2 (20%) of children with appropriate BMI eat the bread several times per day. Children with increased BMI more often eat „farm” milk and cream, that is, 6 (60%) and 9 (90%), but children with appropriate BMI eat “farm” milk and cream – 2 (20%) and 4 (40%) proportionally. Meat more often is eaten by children with increased BMI, that is, 6 (60%) of the them eat the meat several times per day, but only 2 (20%) children with appropriate BMI eat the meat several times per day. Children with BMI appropriate to their age rate more often eat sweets, that is, 5 (50%) eat sweets every day, but only 2 (20%) with increased BMI eats sweets every day.

Conclusions. There are more and more children with increased BMI that does not correspond to their age. It can affect the health condition of these children in the future. According to the data of research, we can conclude that parents do not have enough information about the food appropriate for their children (daily) and importance of the follow-up regarding the food taken by the child. Children eating habits affect their BMI.

***Jolanta Umure, Ramona Valante***

*Rigas Stradins University, Dzirciema street 16, Riga, Latvia, jolanta.umure@gmail.com*

*Pauls Stradins Clinical University Hospital, department of Neurology, Pilsonu street 13, Riga, Latvia*

## **DEPRESSION AND ANXIETY IN PATIENTS WITH PARKINSON'S DISEASE**

Key words: Parkinson's disease, anxiety, depression, HADS.

Introduction. Depression and anxiety in patients with Parkinson's Disease is a very topical problem, as depression and anxiety can have a significant impact on the course of the disease, as well as on working capacity, social activity and the need for care.

Aim of the work. The aim of this review was to calculate average prevalences of depression and anxiety in patients with Parkinson's disease and its association with the disease duration.

Methods and Materials. The study analyzed 28 patients of different ages who suffer from Parkinson's disease and are treated at the Neurology Department of Pauls Stradiņš Clinical University Hospital in the period from 01.11.2017. – 01.01.2018. For this purpose a specially designed scale - Hospital Anxiety and Depression Scale (HADS) – was used to detect and evaluate depression and anxiety. The study also analyzes the duration of the patient's illness and its association with depression and anxiety. Various types of literature, publications related to this topic have also been studied and analyzed.

Results. Anxiety is observed in 43% of patients with Parkinson's disease. Depression is observed in 39% of patients with Parkinson's disease. 18% of PD patients who had anxiety disorder also had depressive symptoms. Anxiety and depression are more common in women than in men. Anxiety and depression peak in 56-75 age groups. The study managed to not prove the significant association of the disease duration with anxiety and depression ( $p = 0.05$ ).

Conclusions. The study concludes that depression and anxiety can be quickly diagnosed with a HADS. Patients who are more likely to suffer from Parkinson's disease are tendency to moderately severe and depression. Patients who are more likely to suffer from Parkinson's disease are tendency to moderately and severely anxiety.

***Artūrs Pētersons, Alise Visocka, Vladimirs Voicehovskis***

## DEPRESSION SYMPTOMS IN LATVIAN CARDIOLOGY CENTRE INPATIENTS

Research data shows that depression (D) is common in cardiac patients and that some conditions are more associated with D than others. Assessment of D symptoms (DS) is important as failing to do so may have negative effects on the well-being and health of patients. A specific Cardiac Depression Scale (CDS-LAT) has been developed to assess DS in these patients.

**Aim.** The aim of this study is to analyse correlations between cardiologic conditions and DS in Latvian Cardiology Centre of P.Stradins Clinical University Hospital, Riga, Latvia (LCC) inpatients.

**Methods.** Overall 106 inpatients of the LCC having at least one of the inclusion criteria (acute coronary syndrome, arrhythmias, cardiac valve disease, cardiomyopathies, chronic heart failure, coronary artery disease, post-myocardial infarction status, post-PCI or heart surgery status, stable/unstable angina) were randomly selected. 47% (N=50) were females, 53% (N=56) were males. Mean age of patients was  $70.7 \pm 8.1$  years (range: 55-91 years). Patients completed the valid Latvian version of CDS-LAT. Pearson Chi-square and Odds Ratio (OR) were calculated for each diagnosis to measure its correlation with DS evaluated by CDS-LAT. Statistical analysis was done by IBM SPSS.

**Results.** Out of the 106 participants, 49% (N=52) had DS (CDS-LAT score >92 points). 41.5% (N=44) of the patients had mild to moderate DS and 7.5% (N=8) had severe DS. Statistically significant positive correlation was found between DS and acute coronary syndrome  $\chi^2(1) = 18.145$ ,  $p = 0.00002$ , OR=45.1, (95% CI: 2.61-776.34), atrial fibrillation  $\chi^2(1) = 4.190$ ,  $p=0.041$ , OR= 2.44 (95% CI: 1.03- 5.81). Other conditions failed to show a statistically significant positive association with DS in cardiac inpatients.

**Conclusions.** Mild to moderate DS are common in cardiac inpatients of the LCC. Acute coronary syndrome and atrial fibrillation show a statistically significant association with increased DS compared to other cardiologic conditions in cardiac inpatients of the LCC.

**Aleksandra Mezecka, Jekaterina Avdotina, Nikita Bezborodovs**

Rīgas Stradiņš University, Dzirciema street 16, Rīga, Latvia, aleksandramezecka@gmail.com,  
014308@rsu.edu.lv, nikita.bezborodovs@gmail.com

## DEPRESSION SYMPTOMS PREVALENCE AMONG CHILDREN WITH SPECIFIC LEARNING DISORDERS FROM 7–17 YEARS OLD

**Introduction.** Depressive disorders are developmental disorders often manifesting early in life, with great public health cost (Journal of the American Academy of Child & Adolescent Psychiatry, 2017). Depression affects 2.5% of children and up to 8.3% of adolescents (Preventing Depression in the WHO European Region, 2016).

**Aim.** The aim of this study was to estimate the level of depressive symptoms using the CDI (children depression inventory) for children with specific learning disorders stratified by gender, age and family status.

**Methods.** The study was conducted among elementary school children in a Latvia. Children with specific learning disorders were identified within archives of a Rīgas special elementary school. The final number of subjects was 60 (42 boys and 18 girls). The children were divided into groups by gender, into groups by age (7–12-year-old n=28, 13–17-year-old n=32), into groups by family status (single parent n=28, full family n=28, children from orphanage n=1, an orphan with the guardian n=3). Depression measured by the CDI. Individuals can score 0-54 on the CDI, with those results being converted to T-score. T-scores are divided into the following levels: significantly below average, a lot below average, below average, slightly below average, average, slightly above average, above average, significantly above average, more significantly above average.

**Results.** Total score analysis: boys (mean=10,98; median=10,0), girls (mean=11,72; median=12,0), single parent family (mean=11,04; median=11,0), full family (mean=10,89; median=10,00) 7-12 year old (mean=12,68; median=11,0) and 13-17 year old (mean=9,9; median=8,0). Levels analysis: children from 7-12 years higher level of depression (analysis indicated significant effects regarding age  $P=0,029$ ). Girls reported more symptoms of Interpersonal problems (analysis indicated significant effects regarding gender  $P= 0.01$ ). Age 7-12 reported more symptoms of negative self-esteem (analysis indicated significant effects regarding age  $P= 0.002$ ) and anhedonia ( $P= 0.008$ ). Statistically significant differences in infectiveness and negative mood symptoms between family status, gender and age were not recorded.

**Conclusion.** The signs of depression varied according to age, family status and the gender. Children from 7-12 years old tend to have more depressive symptoms, especially in the symptoms of negative self-esteem and

symptoms of anhedonia. Girls reported more symptoms of Interpersonal problems. Statistically significant differences between full family and single parent family were not recorded. This finding may be explained by the small sample.

**Guna Šmite**

*Rīga Stradins University, TIF, Dzirciema street 16, Rīga, guna.smite@yahoo.com*

## **DIETARY SUPPLEMENT USAGE IN LATVIA, 2018**

Introduction. With ability to travel, people can purchase a wide variety of dietary supplements from the Internet, buy abroad etc. A part of people uses them without consulting a doctor, even based on ads seen by acquaintances or public media.

Aim. To clarify the current habits and believes of dietary supplements use.

Materials and methods. Anonymous questionnaires on habits were distributed on the Internet and in a GP practice.

Results. 456 people answered the questions: 75% women, and 25% men, average age:43.2 +/- 16.7 years. According to the recommendation of acquaintances, 144 people (33.8%), 37.4% women and 22% men have bought supplements (p = 0.004). Most affected by advise are with higher education (76 people, 43.9%), p = 0.000. The difference is statistically significant only between unmarried and widowers (11.5% and 43.5%), p = 0.006. 79,7% women and 67,1% men sometimes forget to take dietary supplements, p = 0,019. Statistically significant difference is between people with less 430 euro per month income (3,2%) and with above 701 euro per month income (16,5%), p = 0,000. People with higher education (28 of 173) more likely will purchase dietary supplements abroad than people with secondary education (6 of 212), p=0,000. 129 women (39.1%) and 24 men (23.3%) had offers by phone calls to buy dietary supplements, p = 0.003. Accepted to buy only 18 people out of 153.

Conclusions. Women more likely acquire dietary supplements based on acquaintances recommendations. People with higher education are more likely to acquire dietary supplements by the recommendation of acquaintances. Ads affect more likely widows, less married people. Most often forget to take dietary supplements women. People with higher education and with income above 701 Euro per month more likely will purchase dietary supplements abroad by the Internet. More often offers by phone are received by women, however, the survey shows that people are very hard to be influenced by this marketing method.

**Guna Šmite**

*Rīga Stradins University, Dzirciema street 16, Rīga, guna.smite@yahoo.com*

## **DIETARY SUPPLEMENTS AND SIDE EFFECTS**

Introduction. Nutritional supplements have a wide range of combinations, options for strengthening immunity, weight loss, improved well-being. Uncontrolled use has the potential risk of complications such as allergic reactions etc.

Aim. Find out the most commonly used dietary supplements, habits, possible side effects. Methods. Anonymous questionnaires on dietary supplement were distributed on the Internet and also offered to fill in a GP practice. Statistical data analysis was performed.

Results. In the survey, 467 people answered the questions: 74,5% were women, and 25,5% were men at the age of 1 to 87 years old. Average age: 43.1 +/- 16.9 years. More often women use dietary supplements than men: herbal extracts (193/345 – 55,9%: 26/118 – 22,1%, p=0.000), vitamins (272/347 – 78,4%: 70/119 – 58,8%, p=0.000), enzymes (53/342 – 15,5%: 7/115 – 6,1%, p=0.010), amino acids (89/342 – 26%:14/117 – 12%, p=0.002), microelements (219/347 – 63,1%: 38/115 – 33%, p=0.000), minerals (255/345 – 73,9%: 56/116 – 48,3%, p=0.000). More often people use dietary supplements with high income (>701 euro per month) than low income (<430euro per month): herbal extracts (71/125 – 56,8%: 72/174 – 40%, p=0.007), vitamins (272/345 – 78,4%: 70/119 – 58,8%, p=0.000), enzymes (22/120 – 18,3%: 14/181 – 7,7%, p=0.009) and with higher education than with lower: herbal extracts (herbal extracts (115/179 – 64,2%: 19/47 – 40,4%, p=0.000), vitamins (158/179 – 88,3%: 22/47 – 46,8%, p=0.000), minerals (151/179 – 84,4%: 28/47 – 59,6%, p=0.000), microelements (133/179 – 74,3%: 11/44 – 25%, p=0.000), aminoacids (48/179 – 26,8%: 3/45 – 6,7%, p=0.015), enzymes (33/175 – 18,9%: 4/47 – 8,5%, p=0.019), bacteria (130/179 – 72,6%:13/47 – 27,7%, p=0.000). Statistically, people who live in the cities rather than in the countryside prefer to use dietary supplements more often, for example herbal extracts (104/164 – 63,4%: 115/299 – 38,5%, p=0.000, but also in all other types of supplements and the similar results are observed. Side effects from herbal extracts mentioned 13 people of 219 (nausea, dizziness), from vitamins 16 of 338 (allergic reactions, dizziness), from minerals 8 of 305 (dizziness,

diarrhea, nausea), microelements 18 of 258 (constipation), aminoacids 5 of 101 (nausea). When comparing whether people stop using food supplements after the onset of side effects, the results indicate that 33 out of 51 people stopped at once. Most often stopped using people with secondary education (15/18 - 83.3%) than with higher (18/33 - 54.5%),  $p = 0.040$ . Only 13 of 51 people were told their doctor about side effects.

Conclusions. Most often dietary supplements are used by women, people with high income (more than 701 euro per month) and with higher education, also who live in the cities. Only 64,7% people stop using dietary supplements at once after the onset of side effects, most often with secondary education. Only 25,5% people tell their doctor about the symptoms, shows that they are not aware of the importance of side effects.

***Julija Mescerjakova, Zanda Arajuma, Nina Sakele, Nikita Sakels, Santa Sturite, Dmitrijs Skicko, Jolanta Kalnina***

*University of Latvia, Raiņa bulvāris steet 19, Riga, julija@mescerjakova.lv, zanda.arajuma@inbox.lv, nina.shakel@gmail.com, nikitaskakels@gmail.com, santa.sturite@inbox.lv, d.skicko@gmail.com  
Latvian Sea Medical Centre, "Multiple Sclerosis Centre", Vecmīlgrāvja 5 line street 26, Riga, jolanta@ljmc.lv*

## **DIFFERENCE BETWEEN PATIENTS WITH SPECIFIC THERAPY FOR MULTIPLE SCLEROSIS AND PATIENTS WITH NON-SPECIFIC THERAPY AND THEIR VISION FUNCTIONS**

Key words: multiple sclerosis, optic neuritis, vision loss.

Introduction. Vision problems is common symptom of multiple sclerosis (MS). Inflammation influences optical nerve and can cause serious vision problems. Patient can feel vision problems right away or gradually. Rarely symptoms are in both eyes from the very beginning. At first vision starts to get worse and only in about 14 weeks vision can start to improve.

Objective. The aim of the study was to prove that specific therapy (ST) has better influence on vision compared to non-specific therapy (NST).

Materials and methods. In this retrospective cohort study were analyzed 53 patient histories with MS, which were divided into two groups - (N=29) patients who receive specific therapy and (N=24) patients who receive non-specific therapy. All data was analyzed using Mann-Whitney U test, Independent T-test for continuous variables and Chi-square test for categorical data and a p-value of 0.05 considered to be statistically significant (IBM SPSS Statistics 20, Microsoft® Excel for Mac 2016).

Results. Case control group of 53 patient histories (9 males, 44 women): 29 (58 eyes) with specific treatment, and 24 (48 eyes) with non-specific treatment. Two groups mean age  $47.7 \pm 15$  years, duration of illness  $18 \pm 6$  years. Patients' vision changes in both eyes before and after receiving specific and non-specific treatment for MS: mean *visus* before and after receiving a treatment in specific group was (1.0 (IQR 0.6-1) and 0.8 (IQR 0.5-1);  $P=0.001$ ), but in group which received non-specific treatment was (0.9 (IQR 0.7-1) and 0.7 (IQR 0.5-0.8);  $P<0.001$ ). Retrobulbar neurites ( $P=0.05$ ) had 13 patients with (NST) and 10 patients with (ST). Between two groups statistically significant association was between nystagmus ( $P=0.02$ ) and pupil symmetry ( $p=0.02$ ).

Conclusion. Specific therapy is better for MS patients eye health. There was concluded less nystagmus, retrobulbar neuritis and pupil asymmetry in patients with MS.

***Zanda Arājuma, Juris Dzenis***

*Faculty of Medicine, University of Latvia, Riga, Latvia  
Clinic of Neurosurgery, Pauls Stradiņš Clinical University Hospital, Riga, Latvia*

## **DIFFERENCES IN CLINICAL AND RADIOLOGICAL CRITERIA BETWEEN SURVIVORS OF SPONTANEOUS INTRACEREBRAL HEMATOMA AND LETHAL CASES**

Introduction. A spontaneous intracerebral hematoma (SIH) has the highest mortality rate of all intracranial hematomas. SIH accounts for about 10% of all strokes and predictable incidence is 35 to 45 patients per 100,000 inhabitants in Europe's and North America.

Aim. To detect the difference in clinical and radiological signs between SIH patient groups – survivors and lethal cases.

Material and Methods. A retrospective medical record review was performed in the Pauls Stradins Clinical University Hospital and in Riga East Clinical University Hospital Gailezers. The study was conducted retrospectively for the history of patients. Data were processed using SPSS IBM v. 20 and a P-value of 0.05 was

considered to be statistically significant. Continuous variables were examined using independent t-test and chi-square test for categorical variables.

Results. A total of 153 patient histories were selected. Demographics: 49% of patients were discharged (31% women and 18% men) and 51% deceased in hospital (23% men and 28% women). Signs difference in groups: Systolic blood pressure ( $p=0.04$ ): mean BP =  $188 \pm 35$  mmHg in survivors group and  $175 \pm 44$  mmHg in lethal case group. Diastolic blood pressure ( $p=0.23$ ): mean =  $102 \pm 18$  mmHg in survivors group and  $97 \pm 25$  mmHg in lethal case group. GCS rates ( $p<0.0001$ ): mean score  $13 \pm 2.6$  in survivors group and  $8 \pm 4$  in lethal cases group. SIH volume ( $p<0.0001$ ):  $15 \pm 25$ ml in survivors group and  $76 \pm 78$ ml in lethal cases group. Brain midline shift ( $p<0.0001$ ) and perifocal edema ( $p=0,001$ ) on emergency CT were more common in group of lethal cases.

Conclusions. Patients who are more likely to survive have higher SBP and GCS, lesser hemorrhage volume, and fewer signs of edema and brain midline shift at the first day.

We recommend these parameters to make a prediction for the outcome of SIH.

**Zanda Arājuma, Elīza Liepiņa, Juris Dzenis**

*Faculty of Medicine, University of Latvia, Riga, Latvia*

*Clinic of Neurosurgery, Pauls Stradiņš Clinical University Hospital, Riga, Latvia*

## **DIFFERENCES IN CLINICAL AND RADIOLOGICAL CRITERIA BETWEEN THREE DIFFERENT AGE GROUPS IN SPONTANEOUS INTRACEREBRAL HEMATOMA PATIENTS**

Introduction. Spontaneous intracerebral hematoma (SIH) is a serious problem worldwide. There should be different outcomes between patients of different age groups experiencing SIH.

Aim. To show the difference in vital signs between different age groups.

Material and Methods. The study was made retrospectively using patient records at 2 main hospital archives in Latvia (Pauls Stradins Clinical University Hospital and in Riga East Clinical University Hospital "Gailezers"). We divided patients in to 3 different age groups. 1. group was 40-65 y.o., 2.group 66-79 y.o. and 3.group 80+ y.o. Data were processed using SPSS IBM v. 20 and a P-value of 0.05 was considered to be statistically significant. Continuous variables were examined using independent t-test and chi-square test for categorical variables.

Results. A total of 153 patient records were reviewed.

Demographics: 1. group had 45(30%) patients, 2.group 62(40%) and 3.group 46 (30%) patients. Systolic blood pressure ( $p=0.905$ ): mean 1.group =  $182.44 \pm 45$  mmHg, 2. group =  $97.58 \pm 19$  mmHg, 3.group =  $179.41 \pm 39$  mmHg.

Diastolic blood pressure ( $p=0.613$ ): mean 1.group =  $101.84 \pm 26$  mmHg, 2. group =  $182.68 \pm 38$  mmHg, 3.group =  $99.87 \pm 22$  mmHg.

SIH volume ( $p=0.849$ ): mean 1.group =  $48.62 \pm 63.3$  ml, 2. group =  $42.32 \pm 63$ ml, 3.group =  $48.39 \pm 71$  ml.

Brain midline shift ( $p=0.09$ ) and perifocal edema ( $p=0.245$ ) was not statistically significant between the group.

30 day survival and morality case rate between the groups were statistically significant ( $p=0.012$ ). 1.group had 25 lethal cases, 2.group had 23 cases and 3.group had 30 cases of death.

Conclusions. Difference between the groups were not significant in clinical or radiological criteria. The only thing that was significant was mortality rate between the groups.

**Valdis Dakuļs, Assoc. prof. Ilze Konrāde**

*Rīga Stradiņš University, Latvia*

*Riga East Clinical University Hospital, Latvia*

## **DILUTIONAL HYPONATREMIA CAUSED BY PSYCHOGENIC POLYDIPSIA: A CASE REPORT**

Introduction. Primary polydipsia is caused by psychiatric disorders, and often is accompanied by sensation of dry mouth. Since primary polydipsia is a diagnosis of exclusion, other causes, like diabetes insipidus or medication induced symptom must be excluded first.

Case report. We describe a case of a 31 year old woman with paranoid schizophrenia that has resulted in psychogenic polydipsia with dilutional hyponatremia. Since 2014 patient experiences dry mouth. Excessive water consumption caused dilutional hyponatremia. The water deprivation test excluded diabetes insipidus. In

May 2016 the patient presented to the hospital with seizure. Laboratory findings showed  $\text{Na}^+$  120.95mmol/l (N - 136-145mmol/l). After substitutional therapy, patient's condition improved. Patient admitted drinking around 6 liters of water per day. Patient regularly takes psychiatrist prescribed medications – Fluoxetin, Quetiapin, Olanzapine and others. In February 2017 patient admitted with fatigue, cold arms and legs. She was drinking around 25 liters of water per day.  $\text{Na}^+$  111 mmol/l (N - 136-145mmol/l). Psychiatrist recommended limiting water consumption. Patient did that after discharge, but the next day was admitted with another seizure, since sodium rose rapidly from 111 to 134.8 mmol/l (N - 136-145mmol/l). After discharge she had several more episodes of seizures and hospital admissions. Withholding from excessive drinking allows sodium levels to rise from 128 up to 136.76mmol/l in control tests.

Conclusion. Balance between antipsychotic medication for psychogenic polydipsia treatment and medication induced hyponatremia is complex. On one hand medication can reduce polydipsia, but on the other it can promote it. Hypotheses include stimulation of thirst centers by elevated dopamine levels, drinking to counteract anticholinergic side effects of psychotropic medications, and changes in feedback regulation of the hypothalamic-pituitary axis induced by chronic polydipsia.

***Anda Arbidāne, Gunta Sumeraga***

*Riga Stradiņš University, Dzirciema str. 16, Riga, andaarbidane@gmail.com*

*Pauls Stradins Clinical University Hospital, Pilsoņu str. 13, Riga, gunta\_sumeraga@inbox.lv*

## **DO WEATHER VARIABLES HAVE AN INFLUENCE ON NUMBER OF EPISTAXIS VISITS? A RETROSPECTIVE STUDY**

Introduction. Epistaxis is a common emergency in otorhinolaryngology. The influence of weather variables on the occurrence of epistaxis is still uncertain.

Aim. To investigate relationship between the number of epistaxis visits per day and daily, 3-day and 7-day weather variables: air temperature (T), atmospheric pressure (P), relative humidity, precipitation and wind speed.

Materials and methods. A retrospective study of patients with epistaxis treated at Pauls Stradiņš Clinical University Hospital (PSCUH) in 2016. Medical records were reviewed. Meteorological data were obtained from weather observation station in Riga International Airport. Patients with coagulation defects were excluded. Days were grouped by epistaxis occurrence (none, 1-2 and  $\geq 3$  epistaxis visits per day); weather parameters were compared among groups of days using IBM SPSS 22.0 software (Kruskal-Wallis test).

Results. 454 patients presented to the PSCUH due to epistaxis. 64 patients were excluded. Median daily ( $4^\circ\text{C}$ ), 3-day ( $3.4^\circ\text{C}$ ) and 7-day ( $3.3^\circ\text{C}$ ) T on days with  $\geq 3$  epistaxis visits was lower than on days with no epistaxis visits ( $10.2^\circ\text{C}$ ,  $10.1^\circ\text{C}$ ,  $12.1^\circ\text{C}$  respectively) or 1-2 visits ( $6.1^\circ\text{C}$ ,  $5.8^\circ\text{C}$ ,  $5.4^\circ\text{C}$  resp.) ( $p=0.025$ ). Also, minimum daily, 3-day and 7-day T was lower on days with  $\geq 3$  epistaxis visits ( $2.6^\circ\text{C}$ ,  $1.2^\circ\text{C}$ ,  $-0.5^\circ\text{C}$  resp.) than on days with no epistaxis visits ( $7.1^\circ\text{C}$ ,  $6.2^\circ\text{C}$ ,  $5.6^\circ\text{C}$  resp.) or 1-2 visits ( $3.9^\circ\text{C}$ ,  $2.2^\circ\text{C}$ ,  $1.4^\circ\text{C}$  resp.) ( $p=0.021$ ). 7-day P amplitude on days with  $\geq 3$  epistaxis visits ( $17.8\text{mmHg}$ ) was higher than on days with none or 1-2 epistaxis visits ( $13\text{mmHg}$ ,  $15.9\text{mmHg}$  resp.) ( $p=0.014$ ). Also, maximum 3-day and 7-day P was higher on days with  $\geq 3$  epistaxis visits. No relevant differences were found in relative humidity, precipitation and wind speed among the groups.

Conclusion. Study shows a statistically significant association between number of epistaxis visits and some weather variables. The number of epistaxis visits is higher when T is lower, P amplitude and maximum P is higher.

***Julija Mescerjakova, Nina Sakele, Nikita Sakels, Igor Solomatin, Larisa Tomkovica, Jelena Lazovika***

*University of Latvia, Raiņa bulvāris steet 19, Riga, julija@mescerjakova.lv, nina.shakel@gmail.com, nikitasakels@gmail.com*

*Dr. Solomatin Eye Centre, Elizabetes street 75, Riga, iridis@inbox.lv*

*Riga Maternity Hospital, Miera street 45, Riga, 222larisa@inbox.lv*

*Daugavpils Psychoneurological Hospital, Lielā Dārza street 108, Daugavpils, lazovik@inbox.lv*

## **DRY EYE SYNDROME DEVELOPMENT IN POSTPARTUM WOMEN WITH DEPRESSIVE SYMPTOMS, ANXIETY AND SLEEP DISTURBANCE**

Key words: Dry eye syndrome, depression, postpartum women, anxiety, sleep disturbance.

**Objective.** The aim of the study was to investigate DES development and its association between psychosomatic conditions in postpartum women, such as depression, anxiety and the distribution of sleep disturbance.

**Materials and methods.** In this case control study were tested case group (N=50) postpartum women with depression and control group (N=50) women without it. Each subject was tested and diagnosed as having DES, depression, anxiety and sleep disturbance or not, using: OSDI, Schirmer's test, TBUT, PHQ-9, GAD-7, PSQI. All data was analysed using Mann Whitney U test for continuous data and Fischer's Exact test for categorical data (IBM SPSS Statistics 22, Microsoft® Excel for Mac 2016).

**Results.** Case group (N=50), median age of 31.5 years (IQR 27.8-34.0) and control group (N=50), median age 33.5 years (IQR 26.8-38.0) had statistically significant differences in DES (OR 13.1, 95% CI 4.8-35.3, P<0.001), OSDI (no disability vs. any disability, OR 17.5, 95% CI 5.9-52.2, P<0.001), Schirmer's (10 (IQR 6-12) vs. 18 (IQR 12-22), P<0.001) and TBUT test (7 (IQR 5-9) vs. 12.5 (IQR 8.0-16.8), P<0.001) results, anxiety (GAD-7, OR 17.6, 95% CI 7.6-41.0, P<0.001) and sleep disturbance (PSQI, OR 34.3, 95% CI 15.6-75.3, P<0.001). **Conclusion.** Postpartum women with depression, anxiety and sleep disturbance are more likely to have DES. Moreover, confirming the risk factors by tests and examination, this study found new association between DES and postpartum depression with above mentioned psychosomatic disturbance.

***Eva Vanaga, Jānis Mednieks***

*Rīga Stradiņš University, Dzirciema street 16, Rīga, eva.vanaga66@gmail.com*

*Pauls Stradiņš Clinical university hospital, Neurology department, Pilsoņu street 13, Rīga, janis.mednieks@gmail.com*

## **EPIDEMIOLOGICAL CHARACTERISTICS AND THERAPY OF STATUS EPILEPTICUS IN PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL FROM 2012 TO 2016**

**Aim.** To analyse clinical profile, diagnostics, therapy and outcome of status epilepticus patients stationed at Pauls Stradiņš Clinical University Hospital from 2012 to 2016 and compare data to guidelines and publications.

**Methods.** In this retrospective study we selected all status epilepticus patients stationed in Pauls Stradiņš Clinical University Hospital from 2012 to 2016. Patient medical records were analysed and information about level of functioning before status epilepticus, previous history of seizures, diagnostic methods like electroencephalogram (EEG) and magnetic resonance imaging (MRI), therapy and complications and outcome of therapy was collected. Status epilepticus severity score (STESS) was also calculated. Collected data were compared to evidence-based guidelines. All data were analysed using SPSS and Word Office Excel programmes.

**Results.** We found 44 patients with diagnosed Status epilepticus. 15 patients (34%) had simple partial SE, 1 case (2%) was complex partial SE, 5 patients (11%) had generalized convulsive SE and 6 (14%) had nonconvulsive SE. For 17 patients (39%) the type of SE was unknown. For 2 patients (5%) cause of SE was unknown, for the rest of them (95%) it was known.

EEG was done to 26 patients (59%). To 7 (27%) of them more than one EEG was made. It was possible to calculate STESS for 23 patients (52%). In all other cases there was not all necessary information in medical record.

30 patients (68%) were stationed at an intensive care unit, 24 (80%) of them required intubation and mechanical lung ventilation. In average patients spent 4,2 days in intensive care unit. Almost all patients (95%) in therapy received Diazepam, 98% received valproic acid, 73% received Thiopental, but only 9% - Propofol. To 24 patients (55%) developed complications related to treatment. Most common were hospital infection, thrombocytopenia and hypotension. Intrahospital mortality was 11%.

***Jūlija Grigorjeva, Armands Kāpostiņš, Marija Ševčenko, Artem Kalinin***

*Rīga Stradiņš University, Dzirciema street 16, Rīga*

## **EVALUATION OF FUNCTIONAL CAPACITY IN DIABETES MELLITUS TYPE 2 PATIENTS WITH PRESERVED EJECTION FRACTION USING 6 MINUTES WALK TEST**

**Key words:** 6MWT, ECHO, functional capacity, DM.

**Background.** The incidence of diabetes mellitus (DM) is dramatically increasing worldwide. The incidence of heart failure in diabetic patients is high even in the absence of underlying cardiovascular disease like hypertension or coronary artery disease.

More than 5.8 million adults in the United States live with congestive heart failure (CHF). However, its manifestations can be difficult to diagnose accurately and early.

Using a 6 minute walking test (6MWT), it is possible to obtain objective data on physical load tolerance.

The prevalence of early diastolic dysfunction and the choice of suitable treatment is significantly better than systolic dysfunction.

**Purpose.** Investigate functional capacity and possible diastolic dysfunction in DM patients using 6MWT.

**Material and Methods.** A cross-sectional study, stationary patients of endocrinology department at the age 38-72 years. In target group were evaluated: standard echocardiography (left ventricular ejection fraction-EF, mitral valve flow- E/A ratio, mitral valve annulus velocity- E/E'); hypertrophy of left ventricle; diastolic dysfunction grade); 6MWT (Oxygen saturation, arterial blood pressure, heart rate, Borg modified score- before and after test).

**Results.** 22 patients participated in this study (women-12, men-10). Mean age of the patients were 56.8 SD=8.6. The mean duration of DM was 10.3 years, SD=6.9.

Diastolic dysfunction (grade I and II) was found in 14 patients (70%).

Negative correlation ( $r=-0.596$ ) was found between 6MWT walked distance in percents and E/E' results ( $p=0.003$ ). Positive correlation ( $r=0.464$ ) was found between Body mass index and diastolic dysfunction grade ( $p=0.03$ ).

There were statistically significant differences between walked distance groups systolic ( $p=0.032$ ) and diastolic (0.016) blood pressure before 6MWT and systolic blood pressure after test ( $p=0.043$ ).

Smoking was statistically significant factor of worse results in 6MWT ( $p=0.035$ ).

**Conclusions.** 1) This study shows high prevalence of diastolic dysfunction in asymptomatic diabetic patients. 2) It may be important to investigate left ventricular diastolic function and functional capacity in asymptomatic DM patients. 3) The 6MWT is safe, non-invasive and effective method of evaluation of functional capacity and symptoms chronic heart failure. 4) More patients are needed for further investigations for better and accurate results.

***Santa Smilga, Liene Rucka, Anna Miskova, Dace Rezeberga, Santa Markova***

*Riga Stradiņš University, Dzirciema street 16, Riga, santasmilga@gmail.com*

*Riga Maternity Hospital, Miera street 45, Riga, Anna.Miskova@rsu.lv*

## **EVALUATION OF POSTPARTUM ENDOMETRITIS RISK FACTORS INTRODUCTION**

Postpartum endometritis (PPE) is polymicrobial infection that affects endometrium of the uterus, can also extend to myometrium and parametrium and even progress to pelvioperitonitis and sepsis. It occurs in 1-3% of vaginal deliveries and is ten times more common after Cesarean section (CS), especially if it is emergent or urgent. The most common risk factors (RFs) of PPE include bacterial vaginosis (BV), ruptured membranes >18 hours, repetitive vaginal examinations.

**Aim.** To evaluate occurrence of different RFs in patients with PPE and to evaluate if they are significant in development of PPE.

**Materials and methods.** Retrospective case control study. Patients with PPE from year 2016 to year 2017 were included as the case group. Patients with uncomplicated postpartum period were included in control group. RFs were evaluated in both groups. The data was processed with IBM SPSS Statistics 19.0.

**Results.** 115 cases and 350 controls were included in the study. Statistically significant RFs were CS ( $p<0,001$ , odds ratio (OR) 4,8, 95% confidence interval (95% CI) 3,1-7,5), ruptured membranes >18h ( $p=0,003$ , OR 2,8, 95% CI 1,4-5,7), foetal electrocardiogram ST-segment analysis method (STAN) ( $p=0,002$ , OR 2,7, 95% CI 1,4-5,1), chorioamnionitis ( $p=0,004$ ), BV ( $p=0,049$ , OR 2,4, 95% CI 1,0-5,8), duration of second stage more than two hours ( $p<0,001$ , OR 12, 95% CI 3,4-44,7). Non-statistically significant RFs were iron deficiency anaemia ( $p=0,18$ ), diabetes ( $p=0,35$ ), antibacterial treatment or bacterial infection during pregnancy ( $p=0,98$ ), manual removal of the placenta or revision of uterine cavity after labour ( $p=0,28$ ), obesity ( $p=0,46$ ).

**Conclusions.** Not all RFs that were analyzed were statistically significant. It could be due to the small count of the patients with specific RFs, for example, chorioamnionitis. Considering that 95% CI was quite wide in case of several RFs it is necessary to enlarge the case group so that the statistical data were more precise.

***Elīza Avotiņa, Viktorija Maļugina, Dr. Med. Irina Repina, Assoc. Prof. Igors Solomatins, Doc. Renārs Erts***

*University of Latvia, Faculty of Medicine, Raiņa Blvd 19, Riga, Latvia, eliza.avotina@gmail.com, vmalugina@gmail.com, renars.erts@lu.lv*



## EVALUATION OF THE EFFICACY OF WET AGE-RELATED MACULAR DEGENERATION TREATMENT BETWEEN THREE DIFFERENT AGE GROUPS

Key words: wAMD, anti-VEGF, intravitreal injection, age-related, CMT.

Introduction. Age-related wet macular degeneration (wAMD) is the major cause of blindness among the elderly over 60 years of age. In recent years it is treated with anti-vascular endothelial growth factor (anti-VEGF) injections. Despite the treatment of wAMD, the prevalence is expected to increase.

Aim. Evaluate efficiency after 3 time anti-VEGF injections, depending on the age the injections were first started.

Materials and methods. The study was conducted at the Dr. Solomatin Eye Rehabilitation and Vision Correction Centre. OCT images from 21 patients (36 eyes) aged  $65 \pm 5$  years, 22 patients (42 eyes) aged  $75 \pm 5$  and 23 patients (40 eyes) aged  $85 \pm 5$  years. Data was analysed by paired t-test in SPSS statistics.

Results. Using paired-t test in group of age  $65 \pm 5$  average central macular thickness (CMT) OS before anti-VEGF injection was (M=372 $\mu$ m; SD=162 $\mu$ m), after (M=261 $\mu$ m; SD=94 $\mu$ m). The difference is 111 $\mu$ m and it is statistically believable (p=0,021), CMT OD before injection was (M=473 $\mu$ m; SD=172 $\mu$ m), after (M=344 $\mu$ m; SD=116 $\mu$ m). The difference is 129 $\mu$ m and it is statistically believable (p=0.031). Group of age  $75 \pm 5$  average CMT OS before injection was (M=478 $\mu$ m; SD=180 $\mu$ m), after (M=339 $\mu$ m; SD=106 $\mu$ m). The difference is 138 $\mu$ m and it is statistically believable (P=0,000), CMT OD before injection was (M=419 $\mu$ m; SD=196 $\mu$ m), after (M=325 $\mu$ m; SD=112 $\mu$ m). The difference is 94 $\mu$ m and it is statistically believable (p=0.033). Group of age  $85 \pm 5$  average CMT OS before injection was (M=379 $\mu$ m; SD=141 $\mu$ m), after (M=274 $\mu$ m; SD=75 $\mu$ m). The difference is 104 $\mu$ m and it is statistically believable (p=0,000), CMT OD before injection was (M=403 $\mu$ m; SD=128 $\mu$ m), after (M=299 $\mu$ m; SD=40 $\mu$ m). The difference is 104 $\mu$ m and it is statistically believable (p=0.033).

Conclusion. OD: the best results was in group  $65 \pm 5$  years, where 65% of patients had improvement of anti-VEGF therapy after 3 injections. OS: the best results was in group  $85 \pm 5$  years where 55% of patients had improvement of anti-VEGF therapy after 3 injections.

**Jekaterina Zaprivoda, Kaspars Kudiņš, Regīna Krikova, Assoc. prof., Dr. Med. Ilva Daugule**

University of Latvia, Raiņa bulvāris 19, Rīga, katjuxas@inbox.lv, kaspars1212@hotmail.com, reginakrikova@gmail.com, ilva.daugule@lu.lv

## FETAL ALCOHOL SYNDROME DIAGNOSTIC CRITERIA EVALUATION IN NEWBORNS IN LATVIA

Responding to Latvian Center of Disease Control and Prevention statistic data, there is more than 10,2 liters of absolute alcohol per one habitant annually.

The aim of research is to determine whether patients with diagnosis alcohol fetal syndrome (p 04) are corresponding to year 2016 criteria developed by CDC (USA Center for Disease Control and Prevention) and NCBDDD (National Center on Birth Defects and Development Disabilities).

Methods. Retrospective cross section research. Patient cases information evaluation from Children University hospital (Bērnu kliniskā universitātes slimnīca) archive, including newborn anthropometric data, daily habits of parents and their previous illnesses and health state during gestation, labour and perinatal period. The target group of research – newborns, who were hospitalized in Children University hospital (Bērnu kliniskā universitātes slimnīca) newborn unit and diagnosed with alcohol fetopathy syndrome in period of 2013-2018 years.

There is no appropriate clinical trials and diagnostic criteria being used nowadays in Latvia in order to diagnose fetal alcohol syndrome. This research would help to precise the diagnosis and actualize the importance of guidelines and diagnostic criteria of fetal alcohol syndrome.

**Tarass Ivascenko, Vladimirs V. Voicēhovskis, Julija G. Voicēhovska, Andrejs Skesters, Oskars Kalejs, Ketija Apsīte, Julija Grigorjeva**

Riga Stradins University, Riga, Latvia

## GPx AND MDA STRESS MARKERS AND DEPRESSION IN CORONARY HEART DISEASE PATIENTS

Key words: oxydative stress markers, depression in CHD patients.

Background. Depression (D) is 3-4 times more common in patients with coronary heart disease (CHD) than the prevalence in the population. D increases the risk of cardiac mortality, and is associated with an increased risk of secondary acute ischemic events.

Pathophysiological mechanisms such as the activity of inflammatory reactions, circulating inflammatory mediators, dysfunction of the endothelium influence the relationship between these diseases. The accumulation of free radicals in the endothelium of blood vessels leads to its damage and after to dysfunction, this leads to the development of inflammatory reactions and oxidative stress (OS). Active forms of oxygen initiate lipid damage, influence neuronal membrane phospholipids and in result, it can cause cellular necrosis or disruption of signal transmission mechanism.

Reconsidering the attitude towards the use of antidepressants and antioxidants can be particularly useful in the prevention of CHD and it depends from understanding of interactions between D and CHD.

Purpose. To identify and examine the relationship between the severity of symptoms of depression and indicators of OS in primary SCHD patients and in patients with recurrent SCHD.

Material and Methods. A retrospective case-control study, stationary patients at the age 45-65 years: 50 patients with recurrent SCHD and 51 patients with primary SCHD. It is assessed in both target groups: manifestations of stable CHD (using structured interviews); OS parameters in the blood (MDA, GPx); quality of life level (QoL, questionnaire Q-les-Q by J.Endicott, short form, valid Latvian language version); D (long form of Geriatric Depression Scale by J.A.Yesavage and others, the valid Latvian language version GDS-LAT).

Results. The data obtained from 51 patients with primary SCHD and 50 relapses of SCHD: in P with primary SCHD, D was established in 25 cases, in P with recurrent SCHD - at 30. The mean score of the QoL was 63.5% of the total possible score in the group with primary SCHD and 61.1% in the group with relapse of SCHD. GPx does not have any significant changes in both groups. Further results will be reported.

Conclusions. Hypotheses of the study: 1. There is a positive correlation between the level of D and the level of OS markers in patients with SCHD; 2. In patients with recurrent SCHD and D, the level of OS markers in the blood will be higher than in patients with primary SCHD.

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**Liene Sauša, Evija Tropiņa, MD Daila Pugačevska**

Rīga Stradiņš University, Latvia, Rīga, Dzirciema 16, liene.sausa@gmail.com, tropina.evija@gmail.com  
Children's Clinical University hospital, Latvia, Rīga, Vienības gatve 45, Zemgales priekšpilsēta, dailapugacevska@inbox.lv

## IDENTIFYING CAUSATIVE AGENTS OF ACUTE HEMATOGENOUS OSTEOMYELITIS IN CHILDREN – SIX YEARS EXPERIENCE

Key words: Pediatrics, Hematogenous osteomyelitis, Causative agents.

Introduction. Acute hematogenous osteomyelitis (AHO) is a bone infection most commonly seen in children. It is thought to develop due to transient bacteremia, nevertheless, approximately 50% of blood cultures reported to be negative. It is important to isolate causative organism because the isolation of the most common agent is the base of empirical treatment. Also, recent literature has reported an increased rate of MRSA (Methicillin-resistant *Staphylococcus aureus*) as a causative agent.

Aim. Evaluate past six years most commonly isolated microorganisms in children with AHO.

Materials and methods. In this descriptive retrospective study, patient histories from 2012 till 2017 in Children's Clinical University hospital where analyzed. Focus was put on blood culture and operation material culture results. SPSS v.23 for Windows was used to perform all statistical analyses.

Results. From all the treated patients (n=160), blood culture was obtained in 49% (n=78) of patients but operation material culture in 78% (n=125). Blood cultures in 58% were culture-negative. Most commonly isolated microorganism from blood culture was *Staphylococcus aureus* (SA) 89,5% (n=25), *Streptococcus pyogenes* (SP) 3,5% (n=1), *Staphylococcus hominis* 3,5% (n=1) and *Haemophilus parainfluenza* 3,5% (n=1). Most commonly isolated microorganism from operation material were *Staphylococcus aureus* 78,7% (n=74). Less frequently isolated microorganisms: SP in 8,5% (n=8), coagulase-negative *Staphylococcus* 5,3% (n=5) MRSA in 3,2% (n=3), *Morganella morganii* 1,1% (n=1), *Enterobacter cloacae* 1,1% (n=1), *Streptococcus agalacticae* 1,1% (n=1).

Conclusion. Most commonly isolated microorganism in AHO was *Staphylococcus aureus* in both cultures (blood and operation material). There is still a high number of culture-negative cases opening the question if it is relevant to even obtain blood-culture. MRSA is not a common causative agent of AHO in Latvia.

**Katrīna Džeriņa**

*Rīga Stradiņš University, Dzirciema Street 16, Rīga, Latvia, katriina.dzerina@gmail.com*

## **ILLICIT DRUG WITHDRAWAL DELIRIUM ASSOCIATED CHANGES IN THE LEVELS OF MEAN CORPUSCULAR VOLUME AND ASPARTATE AMINOTRANSFERASE IN THE INTENSIVE CARE UNIT PATIENTS**

Key words: Illicit drug abuse, withdrawal delirium, mean corpuscular volume (MCV), aspartate aminotransferase (AST).

Introduction. Illicit drugs that are widely used include central nervous system (CNS) stimulants (such as cocaine, amphetamines), CNS inhibitors (opiates and sedative-hypnotics such as benzodiazepines or barbiturates), and hallucinogens (hemp products, LSD, and phenocyclidine). Products containing solvents or propellants, the fumes of which can be inhaled, may also be considered illicit drugs. Many illicit drugs are highly addictive and pose serious risks such as withdrawal delirium. A combination of MCV and AST level changes are seen in most patients diagnosed with delirium tremens. The goal of this study is to see if the same changes are found in patients experiencing illicit drug withdrawal delirium.

Aim. To examine a combination of MCV and AST level changes in illicit drug abusers experiencing withdrawal delirium.

Materials and methods. The medical records of 63 patients diagnosed with illicit drug withdrawal delirium and 106 illicit drug intoxicated patients that did not develop delirium in the period of abstinence (control group) were reviewed for the period from year 2013 to 2017. Admission MCV and AST levels were assessed. Relative risk (RR), test positive predictive value (PPV) and negative predictive value (NPV) were estimated.

Results. Of the 63 patients diagnosed withdrawal delirium, both – MCV and AST levels – were changed in 6 cases (9%); no changes were found in 25 patients (39%). Of the 106 patients in the control group, both – MCV and AST levels – were changed in 8 patients (7%); no changes were found in 75 cases (70%). RR was estimated 2.0 ( $p = 0.1610$ ). The PPV of the test was 42.86% and the NPV 75.0%, respectively.

Conclusion. The combination of MCV and AST level changes are rarely observed in patients with illicit drug withdrawal delirium and shouldn't be associated with the condition.

**Elīna Petušková**

*Rīga Stradiņš university, Dzirciema street 16, Rīga, elinapetuskova@gmail.com*

## **IMPACT OF BODY MASS INDEX, STRESS AND AGE ON YOUNG ADOLESCENTS AGED 13 TO 25 YEARS OLD WHO HAVE ACNE VULGARIS**

Acne vulgaris is known as the most common skin disorder. Statistics show that acne vulgaris is a very common disease in young people, and it is therefore important to study the effects of various factors and to investigate the recommendations for vaginal treatment and prevention of liver. The purpose of the study is to investigate and analyze the effects of body mass index, stress and age in young people aged 13 to 25 with acne vulgaris. The hypothesis of the study work is body mass index, stress, gender and age do not affect the exacerbation of acne vulgaris, but the increased factors influence the manifestation of the acne vulgaris stage and its treatment.

45% or 134 respondents indicated that they had visited a general practitioner because of skin problems, but because of skin problems 55% or 166 did not submit a general practitioner. 33% or 36 respondents indicated that they were sent to correct skin care, 33% or 34 respondents were referred to skin diseases, while 16% or 18 respondents were referred for skin diseases, 13% or 14 respondents indicated that they were sent 7% or 8 respondents indicated that the results of the study indicated that out of 300 respondents, 48 doctors have found vaginal acne, where 58% or 28 respondents are men, while 42% or 20 respondents are women. The results of the study indicate that males have a 16% higher incidence.

If acne vulgaris is equally affected by all age groups in which 41% or 19 respondents are 18-21, 37% or 17 respondents are between the ages of 13 and 17, but at least 22% or 10 respondents are at the age of 22 - 25 First age The group is the starting point when acne develops, while prolonged and adequate skin care helps to restore

skin and reduce symptoms. 56% or 27 respondents with skin diseases diagnosed with acne mass index at an acceptable level ranged from 18.7883 to 24.833565, while 31% or 15 respondents had an increase in body mass index of 25.68007 to 27.34375 and 13 % or 6 respondents body mass index is reduced from 14.53488 to 17.31341. The results of the study indicate that it is not possible to conclude that the body mass index, stress contributes to the development of acne vulgaris, but it is possible to conclude that patients with acne with high body mass index and increase acne vulgaris stress levels have more symptoms and require a more tight approach to the disease as well general health care, it can be concluded that the hypothesis is approved.

***Vlada Meļņikova, Kristaps Jurjāns, Evija Miglāne, Andrejs Millers***

*Rīga Stradiņš University, Dzirciema street 16, Rīga, vladamelnikova121@gmail.com*

*RSU Department of Neurology and Neurosurgery, Pilsoņu street 13, Rīga, kristaps.jurjans@gmail.com, evija.miglane@stradini.lv, andrejs.millers@stradini.lv*

*Clinic of Neurology in Pauls Stradiņš Clinical University Hospital, Pilsoņu street 13, Rīga*

## **IMPACT OF SOCIAL ACTIVITY ON COGNITIVE FUNCTION IN PATIENTS OVER 65 YEARS OF AGE**

Key words: Cognitive function, social activity, Montreal Cognitive Assessment (MOCA) scale.

Introduction. With age gradually decreases number of neurons and deteriorates neuroplasticity. This is known as a normal aging process. Some people undergo this process faster, some – slower. The main question is which factors are able to decelerate cognitive aging. Social activity, new knowledge assimilation and skill development promotes synapses formation in the brain that may slow down the reduction rate of cognitive function. Aim. To find out and assess the correlation between social activity level and cognitive function in patients over 65 years of age.

Materials and methods. For this research were selected patients from Pauls Stradiņš Clinical University Hospital that were over 65 years of age and without any disorders that could affect cognitive function, including depression. To exclude the depression, was used the “Depression self-assessment test”. If depression was not found, test with Montreal Cognitive Assessment (MOCA) scale was proceeded. The cognitive assessment with MOCA scale was followed up by questionnaire survey about social activity. The obtained data were analyzed in IBM SPSS Statistics 22 software.

Results. 65 patients were evaluated, but 13 of them were excluded due to depression. The definitive number of males (26; 50%) and females (26; 50%) included in the research was equal, with the mean age of  $74.5 \pm 6.7$ (SD) years. MOCA scale results in both males ( $23.0 \pm 4.1$ ) and females ( $22.8 \pm 5.5$ ) did not have statistically significant difference ( $p=0.804$ ). Analysis showed, that the older patient is, the worse is MOCA scale result ( $p=0.005$ ). As to education level, there was found a positive correlation – the higher education level is, the better are cognitive function assessment test results ( $p=0.001$ ). Some more statistically significant positive correlations with MOCA scale results were found in patients, who keep on working ( $p=0.039$ ) and in those, who continue to educate themselves ( $p=0.001$ ). Also better MOCA scale results were associated with higher physical activity level ( $p=0.042$ ) and frequent public event attendance ( $p=0.034$ ). There was found a weak positive correlation ( $r_s=0.27$ ) between MOCA score and general health self-assessment rating ( $p=0.056$ ), however, it was not assumed to be statistically significant (0.056).

Conclusions. The age, education level, working, lifelong learning, high level of physical activity and regular public event attendance are the factors that have a strong impact on cognitive function in people who are over 65 years of age.

***Monta Baduna, Reinis Pitura, Ilze Apine***

*Rīga Stradiņš University, Dzirciema street 16, Rīga, monta.baduna@gmail.com, reinis.pitura@gmail.com*

*Children's Clinical University Hospital, Rīga, dr.ilze.apine@gmail.com*

## **INFLUENCE OF AN ENTERIC OSMOTICALLY ACTIVE AGENT ON DIFFUSION ACTIVITY WITHIN FULLY DISTENDED BOWEL WALL - COMPARISON BETWEEN MAGNETIC RESONANCE ENTEROGRAPHY DIFFUSION SEQUENCES**

Introduction. Inflammatory bowel disease (IBD) is a group of chronic disabling gastrointestinal disorders who are capable of involving the gastrointestinal tract within all its length, its prevalence is continuously increasing. In order to start timely treatment early diagnosis is significant. Due to its high soft tissue resolution and non-

ionizing radiation properties, magnetic resonance enterography (MRE) is widely used in assessment of IBD, but examination requires administration of gadolinium contrast medium associated with systemic nephrogenic fibrosis and formation of gadolinium deposits in brain tissue. Diffusion weighted imaging (DWI) and diffusion weighted imaging with background body suppression (DWIBS) are MR sequences that does not require use of gadolinium though preparation with peroral osmotically active contrast agent is requested to distend bowel. Hypothetically it could influence apparent diffusion coefficient (ADC) value within bowel wall. Aim. To evaluate DWI ADC and DWIBS ADC value changes before and after preparation with mannitol within fully distended large bowel walls.

Materials and methods. 75 DWI and 30 DWIBS (b=50, 600 and 800 s/mm<sup>2</sup>) ADC values of fully distended bowel wall segments with no evidence of IBD were measured before and after preparation with mannitol (2.5%, 1-1.5l). Data were analyzed with unpaired t-test (SPSS 20.0) with CI - 99%.

Results. For both MRE diffusion sequences there were significant difference between ADC values before and after preparation with mannitol: before DWI b=600 (ADC 0.849±0.180 10<sup>-3</sup> mm<sup>2</sup>/s), DWI b=800 (ADC 0.664±0.009 10<sup>-3</sup> mm<sup>2</sup>/s), DWIBS b=600 (ADC 0.848±0.380 10<sup>-3</sup> mm<sup>2</sup>/s), DWIBS b=800 (ADC 0.990±0.379). P values in all tests were <0.0001.

Conclusion. Both, DWI and DWIBS ADC values are significantly higher in presence of peroral osmotically active contrast agent and that should be taken into consideration when assessing the eventual presence of IBD in the large bowel walls.

***Ieva Kārklīņa-Kravale, Iveta Račko, Assoc. prof. Zane Ābola***

*Rīgas Stradiņš University, Dzirciema street 16, Rīga, Latvia*

*Children's Clinical University Hospital, Vienības gatve 45, Rīga, Latvia*

## **INFLUENCE OF SELECTED FACTORS ON THE PROGNOSIS IN NEWBORNS WITH GASTROSCHISIS**

Key words: Gastroschisis, ventilatory support (VS), full enteral feeding (FEF), total hospitalization period (THP)

Introduction. Gastroschisis is a defect of the abdominal wall, resulting in congenital evisceration and requiring neonatal intensive care and early surgical correction. This study evaluated newborns with gastroschisis, seeking the influence of selected risk factors: time of ventilatory support, time needed to achieve full enteral feeding and total hospitalization period.

Aim. The purpose of the study was to evaluate the influence of selected factors for prognosis in newborns with gastroschisis.

Materials and methods. A retrospective analysis of all newborns with gastroschisis treated between 2011-2017 in the Children's Clinical University Hospital. Data collected from medical documentation included the following: presence or lack of prenatal diagnosis, mode of delivery, gestational age, mother's age, birth weight, interval between delivery and operation, kind of surgery (primary repair, Gore-Tex mesh), period of VS, time needed to achieve FEF, THP. Pearson Correlation was used to investigate the association between selected factors and end points (VS, FEF, THP). Statistical analysis was performed using IBM SPSS Statistics.

Results. During the study period 25 newborns with gastroschisis were treated. The full information was available for 23 newborns. Prenatal diagnosis was made in 14 patients (61%). Cesarean section was performed in 10 cases, vaginal delivery in 13 cases. The mean gestational age during delivery was 36.5 weeks, mean mother's age -22.6 years, but mean weight of the newborn - 2642 g. Thirteen newborns were delivered before 37<sup>th</sup> week of gestation, ten after 37<sup>th</sup> week. Mean delivery-operation interval was 6.2 hours. During the first surgical intervention primary closure was possible in 14 cases, Gore-Tex mesh was used in 9 patients. Mean time of VS was 7.7 days, FEF was started in 39.3 days, THP - 60.6 days. Pearson Correlation showed that there was one independent factor that influenced all three end points. It was the mode of delivery. Patients who were delivered by cesarean section needed longer time to achieve full enteral feeding (r=0.523, p=0.026), they had a higher risk of long-standing ventilatory support (r=0.585, p=0.007) and a higher risk of longer hospitalization period (r=0.617, p=0.002).

Conclusions. In this study the mode of delivery was the main independent risk factor having influence on the prognosis of newborns with gastroschisis. Despite progress in prenatal diagnostics, obstetrics, neonatal intensive care and surgical methods, gastroschisis patients still remain a serious therapeutic problem requiring multidisciplinary care.

***Dairis Meiers, Prof. Guna Laganovska***

*Riga Stradins University, Dzirciema street 16, Riga, meiers.dairis@gmail.com*

## INFLUENCING FACTORS OF POSTOPERATIVE REFRACTION IN CATARACT SURGERY

**Introduction.** Cataract surgery is the most common eye surgery practised in ophthalmology department. Every year approximately 10 000 cataract surgeries are done in Latvia. The aim of this common surgery is to achieve emmetropia of the operated eye, which means that there is no refractive error interfering the operated eye. The postoperative refractive expectations of patients have increased due to the advances in technology, for example, optical biometer. Nevertheless in practice postoperative refraction is within  $\pm 1.00$  D of the target refraction.

**Aim.** The aim of the study was to evaluate the refractive outcome three months after cataract surgery in Pauls Stradins Clinical University Hospital and to find out the factors that influence postoperative refraction after cataract surgery.

**Methods.** Retrospective study included 43 eyes of 38 patients who underwent cataract surgery with intraocular lens implantation. Data are collected at the preoperative examination (preoperative vision acuity and refraction, biometry measurements) and at postoperative follow-up three months after surgery (postoperative refraction). Age, sex, other eye disease – glaucoma, diabetic retinopathy, axial length were evaluated as possible influencing factors. In addition, the difference between IOL power calculated using HAIGIS formula and IOL power of lens implanted during surgery were evaluated.

**Results.** The absolute error between target refraction and postoperative refraction for all cases was  $0.48 \pm 0.41$  D (mean + standart deviation). The main aim of surgery - emmetropic eye was achieved in 30,2 percent of cases. In the study, 69.8 percent of cases were within  $\pm 0.50$  D difference between target and final postoperative refraction, and 90.7 percent of cases were within  $\pm 1.00$  D.

**Conclusions.** 1.Surgery outcome was very positive because of the insignificant mean postoperative refractive error. 2.The study did not show statistically significance of evaluated influencing factors of refractive outcome.

**Zanda Arājuma, Elīza Liepiņa, Juris Dzenis**

*Faculty of Medicine, University of Latvia, Riga, Latvia*

*Clinic of Neurosurgery, Pauls Stradiņš Clinical University Hospital, Riga, Latvia*

## INTRACEREBRAL HEMATOMA SCORE IN LATVIAN PATIENTS.

**Introduction.** Intracerebral hematoma score (ICH score) is a prediction of 30-day mortality in patients with intracerebral hematoma (ICH). For now the risk of dying form ICH in 30 days is at 50%. Since it is not mandatory to use ICH scale in Latvia it would be interesting to calculate the score of those patients who died and compare the likelihood of that event using ICH score.

**Aim.** The aim was to find if ICH score is a safe way to predict 30-day mortality risk of patients suffering from intracerebral hematoma in Latvia.

**Material and Methods.** This study was made retrospectively using patient records from to main hospital archives in Latvia (Pauls Stradins Clinical University Hospital and Riga East Clinical University Hospital “Gailezers”). Data were taken from patient records and calculated using the ICH scale. Data were processed using SPSS IBM v.20 and a P-value of 0.05 was considered to be statistically significant. Continuous variables were examined using independent t-test and chi-square test for categorical variables.

**Results.** Data of 153 patients were used. It is stated that if a patient has ICH score 0 points, the mortality risk is at 0%, however my study showed 1 patient, who died. That shows 3% mortality rate in this patient group compared to patients who survived. If a patient gets 1 point in ICH scale (it means there is 13% risk of mortality) but our study showed that there was a 24% mortality rate in the same group. If a patient gets 2 points (26%), in our study it was 59%. If a patient gets 3 (72%), in our study it was 93%. If a patient gets 4 points (97%), our study showed 90%. And if a patients gets 5 points, mortality risk is 100%, our study showed the same rate. Statistical reliability  $p= 0.001$ .

**Conclusions.** Comparing the prediction scale of ICH score with data that we got after reviewing patient records it is safe to conclude that the mortality rate of the patients was much more higher that it would be predicted using ICH score.

**Līta Jēkabsons, Anete Kursīte, Guna Laganovska**

*Riga Stradiņš University, Latvia, litajekabsons@gmail.com, anete.kursite@gmail.com, glaganovska@ml.lv*

# **INTRAVITREAL ANTI-VEGF INJECTION IMPACT ON VISUAL ACUITY IN PATIENTS WITH EXUDATIVE AGE-RELATED MACULAR DEGENERATION**

Key words: Age-related macular degeneration, visual acuity, anti-VEGF.

Introduction. Age-related macular degeneration (AMD) is a leading cause of vision loss among older adults aged 65 and more worldwide. (Ferris, 1983.) It affects the central area of retina known as the macula which is responsible for central field of vision. The reason for using intravitreal injections of anti-vascular endothelial growth factor (VEGF) is to prevent choroidal neovascularization which is the main pathogenic mechanism for exudative AMD and to potentially lead visual recovery. (Jun et al., 2015.)

Aim. To investigate the intravitreal anti-VEGF injection factor impact on visual acuity in patients with exudative AMD undergoing anti-VEGF therapy.

Materials and methods. A single-centre retrospective study was done in P. Stradins Clinical University Hospital. Total 48 eyes of 36 patients with exudative AMD undergoing intravitreal anti-VEGF for 48 months were included. Best-corrected visual acuity (BCVA) measurements were taken from patient medical histories. Obtained data was analysed using IBM SPSS Statistics version 23.0.

Results. The study was composed of 48 eyes from 36 patients, among them 35 (72.9%) were female and 13 (27.1.5%) male eyes. The mean age of the patients was  $81.81 \pm 6.8$  years. The mean number of intravitreal anti-VEGF injections received in 48 months was  $15.38 \pm 5.11$ .

Mean BCVA (decimals) at the beginning of therapy was  $0.29 \pm 0.23$ . After twelve monthly anti-VEGF injections, BCVA was significantly improved from baseline ( $0.36 \pm 0.24$ ,  $p=0.014$ ). However, after essential improvement, we observed remarkable BCVA decreasing at months 24 and 48 ( $0.34 \pm 0.24$  and  $0.26 \pm 0.19$ ,  $p=0.01$ ).

Conclusion. After first year of anti-VEGF therapy BCVA was statistically improved from baseline. However, despite significant improvement at first year, the further treatment contributed BCVA reduction.

***Anna Rubika, Indrikis Krams, Severi Luoto, Tatjana Krama, Didzis Elferts, Sanita Kecko, Ilona Skrinda, Fhionna R. Moore, Ronalds Krams, Markus J. Rantala***

*Daugavpils University, Parādes street 1, Daugavpils, Latvia, anna.rubika@gmail.com*

*University of Tartu, Vanemuise 46, Tartu, Estonia, indrikis.krams@ut.ee*

*University of Latvia, Jelgavas street 1, Rīga, Latvia, didzis.elferts@lu.lv*

*University of Auckland, 14A Symonds street, Auckland 1010, New Zealand, s.luoto@auckland.ac.nz*

*Daugavpils Regional Hospital, Vasarnīcu street 20, Daugavpils, Latvia, skrilona@inbox.lv*

*University of Dundee, Nethergate, Dundee, DD1 4HN, Scotland, UK, f.moore@dundee.ac.uk*

*University of Turku, FIN-20014 Turku, Finland, mjranta@utu.fi*

## **LIFE HISTORY CONSEQUENCES IN ECOLOGY AND PHYSIOLOGY: POSSIBLE ASSOCIATIONS BETWEEN FAMILY INCOME AND BODY HEIGHT AND IMMUNE RESPONSE IN MEN**

Objectives. Male body height and health affect a diverse range of social and economic outcomes such as competition for resources and mates. Life history theory predicts that limited availability of bioenergetic resources causes tradeoffs between somatic growth, immunity and reproduction. Although genetic factors are important determinants of body height, other factors such as income levels may affect the incidence of infections during ontogeny, thus having indirect effects to somatic growth. We tested whether growing up in families with a higher income positively affects body height and immune function.

Materials and Methods. Seventy-three young Latvian men from various socioeconomic backgrounds were given a hepatitis B vaccine. Blood samples were subsequently collected to measure the antibodies produced in response to the vaccination. Tweedie compound Poisson generalized linear models were used to examine relationships between body height, family income, and antibody titers.

Results. Both body height and family income positively correlated with the strength of men's immune response. However, when testing for the simultaneous effects of body height and income on antibody titers, the statistical models showed that body height affected the antibodies produced indirectly because income level mediated the effects of body height.

Discussion. The results of this study show that the relationships between body height and immune function in young men are more complex than found earlier. Associations between taller stature of men and the robustness of their immune response are indirect because resource availability during ontogeny affects both somatic growth and the development of the immune system.

**Valdis Dakuļs, Liene Rituma, prof. Jānis Zaļkalns**

*Rīga Stradiņš University, Latvia*

*Riga East Clinical University Hospital, Latvia*

## **MAIN CAUSES OF STRESS AND DOCTOR SUGGESTED IMPROVEMENT IN FAMILY MEDICINE IN LATVIA**

**Introduction.** Stress is a biological response to a stressor - some environmental condition. High long-term stress can lead to an allostatic shift in bodily functions. Doctors experience high stress levels every day. British National Health Service (NHS) revealed that their general practitioner stress levels are so high, almost 30% plan to quit in the next five years.

**Aim.** Evaluate different stressor role in family doctor work field, ask their opinion on how to improve their work environment.

**Materials and methods.** Surveys were sent electronically to family doctors in Latvia. The survey consisted of the personal data part, created by authors, and modified Health and Safety Executive Work-Related Stress Indicator tool, that asks questions about the main causes of work-related stress.

**Results.** Data from 183 family doctors was obtained - 25 (13.7%) men, 158 (86.3%) women. Six stressors (Control, role, relationships, demands, peer support, change) were analyzed. Men showed lower change stressor role than women ( $p=0.001$ ). Longer working hours spent on bureaucracy result in higher score of demand stressor. ( $p=0.005$ ). Regarding suggestions of how to improve the stressful work conditions, 85 (46.4%) doctors suggested changing factors concerning health system and bureaucracy, 20(10.9%) doctors mentioned lack of funding, 21 (11.4%) doctors mentioned media and patient support, 33 (18.0%) doctors mentioned factors involving patient treatment - more time, fewer patients, improve treatment accessibility, etc.; 20 (10.9%) suggested recreational activities.

**Conclusions.** Changes cause more stress in women doctors than man, demand stressor role correlates with longer hours of bureaucracy related hours in practices. As the main improvement area for stress reduction, doctors mentioned decrease of bureaucracy.

***Nadežda Vorobjova, Olga Sjomina, Pjotrs Vorobjovs, Aiga Vasiļvolfa, Ināra Ādamsons***

*Daugavpils Regional Hospital, Vasarnīcu street 20, Daugavpils, Latvia; Rīga Stradiņš University, Dzirciema street 16, Riga, Latvia, vorobjova.nadezda@gmail.com*

*Riga East University Hospital, 2 Hipokrāta Street, Riga, Latvia; University of Latvia, 19 Raina Blvd., Riga, Latvia, sjomina.olga@gmail.com*

*Rīga Stradiņš University, Dzirciema street 16, Kurzemes rajons, Riga, Latvia, pjotrs.vorobjovs@gmail.com*

*Pauls Stradins Clinical University Hospital, Pilsonu street 13, Riga, Latvia; University of Latvia, 19 Raina Blvd., Riga, Latvia, vasilvolfa@inbox.lv*

*Pauls Stradins Clinical University Hospital, Pilsonu street 13, Riga, Latvia; Rīga Stradiņš University, Dzirciema street 16, Riga, Latvia, inara.adamsone@stradini.lv*

## **MALNUTRITION IN DAUGAVPILS CHRONIC HEMODIALYSIS PATIENTS**

**Introduction.** Malnutrition is common among chronic haemodialysis (CHD) patients accounting 20% to 70% depending on method used to evaluate the nutritional status. It is associated with decreased quality of life and increased mortality in CHD patients. There are various factors that may cause malnutrition such as chronic inflammation, dialysis associated amino acid and protein loss, metabolic acidosis and other complication. Early diagnosis and adequate therapeutic management may increase quality of life of CHD patients.

**Aim.** To assess nutritional status of Daugavpils CHD patients.

**Materials and methods.** Total of 33 CHD patients were screened using Subjective Global Assessment (SGA) score. Patients were divided into 3 groups according to SGA score: normal, mild-to-moderate and severe malnutrition. Anthropometric measurements, demographic data and medical history of patients were obtained.

**Results.** 33 patients participated in research; 60.6% ( $n=20$ ) were men. The mean age of patients was 67.9 years, median – 69.0. Mean duration of CHD was 49.7, median - 30 months. The most common reason of CHD starting was chronic interstitial nephritis ( $n=11$ ), diabetic nephropathy ( $n=7$ ) and hypertensive nephropathy ( $n=5$ ). Based on SGA score results, 24 patients (72.7%) were not malnourished, 7 (21.2%) were mild-to-moderate, and 2 patients were severely malnourished (6.0%). SGA score results correlated with BMI index ( $p=0.023$ ). Significant



correlation between SGA score and haemoglobin level ( $p=0.04$ ), as well as between SGA and dry weight ( $p=0.003$ ) was found. There was no correlation between duration of CHD and SGA score.

Conclusions. Malnutrition is widely spread among CHD patients. Quarter of the patients were moderately to severely malnourished. It could be predicted by patients' dry weight and anemia levels. Timely prediction might be used in adjustment of patients' diet and substitution therapy, that could improve life quality and reduce complications.

**Katrīna Džeriņa**

*Rīga Stradiņš University, Dzirciema Street 16, Rīga, Latvia, katriina.dzerina@gmail.com*

## **MEAN CORPUSCULAR VOLUME AND ASPARTATE AMINOTRANSFERASE LEVEL CHANGES AS PROGNOSTIC ETHANOL ABSTENTION DELIRIUM ASSOCIATED FACTORS FOR PATIENTS IN THE INTENSIVE CARE UNIT**

Key words: Alcohol withdrawal syndrome, delirium tremens, mean corpuscular volume (MCV), aspartate aminotransferase (AST).

Introduction. Severe ethanol intoxication is one of the most common reasons for patient admission to the intensive care unit (ICU). In many cases alcohol withdrawal syndrome develops; it can be broken down into 3 stages of severity with stage 3 or delirium tremens (DT) being the most severe manifested by altered mental status, hallucinations, seizures, agitation and autonomic hyperactivity, which can progress to cardiovascular collapse. DT is a medical emergency with a high mortality rate, making early recognition essential. Interview tools have been used to determine the risk of DT but require an alert, compliant patient and a motivated physician. MCV and AST levels are parts of routine laboratory testing, influenced by excessive alcohol consumption and may serve as predictors of DT.

Aim. To examine a combination of MCV and AST level changes as a predictive factor for delirium tremens in alcohol intoxicated patients during a period of abstinence.

Materials and methods. The medical records of 269 patients diagnosed alcohol withdrawal delirium tremens and 480 ethanol intoxicated patients that did not develop delirium tremens in the period of abstinence (control group) were reviewed for the period from year 2013 to 2017. Admission MCV and AST levels were assessed. Relative risk (RR), positive predictive value (PPV) and negative predictive value (NPV) were calculated afterwards.

Results. Of the 269 patients diagnosed DT, both – MCV and AST levels – were changed in 122 patients (45%); no changes were found in 39 cases (14%). Of the 480 patients in the control group, both – MCV and AST levels – were changed in 98 patients (20%); no changes were found in 221 cases (46%). RR showed to be 2.46 ( $p < 0.0001$ ). The PPV of the test was 55.45% and the NPV 85%, respectively.

Conclusion. The combination of MCV and AST level changes may serve as prognostic factors for delirium tremens in ethanol intoxicated patients experiencing withdrawal.

**Vadim Neffjodov, Janis Zarins, Kalvis Pastars, Dzintars Ozols**

*Rīga Stradiņš University, Dzirciema street 16, Rīga, vadims.neffjodovs@gmail.com*

*The Centre of Plastic and Reconstructive Microsurgery of Latvia, Hipokrāta street 2, Rīga, janis.zarins@mcl.lv, kalvis.pastars@mcl.lv, dzintars.ozols@mcl.lv*

## **MICROVASCULAR TISSUE TRANSFER SURGERY: FLAP SURVIVAL ANALYSIS**

Introduction. Nowadays free microvascular flap survival rate is nearly 100%, nevertheless, full flap necrosis still occurs. This can lead to patients' prolonged hospitalization, greater morbidity and lower quality of life.

Aim. To evaluate survival rate of free microvascular flaps in The Centre of Plastic and Reconstructive Microsurgery of Latvia.

Materials and methods. A retrospective study was conducted from 2011 until 2016. Patients' medical histories database was analysed. Type of flap, recipient region, any early complications and therapy was recorded.

Results. 214 cases of free microvascular flap transfer surgeries were analysed. Mean patients' age was 49 years (range 2-85), 80% were male patients. 114 patients had significant chronic diseases. Reasons for reconstructive surgery included tumour (114), injury (47), soft-tissue infection (12) and osteomyelitis (25), scar tissue (7), pseudarthrosis (6). Flaps were transferred to head and neck (114), torso (3), upper limb (29), lower limb (68). Following flaps were used - radial artery flap (77), fibular osteocutaneous flap (46), lateral arm flap (22),

gracilis myocutaneous flap (16), scapular fasciocutaneous flap (15) anteriolateral thigh flap (12), latissimus dorsi muscular flap (8 cases), inguinal fasciocutaneous flap (7), other flaps (17). Overall flap survival was 94.4%. Flap total necrosis occurred in 12 cases, while minor complications (hypoperfusion, marginal necrosis) in 38 cases (17,8%). All complications occurred in patients with trauma, infections and tumours and more often in patients with chronic diseases (26,3% vs 20%). For rheologic therapy 10% dextran solution in 207 cases and anticoagulants in 34 cases were prescribed.

Conclusion. Nowadays free microvascular tissue transfer surgery provides successful closure of complicated wounds. Some risk factors like wound's etiology, presence of chronic diseases can decrease success rate and should be taken into consideration.

***Alise Lindermane, Dr. Jana Janovska***

*University of Latvia, Faculty of Medicine, Raiņa bulvāris 19, Latvia, aliselindermane@gmail.com  
Rīga Stradiņš University, Department of Internal diseases, Dzirciema street 16, Latvia*

## **MOST COMMON EXOGENOUS FACTORS AFFECTING PREMATURE SKIN AGING**

Key words: (Skin) aging, photo-aging, anti-aging, ultraviolet radiation.

Introduction. There are two basic forms of skin aging: physiological (endogenous) skin aging (genetically regulated) and skin aging influenced by exogenous environmental factors, for instance, ultraviolet radiation - both in the natural sun and, as well as, indoor tanning facilities, smoking, excessive use of alcohol. The most common of those is ultraviolet radiation, which results in photo-aging. As a result of this cumulative process, UV radiation impact on dermis leads to accelerated collagen degradation than it is physiologically, as a result premature skin aging arise. The importance of the problem of photo-aging is related to the fact that the physiological function of skin decreases. Not only the aesthetic function, but also skin immune system is impacted. Also the biological functions of the skin: barrier, receptor functions, thermoregulatory function - decreases.

Aim. So as to analyze most common exogenous premature skin aging factors.

Materials and methods. Prospective study was done. Both gender, 100 respondents were analyzed, aged 18 and older, skin phototype was I-III. Data were obtained using a questioner and expressed as count and percentage value.

Results. Most of respondents were female – 84% and male – 16%, with average age – 27. Most of respondents (56%) had higher education. 81% of respondents are smokers. 31% admitted not using UV protection cream. 55% are users of indoor tanning facilities, most commonly (38%) aged 18 – 25. 16% of tanning facility visitors admitted having various skin changes as a complication, but 4% preterm skin aging.

Conclusion. While we are not yet able to stop the physiological process of skin aging, we can prevent external factors that accelerate skin aging. This may be done by investigating tendencies in the society towards this topic, on which further society education may be based at the same promoting preventive skin ageing cure.

***Lauma Kūliņa, Līga Antoneviča***

## **MOTORIC DEVELOPMENT OF A CHILD DURING THE FIRST YEAR**

Key words: a child, motoric development, anthropometrics, reflexes, physiotherapy.

Introduction. Motoric development is quantitative and qualitative changes of child's movement skills together with other indicators of development reflect child's biological development. During the first year the observation of motoric development of a child one of the major responsibilities of physicians is to provide parents objective information about the development of a child.

The aim of the study. To explore motoric development of a child during the first year.

Material and Methods. This research was carried out in SIA Health center "Ilūkste." The author has observed two toddlers. According to Alberta toddlers motorial scale (AZMS), the authors have observed motorial development of every child by the use of a method of observation, anthropometry, checkup of physiological reflexes, and checkup of a tone of a muscle. For an efficient procedure of a research, the authors delivered a lecture and carried out practical classes to parents where young parents have learned how to take care about one's child. Afterwards, the authors have analyzed motoric development of both children in relation to theoretical knowledge.

Results. It has been observed that motoric development of toddlers was close to a norm. The main indicators of motoric development were raising one's head, holding one's head, rolling, sitting, crawling, raising and

independent walking. There were significant differences in motoric development of both children. Motoric development of one child took place according to a criteria of a normal development, because the child undertook a course of a massage and exercises. The second child demonstrated slower motorial development because he started to crawl, to raise on one's feet and to walk later. In overall, motoric development of both children is normal. The authors have determined and analyzed anthropometric indicators as compared with the norm. The authors have observed also toddlers, reflexes and muscle tone. Conclusion. Participation in the research provided parents with a new experience. Despite of individual differences in toddlers' development, sufficiently applied physiotherapy fosters motoric development of a child.

**Olga Demida**

*Rīga Stradiņš University, Dzirciema street 16, Rīga, Latvia, olga.demida@inbox.lv*

## **MYELOMA CELLS IN PERIPHERAL BLOOD AS A PROGNOSTIC FACTOR OF MULTIPLE MYELOMA**

Key words: circulating plasma cells, multiple myeloma, prognostic factor.

Introduction. Multiple myeloma is a B-lymphocyte malignant lymphoproliferative disease of the blood system. Multiple myeloma prognosis is affected by several prognostic indicators determining the stage of the disease, response to therapy, relapse risk and overall survival. Over the last 10 years, myeloma cells in the peripheral blood have been increasingly studied using flow cytometry method in patients diagnosed with myeloma for the first time.

Aim. Find out the connection between myeloma cells in peripheral blood and myeloma stage during diagnostics and the response to the initial three-month treatment.

Materials and methods. Study design is a prospective study. The study was carried out at the Riga East Clinical University Hospital, Oncology Centre of Latvia, Clinic of Chemotherapy and Haematology, Laboratory of Haemopathology and Stem Cells. Patients' informed consent were obtained, peripheral blood samples were taken in patients diagnosed with myeloma for the first time. Peripheral blood samples were analysed using flow cytometry method. Clinical data were collected from patients' outpatient cards, which included patient's age, sex, stage of the disease, and findings of clinical tests. *Excel* and *IBM SPSS Statistic* programs were applied for data statistical processing and analysis.

Results. 52 patients diagnosed with myeloma for the first time were examined using flow cytometry method from August 2017 to February 2018. The patients' average age is  $64 \pm 11$  years, 31 are male (60%), 21 are female (40%). Out of the 52 patients, myeloma cells in peripheral blood were found in 11 patients (21%), no myeloma cells in peripheral blood were found in 41 patients (79%). The largest myeloma cell count in peripheral blood is 35% of the total nucleated cell population, the smallest is 1.6%. Durie-Salmon stage II A and III A are most common in the patients with positive myeloma cells in the peripheral blood, 27% (n=3) and 27% (n=3) of the patients respectively. Stages II B and III B are 18% (n=2) and 18% (n=2) of the patients respectively. Stage I A is only found in one patient (9%), and stage I B is not found in any patient. In patients with positive myeloma cells in peripheral blood, the blood serum gradient M was reduced by 59% on average three months after the beginning of treatment. In patients with negative myeloma cells in peripheral blood, the blood serum gradient M was reduced by 85% on average three months after the beginning of treatment. According to the nonparametric Mann-Whitney test, there is a statistically significant relationship between myeloma cells in peripheral blood at the time of diagnostics and the difference in blood serum gradient M three months after the beginning of treatment ( $p = 0.000$ ). P value is statistically reliable, if  $p < 0.05$ .

Conclusions. Higher myeloma stages prevail in patients with positive myeloma cells in peripheral blood. There is a statistically significant relationship between myeloma cells in peripheral blood at the time of diagnostics and the difference in blood serum gradient M three months after the beginning of treatment, therefore the response to therapy in patients with positive myeloma cells in peripheral blood is worse than in patients with negative myeloma cells in peripheral blood.

**Liene Rucka, Santa Smilga, Ilze Meldere**

*Riga Stradins University, Dzirciema street 16, Latvia, liene.rucka@gmail.com, santasmilga@gmail.com  
Children's Clinical University Hospital, Vienibas gatve 45, Latvia, Ilze.Meldere@rsu.lv*

## **NECROTIZING ENTEROCOLITIS IN LATVIA YEAR 2012–2016**

Introduction. Necrotizing enterocolitis (NEC) is the most common gastrointestinal surgical emergency in the neonatal period, with prematurity as the single most important risk factor. The overall reported incidence is 0.1% of all live births, and 3-12% of very low-birth-weight infants (<1500g). NEC typically occurs in the first few

days of life with the initiation of enteral feedings. Treatment consists of orogastric tube decompression, broad-spectrum antibiotics and in advanced cases – surgical management.

**Aim.** The aim of this study was to analyze the frequency of NEC, to find out its distribution according to gestational weeks and birth weight, see the most frequently used diagnostic methods and treatment, and compare it to literature data.

**Materials and Methods.** A retrospective study was made including medical history data from all NEC patients in Neonatal Intensive Care Unit in Riga, from year 2012 to 2016.

**Results.** In the time period from year 2012 to 2016 there were 84 cases of NEC. The overall incidence of NEC in Latvia was 0.08% of all live births, and 7.5% of very low-birth-weight infants. Almost all of the patients (90.5%) were born premature. The average onset of NEC was at the age of 7.7 days. Out of all cases – 27.4% of patients had no data of NEC in abdominal x-ray and/or ultrasound and only 23.8% had intestinal pneumatosis. Using Bell's staging criteria 25% of the patients were classified as Stage III – advanced NEC. In 73.8% of cases the treatment was nonsurgical – including antibiotics and orogastric tube decompression.

**Conclusions.** NEC was more common in preterm neonates and those with very low-birth-weight – the same as mentioned in literature. The most commonly used treatment was nonsurgical, as there were only 25% of patients with Stage III – advanced NEC, therefore it is important to diagnose NEC as early as possible.

**Anete Granovska, Madara Strassere, Lelde Logina, Dr. Ilze Skuja**

*Riga Stradins University, Dzirciema street 16, Riga, Latvia, anetegrnovska@gmail.com*

## **OBSTRUCTIVE SLEEP APNEA CORRELATION WITH GLUCOSE AND HBA1C LEVEL IN TYPE 2 DIABETES PATIENTS IN LATVIA**

**Key words:** Obstructive sleep apnea, blood glucose, HbA1c, type 2 diabetes.

**Introduction.** Obstructive sleep apnea (OSA) is the most common sleeping disorder, associated with breathing. It is characterised by repetitive upper airway collapsing, blood oxygenated haemoglobin level decreasing and sympathetic nervous system activation during sleep. 14% of men and 5% of women in general population are estimated to have OSA, in turn, OSA is highly prevalent in T2D patients, ranging from 58% to 88%. OSA severity is proven to correlate with fasting blood glucose (BG) control in type 2 diabetes patients. T2D and OSA correlation studies in Latvia are lacking.

**Aim, material and methods.** The aim of this study is to determinate the correlation of blood glucose control and OSA risk for T2D patients. The survey is carried out in general practices in Riga. We have collected data from 72 individuals, aged 44 to 86 years with T2D, who visited GPs. Along with other measurements (systolic and diastolic blood pressure (SBP, DBP), pulse, oxygen saturation, body mass index, neck circumference, waist circumference), patients underwent standardized OSA questionnaire and current BG level, and the last oxygenated haemoglobin (HbA1c) analysis, done in previous six months was documented.

**Results.** 33 residents (46%) were identified with high risk OSA (HR-OSA), 28 (39%) were identified with intermediate risk OSA (IR-OSA) and 11 (15%) with low risk OSA (LR-OSA). The median BG in patients with LR-OSA were 7,77 (+/- 1,77) mg/dL, in IR-OSA were 7,35 (+/- 2,94) mg/dL and HR-OSA were 8,25 (+/- 3,32) mg/dL. HbA1c in LR-OSA patients was 6,16 (+/- 1,2)% , IR-OSA patients was 6,4 (+/- 1,07)% and HR-OSA patients was 8,25 (+/- 3,32)% and HbA1c statistically correlates ( $p=0,017$ ) with OSA risk grade.

**Conclusion.** The risk of OSA is associated with HbA1c level that is the best laboratory marker to show the patients glucose control in last three months. Therefore, for the patients with insufficient BG control, it is advisable to perform OSA questionnaires to diagnose and treat this illness timely.

**Darja Nesteroviča**

*Riga Stradins university, Military medicine research and study center, Riga, Dzirciema iela 16, Latvia, darja.nesterovica@rsu.lv*

## **OVERLOAD MUSCULOSKELETAL INJURY PREVALENCE AND COMFORT PERCEPTION OF MILITARY BOOTS**

**Introduction.** 80% of all musculoskeletal injuries among soldiers are lower leg biomechanical overload musculoskeletal injuries (OMSKI). Biomechanical overload injuries are defined as cumulative microtrauma caused by altered load distribution. Foot is important for musculoskeletal system functioning during motion. Feet motion and load distribution can be altered with shoes during running and marching. The purpose of this study was to assess the OMSKI prevalence and comfort perception of military boots in Latvian infantry soldiers.

**Materials and methods.** Self-reported data from active duty soldiers from Latvian Land Forces was collected

using survey during annual medical check-up. OMSKI were classified according to Barrel injury matrix body regions. Subjects rated military boots for six dimensions: overall comfort, forefoot cushioning, arch cushioning, heel cushioning, arch support and heel support using 100-mm VAS scale. Riga Stradiņš university Ethics committee approval (Nr.40/26.10.2017) for this research was admitted.

Results. N=160 infantry soldiers at average age  $30,4 \pm 7,3$  years participated in survey, mean service time  $7,6 \pm 6,7$  years. 95% of all participants were males (N=152), 5% females (N=8). Average soldier age for males  $30,1 \pm 7,3$  years, 95% CI [29,0; 31,2]; for females  $35,9 \pm 7,4$  95% CI [28,0; 43,8]. Prevalence of OMSKI in all body regions was 50% (N=80) with 47,5% of males (N=46) and 1,8% of 2,5% females (N=4) injured. Most common sites for OMSKI – lower back (N=25), knee (N=12), lower leg (N=12) and foot (N=4). Males are more likely to get lower leg OMSKI,  $\chi^2(1) = 81,2$ ,  $p < 0,001$ . High forefoot blisters prevalence was observed – 39% (total N=62, N=58 males, and N=4 females). Military boots rate for forefoot cushioning, heel cushioning and for arch support was 6,1 (SD=2,0), arch cushioning rate 6,0 (SD=2,0), heel support rate 6,3 (SD=2,0) and overall comfort rate was 6,4 (SD=1,9). Overall military boot comfort strongly correlated with other boot comfort dimensions: Pearson's correlation coefficient  $0,8 <$  and  $p < 0,001$ . Lower leg overload injuries are associated with overall military boots comfort [ $\chi^2(9) = 120,3$ ;  $p < 0,001$ ].

Conclusions. Lower leg overload injuries are common for infantry soldiers and can be associated with perceived military boot comfort. Uncomfortable military boots usage may lead to foot blisters. It is suggested to modify military boots according to foot types and lower leg alignments to prevent overload injuries.

### ***Līva Jenerte, Anita Vintere***

*Rīga Stradiņš University, Faculty of Continuing Education, Dzirciema str. 16, Riga, Latvia, livajenerte@gmail.com*

*Medical practice Mazcena 21, Jaunmārupe, Latvia, anita.vintere@inbox.lv*

## **OVERWEIGHT AND MOTOR DEVELOPMENT IN INFANCY AGE**

Introduction. Overweight and obesity are one of the greatest problems of modern society. Obesity rates are increasing every year and millions of people are suffering from it. However, the study on infant weight and its effects on children's development is relatively low. It's important to find out, because the effects of early obesity can later be manifested as delayed growth, various organ diseases, adult obesity and even premature death.

Aim. Assess the weight of infants and the relationship with motor development.

Methods. A study is retrospective with 117 patient data from family medical records. Included patients who were born from January 1 2014 to December 31, 2015. Excluded children with chronic and genetic diseases, also prematurely born. Patients were analyzed from the age of 3 months to 18 months, taking into account their weight dynamics, nutrition and motor development. Data were analyzed by SPSS 20

Results. 117 infants participated in the study. Of them 47.9% were men and 52.1% women. Breastfeeding - 70.1%, but artificial 29.9% of children. Almost one third of the babies (26,5%) weighted over 85 percentiles, corresponding to the overweight. At the same time, only 6.8% was less than 5 percentiles, which corresponds to the underweight. Children were divided into study groups according to weight category. Since the underweight category was very small, it was excluded from further analysis. The overweight group was compared with the normal weight group after motor development successively by months. After data analysis, there was a statistically significant difference in motor development between study groups. The motor developmental delay was observed more often in the overweight group ( $p < 0.0005$ ). The highest and statistically significant differences were observed at 3, 5, 6 and 8 months of age (Fishers method  $< 0, 05$ ). No significant differences were observed between sexes and between eating habits.

Conclusion. Almost a third of babies at an early age are overweight (26.5%) In the overweight group, delayed development of motor skills was observed more often ( $p < 0.0005$ ). Gender and nutrition are not influential factors in the development of overweight or delayed motor development.

### ***Anda Dubra***

*Rīga Stradiņš University, Dzirciema ielā 16, Latvia, anda\_dubra@inbox.lv*

## **PERINATAL OUTCOMES FROM THE USE OF ANTIEPILEPTIC DRUGS DURING PREGNANCY**

Introduction. Epilepsy is one of the most common neurological conditions in women of reproductive age. Prescription of antiepileptic drugs(AED) to women with epilepsy and other neurological disturbances requires

to maintain a balance between controlling maternal diseases seizures frequency and minimizing fetal teratogenic exposure .

Aim of study. To evaluate perinatal outcomes and the most common used AED during pregnancy in women with epilepsy

Materials and methods. This was a retrospective study carried by Pauls Stradins Clinical University Hospital from January 2015 till September 2017. Out of 104 pregnant women with different neurological conditions, who were admitted to the tertiary referral perinatal care center, 40 women had epilepsy.

Results. Average age of patients with epilepsy was  $29,3 \pm 5,9$  (20-41). All patients with epilepsy (n=40) received AED before pregnancy, but only 62,5% (n=25) of women continued to use AED during first trimester, and 40% (n=16) during second and third trimester. During 1st trimester, 68% (n=17) received monotherapy, this group perinatal outcomes were 44% (n=11) spontaneous vaginal delivery and 24%(n=6)caesarian delivery. Politerapy use 32% (n=8), perinatal outcomes were 16%(n=4 )spontaneous vaginal delivery, but 12%(n=3) cesarean delivery. Four patients (16%) had seizure during pregnancy period and 4% one patient had seizure during delivery. Three of those four patients, who had seizure, did not use AED in second and third trimester. Only one newborn had major malformation, whose mother did not use AED during 2nd and 3rd trimester and had a seizure during pregnancy.

Conclusions. The study demonstrate the compliance of pregnant women is poor. Therefore the education about the importance of planning pregnancy and the effect of teratogenic AED, also about risks of seizure during pregnancy and perinatal outcomes.

**Kaspars Rīmicāns, Kristaps Jurjāns, Evija Miglāne, Andrejs Millers, Zanda Priede**

*Rīga Stradiņš University, Faculty of Medicine, Dzirciema str. 16, Rīga, Latvia, kaspars.rimicans@gmail.com  
Rīga Stradiņš University, Neurology department, Pauls Stradiņš Clinical University Hospital, 13 Pilsoņu Street, Rīga*

## **PIRMREIZĒJI DIAGNOSTICĒTAS ĀTRIJU FIBRILĀCIJA PREVALENCE KARDIOEMBOLISKA CEREBRĀLA INFARKTA PACIENTIEM PS KUS 2016. GADĀ**

Atslēgvārdi: kardioembolisks cerebrāls infakts, ātriju fibrilācija, perorālie antikoagulanti.

Ievads. Savlaicīga ātriju fibrilācijas (ĀF) diagnostika un ārstēšana būtiski samazina kardioemboliska cerebrāla infarkta (CI) risku, taču ir nepietiekama visā pasaulē.

Mērķis. Izvērtēt pirmreizēji diagnosticētas ĀF prevalenci CI pacientu vidū. Izvērtēt, pie kāda speciālista novērojušies pacienti ar iepriekš zināmu ĀF, un kādi medikamenti lietoti primārajā profilaksē.

Materiāli un metodes. Apkopoti dati par ĀF, pie kāda speciālista novērojies, un kādi medikamenti lietoti pirms insulta CI pacientiem, kuri stacionēti P. Stradiņa KUS Neuroloģijas klīnikā 2016. gadā, un kuriem konstatēta ĀF. Datu analīze veikta izmantojot SPSS.

Rezultāti. Pētījumā iekļauti 401 pacients, no kuriem 140 (34,9%) pacientu pirmreizēji diagnosticēta ĀF. Par ĀF iepriekš zinājuši 261 (65,1%) pacients. No šiem pacientiem 166 (63,6%) novērojušies pie ģimenes ārsta, 14 pie internista (5,4%), 81 (31%) pie kardiologa. No 166 pacientiem, kas novērojušies pie ģimenes ārsta 90 (54,2%) nelietoja nekādus antitrombotiskus medikamentus, 59 (35,5%) lietoja antiagregantus un 17 (10,3%) lietojuši perorālos antikoagulantus (POAKs). No 14 pacientiem, kas novērojušies pie internista 10 (71,4%) nelietoja nekādus antitrombotiskus medikamentus, 2 (14,3%) lietoja antiagregantus un 2 (14,3%) lietojuši POAKs. No 81 pacienta, kas novērojies pie kardiologa 40 (49,4%) nelietoja nekādus antitrombotiskus medikamentus, 28 (34,5%) lietoja antiagregantus un 13 (16,1%) lietojuši POAKs.

Secinājumi. Pirmreizēji diagnosticētas ĀF prevalence CI pacientu vidū ir augsta. CI primārā profilakse ir nepietiekama. Statistiski ticama sakarība starp atbilstošu medikamentu lietošanu un novērošanos pie atbilstoša speciālista. Nepieciešams veicināt pacientu novērošanos pie atbilstoša profila speciālista un savlaicīgu POAKs uzsākšanu, lai mazinātu CI risku.

**Inese Sileniece, Guntis Balodis, Prof. Dr. habil. med. Jānis Zaļkalns**

*Rīga Stradiņš University, Faculty of Medicine, Dzirciema iela 16, Rīga, Latvia, inese.sile@gmail.com,  
guntisbalodis@gmail.com  
Rīga Stradiņš University, Family medicine Department, Dzirciema iela 16, Rīga, Latvia, Janis.Zalkalns@rsu.lv*

## **POLYORBIDITY MANIFESTATION AND DEVELOPMENT OF THROMBOTIC COMPLICATIONS IN AN AVERAGE FAMILY DOCTORS PRACTICE**

**Key words:** Polymorbidity, thrombotic complications, family medicine.

**Introduction and aim.** Polymorbidity is two or more chronic diseases in one individual, which is a major problem in the ageing population for both patients and health care system. Our goal is to clarify the number of patients with polymorbidity and development of thrombotic complications (TC) considering such comorbidities and factors as primary arterial hypertension (PAH), dyslipidemia, arrhythmia, coronary artery disease (CAD), chronic heart failure (CHF), waist circumference >90cm in different combinations in an average family doctor's practice.

**Materials and methods.** A cross-sectional outpatient cards study. Materials: an overview of the information on polymorbidity, a family doctor's practice outpatient cards. Quantitative methods: information record in Microsoft Excel from outpatient cards, practice patient count from medical program MEDIUS. Qualitative methods: data analysis in SPSS, Microsoft Excel.

**Results.** From 1359 (583 men, 776 women) of researched family doctor's practice patients there are 599 (172 men, 427 women) or 44% patients determined as legitimate polymorbid patients. 74.8% (448: 125 men, 323 women) of polymorbid patients has PAH, 62.1% (372) has dyslipidemia, 12.7% (76) has arrhythmia, 17.9% (107) has CAD, 31.6% (189) has CHF, 11.5% (69) has waist circumference >90cm. Thrombotic complications developed: 13.6% or 61 of patients who had separately PAH (448 – 74.8% of polymorbid patients); 19% - 11 patients who had both PAH and waist circumference >90cm (which is 58 – 9.7% out of 599); 12.6% - 40 patients who had both PAH and dyslipidemia (318 - 53.1%); 28.8% - 17 patients who had PAH, dyslipidemia and CAD (59 – 9.8%); 23.5% - 23 patients who had PAH, dyslipidemia and CHF (98 – 16.4%).

**Conclusions.** The cornerstone of developing thrombotic complications is the presence of PAH, dyslipidemia, CAD and CHF. A family medicine practitioner is a first person in the system of health care who can determine whether a patient should take action to avoid thrombotic complications or the person should not be in alerted state, which is why an individual management in family doctors practice is important for patients with the manifested combinations. Also other linkages should be taken in consideration in patient management.

*Nadīna Paegle, Liene Vītola, Sandra Gintere*

*Rīga Stradiņš University, Faculty of Medicine, Dzirciema street 16, Riga, Latvia*

## **POST-VACCINATION REACTIONS: OPINIONS OF PARENTS IN LATVIA AND THEIR RESPONSE IN CASE OF OCCURANCE**

**Introduction.** Vaccination is an important method for prevention of serious diseases. A significant number of parents decide not to vaccinate their children, one reason is the possibility of post-vaccination reactions. It is necessary to find out the opinion of the society about this issue.

**Aim.** To determine the opinion of parents about vaccination, post-vaccination reactions, and their action after them.

**Materials and methods.** An anonymous questionnaire was disseminated in social media. Target audience was parents in Latvia with children under 24 years old.

**Results.** 176 parents participated. 84% (n=148) of respondents had children with all vaccines required in the National vaccination calendar of Latvia, 3.5% (n=6) were not vaccinated at all. Parents were most afraid that their children after vaccination might experience febrile temperature 62.5% (n=110); seizures 57.4% (n=101); loss of consciousness 50.6% (n=89); inactivity or paleness 50% (n=88). 49.4% (n=87) of parents stated that their children have experienced post-vaccination reactions. Most common of them were elevated temperature 77% (n=67), pain and/or redness around the injection place 45% (n=39); anxiety or crying for a long time period after the vaccination 20% (n=17). 64.4% (n=56) of the parents whose children experienced post-vaccination reactions informed their general practitioners. If a child had elevated temperature after vaccination, 53% (n=92) of parents would consult with their doctor after some days, 40% (n=71) would not be worried; with pain and/or redness around the injection place, 45% (n=80) would contact their doctor after some days, 45% (n=80) would not be worried.

**Conclusions.** A significant number of children are not fully vaccinated. Many parents notice changes in children's health after vaccination. Many of them do not consult with their doctors about these reactions because they are not worried about them. Not discussing this issue might influence the spread of incorrect information.

*Antons Zakalkins, Sigita Kazūne*

## **PREDICTIVE VALUE OF SIMPLIFIED AIRWAY RISK INDEX FOR DIFFICULT VIDEOLARYNGOSCOPIC TRACHEAL INTUBATION**

Key words: difficult, intubation, pre-operative, simplified, airway, risk, index, evaluation, El-Ganzouri, videolaryngoscopy, GlideScope, LoPro.

Introduction. Unanticipated difficult intubation may lead to serious complications such hypoxia-related brain damage or brain death. Simplified airway risk index, introduced by El-Ganzouri and colleagues is a method of bedside airway evaluation, in which seven patient's anatomical features are combined. However, evidence of using of El-Ganzouri's simplified airway risk index in prediction of difficult laryngeal visualisation using videolaryngoscopes is not well studied.

Aim of the study. Calculate the specificity and sensitivity of El-Ganzouri multivariate risk index to predict difficult laryngeal exposure using GlideScope Titanium videolaryngoscope equipped with LoPro blade.

Material and methods. We conducted a prospective observational study of 36 patients, which were evaluated using El-Ganzouri's simplified airway risk index before induction of anaesthesia. After induction of anaesthesia videolaryngoscopy was performed using GlideScope videolaryngoscope equipped with LoPro blade and laryngeal visualisation was graded using Cormack-Lehane scale. After laryngeal visualisation grading endotracheal tube insertion was performed and number of attempts as well as complications during intubation were recorded. Sensitivity, specificity, positive and negative predictive values were calculated, receiver operating characteristic curve and area under curve were obtained.

Results. Sensitivity and specificity were 21.9% and 25.0% at simplified airway risk index cut-off value of 4 points. Calculated positive predictive value was 70.0% and negative predictive value was 3.8%. Calculated AUC was 88.3%.

Conclusions. Simplified airway risk index shows low sensitivity and specificity when used with GlideScope Titanium videolaryngoscope equipped with LoPro blade. It can be used to predict difficult laryngeal visualization during videolaryngoscopic intubation.

***Kaspars Rimicāns, Kristaps Jurjāns, Evija Miglāne, Andrejs Millers, Zanda Priede***

*Riga Stradiņš University, Faculty of Medicine, Dzirciema str. 16, Riga, Latvia, kaspars.rimicans@gmail.com  
Riga Stradiņš University, Neurology department, Pauls Stradiņš Clinical University Hospital, 13 Pilsoņu Street, Riga*

## **PREVALENCE OF A NEWLY DIAGNOSED ATRIAL FIBRILLATION AMONG PATIENTS HOSPITALIZED WITH CARDIOEMBOLIC STROKE AT PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL, RIGA, LATVIA IN 2016**

Key words: cardioembolic stroke, atrial fibrillation, oral anticoagulants.

Introduction. A timely diagnosis and treatment of atrial fibrillation (AF) significantly reduces the risk of cardioembolic stroke (CS) but is known to be insufficient world-wide.

Aim. To estimate the prevalence of a newly diagnosed AF among patients with CS. To assess the type of specialist involved in monitoring the patient with a previously diagnosed AF as well as medication used in the primary stroke prevention.

Methods. Data on AF, medication use and monitoring specialist of patients admitted to Neurology department, Pauls Stradiņš Clinical University Hospital, Riga, Latvia with CS, were obtained and data analysis carried out using SPSS.

Results. 438 patients were included, 149 patients (34%) with newly diagnosed AF. In case of 166 patients (63,6%) monitoring was done by general practitioner (GP), in 14 patients (5,4%) by internist and in 81 patients (31%) by cardiologist. Among 166 patients monitored by GP 90 (54,2%) received no antithrombotic medication, 59 (35,5%) received antiplatelet agents and 17 (10,3%) received OACs. Of 14 patients monitored by internist 10 (71,4%) received no antithrombotic medication, 2 (14,3%) received antiplatelet agents and 2 (14,3%) received OACs. Among 81 patients monitored by cardiologist 40 (49,4%) received no antithrombotic medication, 28 (34,5%) received antiplatelet agents and 13 (16,1%) received OACs.



Conclusion. Prevalence of a newly diagnosed AF in CS patients is high. The primary CS prevention is insufficient. A positive association between a guideline-recommended therapy and the monitoring specialist was observed. Monitoring of patients by the appropriate specialist and a timely initiation of OAC therapy for CS prevention should be promoted.

**Ruta Vintere, Maija Kozlovska**

*Rigas Stradins University, Dzirciema 21, Riga, ruta.vintere@gmail.com*

*The rural family doctor's association of Latvia, Latvia*

## **PROLONGED BENZODIAZEPINES USAGE INDICATIONS AND INFLUENCE ON COGNITIVE FUNCTIONS**

Introduction. Benzodiazepines (BDZ) are one of the most used medications for sleep disturbances in GP practice despite comprehensive documentation on arising dependence and influence on cognitive function. BDZ abuse creates dependency with severe withdrawal symptoms. Therefore, patients continue to administer medications for years with severe damage to health.

Aim. Prolonged and unjustified usage causes a cognitive disturbance.

Method. Epidemiological, quantitative, cross-section study which included 300 patients with BDZ usage over three years. Data processed using IBM SPSS version 22.

Result. From 300 patients, 246 (82%) administered medications on a regular basis and 54 (18%) as required. Distribution of sexes: 247 female (82, 3%) and 53 male (17, 7 %). Statistically, it cannot be proven that female gender is more prone to medication usage. Diagnosed depression 114 (38%), and day usage of hypnotic medications were 106 (35.3%). The study included 17 married couples, where both used BDZ. Analysing MMSE questionnaire most patients scored (30) who used medication as required - 24 (54, 5%) against 45(21, 2%), patients who used medications regularly ( $p<0.000$ ). Cognitive disturbance ( $<23$  points) was detected 57 (26.9%) times in patient group with regular medication use and 2 (4, 5%), who used as required ( $p<0.000$ ). Statistically, age cannot be proven depending on MMSE questionnaire results ( $p<0.086$ ). From 300 patients 289 (96, 3%) refused to discontinue current medication, 11 (3, 7%) patients tried to discontinue with unfortunate results. 292 (97, 3%) cases BDZ was prescribed by GP and 8 (2, 7%) by the specialist.

Conclusion. 1) Patients had variable diagnoses, but statistically, multiple diagnoses don't indicate the necessity for sleep disturbance or generalized anxiety adjustment. 2) Prolonged and unjustified usage causes a cognitive disturbance. 3) Guidelines are necessary for GP as primary carers of patients and to specify when to start BDZ and what other therapies are available for patients to use fewer medications. 4) Long-term treatment was not justified (97.3%), since the only indication of long-term use is paroxysmal anxiety. 5) Individual access to couples' therapy is needed.

**Lauma Vasilevska, MD Ilze Meldere**

*Riga Stradiņš University, Dzirciema street 16, Riga, lauma.vasilevska@gmail.com*

*Children's Clinical University Hospital, Vienibas gatve 45, Riga, ilze.meldere@rsu.lv*

## **RECOMMENDATIONS FROM EARLY-ONSET SEPSIS CALCULATOR ON ANTIBIOTIC USE IN NEONATES WITH SUSPECTED INFECTION**

Key words: Early onset sepsis calculator, newborns, antibiotic treatment.

Introduction. A neonatal early-onset sepsis (EOS) calculator is a newly designed tool that allows to predict the risk for development of EOS based on five major risk factors and infant's clinical presentation at birth. It could reduce newborn antibiotic over-treatment in practice.

Aim. The aim was to compare actual antibiotic exposure to the calculated risk and recommendations based on the sepsis calculator in newborns with suspected infection and to mark the differences in EOS risk between early treatment ( $< 12$  hours) and late treatment ( $\geq 12$  hours of life) group.

Materials and methods. Data were obtained retrospectively from medical records in Riga Maternity Hospital. Infants born  $\geq 34$  weeks of gestation who were started on antibiotic treatment for suspected EOS within 72 hours after birth were included. The EOS risk score per 1000 live births was calculated and each newborn was retrospectively assigned to the recommended category by the EOS calculator. Statistical analysis was performed using MS Excel, IBM SPSS Statistics 22. Data were analysed using statistical tests.

Results. A total of 205 newborns were included in the study. Recommendations from the EOS calculator were not to start antibiotic therapy in 157 (77%) infants, to strongly consider starting empiric therapy in 38 (18%), to monitor and re-evaluate in 2 (1%) and to start empiric antibiotics in 8 (4%) infants.

Newborns that received early antibiotics had significantly higher maternal EOS score (median 1.39, IQR: 0.39-2.12) compared with newborns in the late treatment group (median 0.03, IQR: 0.02-0.04). Clinical condition deteriorated in the late treatment group.

Conclusion. Antibiotic use in newborns could be significantly reduced by more than 77%. EOS calculator could help guiding treatment decisions. Newborns with initial low sepsis risk score clinically deteriorated beyond 12 h of life. More safety data is needed.

***Sņeņana Romanuka, Vadims Nefjodovs***

*Rīga Stradiņš University, Dzirciema iela 16, Rīga, sezanocka@gmail.com, vadims.nefjodovs@gmail.com*

## **RĪGA STRADIŅŠ UNIVERSITY MEDICAL STUDENTS KNOWLEDGE ABOUT CHILD VACCINATION AND ITS SUPPORT**

Introduction. The main source of information where parents get information about vaccination is a doctor, so the doctor should be educated and support the vaccination. Medical students are the ones who will have an impact on the vaccination coverage in the near future.

Aim. To evaluate Rīga Stradiņš University medical students knowledge and support on the topic of child vaccination.

Materials and methods. A multiple choice questionnaire was developed and distributed through social networks among medical students of Rīga Stradiņš University. The questionnaire has 10 questions. A properly answered question is considered if all the correct answers are marked, so each student can get from 0 to 10 points. At the end of the questionnaire was asked about the student's personal attitude to the child's vaccination.

Results. The survey was attended by 214 medical students. 182 of them were women, while 32 were men. The survey was attended by students of all years of study, however, the most (58 students) from the sixth year of study. Of the maximum 10 possible points, the average grade for all students is 3.39 (0-8), moda is 3. The lowest average grade was for respondents in the first year of study (average 2.06 (0-4), moda 2), while the highest for respondents in the sixth year is the average 4.53 (3-8), moda 5. In general, the students' personal attitude towards vaccination is positive.

Conclusion. Students' knowledge can be considered mediocre, however, the 6th year students, who will soon become doctors, should be more educated on the topic of vaccination. There is a need to make this topic more actual for students and to start educating medical students on the topic of vaccination already in their first years of study. It would be worthwhile to repeat this study if the education system for medical students' about vaccination is being changed and then compare the results to see if a better approach has been found.

***Arnija Reihmane, Assoc. prof. Aleksejs Miščuks, Dr. med. Iveta Golubovska***

*University of Latvia, Raina bulvaris 19, Rīga, Latvia*

*Hospital of Traumatology and Orthopaedics, Dunties iela 22, Rīga, Latvia*

## **SCIATIC NERVE BLOCK DECREASES THE PAIN LEVEL AFTER LOWER EXTREMITY SURGERIES**

Introduction. The pain level after lower leg surgeries is high. According to a study done by I. Golubovska 16.2% of patients experience severe pain after lower leg surgeries comparing to 2-8% of patients after surgeries done to other sites. Apart from spinal anaesthesia (SA), additional peripheral nerve blocks could be the preferred choice where the region of surgery is analgised longer, therefore decreasing the consumption of opioids. It is intended that *n. ischiadicus* block (NIB) in combination with SA will provide additional analgesia in lower extremity surgeries. The objective of this study is to decrease the postoperative pain level after lower extremity surgeries below the knee using *n. ischiadicus* block.

Material and Methods. Prospective, randomized study was done in Hospital of Traumatology and Orthopaedics, Rīga, Latvia from September 2017 to February 2018. Patients were divided in two groups. I group - SA group - SA with *Sol. Bupivacaine* 2-4ml 0.5%. II group - NIB group - SA and NIB with *Sol. Ropivacaine* 20-40 ml 0.375%, according to patient BMI. Postoperatively all patients received pain therapy by a standardized multimodal analgesia protocol. Rescue medication was morphine 10 mg p/o (maximum dose - 40 mg p/o per 24 h). In the postoperative period patients self-completed a pain journal. The consumption of rescue morphine was documented. The data is statistically processed using SPSS program.

Results. 39 patients were enrolled to the study, SA group - 16, NIB group – 23. The subjective pain level right after the surgery in SA group vs NIB group: 0.13: 0. The subjective pain 2 hours the after surgery in SA group vs NIB group: 1.13:0.13 ( $p>0.05$ ). The subjective pain level 4 hours after the surgery in SA group vs NIB group: 2:0.87. The subjective pain level 6 hours after the surgery in SA group vs NIB group: 4.25:2.48 ( $p>0,05$ ). The subjective pain level 8 hours after surgery in SA group vs NIB group: 3.56:3.17. The subjective pain level 10 hours after surgery in SA group vs NIB group: 3:3.96. The mean time until rescue morphine in SA group was 7.95 hours; in NIB group – 6.69 hours ( $p<0.05$ ).

Conclusions. Spinal anesthesia in combination with *N. ischiadicus* block effectively reduces pain after lower extremity surgeries below the knee. *N. ischiadicus* block does not lower the consumption of morphine after surgery.

### **Dagnija Brutāne**

Riga Stradins university, Dzirciema street 16, Riga, dagnija.brutane@rsu.lv

## **SELF – MANAGEMENT APPROACH IN CARE OF PATIENTS WITH CHRONIC LOWER BACK PAIN**

Pain is one of the most challenging problems in medicine and biology. It is a challenge for both - the sufferer, who needs to learn to live with pain and for medical professionals, who needs to look for opportunities to help the sufferer. Back pain is the most common pain in society – studies, conducted in different countries, show different results, but around the world, it is about 12%. The treatment and care of back pain is about 25 to 50% of the work done by all pain clinics.

The aim of the study was to find out the self-management skills of chronic lower back pain patients, their willingness to take self-management approaches to their pain management and the need for self-management support.

The study used a mixed research method – a qualitative and quantitative research model combining methods for collecting and analyzing data:

Pain Stages of Change Questionnaire

Semi-structured interview with open questions

Demographic data questionnaire

Conclusions. Chronic lower back pain is more noticeable in ages in groups of 50 years of age, which is also consistent with literature data, however, there were too few participants in this study to argue with confidence.

Patients understand the causes of the onset of chronic lower back pain, but they do not have an understanding of the illness itself. This understanding is an essential part of successful treatment and care.

Mostly, medication and invasive manipulations are used, which does not require much personal input to the patient's own pain care.

The most important conclusion is the very high need for information on both the disease and its treatment and care methods, since it was recognized that the prescribed treatment was not applied directly due to lack of information.

The lack of motivation and correct attitude are also difficult to spot.

Patients with self-management approach in the care of chronic lower back pain are ready only at the level of reflection, but additional information and education could motivate them to become more active in self-management. Patients need support in acquiring and performing self-management skills, both informative and educational.

The study also showed that the higher the level of education of the respondent, the more willing it is to become involved in the development and implementation of self-management strategies in the process of the treatment and care of their chronic lower back pain treatment.

**Aija Stankeviča, Nadežda Vorobjova, Olga Sjomina, Anna Proskurina, Anatolijs Turonoks**

Riga Stradins University, Dzirciema street 16, Riga, Latvia,  
aija.stankevica@gmail.com, vorobjova.nadezda@gmail.com

University of Latvia, Raina blvd. 19, Riga, Latvia, Olga\_sjomina@inbox.lv, anna.proskr@gmail.com

Daugavpils Regional Hospital, Vasarnicu street 20, Daugavpils, Latvia, anatolij58@gmail.com

## **STAPHYLOCOCCAL TOXIC SHOCK SYNDROME: A CASE REPORT**

Introduction. Toxic shock syndrome (TSS) is acute multisystemic toxin-mediated condition that typically results in shock and multiorgan dysfunction in early period of the disease. This condition results from superantigens

produced by *Staphylococcus aureus* or A group *Streptococcus*. Prevalence of TSS is 0,3-1 cases per 100 000 and approximately 50% of TSS are associated with menstruation and tampon use. Clinical presentation includes fever, diffuse macular erythrodermia, desquamation of palms and soles 1-2 weeks after onset of rash, hypotension and multiorgan dysfunction. Mortality rates of TSS vary from 3% to 9%. We highlight a case report of a young female who presented with menstrual TSS.

Case report. An 18-year-old woman was admitted to the department of infectology with 12-hour history of high grade temperature up to 40°C, fatigue and vomiting. Patient had a menstrual bleeding and she used a tampon on the fourth day of bleeding for the first time in her life. Despite rehydration therapy patient remained hemodynamic unstable. Mechanical ventilation, vasopressor support, fluid resuscitation and treatment with broad-spectrum antibiotics was started, an acute kidney injury required renal replacement therapy using continuous veno-venous hemodiafiltration. Patient was diagnosed with staphylococcal toxic shock syndrome because a case met the laboratory criteria - blood cultures were negative, in the same time vaginal and nasal swabs showed a growth of *Staphylococcus aureus*. All five clinical criteria were present – fever, diffuse macular erythroderma on legs, desquamation, hypotension, multisystem involvement (gastrointestinal - vomiting at onset of illness, acute kidney injury, elevated liver enzymes, thrombocytopenia). The patient was discharged home following a 1-month hospital admission.

Conclusion. The early recognition and appropriate management of TSS reduces mortality and other complications.

**Aleksandra Borovika, Dr. med. Gunta Sumeraga**

*Rīga Stradiņš University, Dzirciema street 16, Rīga, Latvia*

*Pauls Stradins Clinical University Hospital, Pilsoņu street 13, Rīga, Latvia*

## TASTE DISORDERS AFTER TONSILLECTOMY

Introduction. Taste disturbance is an unusual complication of tonsillectomy (the surgical removal of the palatine tonsils) of which there are very few reports in literature (*C. Uzun et al 2003*).

Aim. To research a possibility of developing taste disorders as a complication of tonsillectomy among patients of Otolaryngology Clinic of Pauls Stradins Clinical University Hospital.

Materials and Methods. The study was conducted involving patients who had undergone tonsillectomy and healthy people who had not undergone tonsillectomy as a control group. All respondents were asked to fill out anonymous surveys. Testing of the sense of taste with chlorhexidine (0.025%; 0.05%), glucose (2%; 10%), citric acid (0.5%; 7.5%) and sodium chloride (0.5%; 2.5%) was also performed. The data obtained were statistically processed using IBM SPSS Statistics 22.0 software. The descriptive statistics and the measurement of agreement Kappa Coefficient were used.

Results. Tonsillectomy patients' complaints about taste disorders after procedure are more likely to be connected with taste perception problems, that patients reported before tonsillectomy (Kappa=0.577,  $p<0.001$ ). In the control group some participants also reported subjective taste disturbances but additional factors, e.g. an upper respiratory infection recently, were present.

The analysis of other factors, which possibly could cause taste disorders, showed no significant difference between respondents who had taste disorders and who did not have such ( $p>0.05$ ).

Conclusions. Taste disorders are uncommon complications among patients who undergo tonsillectomy in Pauls Stradins Clinical University Hospital's Otolaryngology Clinic. Complaints about a disturbed sense of taste are more likely to be connected with patients' previous taste perception problems rather than with tonsillectomy.

**Oļegs Ribakovs, Deniss Anufrijevs, asist. Guna Bērziņa**

*Rīga Stradiņš University, Faculty of medicine, Rīga, Dzirciema 16, rsu@rsu.lv*

*Rīga Stradiņš University, Department of Rehabilitation, Rīga, Anniņmuižas bulvāris 26a, rk@rsu.lv*

## THE ANALYSIS OF FACTORS INFLUENCING ANKLE TRAUMAS AMONG VOLLEYBALL PLAYERS IN LATVIA AT THE AGE 15-30 YEARS

Key words: Trauma, Volleyball, Ankle sprain.

Introduction. One of the most typical trauma in volleyball is ankle sprain. Injured athlete is unable to train efficiently and loses his professional skills. In addition, ankle sprain lowers the sportsman's living standards. Ankle sprains can range from mild to severe, depending on ligament damage level and how many ligaments are injured. There are some risk factors which affect frequency of ankle sprain among athletes, including elevated

BMI, ankle ligament complex instability, congenital ankle pathology and repeated ankle sprains. Ankle sprain prevention methods are limited and the most effective are : ankle ligament stretching, proprioception trainings, tapes and braces.

**Aim.** The aim of our study is to analyse the usage patterns and effectiveness of trauma prevention methods applied by volleyball players in Latvia in the age group between 15 and 30 years; both with and without ankle sprain traumas in anamnesis.

**Materials and methods.** We used standardized survey to question athletes about frequency of ankle sprains and its prevention method usage, which they used before and after traumas. In our study we included volleyball players from Rīga Stradiņš University, Latvia University and other volleyball teams from EVL (enthusiastic volleyball league) in the age group from 15 to 30 years.

Statistic data has been processed in Microsoft Excel and SPSS v22.0 softwares.

**Results.** The study included 58 volleyball players; 27 (47%) of included players were males. Average number of years playing volleyball was 8.3 years and did not differ between male and female players ( $p>0.05$ ).

Out of 58 athletes 32.2% had no traumas playing volleyball, while 67.8% had traumas. From athletes with traumas, 70% had ankle sprains and 30% had other types of traumas. We established that trauma frequency and type was not associated with players sex ( $p>0.05$ ).

For trauma prevention, ankle ligament stretching were used by 57.6% and proprioception trainings, tapes, braces and other kind of prevention methods were used by 6.9%; 35.5% of athletes did not use any prevention methods to control trauma rate.

Out of those who used prevention methods, 60.5% use prevention methods before every training or volleyball game, 13.1% - use them often, 21.0% - use them rarely and 5.4% only use prevention methods after trauma. The choice of trauma prevention method and regularity of its use did not differ between sexes ( $p>0.05$ ).

Out of those who did not use any prevention methods, 63.6% of athletes had traumas. Compared to those who used stretching as prevention method before traumas, only 17.6% athletes had traumas ( $p=0.008$ ,  $OR=0.12$ ,  $95\%CI(0.03-0.56)$ ). Other methods were only used by two players and were not included in the analysis.

**Conclusions.** Our study shows that stretching is the most commonly used ankle sprain trauma prevention method in LV EVL and has high effectiveness rate.

***Deniss Moisejevs, Maija Eglīte***

*Rīga Stradiņš University, Dzirciema street 16, Riga, Latvia, rnhmail@inbox.lv, Maija.Eglite@rsu.lv*

## **THE COMPARISON OF CARPAL TUNNEL SYNDROME IN BOWED STRING INSTRUMENT TEACHERS AND PLUCKED STRING INSTRUMENT TEACHERS AND MUSICIANS IN LATVIA**

**Key words:** Carpal tunnel syndrome, occupational medicine, music teachers, musicians.

**Introduction.** Carpal tunnel syndrome (CTS) is a medical condition due to compression of the median nerve in the wrist at the carpal tunnel. People with CTS may be suffering from pain, numbness, tingling, or burning sensations in the thumb and fingers. String music teachers are in high risk group of developing CTS due to increased use of their hands.

**Aim.** The goal of the research is to compare the prevalence of clinically diagnosed carpal tunnel syndrome and compression symptoms of the hand in guitar music teachers (plucked string instrument) and other string instrument teachers (such as violin, viola, cello, double bass). Despite that both groups use string instruments, the pressure on wrist is different using bowed and plucked instruments.

**Materials and methods.** To investigate this matter, questionnaires were used, in which the music teachers were asked questions about first symptoms, chronic diseases, working experience, how many hours they spend playing on the musical instruments every day and others. Physical tests used on symptomatic patients - Phalen's sign test and Tinel's sign test. Data were processed using MS Excel 2010 and SPSS 20.

**Results.** Among 98 teachers 57 played on plucked string instruments and 41 played on bowed string instruments. Age ranged from 21 to 70 years. Average working and instrument playing experience - 21 year with 3-4 hours of instrument playing per day. From 41 bowed string instrument teachers - 12 had subjective symptoms and 11 of them positive compression test. From 57 bowed instrument teachers 6 had symptoms, but only 4 of them also had positive compression test. This allows to hypothesize, that percentage of bowed instrument music teachers having potential carpal tunnel syndrome (26.8%) is much higher, than percentage of plucked instrument music teachers having CTS(7.0%). Unfortunately, these data are still higher than official registered CTS numbers in Latvian workers(0.044%-0.049%)

**Conclusion.** String music instrument teacher is clearly a profession with a high risk of having a carpal tunnel syndrome or other compression neuropathy. Results show us that bowed string instrument teachers are in higher risk group of having carpal tunnel syndrome than plucked instrument teachers.

**Linda Rubene, prof. Elmārs Rancāns**

*Rīga Stradins University, Dzirciema street 16, Rīga, Latvia, lindarubene93@gmail.com*

*Rīga Psychiatry and Narcology Centre, Tvaika street 2, Rīga, Latvia, elmars.rancans@rsu.lv*

## **THE FREQUENCY OF DEPRESSION AND ANXIETY IN WOMEN OF REPRODUCTIVE AGE WITH PSYCHIATRIC DISORDERS AFTER DELIVERY**

Key words: Psychiatric diseases, pregnancy.

Introduction. Disturbances in mental health in the perinatal period can cause negative personal and child developmental outcomes. There are several risk factors to take in to consideration and one of the major ones is previous psychiatric disorders.

Aim. To find out the frequency of patients with different psychiatric disorders in the past or at the moment of the interview at the Rīga Maternity Hospital and to assess their depression and anxiety rates shortly after delivery and 6 weeks later.

Materials and methods. The study was performed during the period 10 months in 2017 in Rīga Maternity hospital including 235 women in the reproductive age range. Data collection was based on questionnaire form including the M.I.N.I (mini-international neuropsychiatric review) and questionnaires to assess depression and anxiety symptoms – the Edinburgh Postnatal Depression Scale (EPDS), Patient Health Questionnaire (PHQ-9) and General Anxiety Disorder (GAD-7). After 6 weeks there was an interview with the EPDS, PHQ-9 and GAD-7 questions again (215 women responded to the second interview). Data was processed in Microsoft Excel.

Results. Altogether 75 (31,9%) of the women presented with some kind of psychiatric disorder according to M.I.N.I. 43 (18,3%) of the women presented with depression at the moment of the interview according to EPDS and 21 (8,9%) according to PHQ-9. 22 (8,9%) of the women presented with anxiety according to GAD-7. Respectively 23 (53,5%), 14 (66,6%) and 12 (54,5%) of those women also had a psychiatric disorder according to M.I.N.I. After 6 weeks only 7 (3%) women presented with depression according to EPDS and 6 (2,6%) according to PHQ-9. According to GAD-7 3 (1,3%) women had anxiety in the time of the second interview.

Conclusion. This study shows that over 30% of the women who presented at the Rīga Maternity hospital have had psychiatric disorders. Analyzing the depression and anxiety scales in the moment of the interview we can conclude that patients with previous psychiatric illnesses have only slightly higher depression symptoms. During the second interview there is a decline in both depressive and anxiety symptoms in this group.

**Kristiāna Čačka, Evelīna Korsaka, Līga Gaisiņa, Ingūna Lubaua**

*Rīga Stradiņš University, Dzirciema street 16, Rīga, kristiana.cacka@gmail.com, ekorsaka@gmail.com, liga.gaisina@gmail.com*

*Children's Clinical University Hospital, Vienības gatve 45, Rīga, inguna.lubaua@rsu.lv*

## **THE IMPACT OF DOWN SYNDROME ON THE EARLY POSTOPERATIVE PERIOD IN PATIENTS WHO HAD UNDERGONE AVSD CORRECTIVE OPEN HEART SURGERY TILL THREE YEARS OF AGE**

Key words: AVSD, early postoperative period, Down syndrome.

Introduction. Down syndrome (DS) is the most common genetic disorder in children. An atrioventricular septal defect (AVSD) is the most frequent congenital heart defect found in children with DS. The majority of cases of AVSD are suitable for surgical intervention.

Aim. The aim of this retrospective study was to evaluate the impact of DS on the early postoperative period in patients who had undergone AVSD correction and compare results with patients who do not have DS.

Materials and methods. A retrospective study was carried out using the data of 51 patients who had undergone AVSD corrective open heart surgery till three years of age between the years 2007 and 2016 at the Children's Clinical University Hospital. The data were collected from medical histories. The analysis of gathered data was carried out using IBM SPSS 23.0.

Results. A total of 51 patients participated in the study. Mean patient age was 10.75 months. 34 of all patients had DS. 9 patients died. Out of all death cases 7 during the early postoperative period. 6 of the death cases were patients with DS. The early post-operative period was complicated in 56.86% of all patients. The most common reason was infection 33.03 % (n=9), 7 of patients were with DS (p>0.999); atelectasis in 17.24 % (n=5)

( $p=0.064$ ), 4 of them with DS, 16.66 % ( $n=7$ ) patients experienced AV block, 4 of these patients were with DS ( $p=0.595$ ). Mean drainage time was 7.08 days, in a patient group with DS -8.42 days ( $p=0.140$ ). Antibiotics were used 10.81 days on average, patients with DS -11.83 days ( $p=0.232$ ). Average time spent in hospital was 22 days. Patients with DS spent 24.46 days ( $p=0.277$ ).

Conclusions. There was no statistical significance between the groups. Down's syndrome is not associated with a longer time spent in hospital, postoperative drainage and antibiotics usage time, higher risk of complications, including infections, atelectasis, AV block.

**Unda Kaļķe, Renāte Kaminska, Sigita Hasnere**

*University of Latvia, Riga, Latvia, unda.citur@gmail.com*

*Pauls Stradins Clinical University hospital, Riga, Latvia, sigita.hasnere@gmail.com*

## **THE IMPACT OF TUMOUR INVASION DEPTH ON MEDIAN SURVIVAL IN PATIENTS WITH STAGE IV GASTRIC CANCER**

Introduction. Stomach cancer takes the fourth place in cancer-related death. In TNM classification T describes the tumour invasion in stomach layers. In stage T1 tumour has started to grow into the wall and in T4 the tumour has grown through the outer lining of the stomach. At the stage IV of gastric cancer the typical treatment is symptomatic therapy to improve quality of life, palliative chemotherapy and radiation therapy that can reduce tumour's size. 5 year survival rate in patient with IV stage of gastric cancer is 5%.

Aim. To determine if the invasion depth of the tumour impact the median survival in patients with stage IV gastric cancer.

Materials and Methods. A retrospective study was performed. Was analysed the impact of tumour invasion depth on median survival in patients with stage IV gastric cancer. The data of histologically confirmed gastric carcinoma were obtained from clinical university hospital from year 2016-2017. Data was analyzed by SPSS.

Results. In total were identified 81 patients, 31 patients had stage IV. 77% ( $n=24$ ) patients with stage IV received symptomatic treatment. In this group of patients T2 carcinoma was confirmed in 9% ( $n=2$ ) of cases, T3 – 25% ( $n=6$ ) and T4 in 67% ( $n=16$ ) of patients. Patients who received symptomatic treatment with T2 tumour survived 27 days, T3 tumours- 41 days and T4 - 26 days ( $p=0.807$ ). 23% ( $n=7$ ) patients with stage IV gastric cancer received palliative chemotherapy. 14% of patients had T3 and 86% had T4. Patients who received palliative chemotherapy with T3 median survival was 47 days, with T4 - 327 days ( $p=0.014$ ).

Conclusions. Tumour size did not impact median survival in patients with stage IV gastric cancer and symptomatic treatment. Statistically significant longer term survival was observed in patients with T4 tumour, who received palliative chemotherapy, however the number of patients was too small to suggest that patients with T4 tumour have longer survival rates than patients with T3 tumour.

**Marta Gebele, Artūrs Miksons**

*Riga Stradiņš University, Dzirciema str. 16, Riga, Latvia, marta.gebele@gmail.com, arturs.miksons@rsu.edu*

## **THE INCIDENCE OF BURNOUT SYNDROME AMONG YOUTH CENTRE STAFF**

Key words: burnout, youth centre.

Introduction. The burnout syndrome occurs due to an increased emotional burden, stress conditions in the workplace. Because of the syndrome, the quality and performance of the work are sharply reduced, the person becomes demotivated and emotionally stunned, unable to fully perform his duties. [Chris Loyd, Robert King & Lesley Chenoweth, 2002]

The staff of youth centres plays an important role in society, because it ensures the integration of young people into society, involving them in social activities and organizations and helps to find solutions to the problems of young people. There are currently 160 youth centres in Latvia. [LR Ministry of Education and Science]

The aim. The purpose of the study is to investigate the incident of burnout syndrome among youth centre staff.

Materials and methods. To find out, the author used an anonymous Google Forms computerized questionnaire, which consisted of demographic questions and the Maslach Burnout Syndrome Scale. The questionnaire was sent to all youth centres' e-mails that are available at [www.jaunatne.gov.lv](http://www.jaunatne.gov.lv) The data was compiled using statistical calculations using the following programs: Microsoft Excel; IBM SPSS Statistics 20. The data collection period was from December 2017 until January 2018.

Results. The study was attended by 97 respondents, of which 83 women and 14 men. The median age for women was 31 and 28 for men. Analysing the Maslach Burnout Syndrome Scale subgroups: emotional burnout- with a

low emotional exhaustion level of 32.0%, an average of 42.3% and a high of 25.8%, a depersonalization-with a low of 64.9%, an average of 20.7% and a high of 14.4%, personal success- with a low personal success rate is 30.9%, an average of 29.9%, high of 39.2%. No statistically significant difference between genders and age groups has been found.

Conclusions. From the results of the study, it can be concluded that the burnout syndrome symptoms in this population is present. The results indicate that about one third of the respondents have a medium to high-level burnout syndrome.

***Viola Bule, Karlīna Elksne***

*Rīga Stradins University*

## **THE POTENTIAL BENEFITS OF PARTNER PARTICIPATION AT CHILDBIRTH**

The beginnings of modern family involved childbirth in the developed Western countries began in the 1950s, but such practice has entered the Latvian maternity ward around the end of the 90's. Now, partner participation in labor is a relatively common phenomenon. While preparing for childbirth, every couple have rights to decide whether the partner is going to participate in childbirth, assessing the benefits and disadvantages. Aim. To clarify the profile of couples who choose family childbirth and find out the motivation for those women who do not want their partners to participate in labor; to determine the potential short-term and long-term benefits.

Materials and methods. A longitudinal prospective study took place in Rīga Maternity Hospital from November 2017 until March 2018. In this study couples during labor were involved. For the control group women who gave birth without partner support were selected. Participants completed a questionnaire during the first period of labor and two months after the childbirth. The data were collected and processed with Microsoft Excel 2016, SPSS 22.0 programmes.

Results. In the focus group (group F) 33 couples are involved, the control group (group C) consists 14 women. The mean age for women in the group F is  $29 \pm 4.7$  (SD) years, in the C group  $31 \pm 3.9$  (SD) years. 55% of the women in group F and 21% in C group were nulliparous. 36% of women in F group and 21% of women in C group had epidural anaesthesia. The need for childbirth stimulation in the F group was 27%, in the C group - 50%. The c-section were performed in 12% of the women in F group and 14% of the women in C group. Episiotomy has been performed in 27% in F group and 14% in the C group. The most common reason (45%) why women wanted their partner participation during childbirth was to receive emotional support. While investigating the reasons for reluctance of women in the presence of partner at childbirth, in 47%, women believed that men shouldn't participate in such physiological process. No one of the men has confirmed that childbirth has changed the woman's sexual attractiveness. 65% (n = 13) of women noted that the couple relationship after the childbirth became closer. The second survey, revealed that 75% (n = 15) of women from F group received emotional support. As the most common benefit of participation in childbirth 87% (n = 13) of men recognize the opportunity to show respect and concern to their women.

Conclusions: 1) the most significant difference that determines the choice of family labor is women's parity; 2) Despite the partner's support, the use of epidural anaesthesia has not been decreased; 3) Partner participation in childbirth significantly reduced the need for childbirth stimulation; 4) Family labor experience positively influenced couples' relationships and has not affected women's sexuality.

***Rita Partojeva, Anete Kursīte, Guna Laganovska***

*Rīga Stradins University, Dzirciema street 16, Rīga, Latvia, rita.parto@gmail.com*

*Department of Ophthalmology, Pauls Stradins Clinical University Hospital, Pilsoņu street 13, Rīga, Latvia*

## **THE PREVALENCE OF DEMODEX SPP. IN PATIENTS WITH BLEPHARITIS**

Key words: blepharitis, Demodex spp., ocular demodicosis.

Introduction. Blepharitis is chronic inflammation of the eyelid. One of the possible cause of blepharitis is *Demodex* eyelash mites. The pathogenic role of *Demodex* mites remains unclear because they are found on the lashes of asymptomatic individuals.

Aim. To evaluate the prevalence of *Demodex* mites infestation of eyelashes in patients with blepharitis, its effect on ocular symptoms and association with comorbidities.



Materials and methods. This study was conducted at the Pauls Stradins Clinical University Hospital. 22 patients with blepharitis were included in research and surveyed about their comorbidities and ocular symptoms. All patients underwent random epilation of four non-adjacent lashes per lid for each eye. The lashes were examined for *Demodex spp.* under the light microscope. Collected data was analysed using IBM SPSS 25.0.

Results. A total of 22 patients were included in this study from which 18.18% (n=4) were male and 81.82% (n=18) female. The mean age was 66.91±8.00 years. The prevalence of *Demodex spp.* was 36.36% (n=8). The mean number of symptoms in *Demodex*-positive group was 6.63±1.2 and 4.64±1.2 in *Demodex*-negative group. The most common symptoms for *Demodex*-positive group were redness of the eyelid 75% (n=6), foreign body sensation 75% (n=6), itching 75% (n=6), eye redness 75% (n=6), cylindrical dandruff 62.50% (n=5) and blurred vision 62.5% (n=5). All patients with *Demodex* had complaints in both eyes but 2 *Demodex*-negative patients had symptoms only in one eye. Some comorbidities were more common for patients with *Demodex*: diabetes mellitus, hyperthyroidism, dry eye syndrome, dermatitis, asthma, allergies.

Conclusion. *Demodex spp.* may be associated with more severe blepharitis. For patients with blepharitis and endocrine or allergic diseases *Demodex spp.* caused blepharitis could be considered.

***Elina Silina, Arturs Viksne, Arnis Engelis, Aigars Petersons***

*Riga Stradiņš University, Dzirciema str. 16, Riga, Latvia, sil.elina.23@gmail.com*

*Children's Clinical University Hospital, Vienības gatve 45, Riga, Latvia, arturs.viksne@rsu.lv*

## **THE PROFILE OF CHRONIC OSTEOMYELITIS CASES AFTER ACUTE HAEMATOGENOUS OSTEOMYELITIS IN CHILDREN**

Key words: Acute haematogenous osteomyelitis, chronic osteomyelitis, children.

Introduction. Acute haematogenous osteomyelitis (AHO) can transit into a chronic form and increase necessity for repeated hospitalizations and surgeries. In order to avoid AHO transition into a chronic form analyze of chronic cases are essential to understand the current situation.

Aim. The aim was to determine the epidemiology, etiology and management of chronic osteomyelitis cases in children after AHO.

Materials and methods. A retrospective analysis of hospitalized patient medical history in a ten-year period from 2008 to 2017, admitted to a single reference center with diagnosis of chronic osteomyelitis (CO) after AHO episode. Patients with clinical signs of CO after AHO in anamnesis were included in the study. Age, localization of infection, etiological agent, length of complaints before starting treatment and the following count of surgeries were studied. Data were analyzed using IBM SPSS 22 nonparametric statistics and Mann-Whitney test.

Results. A total of 282 children with AHO were hospitalized during the study period. From those 25 (9 %) patients developed chronic osteomyelitis. The most common age groups with CO in histogram were divided in children aged <1 years old or at 12-15 years. The most frequent localization of the disease in 28 % was in femur and the same count in tibia and fibula also. The most common etiologic agent in 60 % (15/25) was identified *Staphylococcus aureus*. The time from onset of symptoms to presentation for a medical care less than 24 hours was in 4 % (1/25), 24-72 hours in 52 % (13/25), more than 72 hours in 44 % (11/25). Duration of antimicrobial therapy in acute episode less than 4 weeks was in 33 %, but at least 4 weeks or more was in 67 %. Overall were performed 66 surgeries, average count was 2,6 for 1 patient, in a range from 1 to 8. Surgical procedure performed in the first episode of CO was followed by on average 3 operations, compared to 2 surgeries if there have not been any intervention.

Conclusions. In a ten-year period were identified less than 10 % or 25 cases of chronic osteomyelitis after acute haematogenous osteomyelitis. CO cases are statistically more common in patients aged under 1 year or at 12 to 15 years.

***Ruslans Bepjatijš***

*Daugavpils University, Parādes street 1, Daugavpils, veselibadpip@inbox.lv*

## **THE ROLE OF NUTRITION IN PROMOTING HEALTHY LIFESTYLE IN SCHOOLS**

Nutrition has a crucial role in improving health indicators. A balanced diet with a high nutritional value is needed to ensure the growth and the development of the body. In 2012, a Cabinet of Ministers Regulation (Nr. 172 standards for healthy meals at kindergartens and schools) was adopted, prohibiting distribution in institutions of education food products that contains certain food additives. To promote the accessibility of healthy food in institutions of education, in 2004 with the support of the EU the program "School Milk" has

been initiated in order to supplement children's daily intake of milk products in kindergartens and school. In the 2010-2011 school year the program "The School Fruit", was introduced, with the aim of promoting higher rates of consumption in fruit and vegetables among school students. To ensure balanced nutrition for pupils, beginning on 1 November 2017, pupils have been receiving free lunch.

A study was conducted „School Nutrition 2017” in which 5111 students in grades 1 to 12. and 3218 parents in 18 Daugavpils comprehensive schools reported their eating behavior. 71% of children ate breakfast daily. A total of 46% of students eat sweets at least once per day. Fish and shellfish are good sources of many vitamins, minerals and protein and yet 23% of school students do not consume fish. 25% of children and adolescents ate potato chips 3 or more times a week. 25% of children and adolescents ate mayonnaise 3 or more times a week. 31% of children ate ketchup 3 or more times per week. 15% of children and adolescents drank one or more cups of soft drink daily. However, only 60% of parents consider the food that they consume daily to be generally healthy, but 40% admit that their daily diet is not healthy.

During the teenage years the need for nutrients physiologically increases, and the nutritional value and the balance of food consumed is important. School that support healthy food choices can help students do better in school and be healthier over all. Schools are an ideal place for students to observe and learn about healthy eating. Educating students and their parents on issues of healthy nutrition is very important, thereby promoting the choice of a healthy diet among school students.

***Kateryna Bulavkina, Lauma Vasilevska, MD Ilze Meldere***

*Riga Stradiņš University, Faculty of Medicine, Dzirciema street 16, Riga Latvia, katja\_bulavkina@mail.ru, lauma.vasilevska@gmail.com*

*Children's Clinical University Hospital, Torņakalna street 45, Riga, Latvia, ilze.meldere@rsu.lv*

## **TRACHEAL CLEFT: A CASE REPORT OF OPITZ G/BBB SYNDROME**

Key words: Tracheal cleft, Opitz G/BBB syndrome, newborn.

Introduction. The Opitz G/BBB syndrome is a rare congenital midline malformation syndrome diagnosed on the basis of clinical findings. It is characterized by laryngotracheoesophageal abnormalities, hypertelorism, hypospadias, imperforate anus and developmental delay. Molecular genetic testing is difficult due to the complicated etiology.

Case report. A ten-day old male infant was transferred to Children's Clinical University hospital (CCUH) with right sided pneumonia and esophageal fistula suspecta. He was born at 39 gestation weeks via Caesarian section with Apgar score 8/9. Examination later revealed severe respiratory insufficiency, no swallowing movements, salivation. Ectopic anus, hypospadias, hypertelorism also remarked. Sigmoidostoma duplex was made. Videobronchoscopy and EGDS revealed congenital laryngeal anomaly, tracheal cleft, anomaly of bronchi and tracheal bronchomalacia. In a CT scan no posterior wall of trachea and anterior wall of esophagus are differentiated. Tracheal cleft type IVa confirmed. Due to the rare congenital pathology, consilium was called to decide further tactics. The surgery planned in Finland, Helsinki as no previous surgery of this kind had been done in Latvia. Karyotyping and FISH 4q was performed; a normal male karyotype (46, XY) was reported and Opitz G/BBB syndrome suspected. No chromosomal abnormalities reported. At 2 months age a tracheal cleft closure in cardiopulmonary bypass and tracheostomy was performed in Helsinki. Discharged from the hospital 2 months after surgery; prolonged stay due to opiate abstinence, complex care, tracheobronchomalacia, oxygen dependency, feeding difficulties.

Conclusions. The phenotype of the infant matches the criteria for Opitz G/BBB syndrome. It is a rare pathology, which demands complex care because of tracheostoma, sigmoidostoma, gastrostoma, several surgeries and an increased risk for hospital-acquired infections.

***Linda Mežmale, Anna Krīgere, Aldis Puķītis***

*University of Latvia, Faculty of Medicine, Raina Blvd. 19, Riga, mezmale.l@gmail.com, anna.krigere@gmail.com*

*Pauls Stradins Clinical University Hospital, Pilsonu street 13, Riga, aldis.pukitis@lu.lv*

## **TREATMENT APPROACHES OF GASTROESOPHAGEAL REFLUX DISEASE IN GENERAL PRACTICE**

Key words: GERD, PPI, lifestyle changes.

Introduction. Treatment of gastroesophageal reflux disease (GERD) is based on combination of diet, lifestyle recommendations and effective medicine. If any of the components are missing, the effectiveness of treatment

drops.

**Aim.** To evaluate pharmacological treatment and lifestyle recommendations for patients with GERD prescribed by general practitioners in Latvia.

**Material and methods.** General practitioners (GP) registered in The National Health Service database filled quantitative survey questionnaire; 201 completed replies were received. Statistical analysis was performed with Microsoft Excel and SPSS 22.0 by using Pearson's chi-squared test. The level of statistical significance was set at  $p < 0.05$ .

**Results.** Most GPs from Riga 29%, Kurzeme 30% regions first line choice is esomeprazole ( $p = 0.0000$ ). GPs in Vidzeme 34%, ( $p = 0.0001$ ) and Zemgale 33%, ( $p = 0.0000$ ) regions choose pantoprazole, but in Latgale 37%, ( $p = 0.0063$ ) omeprazole. Use of  $H_2$  antagonists was low in all groups. First choice antacids in all Latvian regions were aluminium and magnesium based. Most popular prokinetic in Riga 39% and Kurzeme 34% regions was domperidone ( $p = 0.0000$ ), but in Zemgale 39%, Vidzeme 42% and Latgale 36% was metoclopramide ( $p = 0.0000$ ). The most popular lifestyle recommendations were – stop smoking, reduce weight, avoid eating before lying down, avoid overeating. Majority recommended to avoid spicy foods, avoid sweets and to avoid citrus fruits.

**Conclusions.** Our data showed existing differences in pharmacological treatment, diet and lifestyle recommendations for GERD patients in different regions of Latvia. The decision making for PPI varies between esomeprazole, pantoprazole and omeprazole. The most used antacids were aluminium and magnesium based, and the most used prokinetics were metoclopramide and domperidone.

***Andris Romašovs, Egils Vjaters, Elina Frolova***

*University of Latvia*

*Riga Stradins university*

## **UPGRADING AND DOWNGRADING OF GLEASON SCORE IN PATIENTS WITH PRE-OPERATIVE BIOPSY AFTER RADICAL PROSTATECTOMY**

**Background.** Prostate cancer is one of most common cancer worldwide and second most common in men. In 2012 prostate cancer became most common cancer in Europe in a male population. In Latvia between 2012 and 2016 – 5134 men were diagnosed with prostate cancer and 1969 deaths occurred during this period.

**Purpose.** Main purpose of this study is to investigate the rate of upgrade and downgrade of Gleason score (GLS) in patients who had pre-operative prostate biopsy comparing it to radical prostatectomy specimen.

**Material and methods.** Study took place at Paula Stradina clinical university hospital, Pilsonu street 13, Riga, Latvia. Design of the study is a retrospective cohort. 323 patients enrolled in this study who received radical prostatectomy (RP) between 2012 and till June 2017. All patients underwent pre-operative biopsy. Inclusion criteria were: more than eight needle core biopsies, no regional or local metastasis. Information about: patient age, date of RP, RP specimen GLS, tumour percentage in RP specimen, prostate weight and volume, PSA before biopsy, count of needle core biopsies performed, biopsy GLS, count of positive needle core biopsies and percentage of tumour in each positive needle core biopsy were obtained using medical case record. All patients are divided into groups for comparison. All data were analysed using IBM SPSS 22. To analyse information non-parametric tests were performed. For nominal variables, Pearson Chi-square was applied. For statistical significance, a p-value of  $< 0.05$  was used.

**Results.** Upgrading of Gleason score was noted in 52.7% ( $N = 165$ ) of cases and a downgrade in 8% ( $N = 25$ ) ( $p = 0.04$ ). From 2012 till 2014 upgrade was made in 59.7% and a downgrade in 9.2% of cases. From 2015 till June 2017 number of cases with an upgrade in Gleason score after radical prostatectomy declined till 41.2% and downgraded to 6.1%. A number of positive needle core biopsies lowered chance of upgrading after RP ( $p = 0.041$ ). It was also concluded, that time between biopsy and surgery impacted upgrading frequency. Patients who performed surgery earlier had a lower chance of upgrade ( $p = 0.022$ ).

**Conclusions.** Gleason score differs between biopsy and radical prostatectomy specimen. It is challenging for the urologist to guide the patient through active surveillance and to make a decision when it's time to perform surgery based on PSA, biopsy GLS and digital rectal examination due to frequent upgrade in GLS after RP.

***Andris Romašovs, prof. Egils Vjaters, Elina Frolova***

*University of Latvia, Riga, Latvia*

*Riga Stradins University, Latvia*

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**Lita Gipsle**

*Riga Stradins University, Dzirciema str. 16, Riga, Latvia, lita.gipsle@gmail.com*

## **UPTAKE OF SCREENING FOR COLORECTAL CANCER IN RURAL PRIMARY CARE PHYSICIAN PRACTICE IN LIZUMS OVER 2013–2017**

**Key words:** uptake, screening, colorectal cancer

**Introduction.** Colorectal cancer (CRC) screening is a key health care tool as it decreases mortality rates and reduces all types of health care costs. However, uptake rates of the screening population in Latvia are low (only 7% of those at risk, while in Europe – 45% of the screening population use this opportunity).

**Aim.** The aim of the study was to compare the results of CRC screening program in rural primary care physician practice in Lizums with data from national sample of CRC screening in Latvia over 2013-2017.

**Materials and methods.**

In retrospective longitudinal study data of 385 patients from rural general practitioner's medical documentation were analyzed: 158 men un 227 women, aged between 50-74, participated in CRC program and completed hemocare fecal occult blood tests between 2013 and 2017.

**Results.** The uptake gradually increased with increasing age up to 65–69 and was lower in men than women, however statistically significant difference ( $\chi^2(2, N = 385) = 8.905, p = .012$ ) occurs only in 2015. Over 2013-2017 the proportion of uptake (completed tests) in rural primary care physician practice in Lizums was ranging from 62.6% to 71.6%, however, only 10.1% to 29, 2% of the screening population participated (were invited) in the screening. Compared to the national data (2013-2017), where the uptake in CRC screening program varied from 9.6% to 13.4%, the level of uptake in rural practice is still higher.

**Conclusions.** Personalized approach and working in a team improve the rate of CRC screening. The present study confirms previous findings that the role of primary care physicians in CRC screening is crucial.

**Aleksandra Bukina, Anna Mihailova**

*Rīga Stradiņš University, Dzirciema street 16, Riga, Latvia, aleksandrabukina@inbox.lv*

## UREAPLASMA AND MYCOPLASMA INFECTIONS ASSOCIATION WITH DIFFERENT TYPES OF ARTHRITIS

Key words: ureaplasma, mycoplasma, seronegative spondyloarthropathies, reactive arthritis.

Introduction. Ureaplasma and mycoplasma infections are common around the world. These infections are mostly asymptomatic, only a small part have clinical symptoms. Associations were detected between mycoplasma and ureaplasma infections and rheumatoid arthritis and seronegative spondyloarthropathies, these bacteria can cause reactive arthritis. However, there are few studies about this problem and further research is required.

Aim. Investigate the association of ureaplasma and mycoplasma infection with different types of arthritis.

Materials and methods: The study was carried out in the "ORTO clinic". Clinical data were collected from outpatient cards, which included patient's sex, age, diagnosis, results of ureaplasma and mycoplasma culture tests, HLA-B27 blood test.

Results. 1377 patients with arthritis were examined. From all of them 68% are female and 32% - male; 64,8% of patients were under 50 years old and 35,2% - over 50. The patient's average age was 44 years. From all of patients the ureaplasma culture was positive in 21,6%, mycoplasma culture - in 17,9%. The presence of ureaplasma and mycoplasma infection was compared in four groups of diagnosis: seronegative spondyloarthropathies, rheumatoid arthritis, osteoarthritis and crystal arthropathies. More frequently the positive culture was detected in patients with seronegative spondyloarthropathies: ureaplasma was detected in 24,4% of cases, mycoplasma - in 19,8%. In patients with rheumatoid arthritis ureaplasma culture was positive in 15,3%, mycoplasma - in 16%. In patients with osteoarthritis and crystal arthropathies positive culture was less common. Patients with osteoarthritis had ureaplasma and mycoplasma positive culture in 5,2% of cases, but patients with crystal arthropathies had ureaplasma positive culture in 8,9% and mycoplasma - in 4,4%. From all of seronegative spondyloarthropathies positive culture more often was detected in patients with reactive arthritis: ureaplasma was positive in 26,1% and mycoplasma in 20,8%. The results in ankylosing spondylitis patients and psoriatic arthritis were the same: in patients with ankylosing spondylitis ureaplasma was positive in 16% and mycoplasma in 14,5%. In patients with psoriatic arthritis both bacteria were positive in 14,7%.

Conclusions. Ureaplasma and mycoplasma infections have association with inflammatory arthropathies. These bacterial infections are most common in patients with seronegative spondyloarthropathies. From seronegative spondyloarthropathies ureaplasma and mycoplasma infections are most common in patients with reactive arthritis. In patients with osteoarthritis and crystal arthropathies ureaplasma and mycoplasma infections are rare.

**Elīze Brokāne, Vija Veisa**

Riga Stradins University, Department of Gynecology and obstetrics, Latvia  
Riga Maternity Hospital, Latvia

## VAGINAL BIRTH AFTER CESAREAN SECTION

Introduction. In Latvia, out of 20,094 births in 2013, 21% (n=4,304) were cesarean sections, in 2016 there were 21,646 births, of which 21.5% (n=4663) were cesarean sections. Part of the reason for the increase is a decline in the rate of vaginal birth after cesarean section.

Aim. The aim of this study was to evaluate the choice of delivery and the success rate of vaginal birth in patients with one previous cesarean section.

Materials and methods. Retrospective study was carried out using patient data in years 2013, 2016 and 2017 from Riga Maternity Hospital. Data were analysed using Microsoft Excel and SPSS 21.

Results. A total of 822 cesarean sections were performed in patients with a history of one previous uterine scar in 2016 and 2017, 416 and 349, respectively. In 2013 there were 458 cesarean sections in patients with one previous uterine scar. Most frequent indications for repeat cesarean was: a history of uterine scar (n = 553), premature rupture of membranes (n = 53), patient refuses to give birth vaginally (n = 34), uterine dysfunction (n = 21), malpresentation (n = 19), premature birth (n = 15), fetal distress (n = 15), painful scar area (n = 4), uterine dehiscence (n = 5), twin pregnancy (n = 6), *in vitro fertilization* (n = 6), *placenta praevia* (n = 5), ultrasound scan of a thin scar (n = 3). In 2016 and 2017, out of 214 cases there was 157 cases with successful vaginal birth and 57 cases underwent a repeat emergency c-section. In 2013 out of 58 cases there was successful vaginal delivery in 36 cases, repeat emergency c-section in 22 of cases. Uterine rupture is the main complication of vaginal delivery after a caesarean section: in 2013 - in 0 cases, in 2016 in 4 cases, and in 2017 - 0.

Conclusion. Patients with one previous uterine scar who try to give birth vaginally have a high success rate. Comparing the year 2013 with 2016 and 2017, there is an increase in trial of labor in patients with one previous cesarean section, as well as successful vaginal delivery.

DRAFT

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# KVARTĀRVIDES PĒTĪJUMI

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## RESEARCHES OF QUATERNARY ENVIRONMENT

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**Ēriks Ošmjanskis, Juris Soms**

*Daugavpils University, Parādes street 1, Daugavpils*

### **A MULTIPROXY STUDY OF GLACIOAQUATIC SEDIMENTS FROM THE AUGŠDAUGAVA SPILLWAY VALLEY**

The main objective of this study was to elucidate the glaciofluvial processes of sediment deposition in selected sites in the Augšdaugava spillway valley. The interrelationships between sediment properties and local paleoenvironmental conditions which determined deposition were investigated based on multiproxy records, i.e., Folk and Ward (1957) indicators of particle size distribution and microtextures of quartz grains. Analysis of the grain size composition of samples has been carried out with a laser diffraction particle size analyzer Malvern MASTERSIZER 2000. Subsequently obtained records allowed the calculations of the granulometric indicators, i.e., the mean grain size, the sorting and the skewness. For this purposes, GRADISTAT module was applied. The microtextural analysis of quartz grains has been performed by scanning electron microscopy. Prior to obtaining micrographs of quartz grain by SEM, chemical pre-treatment of samples by citrate-bicarbonate-ditionate method has been performed to clean carbonates and iron oxide coatings from the grain surfaces. After that sand samples were washed thoroughly with deionised water in order to remove any remnants of chemicals that could crystallise on the surface of quartz during the drying. The data complex obtained in the result of multiproxy studies of glacioaquatic sediments indicates significant changes in transport history and depositional conditions during the development of the Augšdaugava spillway valley. Despite the fact, that in literature certain microtextures, e.g., conchoidal fractures, V-shaped percussion marks and graded arcs are indicated as abundant or common for glacioaquatic sediments deposited by high-energy streams, our study does not confirm it. In this context, the question arises of whether the quartz grain microtextures can be reliable both in discrimination of glaciofluvial sediments and as a diagnostic indicator for reconstructing the glacioaquatic environment of transport and deposition.

**Raimonds Šlesarevs, Juris Soms**

*Daugavpils University, Parādes street 1, Daugavpils*

### **APPLICATION OF CONVENTIONAL FIELD SURVEY AND NON-INVASIVE SHALLOW GEOPHYSICAL METHODS IN GEOLOGICAL STUDIES OF MALTA-ANDRUPENE ESKER**

In this paper authors combine data of conventional geologic field survey and non-invasive shallow geophysical studies from Malta-Andrupene esker in Latgale upland. Because quarries or outcrops with sediment sections are absent within esker under study, conventional geologic survey, i.e., near surface augering (<2 m depth) by AMS MudAuger system was employed to investigate the lithofacies of glaciofluvial sediments, as well as their geographic distribution. In total data from 79 shallow boreholes was obtained, allowing adequately to assess the changes in spatial patterns of sediments along the esker ridge. After that, geophysical techniques by applying ground-penetrating radar were employed to investigate the sedimentary architecture of the esker. In total 21 GPR profiles were collected along the crest of the esker using a Radar Systems Inc. GPR Zond-12e with 300MHz and 500MHz shielded antennas. Subsequently, GPR profiling data was processed and visualized as radarograms by software Prism 2.60. In radarograms, different types of GPR reflections were identified, e.g., sub-horizontal reflections, dipping reflections and parabolic reflections allowing to identify surfaces between layers of glaciofluvial sediments with different electromagnetic properties, as well as other stratigraphic elements, e.g., boulders. Hence, the interpretation of geophysical data reveals the sedimentary architecture of the esker. The results of the geological survey indicate that medium and coarse sand, gravel with pebbles are dominant types of glaciofluvial sediments making up esker, while fine-grained sand occurs sporadically. Despite the expected, the fining of glaciofluvial sediments towards to the delta of the esker was not identified. Considering the results of

the study, we can assume that that esker geomorphology and geological composition were primarily governed by sediment supply which in turn was controlled by discharge of ice meltwater streams during several phases of deglaciation.

***Janis Krumins, Maris Klavins, Laimdota Kalnina***

*University of Latvia, Raina Blvd. 19, Riga, Latvia, krumins.janis@lu.lv, maris.klavins@lu.lv, laimdota.kalnina@lu.lv*

## **CONCEPTUAL DIFFERENCES BETWEEN FEN AND RAISED BOG PEAT**

The EP states that peat is fossil fuel and use of it in the energy sector is subject to CO<sub>2</sub> emission tax. Moreover, according to Climate and Energy Package and 2050 Low-carbon Economy it is planned to reduce peat extraction in EU. However, this directive is based on the limitation of GHG emission alone, while differences amongst peat types and their annual growth or possibilities of mire re-cultivation are not taken into account. There is also no comprehensive scheme for the accounting of GHG emissions from peat extraction and from abandoned peat extraction sites. Neglected fields of fen peat cause peat mineralization that causes elevated GHG emissions naturally. Moreover, fen peat cannot be used in the energy generation or heating thus its extraction and industrial use do not significantly add to the annual GHG emissions. In turn, fen peat can be used in the preparation of environmentally friendly products that can improve overall environmental health. In this study, we evaluated differences between fen and raised bog formation and described key findings and recommendations drawn from this study. The main distinctive features of mechanisms involved in formation of fen peat in comparison to raised bog peat are weathering and erosion of sedimentary rocks alongside mire and atmospheric precipitation and pollution, while main carriers are ground and surface waters. Higher terrestrial plants produce biomass for fen peat, while lower plants produce scanty biomass for bog peat, thus renewal speed of both types of peat significantly differs. We suggest revising the European Council Directive and separate fen peat from bog peat when describing peat as fossil fuel and to take into account that neglectance of fen peat fields after raised bog peat removal increases greenhouse gas emissions.

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***Juris Soms***

*Daugavpils University, Parādes street 1, Daugavpils, juris.soms@du.lv*

## **EVIDENCE OF PAST AEOLIAN MORPHOGENESIS: INLAND DUNES TO THE NORTH OF DVIETE VILLAGE**

Late Pleistocene and Holocene cold-climate aeolian sediments and formations are widely distributed across Europe making up a zone which is named in literature as the ‘European Sand Belt’. The territory under study, which is represented by inland dune field located near to Dviete village and stretches northward and north-westward from the village, also belongs to the ESB, more specific – to the north-eastern part of it. Dviete inland dune field together with Daugavpils field forms a larger local area of aeolian landforms located in southern part of the East Latvian lowland. Unlike the geomorphology and internal structure of inland dunes in other parts of Latvia, the aeolian landforms in this region are weakly covered in the national geomorphological literature and scientific publications, although data on the distribution of the Late Pleistocene and Holocene aeolian sediments has been displayed in geological maps. Considering that recent materials and data about dunes in this area are fragmented and require summarizing, author accomplished a study based on analysis of airborne LiDAR elevation data and field geomorphological reconnaissance. Results indicate that aeolian landforms within the Dviete dune field are distributed rather sparse. Dunes have an asymmetric profile and U-shaped or parabolic configuration in planar view. GIS analysis of dune crests indicates the similar orientation of landforms within the dune field. This fact reveals the dominance of westward winds during the phase of active development of dunes. An additional geological survey indicates that the dunes mainly are constituted of fairly homogeneous fine sands, which lie on the top of glaciolacustrine sediments deposited in the Gaiļu ice-dammed lake. Considering the results of OSL dating published in literature we can assume that Dviete inland dune field reflects evidence of past aeolian morphogenesis during the cold conditions of the Younger Dryas, but further studies are required to confirm this.

***Viktorija Samoilova, Juris Soms***



## **GEOMORPHOLOGICAL AND GEOLOGICAL CHARACTERISTICS OF RING-SHAPED HILL NEAR PUŠA, LATGALE UPLAND**

Although the number of research programmes conducted recently in the field of Quaternary geomorphology in Latvia increases, only a few of these researches are focused on the studies of landforms of peculiar morphology, i.e., ring-shaped mounds or circular ramparted depressions. Such landforms have been documented in scientific literature across temperate areas of the Northern Hemisphere and often have been interpreted as relict cryogenic mounds or collapsed pingos. The presence of such features also has been used to establish the extent of former permafrost. Despite the similar landforms was described in Latgale Upland by J. Straume in 1979, until now there is no data on the geological structure and topographic characteristics of these features. Hence complex desk-based and field studies were realized in a ring-shaped hill near Puša village. First of all, geomorphology of this landform has been mapped in a GIS. After the DEM-based analysis of its morphological elements, sites for detailed geological and geophysical research were selected. Geological studies include shallow augering of surface sediments, but identification of the depth of depression in ring-shaped mound was performed by Eijkelkamp peat sampler and ground penetrating radar system. Results indicate that Puša mound in planar view has ring-shaped, semi-circular outlines, with almost closed positive-elevation rim encircling lower elevation terrain in the central part of this landform. Like similar features in Europe, the depression contains a wetland – small raised bog filled with peat. Peat sampling and GPR profiling indicate that max. depth within the depression exceeds 10.4m. The relative height of Puša mound is 46m, but its diameter is about 800m. Geological studies reveal complex, patterned spatial distribution of glaciofluvial, glaciolacustrine and glacial sediments, where glacioaquatic sand, gravel or silt forms higher parts of Puša mound, while ablation moraine covers lower parts of the landform.

***Valērija Rumjanceva, Juris Soms***

*Daugavpils University, Parādes street 1, Daugavpils, valery.rumjanceva@inbox.lv, juris.soms@du.lv*

## **GEOMORPHOLOGICAL FEATURES OF GEOCONSERVATION SIGNIFICANCE IN HUMMOCKY POST-GLACIAL LANDSCAPE, NORTHERN PART OF LATGALE UPLAND**

Latgale Upland is one of the glacial uplands located in eastern part of Latvia. According to data given in scientific publications, the uplands in the eastern and south-eastern part of Latvia were precisely those areas that were the first to become free of continental ice sheet cover at the end of the Pleistocene. Consequently, Latgale Upland is amongst those in Latvia which is exposed to subaerial conditions for the longest period and thus reflects the oldest features of glacial morphogenesis. At the same time complexes of glacial landforms as well as individual prominent geomorphological features are essential elements of the hummocky post-glacial landscape. In such a context glacial landforms are objects of the geological and geomorphological heritage, and they should be protected regarding both their scientific and scenic values. However, until now these geomorphological features, i.e., glacial landforms as potential objects of geoconservation significance are not either identified nor protected. These issues also are not sufficiently integrated into the nature protection policy of Latvia. Hence, integrated desk-based and field research program was performed by application of matrix methodology (Pralong, 2005) for assessment of glacial landforms as features of geoconservation significance in Latgale Upland. In the course of expeditions, individual landforms like hummocky massifs, plateau-like hills, ridge-like eskers, etc. were scored, and their scientific value and scenic value were assessed. The performed research demonstrates that 33 hills as landforms of different morphogenetic types could be the most prominent relief elements of Latgale Upland. However, considering their assessment according to scientific and landscape-aesthetic criteria, only five of them correspond to the status of objects of geoconservation significance in northern part of the upland.

***Dāvis Gruberts***

*Daugavpils University, Parādes street 1, Daugavpils, davis.gruberts@du.lv*

## **MAIN RESULTS OF THE 11<sup>TH</sup> ANNUAL DRIFT EXPEDITION ON THE MIDDLE DAUGAVA RIVER**

The 11<sup>th</sup> annual Drift Expedition of Daugavpils University was conducted on the Middle Daugava River downstream from Daugavpils on April 4, 2017, at the drainage phase of the floods (Gruberts et al., 2018). As usually, it was conducted by applying the Lagrangian research strategy (Doyle & Ensign, 2009) and by using the drifting research platform "Aventura" made from a maritime life-raft and an inflatable boat and equipped with different instruments for real-time in situ measurements of the average drift speed, the river depth, water transparency, physical and chemical properties (water temperature, conductivity, turbidity etc.), as well as for the in situ measurements of water mass turbulence intensity by the ultrasound method.

The 11<sup>th</sup> Drift Expedition was started at Daugavpils at 8:40 and finished at village "Cukuriņi" at 19:20. During the whole length of the drift, instrumental measurements of selected parameters were repeated each 30 minutes. In total, 41,2 km long distance was covered with the average drift speed about 4,0 km per hour. During the uninterrupted drift, significant downstream trends in selected hydrodynamic, physical and chemical parameters were detected. In general, the drift speed, river depth, water mass transparency, red-ox potential, chlorophyll-a concentration and turbidity gradually decreased. Meanwhile, the water temperature, conductivity, pH, and oxygen concentration and saturation increased.

Statistical analyses revealed strong positive correlation between horizontal and vertical components (horizontal and vertical flow velocities) of the turbulence intensity measured in situ ( $r = 0,79$ ). However, there was no correlation found between the turbulence intensity and other hydrodynamic parameters of the moving flood water mass (i.e. its average drift speed and river depth).

**Loreta Marija Lisenoka, Juris Soms**

*Daugavpils University, Parādes street 1, Daugavpils*

## **THE GRAIN SIZE DISTRIBUTION OF CHANNEL SEDIMENTS ALONG THE LONGITUDINAL PROFILE OF THE POGUĻANKA RIVER, SOUTH-EASTERN LATVIA**

Downstream changes of channel sediments in rivers is a phenomenon well-documented in scientific literature. However, there is a lack of scientifically reliable data on grain size distribution of channel sediments along the longitudinal profile of rivers in our country. This problem particularly can be referred to small rivers in SE part of Latvia. Considering that, the objective of this study was to obtain data on the granulometric properties of channel sediments, as well as changes of the grain size distribution along the longitudinal profile of the Poguļanka River. Firstly, 23 samples of alluvial sediments were taken from accumulative elements like mid-channel bars and point bars in the different stretches of the river. After that, sediments with size between 63  $\mu\text{m}$  and 2.0 mm, which corresponds to a sand fraction with phi intervals from 4 to -1 was extracted by wet sieving. Before the granulometric analysis sand samples were boiled for 1 h in a 30%  $\text{H}_2\text{O}_2$  solution for removal of the organic matter. For the purposes of analysis of the grain size distribution Malvern MASTERSIZER 2000 analyser was employed. It allowed to determine the Folk & Ward (1957) indicators. Typically, downstream fining of sediments should be observed. However, results of the study indicate that the grain size distribution along the longitudinal profile of the Poguļanka River differs from the regularity. This fact has several explanations, the most likely one being that irregular changes of channel gradient cause variation of flow velocities, hence leading to the accumulation of finer sediments in stretches with lower stream velocities, and, *vice versa*, the accumulation of coarser sediments in stretches with higher stream velocities. In addition, other sediment supply and extraction processes, such as inflow of tributaries, or non-alluvial sediment sources like mass movement processes or delivery of coluvium by side gullies are less important in small rivers, but can locally have a great effect.

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# DABAS AIZSARDZĪBA UN VIDES PĀRVALDĪBA

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## NATURE PROTECTION AND ENVIRONMENTAL MANAGEMENT

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*Evita Muižniece-Treija*

### DISTRIBUTION OF ODORS CAUSED BY POLLUTANT ACTIVITY AND RELATED PROBLEMS IN RIGA

Odor emissions have a negative impact on human health and well-being and this problem has become more acute in urban administrative areas, where manufacturing companies are relatively close to the construction of residential buildings. In recent years, attention has been paid to the reduction and elimination of odor emissions due to economic activity, as well as the development of odor emission limit projects, installed equipment for the measurement of odor emissions, and the conditions for reducing odor emissions, however, nevertheless, still controlling institutions competent Includes control of sources of pollutant emissions, annually receives about 2000 residents complaints about disturbing and severe smells in residential areas. In order to better understand the technological processes of polluting activities, which produce odors, odor distribution areas, identify smoke units ( $\text{ouE}/\text{m}^3$ ), odor research has begun in the administrative territory of Riga. The studies included analysis of both odor emission limits, analysis of complaints received, surveys, and the recording of smoke units with field olfactometer and the determination of substances in the air by gas analyzers. The results obtained so far indicate that the developed odor emission limits do not always reflect the actual situation, which is also proved by measurements made outside the premises of enterprises, during which there are fixed intermittent odors. According to the collected information and studies on the nature and localization of odors, it can be concluded that the smell of the most distressing smells in Riga causes odor of petroleum products, thus the inhabitants of the neighboring housing estates of the Freeport of Riga are exposed to disturbing odors. Thus, both the state controlling institutions and the municipality should pay more attention to solving this problem.

*Alīna Helde, Zanda Penēze*

*University of Latvia, Jelgavas iela 1, Rīga, helde@inbox.lv, zanda.penze@lu.lv*

### FACTORS INFLUENCING USE OF AGRICULTURAL LANDS IN MARGINAL TERRITORIES OF NORTHWEST LATVIA

Since the middle of the 20<sup>th</sup> century Latvian rural landscape has greatly changed due to the change in the proportion between land used in agricultural and forestry. The territory of agricultural land has decreased while woodland has increased almost twice. At present agricultural land occupies 36.2% but woodland 47% of the territory of Latvia. Territories of cultivated agricultural lands continue to decrease in marginal territories situated away from economic and administrative centres, which become depopulated. However, our study showed that such tendency cannot be observed in all marginal rural territories. The study was carried out in Lube rural district situated in the northeast of Latvia between the North Curonian Uplands and the Seaside Lowlands. It is away from economic and administrative centres. Since the beginning of the 21<sup>st</sup> century the number of inhabitants is decreasing. The territory of agricultural lands occupies 31% of the district. Within the framework of our research we mapped the territory for the present land use and interviewed the landowners and land users about their motivation to cultivate their land. The research showed that in Lube rural district no significant change can be observed in the proportion between agricultural land and woodland since the middle of the 20<sup>th</sup> century. The proportion of uncultivated land is only 3%, which is small in comparison with other marginal territories. Here cultivation of agricultural lands is encouraged by interaction of several factors, the most important being agro-environmental conditions, support of the present agrarian policy, experience in farming accumulated during the times of collective farms, drainage systems built during the 60ties and 70ties, maintenance of good roads, as well as wish of farmers to get profit from farming and the idea of clean environment.

***Liene Sustere, Iveta Steinberga***

*University of Latvia, Jelgvas street 1, Riga, iveta.steinberga@lu.lv*

## **GENEALOGY OF HIGH POLLUTION EPISODES OF PARTICULATE MATTER IN RIGA (LATVIA)**

Morphology and fractional distribution of atmospheric aerosols usually are site specific, they can be solid, liquid, or a mixture of both and can contain a wide range of components, but most are believed to be mainly composed of an inorganic part, an organic part and associated water. Keeping in mind diversity of aerosol sources (eroded dust from soil and roads, diesel exhaust, combustion, industrial emissions, biogenic sources, including volcanic eruptions), lifetime, ability to participate in physical and chemical conversions and tendency to accumulate at specific meteorological conditions, pollution level in atmosphere could be extremely high exceeding national and international standards leading to adverse health effects. Toxicity of atmospheric aerosols mainly depends on their size and chemical composition (heavy metals, poly aromatic hydrocarbons) which is determined by specific sources. Within this study aerosol (PM<sub>10</sub> and PM<sub>2.5</sub>) sampling on two street canyons were done by OPSIS instrument SM200 Beta attenuation particulate monitor (gravimetric sampler), which is an automatic method (CEN 1234-1 equivalent). Additionally for specific episodes analysis meteorological measurement (air temperature, wind direction and speed, precipitation, atmospheric pressure, relative humidity, solar radiation and visibility) and atmospheric gases (SO<sub>2</sub>, NO<sub>2</sub>, NO<sub>x</sub>, CO, VOCs) measurement sets were used to recognize influence of meteorology and possibility of photochemical reactions as a source for secondary aerosols.

***Jekaterīna Minčenko, Dāvis Gruberts***

*Daugavpils University, Parādes street 1, Daugavpils, jekaterina.mincenko@gmail.com, davis.gruberts@du.lv*

## **HYDROLOGICAL MONITORING OF THE DVIETE FLOODPLAIN IN THE CONTEXT OF REALIZATION OF THE “DVIETE” LIFE+ PROJECT**

Sufficiently high water level of Dviete floodplain in summer affects its biodiversity, such as quality of the floodplain meadow biotopes, and quantity of migratory birds, too. Artificial straightening of the Dviete river flow has a negative impact on floodplain hydrology in summer. This action leads to accelerated runoff of water in low-water period, which in turn impacts the number of nesting sites of rare bird species, such as corn-crake.

Restoration of the natural flow of the Dviete river in 2015 probably positively influenced hydrological regime of the groundwater within the Dviete floodplain – after the riverbed renewal an increase in groundwater level was expected.

The Dviete river restoration project was realized in the Dviete floodplain area from 2010 till 2015. In result, the natural flow and meanders of the Dviete riverbed were partially restored. For that reason, it is important to keep track of hydrological changes in this area, to understand, if the riverbed restoration has positive impact on floodplain hydrology, too.

The main goal of this study is to ascertain if the hydrological regime of Dviete floodplain has been renaturalized after the restoration of natural flow of the Dviete river.

Measurements of the groundwater and river water levels were conducted to compare water level fluctuations in the floodplain before and after renovation project. The drop in water levels between adjacent monitoring wells was analyzed, and correlation analyses were conducted between precipitation, evaporation and groundwater levels.

***Indra Kodore***

*Daugavpils University, Parādes street 1, Daugavpils, indra.kodore@inbox.lv*

## **MONUMENTAL TREES AND POTENTIAL MONUMENTAL TREES IN RIEBINU UN PREILU DISTRICT**

Monumental trees are very old and significant size reached trees. Which are the oldest and largest specimens of their species, which over the years have survived both natural and antropogenic influences. Monumental trees in the natural landscape characterizes cultural-historical and aesthetic significance and the symbols of greatness. In Latvia monumental trees are an integral part of the national landscape, as well as contribute biodiversity. More than 8,000 monumental trees are already counted in Latvia, but specialists estimate that it is only one quarter of

all Latvian forests. In honor Latvian 100<sup>th</sup> Anniversary are launching the initiative "LV100 Dižošanās". Within this framework, everyone is encouraged to go and find unforgettable trees.

Monumental tree research in Riebinu and Preilu district have not been surveyed since 2005, and only part of these counties were surveyed. Since 2010, has changed parameters of monumental tree size.

Monumental tree research in Riebinu and Preilu district is necessary to re-inventory 2005 monumental trees survey and search the area to find new monumental trees.

**Tatjana Svirska, Dāvis Gruberts**

*Parādes street 1, Daugavpils, tatjana.svirska@inbox.lv, davis.gruberts@du.lv*

## **THE LATEST TRENDS OF CLIMATE CHANGE IN THE SOUTH-EASTERN PART OF LATVIA OVER THE PAST 5 YEARS**

Rapid climate change has been observed in Latvia and all over the world for several decades. Extreme weather events that can be observed year after year globally as well as regionally more and more different from those registered during the last centuries of the 20<sup>th</sup> century.

This study focused on the climate changes that has been observed in the South-Eastern part of Latvia over the last five years (2013–2017). Data records obtained from Daugavpils weather station are compared to the Climatic norm data base for the South-Eastern Latvia, which consists of the average, maximum and minimum monthly values of selected weather elements recorded from 1981 till 2010. Meteorological elements that are selected for this study include the average, maximum and minimum air temperatures, total precipitation amounts and wind strength.

**Aija Pupina, Mihails Pupins, Andris Ceirans**

*Daugavpils University, Institute of Life Sciences and Technologies, Parades street 1A, Daugavpils, Latvia, mihails.pupins@gmail.com, cuskisa@gmail.com  
Latgales Zoo, Vienibas street 27, Daugavpils, Latvia*

## **DISTRIBUTION AND BREEDING HABITATS OF LISSOTRITON VULGARIS AND TRITURUS CRISTATUS IN THE NATURE RESERVE “PILSKALNES SIGULDINA” (SOUTH-EASTERN LATVIA)**

The Family Salamandridae (Amphibia: Caudata) is represented in Latvia by two species: *Triturus cristatus* (Laurenti 1768) and *Lissotriton vulgaris* (Linnaeus 1758), which can be found here in the same biotopes. The research of the species distribution in the South-Eastern Latvia is important for organization of their conservation and preservation of the contacts of these populations with the populations of Lithuania and Belarus, and is actual in the protected areas of Latvia, which can provide an effective protective regime for the species. One of these territories is Natura 2000 (code LV0524900) Nature reserve “Pilskalnes Siguldina” (S=71 ha).

In July 2017, we conducted a study on the distribution of *T.cristatus* and *L.vulgaris* in 8 waterbodies in “Pilskalnes Siguldina”. We used a scoop net of 40 cm diameter to find larvae in each waterbody; 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 4 (50%) water reservoirs, *L.vulgaris* - in 7 (87.5%) reservoirs. The presence of larvae *T.cristatus* (1,0) and *L.vulgaris* (0,1) in water bodies: PiSi-01 (2,4); PiSi-02 (0.5); PiSi-03 (0.2); PiSi-04 (0,0); PiSi-05 (0.1); PiSi-06 (1,2); PiSi-07 (1.3); PiSi-08 (1.2). *L.vulgaris* in joint waterbodies with *T.cristatus* was found in greater quantities (2:1 - 3:1). The presence of fish and currents, overgrowing by bushes and reed, the absence of thick, small-leaved vegetation are negative factors for the reproduction of *T.cristatus* in the pond.

The results obtained can be used to plan the protection of *T.cristatus* and *L.vulgaris* in Latvia.

The research was conducted with support of the Nature conservation agency project “Amphibian and Reptile base monitoring and monitoring Natura 2000 territories (2016-2018)” (No 7.7-77/2016-P).

**Aija Pupina, Mihails Pupins, Andris Ceirans**

*Daugavpils University, Institute of Life Sciences and Technologies, Parades street 1A, Daugavpils, Latvia, mihails.pupins@gmail.com, cuskisa@gmail.com  
Latgales Zoo, Vienibas street 27, Daugavpils, Latvia*

## **DISTRIBUTION AND OCCURRENCE OF THE EUROPEAN GREEN FROGS PELOPHYLAX ESCULENTUS COMPLEX IN PONDS OF THE SOUTH-EASTERN LATVIA**

The green frog *Pelophylax esculentus* complex (*Pelophylax lessonae*, *Pelophylax ridibundus*, and their fertile hybrid *Pelophylax* kl. *esculentus*) are widespread in Latvia. At the same time, the data on their distribution are not complete here and do not cover South-Eastern part of Latvia.

In 2015-2017, we conducted the research on the distribution of *P.esculentus* complex in the South-Eastern Latvia, the most southern region of Latvia, directly bordered with the Lithuania and Belarus. The territory has a mosaic relief, a large number of small ponds and moderately developed agriculture.

We used the scoop net and visual recording of young and adult *P.esculentus* complex individuals in randomly selected ponds and other small reservoirs (beaver dams, melioration channels, etc.) in micro-biotopes suitable for water frogs. We also made the biotope descriptions. For each reservoir, a coastal zone of 10 m long and suitable for water frogs was examined. Recording was carried out in the summer time during daytime and under favourable weather conditions.

In all, we surveyed 38 water reservoirs, *P.esculentus* complex specimen were found in 36 of them (94.7%). Number of individuals in occurrence ponds  $N_{max} = 36$ ; Average = 4.4; individuals per metre of shore  $N_{max} = 6$ ; Average = 0.5. The water reservoirs with the highest relative number of *P.esculentus* complex specimen are small ponds that are not covered with shrub or reed, not covered with *Lemna* sp., without fish, with a wide littoral zone. Often, these are small natural ponds, beaver dams and roadside small ponds formed as a result of sewage pollution.

The research results can be used in the planning of pond aquaculture and optimisation of amphibian ponds in the South-Eastern Latvia. The research was partly supported by the Project No 16-00-F02201-000002, financed by Rural Support Service of Latvia.

**Volodymyr Tytar, Oksana Nekrasova, Aija Pupina, Oleksandra Oskyrko, Mihails Pupins**

*Schmalhausen Institute of Zoology NAS of Ukraine, vul. Khmel'nytskogo, 15, Kiev, Ukraine, oneks22@gmail.com*

*Daugavpils University, Institute of Life Sciences and Technologies, Department of Ecology, Parades street 1A, Daugavpils, Latvia, mihails.pupins@gmail.com*

*Educational and Scientific Center "Institute of biology and medicine", Taras Shevchenko national university of Kyiv, prosp. Akademika Hlushkova 2, Kyiv, Ukraine, sashaoskirko@gmail.com*

## **SPECIES DISTRIBUTION MODELLING AS A PROACTIVE TOOL FOR CONSERVATION OF MARGINAL POPULATIONS OF THE FIRE-BELLIED TOAD, BOMBINA BOMBINA(LINNAEUS, 1761), UNDER GLOBAL CLIMATE CHANGE**

The most northern European populations of *Bombina bombina* are in Sweden, Denmark, Germany and southern Latvia. Southwards the home range border stretches far as to the Danube floodplain and Turkey. The resulting GIS-modelling, in terms of the bioclimatic niche and contemporary climate, shows that a large portion of areas of high and/or very high habitat suitability ( $>0.6$ ) for the species is located in Ukraine (potentially up to 46% of the country). Compared with the area of the most optimal habitat under current climate prediction, the overall predictions for 2050 show a clear north and north-west shift of such habitat for *B.bombina* populations. In Ukraine areas of potential high or very high habitat suitability are predicted to be drastically reduced to 18%. At the northern border of the distribution of the toad areas of moderate habitat suitability ( $>0.4$ ) are found in southern Latvia, however under contemporary conditions they are far from reaching higher levels ( $>0.6$ ). These are located mainly in Riga and Zemgale provinces and in a separate patch in Latgale province, apparently adjacent to the Daugava River. Climate changes in 2050 are predicted to considerably improve for the species in Latvia, where patches of highly suitable habitat conditions ( $>0.6$ ), 43% of the country.

In Ukraine planned measures should be undertaken to preserve the toad and associated with the species habitats, where favourable conditions are predicted to persist. In Latvia one important way of enabling the expanding species to adapt to climate change would be to provide protected areas that include a range of habitat types suitable for *B.bombina*. These must be connected by habitat corridors that will allow the species to move northwards.

The research was supported by the programme "Latvian Ecosystems Value and Dynamics under Climate Influence" (EVIDEnT), No 4.6. "Freshwaters Ecosystems Services and Biodiversity", No LHEI-2015-19.

**Aija Pupina, Mihails Pupins, Andris Ceirans**

Daugavpils University, Institute of Life Sciences and Technologies, Parades street 1A, Daugavpils, Latvia,  
mihails.pupins@gmail.com, cuskisa@gmail.com

Latgales Zoo, Vienibas street 27, Daugavpils, Latvia

## **UPDATED DISTRIBUTION OF PERCCOTTUS GLENII (DYBOWSKI 1877) IN THE SOUTH-EASTERN PART OF LATVIA**

Invasive fish *Perccottus glenii* (Perciformes: Gobioidae: Odontobutidae) has a native range in the Far East. *P. glenii* is found in the Eastern and central parts of Latvia. *P. glenii* in Latvia is a new predator, competitor and parasite vector for native fishes, amphibians and water reptiles (*Natrix natrix*, *Emys orbicularis*). *P. glenii* in Latvia is often distributed by local residents. *P. glenii* may come to Latvia from neighbouring countries. This makes the research of the spread of *P. glenii* in the South-Eastern part of Latvia topical.

In the previous years and in 2017, we conducted a research of the distribution of *P. glenii* in the Daugavpils district, Ilukste district, Kraslava district in the South-Eastern part of Latvia. 40 randomly selected small water bodies were examined. We used a scoop net of 40 cm diameter, in each pond we made 10 catches within the coastal littoral zone, each on an area of 1 m<sup>2</sup> and at a depth of 0.2-0.8 m in places with dense vegetation.

As a result of the study, *P. glenii* was found in 27 water bodies (67.5%). Maximal number of caught individuals with juveniles in occurrence of ponds N<sub>max</sub> = 84 (in drying up Round pond in Nature Reserve Ilgas, Daugavpils district), Average = 3.4; maximal number of caught individuals per 1 m<sup>2</sup> N<sub>max</sub> = 26 (the same drying Round pond); Average = 0.2. Juveniles *P. glenii* prefer littoral zones with a depth of up to 0.5 m, with abundant vegetation. In new ponds with minimal vegetation, *P. glenii* concentrates in the available vegetation (up to 18 individuals per 1m<sup>2</sup>). In the Round pond with a high concentration of *P. glenii*, amphibian larvae were not found. The results can be used in the management of freshwaters ecosystems services and biodiversity in the South-Eastern part of Latvia.

The results were received in the programme "Latvian Ecosystems Value and Dynamics under Climate Influence" (EVIDEnT), No 4.6. "Freshwaters Ecosystems Services and Biodiversity", No LHEI-2015-19 and in the ALEPF project No 1-08/ 153 / 2017.

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**Alina Kulbachna, Nataļja Škute, Vija Strazdiņa**

*Daugavpils University, Parādes street 1A, Daugavpils, Latvia, alinakulb@yahoo.com, natalja.skute@du.lv  
Institute of Agrarian Resource and Economy, Stende, Latvia, vija.strazdina@arei.lv*

## **ANTIOXIDANT ACTIVITY IN WINTER WHEAT (*TRITICUM AVESTIVUM*, (L.)) LEAVES UNDER ROOT FLOODING STRESS**

Waterlogging or root flooding stress is one of the most global climate changes, which affects crop growth and yield worldwide, especially in the low-lying rainfed areas. The effects of flooding makes great influences on wheat (*Triticum aestivum*, L.) plants: depresses photosynthesis and respiration, reduces growth, development and finally yield. Increased reactive oxygen species (ROS) levels in plants under waterlogging stress stimulate cellular protective mechanisms and also the activity of antioxidant system against post-stress oxidative damages. The aim of the investigations was to analyze the effects of 10 days flooding events applied during tillering on the antioxidant properties of winter wheat cultivar "Fredis".

The experiment was carried in laboratory in the climatic chambers under controlled environmental conditions. During flooding, soil environment of plant roots were water saturated for experimental group of plants. Different parts of third wheat leaf (basal part, middle part and apical part), also forth leaf with a bud of fifth leaf were taken whole for this measurements were taken for studding antioxidant activity existing in wheat shoots under flooding. The total content of phenolic compounds was determined in methanol extracts of frozen wheat leaves using colorimetric method with Folin-Cicalteu reagent. The antioxidant activity of methanol extracts of the investigated leaves was evaluated spectrophotometrically as the 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging capacity and ferric reducing antioxidant power (FRAP). To observe the dynamic of oxygen metabolic changes, measurements were performed four times on the 1<sup>st</sup>, 4<sup>th</sup>, 6<sup>th</sup> and 10<sup>th</sup> day of flooding stress. Antioxidant activity in basal, middle and apical parts of third leaf provide various response to root flooding stress, supposed to different functional condition. However, the total content of phenolic compounds and free radical scavenging activity changed ambiguously in third, fourth and fifth leaves, anticipated, because of the different development stages.

**Gatis Melkus, Kristīne Dokāne, Natālija Paramonova, Kristīne Ošiņa, Nikolajs Sjakste**

*Genomics and Bioinformatics, Institute of Biology of the University of Latvia, Miera str. 3, Salaspils, Latvia  
Faculty of Medicine, University of Latvia, Riga, Latvia*

## **ASSOCIATION OF PROTEASOMAL GENE POLYMORPHISMS WITH MULTIPLE SCLEROSIS IN THE LATVIAN POPULATION**

**Objectives.** Multiple sclerosis (MS) is a chronic progressive disabling disorder of the central nervous system with considerable social impact and economic consequences. The ubiquitine proteasome multycatalytic protease complexes regulate a variety of cellular processes. Deregulation of this system implicated in MS and can depend on the structural variations in the genes encoding the proteasome subunits. The aim of this study is to analyze the association between MS and proteasomal gene genetic variations (SNPs) that previously have been implicated in autoimmunity in Latvian population.

**Materials and methods.** *PSMC6* (rs2295826, rs2293827) and *PSMA6* (rs2277460, rs104990) were genotyped using allele-specific PCR and restriction fragment length polymorphism analysis in a case/control study. The control group was represented by 305 healthy individuals (179 women) diagnosed to be without any autoimmune and/or cardiovascular disorders, type 2 diabetes mellitus (T2DM), or obesity. The case group included 280 MS patients (198 women). The genotyping data were combined with previously gathered *PSMA3* (rs2348071) genotyping data for further haplotype analysis.

**Results.** The previously observed pattern of complete linkage disequilibrium (LD) between the two studied *PSMC6* rs2295826 and rs2294827 loci in the Latvian population was confirmed in MS patients, resulting in



identical genotyping result distributions ( $D' = 1$ ,  $r^2 = 1$ ). A significant ( $p < 0.001$ ;  $OR = 1.949$  [ $1.343 - 2.829$ ]) association was found between *PSMC6* investigated loci and MS common group, for genotypes involving rare alleles and for rare alleles ( $p < 0.01$ ).

A sex-specific association of nominal significance ( $p < 0.05$ ) was found for the *PSMA6* rs2277460 genotype CA in women. Finally, it was observed that *PSMC6* loci genotypes involving rare alleles in group of MS patients showed higher significance levels for men than for women.

Using the assumption of random assortment of alleles, 10 haplotypes were expected for five two-allele loci; a haplotype (C-C-G/T-A) with risk minor alleles at the rs2295826/rs2295827 and the rs2348071 was found in strong ( $p < 0.0001$ ) association, and a haplotype (A-C-A-C-G) including the minor allele for rs2277460 showed a significant association ( $p < 0.001$ ) with MS.

Conclusions. *PSMA6*, *PSMC6* and *PSMA3* genetic variations may contribute to the risk of multiple sclerosis in Latvians. Our results are consistent with earlier findings of associations of these loci with juvenile idiopathic arthritis (Sjakste, 2014), obesity and bronchial asthma (Paramonova, 2014a; 2014b), type 1 diabetes mellitus (Sjakste, 2016) in Latvians. These SNPs offer a promising avenue in our continued search for biomarkers relevant to the treatment and risk assessment of MS, particularly if combined with clinical data.

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**Giedrius Trakimas, Tatjana Krama, Ronalds Krams, Indriķis Krams**

*Department of Biotechnology, Institute of Life Sciences and Technology, Daugavpils University, Daugavpils, Latvia*

*Institute of Biosciences, Vilnius University, Vilnius, Lithuania, giedrius.trakimas@gf.vu.lt*

*Institute of Ecology and Earth Sciences, University of Tartu, Tartu, Estonia*

*Department of Zoology and Animal Ecology, University of Latvia, Rīga, Latvia*

## **DEVELOPMENTAL RATE AFFECTS BODY ELEMENTAL COMPOSITION, METABOLIC RATE AND BEHAVIOR IN A CRICKET**

Life history theory predicts that development time is associated with energetic and behavioral trade-offs, and environmental stress. However, it is not well understood how individual's elemental composition, development, metabolism and behavior are linked with each other. We tested elemental body content of western stutter-trilling crickets (*Gryllus integer*) in relation to developmental speed, antipredator behavior and resting metabolic rate (RMR). We found that slowly developing crickets have significantly higher body carbon levels, higher carbon to nitrogen ratio and lower body nitrogen than rapidly developing crickets. Crickets of the slow developmental line had significantly higher RMR than crickets of the rapid developing line, and further, the male crickets had higher RMR than females. Slowly developing crickets resumed their activities faster in an unfamiliar environment but they were slower in resuming the activity in a familiar environment on average. Rapidly developing crickets did the opposite. Our findings indicate that within a population individual crickets may use alternative strategies which are linked to developmental rate which affects stress reactivity and body elemental composition.

**Oleksandra Oskyrko, Oksana Nekrasova, Oleksii Marushchak**

*Educational and Scientific Center «Institute of biology and medicine», Taras Shevchenko national university of Kyiv, prosp. Akademika Hlushkova 2, Kyiv, Ukraine, sashaoskirko@gmail.com*

*Shmalgausen Institute of Zoology NAS Ukraine, vul. B. Khmelnytskogo, 15, Kyiv, Ukraine, oneks22@gmail.com*

*Schmalhausen Institute of Zoology NAS Ukraine, vul. B. Khmelnytskogo, 15, Kyiv, Ukraine, vse\_Okei@bigmir.net*

## **DISTRIBUTION OF THE INVASIVE SPECIES *PODARCIS MURALIS* (LAURENTI, 1768) IN THE ODESSA REGION, UKRAINE**

Due to global climate change, new species appear in many regions of the world. An interesting example is the introduced of the sub-Mediterranean common wall lizards of the *P. muralis* in territories outside the natural distribution area (Kraus, 2009). This species has been introduced in different places of Europe: Germany (Schulte et al., 2011), Czech Republic (Šandera, 2013), Poland (Wirga, Majtyka, 2013) southern England (Beebee, Griffiths, 2000), USA (Deichsel, Gist, 2001) and Canada (Allan et al., 2006). The species is at the northern limit of its range in Romania, occurring primarily along the Carpathian Mountains and in several sites

in the Danube river basin and city of Dobruja (Cogălniceanu et al. 2013). On the territory of Ukraine this species was found for the first time in 2012 in the southern part of the Odessa region (two populations) (Matveev, 2012). The modern distribution of wall lizards in the Odessa region is not completely studied, that became the purpose of this work.

An expedition was carried out in August 2017 to the southern part of the Odessa region. The research was conducted by the route method without harm to animals. Each animal was photographed. As a result, *P. muralis* was found in only 3 localities near the city of Reni: abandoned complex opposite the sea port, first road turn across the city water channel and the second road turn across the channel. Also, A. S. Matveev found this species on the territory of the Reni port in 2012. The second population of these lizards was found by him at a pumping station on the northwest coast of Cahul lake (Matveev, 2012), but during our expedition this species was not found there. In other localities near Cahul lake (Limanske and Orlovka villages) *P. muralis* was not registered. All findings allow to conclude, that lizards prefer biotopes with anthropogenic buildings and rocks near the water (concrete fences, blocks, walls of houses).

**Linda Bankovska, Inese Kokina, Digna Pilāte, Valdis Pilāts, Inese Gavarāne**

*Daugavpils University, Institute of Life science and Technology, Parādes str. 1A, Daugavpils, Latvia, linda.bankovska@du.lv*

*Latvian State Forest Research Institute "Silava", Rīgas str. 111, Salaspils, Salaspils novads, Latvia*

*The Nature Conservation Agency, Baznīcas str. 7, Sigulda, Latvia*

## **EVALUATION OF EIGHT PROTOCOLS FOR TOTAL DNA EXTRACTION FROM DIFFERENT SAMPLE TYPES OF FOREST DORMOUSE (*DRYOMYS NITEDULA* PALLAS, 1778)**

Molecular biology techniques play essential role in measurement and conservation of genetic variation. The DNA extraction is the main procedure for almost every method of DNA analysis. Nowadays, various DNA extraction procedures are developed for various biological materials under interest. Selection of proper sample type and DNA extraction procedure is significant step of investigation of endangered and small organisms due the limited amount of material. Extraction methods can be evaluated for their efficiency, cost, and side effects such as DNA degradation during extraction procedure.

The forest dormouse (*Dryomys nitedula*) is protected species listed in the Annex IV of Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora. Forest dormouse is rodent found in Silene Nature Park and is classified as threatened and protected species in Latvia. Population of this species is isolated, numerically and territorially small.

During this study, different seven DNA extraction protocols for variable biological material of forest dormouse were evaluated. Three kits were compared for DNA extraction from tissue collected by cutting a part of the ear tip. Three kits were selected for DNA extraction from saliva collected by buccal swabs. And two kits were used for DNA extraction from hair samples. The amount of DNA was measured by spectrophotometer NanoDrop ND-1000 (ThermoFisher Scientific, USA). DNA was visualized utilizing submarine gel electrophoresis and RAPD-PCR analysis was performed to evaluate DNA obtained from variable sample types using different protocols.

The most appropriate sample type for efficient DNA extraction is part of the ear tip and saliva samples. DNA extracted hair samples were low-quality. However, RAPD-PCR profile was obtained for all sample types.

**Kristīne Ošiņa, Evita Rostoka, Natalia Paramonova, Nikolajs Sjakste**

*Institute of Biology of the University of Latvia, Miera str. 3, Salaspils, Latvia, kristine.osina@lu.lv*

*Faculty of Medicine, University of Latvia, Jelgavas street 1, Riga, Latvia*

## **EXPRESSION OF POLY(ADP-RIBOSE) POLYMERASE 1 GENE IN KIDNEYS OF DIABETIC RATS TREATED WITH AV-153-NA AND AV-153-CA**

*Diabetes mellitus* (DM) is a metabolic disease that affects people throughout the world. One of its main complications is diabetic nephropathy that causes loss of kidney function. During DM, there is activated poly(ADP-ribose) polymerase 1 (PARP-1) - a nuclear enzyme that participates mainly in oxidant-induced DNA single-strand break repair by transferring ADP-ribose residues from NAD<sup>+</sup> to nuclear proteins. Compounds with

antioxidative and antidiabetic properties, including 1,4-dihydropyridines (1,4-DHP), might be prospective for treatment of DM and its complications.

The aim of the research was to determine effect of 1,4-DHP derivatives AV-153-Na and AV-153-Ca on *Parp1* gene expression in diabetic rats.

Type 1 DM was induced in rats by streptozotocin injection (50 mg/kg). Nine days post injection rats were treated with AV-153-Na or AV-153-Ca (0.05 mg/kg or 0.5 mg/kg) for three days. RNA was extracted from rat kidneys, and expression level of *Parp1* gene was determined by qPCR.

AV-153-Na and AV-153-Ca did not change *Parp1* expression in kidneys of control rats. Induction of diabetes significantly increased *Parp1* expression. Treatment of model animals with AV-153-Na (higher dose) and AV-153-Ca caused further significant increase in the gene's expression level.

The study was funded from the UL research project "The study of biomarkers and natural compounds for the diagnosis and personalized treatment of acute and chronic disease".

***Inese Gavarāne, Ilona Mickeviča, Ilze Rubeniņa***

*Daugavpils University, Parades Street 1A, Daugavpils, inese.gavarane@du.lv*

## **FLUORESCENCE IN SITU HYBRIDIZATION FOR IDENTIFICATION OF PATHOGENS**

Fluorescence *in situ* hybridization allows the identification of target organisms (e.g. bacteria, yeasts, protozoa etc.) at genus or species level due to the binding of short, usually 18–25 bp sized, fluorescence-labeled target-specific oligonucleotide probes with subsequent analysis under the fluorescence microscope. The fixation procedure is mentioned in most of protocols for pathogen identification. Fixation is required to preserve cellular morphology and to ensure optimal conservation of target sequences. Various fixatives have been assessed, including buffered paraformaldehyde, glutaraldehyde, ethanol, Bouin's solution etc. Permeabilization approaches mainly are used to allow for standardized probe uptake into the cell, especially using long-fragment probes. Among known substances, 0.2% Tween-20 allows for optimum fluorescence intensity with minimum cell damage. Most of diagnostic FISH protocols contain formamide to affect the binding affinity of the probes. Hybridization buffers based on sodium chloride and urea without toxic formamide have also been applied successfully. In addition, probe binding is compatible with counterstaining by DAPI to demonstrate the presence of cellular nucleic acids.

Various fluorophores are available for labelling of FISH probes. Labelling of probes with fluorophores has several advantages in comparison with radioactively labelled probes. The detection of the fluorescence signals of the probes and DAPI staining in the same microscopic field occurs by different fluorescence channels of the microscope.

FISH is proved to be useful and applicable technique in multiple fields of diagnostics, especially for investigation of mixed infections to identify the key species. Also, it can be used to differentiate infection and contamination if culture or PCR give inconclusive results. The main advantage of FISH is possibility to identify pathogens directly from primary material.

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***Laura Paulovska, Biruta Bankina***

*Latvia University of Life Sciences and Technologies, Lielā street, Jelgava, paulovska.laura@gmail.com*

## **FUSARIUM SPP. AND MICRODOCHIUM SPP. – IMPORTANT CAUSAL AGENTS OF CROWN WHEAT ROT**

Winter wheat is one of the most important and economically beneficial crops in Latvia. Winter wheat diseases, including wheat crown and root rot, are one of the main risk factors that affect wheat yield. Wheat crown and root rot is a complex disease caused by different causal agents. *Fusarium* spp. are one of the most harmful pathogens that decrease the quality of yields, because they cause head blight of ears and are involved in production of mycotoxins. In 2017, *Fusarium* spp. was found in 34% of all infected wheat stems. The most frequently isolated pathogens were *F. avenaceum* (34%) and *F. culmorum* (24%), but the most aggressive species – *F. graminearum* – was found only in 0.4% cases. A relatively high incidence of *Microdochium* spp. was observed (10%). *M. nivale* is the causal agent of pink snow mould, but it can also infect wheat leaves and stems; in our study, it was found in grains as well. There are different opinions regarding *M. bolleyi*, which is considered a weak pathogen or endophyte in wheat. The results presented clearly revealed the complexity of the

problem, and further investigations are required to find regularities that determine the development of crown and root rot and the composition of pathogens.

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**Iveta Jakubāne, Digna Pilāte, Maksims Zolovs, Inese Kivleniece, Māris Nītcis**

*Daugavpils University, Institute of Life Sciences and Technology, Parādes Street 1a, Daugavpils, Latvia, iveta.jakubane@biology.lv*

*Latvian State Forest Research Institute “Silava”, Rīgas Street 1111, Salaspils, Latvia, digna.pilate@silava.lv*

## **INVASION OF SPANISH SLUG *ARION VULGARIS* MOQUIN-TANDON, 1855 (SYN. *ARION LUSITANICUS* AUCT. NON-MABILLE) IN LATVIA**

*Arion vulgaris* is a serious pest for agriculture with observed impact on native fauna and flora. The invasive nature of this slug cause a lot of discussions about taxonomic status and its impact on ecosystems. *A. vulgaris* has adapted to a dry climate and in the most regions of Northern Europe it has less limitations of reproduction that resulted in rapid spread of this species. This research was carried out in 2017. In total all known localities of *A. vulgaris* (n=22) by 2017 were surveyed. The data of slug distribution were obtained in the frame of LVAF project “Data acquisition of invasive Spanish slug (*Arion lusitanicus*) in Latvia”. In the localities of slug occurrence, we plotted sampling areas (2x10 m) and used them to evaluate the size of slug population. The number of sampling areas varied depending on the size of locality. In total, we evaluated 120 sample areas. The aim of this study was to evaluate the invasion of *A. vulgaris* in Latvia and figure out how citizens deal with this species in the invaded areas. Main results show that *A. vulgaris* was found in large number (10 – 100 individuals per sample area) and formed a stable populations. The largest distribution area was in Jelgava with 119.1 ha, whereas the smallest - Ieriķi with 1.5 ha. The invasion of *A. vulgaris* in Latvia is evaluated as medium (~50 individuals per 20m<sup>2</sup>). We have found that the most effective, easiest, most economically advantageous method, which provides an immediate result, is the handpicking of slugs. Any other methods such as chemicals, biological enemies and agrotechnical techniques appeared unsuccessful.

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**Inese Kokina, Ilona Mickeviča, Marija Jermaļonoka, Linda Bankovska, Vjačeslavs Gerbreders, Andrejs Ogurcovs, Eriks Sledevskis, Inese Gavarāne**

*Department of Biotechnology, Daugavpils University, Institute of Life Sciences and Technology, Laboratory of Genomics and Biotechnology, Parades Street 1A, Daugavpils, Latvia*

*Department of Technology, Daugavpils University, Institute of Life Sciences and Technology, G. Liberts' Center of Innovative Microscopy, Parades street 1A, Daugavpils, Latvia*

## **NANOPARTICLES INDUCE INCREASING OF VARIATION IN RESISTANCE-RELATED GENE PME3 IN FLAX**

Nanoparticles are between 1 and 100 nm and can penetrate into living organisms and cause different changes. Therefore, more research is being performed to investigate the potential effect of nanoparticles on environment, health and safety. Hence, numerous experiments have been realized to demonstrate the effects of nanoparticles on the growth, development and gene expression in plants. Recently, a great attention has been given to the use of nanotechnologies in *in vitro* plant systems.

The present work shows results of variation in resistance-related gene pectin methylesterase in all tissue culture development stages, as donor plant, calluses, and regenerants of *Linum usitatissimum* induced by different nanoparticles. Specific primers were developed for resistance gene to define the genetic variability in tissue cultures of flax. Obtained data show the variation increase in calluses grown on medium supplemented by nanoparticles and decrease in regenerants. Morphological parameters of calluses showed a number of differences between each investigated culture group. As a result, induction of random changes in the nucleotide sequences of the resistance-related gene region in flax were detected. The method presented could be utilized to increase plant yield in different environmental biotic stresses.

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**Natalja Škute, Nadežda Harlamova, Marina Savicka**

## **THE EVALUATION OF LUMA METHOD FOR ANALYSIS TOTAL DNA METHYLATION OF FEN ORCHID (*LIPARIS LOESELII* L.) FROM DIFFERENT LATVIAN POPULATIONS**

Epigenetic mechanisms regulate gene expression without changes to the underlying DNA sequence. DNA methylation is the best known epigenetic modification. These epigenetic changes can be caused as adaptive response to environmental factors. The total DNA methylation level depend on the type of environmental factors. The orchid family is one of the most threatened families in Latvia. One of the rarest and especially protected species in Latvia is the fen orchid (*Liparis loeselii* L.), whose area covers the entire territory of Latvia. DNA was isolated from orchid leaves, using the DNeasy Plant kit (*Qiagen*). The Luminometric Methylation Assay (LUMA method) was used for total DNA methylation analysis of orchid populations. The LUMA is permissive for genomic DNA methylation studies of any genome as it relies on the use of methyl-sensitive and – insensitive restriction enzymes followed by polymerase extension via Pyrosequencing technology. In first time the DNA GC methylation analysis for fen orchid in different Latvian regions was done. It was shown, that relative methylation levels in fen orchid varies from 0.27 to 0.46 in different Latvian regions.

**Natalja Škute, Jelena Oreha, Arina Evarte**

Daugavpils University, Parādes street 1A, Daugavpils, natalja.skute@du.lv, jelena.oreha@du.lv, arina.evarte@du.lv

## **THE GENETIC STRUCTURE OF EURASIAN PERCH (*PERCA FLUVIATILIS* (L.) POPULATION FROM DAUGAVA AND LIELUPE RIVERS**

The fish resources are among the most valuable biological resources in Latvia. Anthropogenic influence of cities on water systems can be affect the genetic structure of fish populations. The cascade of Daugava hydroelectric power stations (HES) can effectively preserve not only the water biodiversity, but division of natural river-beds by HES and creation of reservoirs is resulting in the fragmentation effect of natural water bodies. The aim of the work was to study the genetic structure of some fish populations in different parts of the Latvian rivers. Eurasian perch have abundance and wide distribution, extended genetic research of perch populations in Europe, and no stocking effects.

The genetic structure of the perch population from Daugava and Lielupe River has been investigated using 9 DNA microsatellites loci (*Pfla L2, Pfla L4, Pfla L6, Pfla L10, YP 60, YP 78, YP 111, Svi L7 and Svi L10*). The genetic diversity, the level of polymorphism, means of alleles on locus, observed and expected heterozygosity, population structuring ( $F_{ST}$  and  $R_{ST}$ ), Bayesian approach, gene flow ( $Nm$ ) were analysed in perch populations from different particular Daugava and Lielupe rivers: near Daugava river creek, Daugava river in town Riga, Daugava river in Kegums HES site and Daugava river after Kegums HES site and Lielupe river creek, Lielupe river in town Jelgava. It was detected, that there is the poor of heterozygotes of perch populations from river Daugava River on territory of Riga, in Lielupe River on territory of Jelgava. It was shown, that the genetic differentiation is essential for fish populations in the Daugava River between Kegums HES and Riga HES reservoirs due to the fragmentation of population by HES dams, but in general, genetic differentiation reflects geographic isolation in the fish populations of Daugava River and Lielupe River. The perch population in the Daugava River in the territory of Riga (Voleri) is significantly different among all other populations, which is possibly due to the migration of tears from the sea to the river.

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**Inta Jakobija, Biruta Bankina**

Latvian Plant Protection Research Centre, Struktoru 14a, Rīga, Latvia, inta.jakobija@laapc.lv  
Latvia University of Life Sciences and Technologies, Lielā iela 2, Jelgava, biruta.bankina@lu.lv

## **SYMPTOMS OF ROT CAUSED BY MONILINIA SPP. AND THE MORPHOLOGY OF PATHOGENS IN POME FRUITS**

The aim of this study was to describe the symptoms of fruit rot caused by *Monilinia* spp. and the morphology of pathogens. *Monilinia* spp. cause brown rot of fruits belonging to the family *Rosaceae*, e.g., pome fruits. Brown rot is a significant reason for yield loss in apple, pear, and Japanese quince plantations.

*Monilinia fructigena*, *M. Laxa*, and *M. fructicola* are the main causal organisms of brown rot in pome fruits.

The first symptoms on fruits appear as brown lesions that during rot development expand and cover a whole fruit or its parts. All or part of the infected fruit. The most severe attack of brown rot can be observed on ripened fruits. Tan spore sporodochia appear on the infected part of fruit under moist conditions. Rotten fruits turn black, shrink, and remain as mummies on a tree or in storage. In spring, conidia develop on the surface of those mummies under favourable conditions.

Pathogens cannot be separated credibly on symptoms alone, and laboratory examination is necessary. Identification to genus level can be made by examination of conidia (anamorphic stage) under a microscope and by comparing the morphology of spores. Moist chamber incubation may be necessary in some cases to promote the sporulation of fungi. Brown rot fungi can be readily cultured on potato dextrose agar (PDA). *Monilinia* species are morphologically similar in PDA culture, the greatest difficulty perhaps being to separate the isolates of *M. fructicola* and *M. laxa*. The main characteristics used to distinguish among the species are culture color, growth rate, sporulation, forming rings of sporulation, colony margin, and rosetting.

***Muza Kirjušina, Evita Grāvele, Ligita Mežaraupe, Mihails Pupiņš***

*Daugavpils University, Institute of Life Sciences and Technology, Department of Ecology, Parades Street 1A, Daugavpils*

## **THE PILOT STUDY OF GREEN FROG PELOPHYLAX ESCULENTUS COMPLEX (ANURA: RANIDAE) PARASITES IN LATVIA**

The European water green frog *Pelophylax esculentus* complex includes *Pelophylax lessonae* (Camerano, 1882), *P. ridibundus* (Pallas, 1771) and their fertile hybrid *Pelophylax* kl. *esculentus*. They are widespread species in water bodies of Latvia and play a significant role in the food chains of lakes, rivers and ponds ecosystems. Research was conducted in accordance with Nature conservation agency agreement. Frogs were collected from habitats associated with Daugava River, different sizes lakes and ponds throughout Latvia.

Hosts examination for endoparasites was carried out within 24-72 hr after capture. In July-Augusts 2017 total of 141 specimens were collected for parasitological examination. The frogs were over anaesthetized in ether-filled containers. The eyes, heart, lungs, liver, gall bladder, alimentary tract and urinary bladder were separated and examined under stereomicroscope. Mouth cavity and body cavity have been carefully studied. The parasites found belong to the following systematic groups Protozoa, Monogenea, Digenea, Nematoda and Acanthocephala. All parasites are collected for future detection and investigation.

This work was supported by Daugavpils University grant 14-95/31.

***Marina Savicka, Aleksandrs Petjukevičs***

*Daugavpils University, Institute of Life Sciences and Technology, Department of Ecology, Parādes street 1A, marina.savicka@du.lv*

## **THE ROLE OF MACROPHYTES IN CHANGE OF HYDROLOGICAL PARAMETERS UNDER SALINITY AND HIGH TEMPERATURE STRESS**

Alterations in water chemistry and hydrological regimes affect the structure and function of aquatic ecosystems. Climate changes alter the characteristics of the water. Physico-chemical factors of water in terms of pH, dissolved oxygen, total P and N, quantity of chlorophyll *a* may affect the distribution and the richness of macrophytes. However, the importance varies with the growth forms of macrophytes, e.g., free-floating macrophytes often have a large impact on freshwater ecosystems. When nutrient loading is high, free-floating macrophytes will form dense mats that cover the entire surface of the water body. *Ex situ* experiments were performed with freshwater free-floating plant *Lemna minor* grown at 30°/25°C (day/night; temperature stress), in 25mM NaCl (moderate salinity stress), and as a control was *Lemna minor* grown at 15°/18°C and without NaCl (Control). In this study, the effect of the moderate heat and salt stress on the change in hydroecological parameters (quantity of chlorophyll *a*, dissolved oxygen, total P and N, water pH etc.) was studied. Hydroecological studies (*ex situ*) showed that the biomass of macrophytes rapidly increased during moderate salt and heat stress treatment. However, this led to a gradual deterioration of the hydrological parameters (decrease

of dissolved oxygen, increase in chlorophyll concentration and water pH etc.), total phosphorus and nitrogen changed as well ( $p < 0,05$ ). Our research has shown that a moderate increase in temperature and salinity of freshwater may lead to eutrophication and to a decrease in biological diversity in the future.

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***Evita Grāvele, Digna Pilāte, Valdis Pilāts, Muza Kirjušina***

*Daugavpils University, Life Sciences and Technology Institute, Parādes street 1A, Daugavpils, evita\_22@inbox.lv, muza.kirjusina@du.lv*

*Latvian State Forest Research Institute “Silava”, Rīgas street 111, Salaspils, digna.pilate@biology.lv*

*Nature Conservation Agency, Baznīcas street 7, Sigulda, Latvia, valdis.pilats@daba.gov.lv*

## **ZOONOTIC HELMINTHS DETECTED IN RODENTS AND SHREW IN LATVIA**

Worldwide many diseases cause viruses, bacteria, parasites and ticks. Diseases shared by animals and humans called zoonotic diseases or zoonosis. Wild rodents act as definitive and/or intermediate hosts of many endoparasites, several species of which are common to humans. For example, Nematoda *Capillaria hepatica* infects liver and causes capillariasis disease. Cestoda species *Hymenolepis diminuta*, *H. nana*, *Mesocestoides lineatus*, cause human hymenolepiasis, mesocestoidiasis, respectively. Acanthocephala *Moniliformis moniliformis* causes acanthocephaliasis. For *H. diminuta*, *H. nana* and *C. hepatica* definitive hosts are rodents and humans, but for *M. lineatus* rodents are intermediate hosts. *M. moniliformis* definitive hosts are rodents. Humans are incidental (accidental) host for *M. moniliformis*, and *M. lineatus*. Cestoda *Echinococcus multilocularis* especially pathogenic for humans because lethal disease alveolar echinococcosis and rodents support the population as intermediate hosts.

In period of 2015–2018, more than 450 small mice, like rodents and shrews (*Apodemus agrarius*, *A. flavicollis*, *Arvicola amphibious*, *Myodes glareolus*, *Micromys minutus*, *Microtus agrestis*, *M. arvalis*, *Mus musculus*, *Rattus rattus*, *Sicista betulina*, *Sorex araneus*, *Sorex minutus*, *Neomys fodiens*), were collected and examined for the presence of parasites. The method of full parasitological examination was used.

In this survey we found following zoonosis agents: *H. diminuta*, *M. lineatus* and *C. hepatica*. All three species were recorded in yellow-necked mouse. Only one species of *H. diminuta* was found in black rat and in Eurasian pygmy shrew – *M. lineatus*.

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# FINANŠU UN SAIMNIECISKĀS DARBĪBAS ANALĪZES JAUTĀJUMI

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## ISSUES OF FINANCES AND COMMERCIAL ACTIVITY

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*Jānis Šņepsts*

*Daugavpils University, Parādes street 1, Daugavpils, janis\_21@inbox.lv*

### ASSESSMENT OF THE AGRICULTURAL SECTOR IN THE SOUTH-LATGALE REGION FROM 2004 TO 2016

Key words: European Union, European Agricultural Fund for Rural Development, Rural Development Programme, Rural Support Service, South Latgale regional agricultural department, Farming sector, Direct payments.

Aim of the study. Studying and analyzing the agricultural sector in the South-Latgale region during the period from 2004 to 2016, to develop recommendations for the sustainable development of the agricultural sector.

Land is one of the main production resources for ensuring the functioning of the national economic system. The State must establish a system of economic governance that will allow the best use of all its resources to meet the needs of the State. The research is topical with the fact that the agricultural sector is one of the basic branches in the Latvian economy. Agriculture has historically been a vitally important sector in Latvia, because it has been a long time ago with farming in Latvia. Latvia is not rich in natural resources, but according to the data of the State Land Service of republic Latvia, as of January 1, 2016, the agricultural land occupies 2 352 614 ha or 36.5% of Latvia's total area, therefore it is very important to use this huge resource correctly and expediently, which would bring profits and a common benefit to the entire national economy in the long-term period.

Analysis and evaluation of the situation in the agricultural sector in the South-Latgale region allows us to look at the trend of agricultural development since 2004, when EU funds became available to farmers, which contributed to an increase investments in agricultural enterprises. The study will allow to go into the agricultural sector of the Southern Latgale region, will allow you to look at and see the sources and internal factors that have affected the agricultural sector in South Latgale, thus also showing and suggesting solutions for the future development of the agricultural sector in the South-Latgale region. The study is unique in part, because the agricultural sector in the South Latgale region has not been studied in details before.

*Viktorija Aleksejeva*

*Daugavpils University, Parādes street 1, Daugavpils, aleksejeva30@inbox.lv*

### E-VIDES IETEKME UZ REĢIONĀLO ATTĪSTĪBU EIROPAS SAVIENĪBAS VALSTĪS NO 2014. LĪDZ 2017. GADAM

IKT infrastruktūras tīkla izveide un pārklājums gan Latvijā, gan Eiropas Savienībā (turpmāk ES) strauji attīstās un pārņem visas nozares. Ne tikai Eiropas Savienībā, bet arī Latvijā notiek IKT industrijas uzplaukums – strauja attīstības augšupeja, par to liecina sabiedrības un saimniecības subjektu IKT lietošanas paradumi un pieejamā statistika par IKT aktīvo lietošanu. Šāda globāla attīstības tendence mudina Eiropas Savienības valstis, domāt par, tā saukto, informācijas sabiedrības attīstības iespējām. Jebkura nozares darbība gan Latvijā, gan pasaulē ir cieši saistīta ar IKT, ņemot vērā IKT lietošanas iespējas, neviens uzņēmums un mājsaimniecības nav iedomājams bez IKT iespēju izmantošanas. Visi “papīru dokumenti” tiek sistematizēti un pārveidoti elektroniskajos formātos un datubāzēs, tādēļ arvien straujāk pieaug arī pieprasījums pēc IKT speciālistiem. Tādējādi par jebkura uzņēmuma vērtīgāko rīku kļūst IKT, respektīvi ierīces, kas informāciju ļauj ātri iegūt, apstrādāt un glabāt. Gan mājsaimniecības, gan uzņēmumus strauji aptver IKT, un, pieļaujams, ka nākotnē visas uzņēmumu un mājsaimniecības darbības tiks elektronizētas un digitalizētas, tādēļ ne tikai uzņēmumu darbiniekiem būs jāpielāgojas šai sistēmai, bet arī visiem iedzīvotājiem, respektīvi, mājsaimniecībām.

Interneta tīkls un tā pieslēgums, kas nodrošina IKT infrastruktūru, ir neaizstājama komponente uzņēmumu un mājsaimniecības darbībā. Interneta tīkls ir būtiska platforma, uz kuras attīstās IKT infrastruktūra. Tas kalpo kā ātrs un ērts sazināšanas līdzeklis starp uzņēmumiem un kā informācijas iegūšanas avots. Interneta tīkla kvalitāte



ir būtisks faktors efektīvai uzņēmuma un mājsaimniecības darbībai, līdz ar to arī valsts ekonomikai kopumā, jo reģionālās attīstības līmenis ir atkarīgs no uzņēmumu un mājsaimniecību darbības.

Izmantojot IKT iespējas, uzņēmumu produktivitāte un darbības efektivitāte uzlabojas un aug, jo šī infrastruktūra palīdz optimāli organizēt uzņēmējdarbības un mājsaimniecības resursus, ātri apmainīties ar informāciju, kā arī iegūt informāciju, līdz ar to arī ekonomikās aktivitātes līmenis un reģionālās attīstības līmenis uzlabojas. Ekonomikas izaugsmes pamatā ir uzņēmumu un mājsaimniecību darbība. Gan Latvijas, gan Eiropas Savienības politikas līderu izstrādātajos stratēģijas plānos tiek atrunāti aspekti saistīti ar IKT, kas balstās uz informācijas sabiedrības attīstību, uz zināšanu balstītu ekonomikas veidošanu, kā arī plašu piekļuvi IKT ikvienam iedzīvotājam u.c. Informācijas sabiedrības sastāvdaļa ir uzņēmumu tehnoloģiskā pratība, kas, saskaņā ar Informācijas sabiedrības attīstības pamatnostādņem 2014.–2020.gadam, dod pienesumu tautsaimniecības attīstībā. Līdz ar to IKT attīstība uzņēmumos un mājsaimniecībās ir svarīgs priekšnosacījums valsts ekonomikas un reģionālās attīstības izaugsmei.

**Jūlija Rukavišņikova**

*Daugavpils University, Parādes street 1, Daugavpils, fantasy09@inbox.lv*

## **JAUNIEŠU BEZDARBA DINAMIKA BALTIJAS VALSTĪS 2010.–2015. GADĀ**

Jauniešu konkurētspējas ir ierobežotas, salīdzinājumā ar citām vecuma grupām un jaunieši joprojām paliek par vienu no neaizsargātākajām vecuma grupām darba tirgū. Situācija Baltijas valsts darba tirgū ir diezgan saspringta un tai ir raksturīgā tendence ar katru gadu pasliktināties. Jaunieši ir sabiedrības nākotne, tāpēc ir svarīgi novērtēt jauniešu bezdarba lielumu un izprognozēt tās dinamiku ar mērķi atrast veidus, lai sniegtu efektīvu atbalstu jauniešiem, kam ir grūtības ar nodarbinātību. Pētījumā tika noteiktas problēmas ar kurām sastopas jaunieši darba tirgus iekļūšanas procesā, tika izanalizēta jauniešu bezdarba dinamika Baltijas valstīs 2010. – 2015. gadā, veikta socioloģiskās aptaujas analīze kā arī izdarīti secinājumi un izstrādāti priekšlikumi Baltijas valsts darba tirgus stabilizēšanai, saistībā ar jauniešiem.

**Iveta Geriņa, Dr. oec. Aina Čaplinska**

*Daugavpils University, Parādes street 1, Daugavpils, ivete3@inbox.lv, aina.caplinska@gmail.com*

## **KREDĪTPOLITIKA UN KREDĪTPORTEĻA KVALITATĪVIE RĀDĪTĀJI**

Kredītiestāžu kredītportfeļa kvalitāti būtiski ietekmē – valsts kā institucionālā vara, banku, kā arī aizņēmēju īstenotā kredītpolitika. Kā apliecinājums tam ir Latvijas kredītiestāžu kredītportfeļa kvalitāte.

Ar valsts prasībām noteikta kredītiestāžu kredītpolitika darbojas kā kredītu pārvaldīšanas procesa pamats, kas nosaka objektīvus standartus un parametrus kredītu piešķiršanas un atmaksāšanas kārtībā, izsniegto kredītu uzraudzības un to kvalitātes novērtēšanas kritērijos ar mērķi veicināt efektīvas un ilgtspējīgas kredītooperācijas augstā kvalitātē.

Politika nodrošina bāzi banku biznesam un kredītu operāciju stratēģijai, kā arī noder kā ceļvedis, lai veidotu ilgtermiņa attiecības ar darījuma partneriem un koriģētu iespējamo kredītrisku.

Nozīmīgs kredītportfeļa kvalitatīvais rādītājs ir kredītu sadalījums pēc maksājumu kavējuma perioda, kur valsts straujās ekonomiskās izaugsmes periodā no 2005. līdz 2007.gadam bez kavējumiem kredītu īpatsvars svārstījās vidēji ap 94%, turklāt kredītiem ar kavējumu virs 180 dienām vidēji ap 0,7%.

Latvijas finanšu un pārvaldes krīzes laika posmā no 2008.g. līdz 2010.g. kredītu kavējumi palielinājās: 2008.g. jau iezīmēja situācijas pasliktināšanos – kredītu skaits bez kavējumiem kritās un sastādīja 85%, bet kredītu skaits ar kavējumu virs 180 dienām jau uzrādīja 2,1%, 2009.g. –13,1%, 2010.g. –17,2%. Bez kavējuma kredītu skaits 2010.g.bija vien 73,4%.

Pakāpenisks rādītāju uzlabojums sākās no 2011.g., sasniedzot stabilus rādītājus 2017.gadā: ar kavējumu virs 180 dienām vien 3,8%, bez kavējuma kredītu skaits – 90,6%.

Var secināt, ka vēsturiskie notikumi ekonomikas konjunktūrā ir būtiski ievirzījuši kredītpolitikas izmaiņu stingru prasību ievērošanas virzienā, proti, ieviestas un īstenotas būtiskas izmaiņas komercbanku uzraudzībā – pāreja no ekstensīvās pie intensīvās uzraudzības, kas orientēta uz paaugstinātu risku diagnostiku, tiek izmantoti stresa testi, procesa modelēšana un darbības caurskatāmība.

**Nadežda Griškjāne**

*Daugavpils University, Parādes street 1, Daugavpils, nadezhda.grishkyane@gmail.com*

## **LABOR MIGRATION AND THIS IMPACT TO MACROECONOMIC PERFORMANCE IN THE BALTIC COUNTRIES**

Labor migration is a bilateral movement of labor force in order to satisfy certain economic benefits (for example, job findings, the highest salary, career's opportunities, etc.).

The impact of labor immigration to macroeconomic performance has been studied by many and different researchers, because labor immigration increases supply in the labor market, facilitates flexibility of labor market, promotes business development and thus contributes the economic growth in the country.

The impact of labor migration to macroeconomic performance depends on the level of education and qualifications of labor migrants. Highly skilled labor migrants are considered more valuable human capital, because they promote exchange of knowledges, development of entrepreneurship, investment inflow and the economic growth in the country.

Labor emigration, on the one hand, reduces competition in the local labor market, but, on the other hand (especially highly qualified labor emigration) – reduces supply in the labor market, increases unemployment rate, causes the demographic problems, reduces the entrepreneurial potential and thereby economic growth in the country too.

Remittances are one of the labor emigration positives factors. It is believed that remittances can contribute local inhabitants income growth, business development and investment inflow, as well as the economic growth in the country. This effect depends on where these remittances are invested.

Therefore topicality of study has related to determine labor migration impact to macroeconomic performance in the three Baltic countries during 2004–2016. It'll allows to determine the prospects for the development of labor migration and government policy in the future.

***Rita Moskvitina***

*Daugavpils University, Parādes street 1, Daugavpils, rita.pavlenoka@gmail.com*

## **SIA “LDZ CARGO” FINANŠU DARBĪBAS ANALĪZE**

Savu finansiālo stāvokli ir svarīgi noteikt katram uzņēmumam, identificēt iespējas pilnveidot esošas finanšu vadības metodes un uzlabot uzņēmuma finansiālo stāvokli. Pētāmā uzņēmuma finanšu analīze ļauj uzņēmumam noteikt vai uzņēmums finanšu resursus izmanto efektīvi, tā ļauj prognozēt iespējamus finanšu rezultātus un, ja nepieciešams, izstrādāt pasākumus finanšu stāvokļa uzlabošanai un veikt pilnveidošanās iespējas.

Lai uzņēmums spētu veiksmīgi attīstīties un ieguldīt naudu tehnoloģiju modernizēšanai, veicinot resursus eksporta tirgus iekārošanai, uzņēmuma vadībai ir nepieciešams sekot uzņēmuma saimnieciskās darbības rezultātiem, lai laicīgi spētu konstatēt un novērst problēmas, vai arī laicīgi konstatēt uzņēmuma darbības rezultātu uzlabošanai un to veicinošu faktoru konstatēšanai.

Pētījuma galvenais mērķis ir analizēt apskatāma uzņēmuma finansiālo stāvokli 2014.–2016. gadā, kā arī izstrādāt pasākumus uzņēmuma finansiālā stāvokļa uzlabošanai. Finansiālais stāvoklis var būt stabils, nestabils (pirms krīzes) un krīzes.

Pētījuma hipotēze – vai ir iespējams uzlabot finanšu izmaksu procesu lietderīgāka metode.

Pētījuma izziņošanai un apkopošanai tiek izmantotas metodes – analīze, sintēze, grafiskā metode, gada finanšu pārskatu datu analīze, literatūras avotu izpēte.

Pētījuma aktualitāte saistīta ar nepieciešamību uzlabot finansiālo stāvokli uzņēmumā, kas rodas pašreizējā ekonomiskajā situācijā.

Analizējot pētāmo uzņēmumu izstrādāt priekšlikumus, lai uzlabotu to finanšu rādītājus.

***Jekaterina Razina, Daina Skiltere***

*University of Latvia, Raina Blvr. 19, Rīga, razina.jekaterina@gmail.com, daina.skiltere@lu.lv*

## **THE FACTORS HINDERING DEVELOPMENT OF THE LATVIAN AGRICULTURAL PRODUCTION INDUSTRY**

Key words: agriculture, factor analysis, development forecasting, economic freedom.

The agricultural sector and the dairy products sector have received significant funding from European Union funds since 2004. The main objective of the Common Agricultural Policy of the European Union is to promote sustainable agriculture within European Union countries. The authors analyse the factors, which limit and

prevent the development of the agricultural sector, based on the examples of the milk and dairy product manufacturing industry. The authors suppose that one of the most important indicators for assessing the development of the industry is the export performance, therefore the study deals with a direct analysis of the factors preventing export.

The purpose of the research is to analyse the factors hindering development of the Latvian agricultural production industry.

The study uses statistical data processing methods, system analysis, comparison methods, empirical data collection methods, factor analysis.

The results of the analysis show the regularity of the fact that very important hindering factors are the ones regarding the lack of co-financing and other financial assistance. The authors conclude that the factors that significantly impede the export of Latvian dairy products are the limited duration of dairy products, political decisions (sanctions and other factors limiting trade), insufficient demand in foreign markets, high level of competition in foreign markets, high import tariffs, high logistics costs. The economic freedom of the region and the country has a significant impact on the development of the agricultural sector. The authors conclude that the Ministry of Agriculture should use the fundamental factor analysis for binding research in the field of agricultural industry and especially for forecasting exports.

***Vladimir Menshikov, Olga Volkova***

*Daugavpils University, Parādes street 1, Daugavpils, v.menshikov@inbox.lv, olga.volkova@du.lv*

## **THE IMPACT OF HEALTH ON THE SOCIOECONOMIC STATUS OF THE POPULATION OF LATVIA**

Key words: human capital, health capital, socio-economic status.

Generally, healthy people are more energetic, mobile and have a more optimistic view of life. These characteristics not only reflect a positive impact on social activities, but also influence an economic growth and development. Indicators of individual health affect the possibility of familiarizing a person to work, the level of its material well-being and social realization. Emerged in recent decades, numerous studies, devoted to the impact of health indicators on the economy, demonstrate the unfading relevance of this theme. In recent years, the attention of researchers has been aimed at studying inequalities in health, differentiation in health assessments between different socio-economic groups of the population. The paper discusses ways of health affecting the material well-being, the important issues of health to the socio-economic status of Latvians.

***Solvita Kozlovskā***

*Daugavpils University, Parādes street 1, Daugavpils, solvita.kozlovskā@jak.lv*

## **THE RELATIONSHIP BETWEEN FINANCIAL ANALYSIS AND THE HISTORICAL DEVELOPMENT OF ACCOUNTING**

Accounting records have existed for a very long time and appeared approximately when people started trading. Such accounting makes sense doing business, because then an organized system of accounting is needed to arrange and keep track of economic activities and their efficiency. The term accounting means an arranged system of collecting, registering and summarizing information organized in monetary terms on the company's property position, liabilities and their changes (cash flow) with the complete, continuous and documented accounting of all economic operations. The founder of the bookkeeping was Luca Pacioli, an Italian monk and mathematician who lived on the turn of the 15<sup>th</sup> and 16<sup>th</sup> centuries. The accounting system is characterized by high levels of unevenness and diversity in the course of historical development, depending on how the relevant developments have been and how they have been reflected in the accounting.

The science of financial analysis has developed relatively recently. Fundamental work on financial analysis is not up to the 20<sup>th</sup>-30<sup>th</sup> years of the 20<sup>th</sup> century. During this time, the analysis focused mainly on assessing the company's financial position and looking for funds to maximize profits. Financial analysis is an integral part of the economic analysis, to carry out the following analysis it is necessary to use by statistics summarized and in company accounting reports reflected information.

The aim of the research: to carry out research on accounting creation and historical development that stimulated the development of financial analysis as a science.

The fastest growing financial analysis is being experienced in the beginning of the 21<sup>st</sup> century, as world economic crises activated scientists' research focused on the search for analytical methods and the rapid development of information technology and computer science for the processing of economic information

enabled the basis for scientists' research in the field of financial analysis. It is important for each company to determine its financial position, to identify opportunities to improve existing financial management methods and improve the company's financial position.

***Liene Amantova-Salmane***

*Daugavpils University, Parādes street 1, Daugavpils, liene.amantova-salmane@rta.lv*

## **THE SUSTAINABILITY CRITERIA AND INDICATORS OF INVESTMENT PROJECT IN LATVIA EUROPEAN UNION PROGRAMME PERIOD 2014–2020**

The variety of criteria and indicators is often a cause for uncertainty and probably one of the reasons for the still unacceptable of criteria and indicators as a support for implementation of sustainable project management. In order to address this statement about sustainability criteria and indicators of investment project in Latvia this research offer the content and quality of these criteria and indicators. The research demonstrates that criteria and indicators, although addressing the social, ecological and economic dimensions of sustainability, display different thematic focus. A general lack of validity as well as missing specificity and practicability of the indicators and in order to increase objectivity and transparency, the criteria and indicators have to reflect more clearly and definitely. This research outlines general criteria and indicators of and constraints on investment project sustainability. The aim of the research is to demonstrate the necessity of investment projects sustainability criteria and indicators. Consequently, the main task of the research is to develop a sustainability criteria and indicators of investment project in Latvia in European Union programme period 2014 – 2020 matrix. The key results: a matrix of sustainability criteria and indicators. The methods of research are monographic, quantitative, quantitative, deductive and inductive. An investment projects sustainability criteria and indicators would allow the systematic scoring and ranking of public investment projects. In order to deal with failings in the public investment projects, the focus on developing key criteria and indicators has to be used.

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# CIVILTIESĪBAS

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## CIVIL LAW

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**Atis Bičkovskis**

*Rīga Stradins University, Dzirciema street 16, Rīga, atisbickovskis@inbox.lv*

### CONSTRUCTION SERVICE FIELDS AS A TOOL FOR VALUE ADDED TAX FRAUD

Darba mērķis ir analizēt Latvijas tiesu praksi par komersanta iesaistīšanos krāpnieciskās darbības ar nolūku gūt fiskālās priekšrocības atskaitāmā nodokļa veidā darījumos saistībā ar būvniecības pakalpojumiem.

Piemēram, komersants, kurš atskaita priekšnodokli, ir uzvarējis konkursā par liela objekta būvniecību. Deklarējis apakšuzņēmējus, kas norādīti kā faktiskie darba veicēji. Nodokļu administrācija, veicot nodokļu pārbaudi, komersantam konstatē, ka komersanta izvēlētajiem apakšuzņēmējiem un to tālākajiem darījumu partneriem nav darbaspēka, lai faktiski sniegtu pakalpojumus (būvdarbus). Turklāt, to saimnieciskās darbības veids ir reģistrēts nesaistīts ar būvniecību, tas nozīmē, ka attiecīgais komersants nav izpildījis Būvniecības likuma prasību reģistrēties būvkomersanta reģistrā. Tāpat arī Vispārīgo būvnoteikumu normas nosaka, ka būvdarbu sagatavošanu un būvdarbus var veikt būvētājs vai būvkomersantu reģistrā reģistrēta persona.

Pievienotās vērtības nodokļa piemērošanā, gan nodokļu administrācijā, gan Administratīvajās tiesās tiek izmantota Eiropas Savienības Tiesas atziņa, ka ar nodokļu iestāžu sniegtajiem objektīviem elementiem ir jābūt pierādītam, ka nodokļu maksātājs (komersants) zināja vai tam bija jāzina, ka darījums, kas ir tiesību uz atskaitījumu pamatā, ir bijis iesaistīts minētajā krāpnieciskajā darbībā. Būvniecības pakalpojuma sniegšanas lietās, nedrīkst atstāt bez ievērības komersanta attieksmi par pierādījumu sniegšanu nodokļu pārbaudes laikā – ja tas neiesniedz būvdarbu žurnālu vai arī iesniedz kādu tā daļu, neiesniedz būvobjekta nodarbināto sarakstu – jau pamatoti rada šaubas vai darījums ir noticis tā, kā to deklarējis komersants. Tā kā, atbilstoši Vispārīgajiem būvnoteikumiem, par katru būvobjektu ir jāved būvdarbu žurnāls, komersants nevar nezināt, kas konkrēti strādā objektā, tostarp nodarbināto vārdus, uzvārdus un darbuzņēmēja nosaukumu, kas tos nodarbina.

Ņemot vērā minēto, autors analizēja judikatūru attiecībā uz pievienotās vērtības nodokļa krāpšanas apkarošanas problēmām Latvijā saistībā ar būvniecības pakalpojumiem.

**Zane Zvīgule**

*Daugavpils University, Parādes street 1, Daugavpils, zanezvigule@inbox.lv*

### ĀRPUS LAULĪBAS KOPDZĪVES TIESISKAIS REGULĒJUMS UN NEREĢISTRĒTO PARTNERATTIECĪBU PROBLEMĀTIKA

Latvijas Republikas Satversme aizsarga oficiāli reģistrētu laulību - savienību starp vīrieti un sievieti. Citas savienības Latvijā nav aizsargātas. Tomēr Latvijā vairums pāru izvēlas dzīvot neregistrētā laulībā. Iemesli var būt dažādi, piemēram, nevēlēšanās uzņemties atbildību, pārim laulība nav galvenais, viendzimuma pāris nevar oficiāli reģistrēt laulību Latvijā utt. Oficiāli neregistrēta laulība var radīt vairākas problēmas, piemēram, īpašuma sadales jautājums (manta nav uzskatama par kopmantu), nav mantošanas tiesību, dzimušā bērna paternitātes noteikšana utt. Šobrīd ir diskusijas par iniciatīvu par Kopdzīves likuma pieņemšanu, kura savāca 10 tūkstošu Latvijas iedzīvotāju balsu skaitu. Dažās ES dalībvalstīs savas partnerattiecības varat noformēt nenoslēdzot laulību, bet izveidojot neregistrētu savienību vai reģistrētu partnerību. Tomēr ārpus laulības kopdzīves legalizācija ir solis arī viendzimuma laulību legalizācijai.

**Ineta Lilinfelde**

*Rīga Stradiņš University, Dzirciema street 16, Rīga, ineta.lilinfelde@inbox.lv*

### BĒRNU DZĪVESVIETAS NOTEIKŠANAS PROBLEMĀTIKA

Ja abiem vecākiem pastāv strīds par bērna dzīvesvietas noteikšanu, tad vecākiem ir tiesības šo strīdu par bērna dzīvesvietu izšķirt tiesā. Ar tiesībām noteikt bērna dzīvesvietu saprotama ģeogrāfiskā dzīvesvietas izvēle un mājokļa izvēle. Tiesību aktos noteiktais kritērijs, izšķirot strīdu par tiesībām noteikt bērna dzīvesvietu, ir bērna intereses, jo likumā nav noteiktas kaut kādas priekšrocības vienam vai otram vecākam. Līdz ar to tiesai ir jāpārbauda un jāizvērtē arī vecāku objektīvās iespējas nodrošināt bērna pilnvērtīgai attīstībai nepieciešamos apstākļus, vecāku subjektīvās iespējas (personiskās īpašības, viņu spēja audzināt bērnu, vecāku pienākuma izpratne, morālā stāja, veselības stāvoklis un citas iespējas) un bērna subjektīvā attieksme pret vecākiem (pieķeršanās tiem, vēlēšanās dzīvot kopā ar vienu vai otru vecāku un citi apstākļi).

Savukārt izšķirot strīdu par bērna dzīves vietas noteikšanu, bērna dzīves vieta tiek noteikta pie viena no vecākiem, tad otrs vecāks bērna aprūpi un uzraudzību ikdienā nerealizē.

Ar vien biežāk tiesu spriedumos parādās šī bērna dzīves vietas caur saskarmes tiesību noteikšanu noteikta daļēji pie abiem vecākiem, pemēram vienu mēnesi pie viena vecāka, otru mēnesi pie otra vecāka, tādējādi uzskatāms, ka netiek pie šādiem apstākļiem ievērotas bērna interese, jo bērnam ir tiesības uz savu pastāvīgo dzīvesvietu. Tādējādi būtu precizējums Civillikumam, kura nosakāms ir saskarsmes apmērs, lai bērns saglabātu tiesības uz savu patstāvīgo dzīvesvietu.

***Kristaps Zariņš***

*Rīgas Stradiņa universitāte, Dzirciema iela 16, Rīga, kristaps@zarins.lv*

## **CANON LAW LEGAL DESCRIPTION OF THE HISTORICAL AND CONTEMPORARY CODIFICATION**

The origin of the earliest canonical concept is to be found in the Epicurean era of 342/431. - 271/270 BC. The epicurist for philosophy has three parts: the doctrine of general regularities (canonics), the doctrine of nature (physics and ethics) (Epic Life, 29-30). Canonical or epistemology as a separate lesson developed only in the era of Hellenism, after Aristotle's death, i.e., after 322 BC. It was strongly influenced by the philosophers Pirron, Diogenes Laretti, Democrats. The work of the Epicurean itself, the Canon, has not survived to this day. The epic of the word canonical signified the theory of truth.

The word "canon" in the Ancient Greek language means a straightforward carpenter's tool that verifies, for example, that the house wall is straight. In Latin, "canon" means the norm. The epic was the first to use the term "canonical" as a legal instrument for philosophy. For sentences: "Laws exist for the sake of wisdom - not because they do not behave injustice, but because they do not experience injustice." Namely, the law can at least partially protect the wise from the harm of others - the wise do not act unjustly, because they know that this behavior is disadvantageous. The epicenter of the contention is: "Natural justice is an asset to no one to harm or suffer from harm." "Justice does not exist in itself, but when people come together in a place, it is always a fixed agreement on non-harm and non-harm. .. People do not just or unfair if they can not enter into an agreement on mutual harm and non-harm from harm."

As a canonical right based on a historical background and the relationship between their origins and neighboring Roman rights, it will be outlined in more detail at work.

***Jolanta Dinsberga***

*Rīga Stradiņš University, Dzirciema street 16, Riga, Latvia, dinsbija@gmail.com*

## **CREATION OF A ROAD EASEMENT THROUGH COURT**

Key words: road easement, right of use, restriction of property right, mediation.

Irrespective of the absolute powers assigned to a proprietor over a property belonging to him, in specific cases the property rights may be restricted. One of such basis for imposing a restriction is the creation of a road easement in the favour of some individual or land plot. The Civil Law of Latvia Article 1231 prescribes that a road easement may be established by law, by a contract or a will or by a judgment of a court. In case of opting for the establishment of an easement through a court, the parties will have to face a time consuming, costly and complex lawsuit. The complications to be faced during the lawsuit are of legal and practical nature. The purpose of this article is to describe the problems associated with establishing a road easement through a court, draw conclusions and offer possible solutions. The article addresses such issues as the necessity to apply interim measures before the judgment is awarded, lists documents that must be enclosed to the statement of claim and the possibility of mediation. These and other topics addressed by the article are targeted at maximally simple and

short legal proceedings to arrive at a balance of interests of the parties when handling a case on the establishment of a road easement.

**Jānis Radionovs**

*Daugavpils University, Parādes street 1, Daugavpils, janrad@inbox.lv*

## **KOPIPAŠUMĀ PIEĻAUTA PATVAĻĪGA BŪVNICĪBA**

Kopīpašums kā aprobežojums, kas attiecas uz īpašumu visā tā apjomā paredz noteiktus pienākumus no katra kopīpašnieka puses. Saskaņā ar Civillikuma 1068.panta pirmo daļu, rīkoties ar kopīpašuma priekšmetu, kā visumā, tā arī noteiktās atsevišķās daļās, drīkst tikai ar visu kopīpašnieku piekrišanu. Tomēr praksē pastāv daudz strīdu starp kopīpašniekiem, tai skaitā, kuri saistīti ar viena kopīpašnieka veikto patvaļīgu būvniecību, kura skar citu kopīpašnieku tiesības un intereses. Administratīvais process par patvaļīgas būvniecības seku novēršanu var pāriet uz civilprocesu par kopīpašuma lietošanas kārtības noteikšanu vai kopīpašuma izbeigšanu. Nav garantijas, ka patvaļīgas būvniecības sekas tiks novērstas, un ka, tiesas lēmums būs labvēlīgs visiem kopīpašniekiem. Autors analizē lietas par kopīpašuma lietošanas kārtības noteikšanu un kopīpašuma izbeigšanu, ievērojot to, ka kopīpašnieki veica patvaļīgu būvniecību.

**Kristaps Ābelis**

*Rīgas Stradiņa universitāte, Dzirciema iela, Rīga, Latvija, kristaps.abelis@inbox.lv*

## **KREDITORA TIESĪBAS UZ INFORMĀCIJU TIESISKĀS AIZSARDZĪBAS PROCESĀ**

Atslēgas vārdi: parādnieks, kreditors, tiesiskās aizsardzības process, informācija.

Tiesiskās aizsardzības procesa mērķis ir aizsargāt gan parādnieku, gan tā kreditoru kopumu īslaicīgu finansiālu grūtību gadījumā. Būtībā parādnieks ir ieinteresēts sadarboties ar kreditoru kopumu, lai atjaunotu savu maksātspēju un nodrošinātu kreditoru prasījumu izpildi ar tiesiskās aizsardzības procesa plānā paredzētajām metodēm. Pirmšķietami var pieņemt, ka tiesiskās aizsardzības plānu, tā saskaņošanas un apstiprināšanas procesu var ietekmēt tikai Maksātnespējas likumā noteiktais kreditoru vairākums, tomēr jebkuram kreditoram ir tiesības piedalīties ne tikai plāna saskaņošanā, bet arī tiesības sniegt viedokli par tiesiskās aizsardzības procesa plānu un tā metodēm. Protams, kreditors var savas tiesības neizmantot, taču parādniekam jebkurā gadījumā ir jānodrošina kreditoru tiesību ievērošana.

Prakse liecina, ka parādnieks bieži vien nenodrošina pilnīgu kreditoru tiesību aizsardzību un tiesiskās aizsardzības procesa plānu saskaņo tikai ar kreditoru vairākumu, liedzot citiem kreditoriem to garantētās tiesības. Referāta mērķis ir analizēt tiesiskās aizsardzības procesā noteiktās kreditoru tiesības uz informāciju, konstatēt pastāvošās problēmas un piedāvāt iespējamus risinājumus. Referātā tiks aplūkoti jautājumi, kas saistīti ar tiesiskās aizsardzības procesa plāna saskaņošanu, kreditoru iebildumu izteikšanu un problēmām ar kreditoru tiesībām uz informāciju nodrošināšanā.

**Jānis Neimanis**

## **LABAS PĀRVALDĪBAS PRINCIPS: NO EIROPAS PADOMES REKOMENDĀCIJĀM LĪDZ NEATŅEMAMAI LATVIJAS TIESĪBU IEKĀRTAS DAĻAI**

Referātā tiks aplūkota labas pārvaldības principa piemērošana Latvijā. Tiks aplūkots, kā Latvijas administratīvajā procesā tika uzņemti atsevišķi šā principa elementi, izmantojot Eiropas Padomes rekomendācijas, kā princips tika ietverts Valsts pārvaldes iekārtas likumā un kā labas pārvaldības princips tiek piemērots administratīvo tiesu judikatūrā.

**Inese Stikute**

*Daugavpils University, Parādes street 1, Daugavpils, inesestikute@inbox.lv*

## **LEGISLATION AND PRACTICE OF GUARANTEE ALLOCATION IN LATVIA**

Key words: guarantee, credit, debt, debt recovery.

Credit institutions to guard against it that the debt issued to the debtor is paid uses one of commitment tools – guarantee. Guarantee institute plays an important role at credit institutions daily work, because it ensures more successful debt recovery. Guarantee essence is in that the person voluntarily agree to be a guarantor who undertakes to fulfill obligations at place of third party in case if last own contracted obligations are not fulfilling. Guarantor before signing surety agreement it should thoroughly investigated and should not be perceived as a mere formality. Judicial practice shows about that creditors in surety agreement tend to include unfair contract terms.

**Līga Mazure**

*Rezekne Academy of Technologies, Atrivosanas aleja 115, Rezekne, liga.mazure@inbox.lv*

## LIMITS OF HEALING IN PATIENT TREATMENT

The aim of patient treatment is patient interests, i.e. improving or at least preserving the patient's health as much as possible by applying specific treatment methods to avoid deterioration of the patient's health. For achieving this aim, the following treatment types are used – modern medicine and healing.

The primary postulate of modern medicine and healing is the principle of 'do no harm' to the patient, which, in fact, determines the limits of these types of patient treatment. Considering the particular differences of modern medicine and healing, the principles for determining the limits of these types of treatment are, of course, different too.

In determining the limits of healing applied in patient treatment, two directions are noted. First of all, there are cases when healing is impermissible, considering the severity of the patient's condition and the nature of healing methods (for example, severe infectious diseases, the necessity of surgical intervention). Secondly, the principles of collaboration between the doctor and the healer in the treatment of a patient are to be determined, thus creating a start for the integration of healing into modern medicine.

The limits of healing in patient treatment are to be secured in the normative regulations of Latvia in order to secure the protection of patient health as nonmaterial benefit and decrease any possible negative consequences of healing to the patient.

**Agija Pugaine**

## NEKUSTAMĀ ĪPAŠUMA ATSAVINĀŠANA: TIESISKAIS ASPEKTS UN PRAKTISKĀS PIELIETOŠANAS PROBLEMĀTIKA

Nekustamā īpašuma saistītajos tiesību aktos novērojamas nepilnības, kuru praktiskās pielietošanas rezultātā - netiek efektīvi noregulētas subjektu savstarpējās tiesiskās attiecības. Šādas nepilnības novērojamas nekustamā īpašuma atsavināšanas tiesiskajā regulējumā. Spēkā esošajā tiesiskajā regulējumā ir veicamas optimālākas izmaiņas, vērstas uz pilnvērtīgāku konkrēto tiesību normu mērķu sasniegšanu un subjektu tiesību nodrošināšanu.

Novērojama arī nekustamā īpašuma darījumu reģistrēšanas procesa uzlabošana. Saskaņā ar Pasaules Bankas veikto un publicēto pasaules valstu reitingu, kas radies – izvēsta pētījuma rezultātā „Doing Business 2017”, Latvijas nekustamā īpašuma darījumu reģistrācijas process – pasaules valstu reitingā – novērtēts ar 23. vietu. Lietuva un Igaunija reitingā atrodas ievērojami augstāk, attiecīgi – 2. un 6.vietā.

Tiesību normu regulējumā – efektīvāk jānodrošina personu pamattiesības, kuras vērstas uz nekustamā īpašuma aizsardzību un jāuzlabo nekustamo īpašumu reģistrācijas process – tādējādi veicinot nekustamā īpašuma darījumu noslēgšanas procesu, reģistrēšanas kārtību, zemesgrāmatu ierakstu stingrāku stabilitāti un ticamības pakāpi – izveidojot vienotu, praktisku nacionālo mehānismu.

**Iīga Krampuža**

*Rezekne Academy of Technologies, Atrīvošanas aleja 115, Rēzekne, Latvia*

## NORMATĪVO AKTU PĀRPRODUKCIJA?

Izmantojot juridisko metožu piemērošanas prasmes ir iespējams atrisināt jebkuru tiesību jautājumu. Referātā aktualizēta prakse – juridiskas problēmas risināt ar normatīvo aktu grozījumiem un jaunu normatīvo aktu pieņemšanu. Analizēti faktiskie risinājumi normatīvo aktu skaita samazināšanai un ieteikumu izstrādāšanas



iespējas saistībā ar sabiedrības interešu aizsardzības nodrošināšanu. Izcelta praksē redzamā aktualitāte: pieaugot normatīvo aktu skaitam un normatīvo aktu grozījumu skaitam kļūst apgrūtināta normatīvo aktu piemērošana.

**Ginta Kriščūne**

*Rīga Stradiņš University, Dzirciema Street 16, Rīga, Latvia, ginta.krikscone@gmail.com*

## **PAŠVALDĪBU LOMA SADARBĪBAS VEICINĀŠANĀ BĒRNU TIESĪBU AIZSARDZĪBAS JOMĀ**

Atslēgvārdi: likums, bērna tiesību prioritāte, vecāku atbildība, starpinstitūciju sadarbība.

Bērnu tiesību aizsardzības jomā Latvijā valsts kompetencē ietilpst bērnu tiesību aizsardzības politikas izstrāde, kā arī normatīvo aktu tiesiskā reglamenta ievērošanas uzraudzība un kontrole.

Bērnu tiesību aizsardzības principi ir noteikti Bērnu tiesību aizsardzības likumā un, proti, tie ir – tiesiskajās attiecībās, kas skar bērnu, bērna tiesības un intereses ir prioritāras. Visām darbībām attiecībā uz bērnu neatkarīgi no tā, vai tās veic valsts vai pašvaldību institūcijas, sabiedriskās organizācijas vai citas fiziskās un juridiskās personas, kā arī tiesas un citas tiesībaizsardzības iestādes, prioritāri ir jānodrošina bērna tiesības un intereses. Bērna tiesību aizsardzība īstenojama, sadarbojoties ar ģimeni, valsts un pašvaldību institūcijām, sabiedriskajām organizācijām un citām fiziskajām un juridiskajām personām. Institūciju sadarbības organizēšanu un kārtību, kādā īstenojama bērnu tiesību aizsardzība, nosaka Ministru kabineta 2017. gada nogalē pieņemtie noteikumi Nr. 545 “Noteikumi par institūciju sadarbību bērnu tiesību aizsardzībā”.

Aizvien vairāk ir vērojama izteikta pienākumu deleģēšana vietējām pašvaldībām, kurām bieži ir ļoti ierobežoti finanšu līdzekļi sociāliem pakalpojumiem ģimenēm ar bērniem un ārpusģimenes aprūpes pakalpojumu sniegšanai. Pašvaldību kompetencē ietilpst ar bērnu tiesību pārkāpumiem saistītu jautājumu izskatīšana, sociālo pakalpojumu administrēšana, bērnu aprūpes iestāžu funkcionēšanas nodrošināšana. Un tās ir tikai dažas no jomām, kurās pašvaldībām ir jāņem dalība un jāveic pienākumus, ko tai ir deleģējusi valsts, bet ne vienmēr pašvaldības ar šie pienākumiem tiek galā, pie kam, tiek galā efektīvi, kvalitatīvi un atbilstoši bērna vislabākajām interesēm.

Īpaša uzmanība veltīta jautājumam par starpinstitucionālo sadarbību, kad ir jāveic sociālās korekcijas un sociālās palīdzības programmas īstenošana bērniem, kuri ir izdarījuši likumpārkāpumus vai veikuši darbības, kas var novest pie prettiesiskas rīcības.

Pētījumā izmantojot salīdzinošo un analītisko metodi, ir analizēti likumdevēja bērnu tiesību aizsardzībai izvirzītie mērķi un to atbilstība valstī īstenotajai ģimenes valsts politikai.

**Ļubova Kovaļa**

*University of Latvia, 19 Raina Blvd., Rīga, lubovak@inbox.lv*

## **QUALIFYING ELEMENT OF TAX AND SIMILAR COMPULSORY DUTIES EVASION**

This paper is dedicated to such a topic of criminal law, as tax and similar compulsory duties evasion (hereinafter referred to as – tax evasion). Publication includes research of the qualifying element of tax evasion – committing of this criminal offence in organized group. Analysing the concept and elements of organized group, this paper contains research of the challenges in regard to determination of the qualifying element of tax evasion. In conclusion of the paper, summary of the research results is described, providing recommendations for the solution of the challenges related to qualification. Author concludes that, upon qualification of the offence in accordance with Section 218, Paragraph 3 of the Criminal Law, it should be taken into account that all members of the organized group are joint perpetrators of the tax evasion regardless of their role in the offence. All members of the group, including the leader (the organizer) of the group, are held criminally liable for the tax evasion as perpetrators of criminal offence. Ascertaining of role and liability of a member of organized group in the jointly committed tax evasion plays role both in correct qualification of the criminal offence, and in determination of individual punishment for each member of the group.

Not only taking into account of the testimonies of the members of the group is required for the purpose of determination of preliminary distribution of duties among the members of the group, but also assessment of elements on the objective part (actus reus), paying special attention to the analysis of unlawful actions aimed at ascertaining, if they contain any signs of coordinated activity and if the actions taken by each member of the group should be included in the common chain of actions resulting in previously planned criminal result.

**Tatjana Jukna**

## **REPO DARĪJUMS LATVIJAS TIESĪBĀS 19. GS. BEIGĀS – 20. GS. SĀKUMĀ**

Repo darījums ir darījums, kas ir mazpētīts Latvijas tiesībās. Autors rakstā pievērsies Repo darījumu izpētei Latvijas vēstures kontekstā, jo jau pirms pētījuma sākuma Latvijā tika konstatēti visi Repo darījumu noslēgšanai nepieciešami ekonomiskie priekšnosacījumi, taču pietrūka paša darījumā. Juridiskajām konstrukcijām un nosaukumiem, attīstoties sabiedrībai arī mēdz mainīties, pielāgojoties to ekonomiskajām vajadzībām, tamdēļ rakstā autors meklēs Repo juridisko konstrukciju, kas bija pazīstama Latvijas tiesībās 19. gs. beigās – 20. gs. sākumā, kā arī aizstāvēs viedokli par to, kā pretēji bieži literatūrā paustajam viedoklim, par to ka jēdziens “repo” ir saīsinājums no angļu vārdā “repurchase”- atpirkšana, un izveidojies no amerikāņu žargonisma – “repo man”, tam ir senāka izcelsme, un proti “Repo” jēdziena saknes būtu meklējami latīņu valodā – darbības vārdā “report”. Autora skatījumā, Repo jēdziena pamatā ir izteiciens “Atgriežot es pelnu”, kas atspoguļo repo darījuma spekulatīvo dabu, savukārt pats darījums Latvijā bija pazīstams, kā “reports” vai “deports” atkarībā no gadījuma līdzīgi kā mūsdienās tiek izmantoti jēdzieni “repo” un “reverse repo”.

Tomēr mums šeit būtu jāatziņš, ka jebkuras atziņas, kas tiks izteiktas šajā rakstā būs samērā relatīvas, līdzīgi kā jebkuras loģikas modeles, kas tiek vērsti uz reālo vēsturisko procesu rekonstruēšanu. Autora skatījumā, Repo darījuma izziņšana vēsturiskajā kontekstā varētu palīdzēt paskaidrotu arī moderno repo darījumu teorētiskās problemātikas rašanos, kurai autors plāno pievērsties nākotnē.

**Valdis Savickis**

*Rīga Stradiņš University, 16 Dzirciema Street, Rīga, Latvia, valdis.savickis@gmail.com*

## **THE INFLUENCE OF THE CHANGES OF THE LEGAL REGULATION ON THE PROFESSIONAL ACTIVITY OF THE ADMINISTRATOR OF INSOLVENCY PROCEEDINGS**

Continuing to study the insolvency process of legal persons and developing the topic of proceeding "HISTORICAL DEVELOPMENT AND EVOLUTION OF THE PURPOSE OF THE INSOLVENCY PROCESS", presented at the 59<sup>th</sup> International Scientific Conference of Daugavpils University, the author addresses the professional activity and status of the insolvency process administrator taking into account the changes in the legal framework, objectives and sub-goals identified by the state insolvency policy.

Insolvency Policy Development Guidelines for the Years 2016-2020<sup>th</sup> (hereafter – Guidelines) envisaged a scope of measures (the directions and tasks of action), as one of them defining the administrators, as highly qualified and professional specialists, who effectively perform their duties and take care of the prestige of the profession. In addition, indicators were set out in the Implementation plan for the Guidelines, in order to indicate the qualitative or quantitative terms, to determine the achievement of the objectives and sub-objectives of the Guidelines.

To make conclusions and proposals of the research there are used analytical and descriptive methods. Using these methods are analyzed additions and improvements to normative acts and purposes of the legislator. Analysis is made in order to research the influence to mentioned changes to the administrator and reflection on the status of administrator, as well on the compliance of them with the insolvency politics, implemented in the state.

**Anita Kovalevska**

*Latvijas Universitāte, Raiņa bulv.19, Rīga, anita.kovalevska@lu.lv*

## **TIESĪBAS UZ ILGTSPĒJĪGU SOCIĀLĀS DROŠĪBAS SISTĒMU UN ILGTSPĒJĪGAS ATTĪSTĪBAS PRINCIPS**

ANO Starptautiskā pakta par ekonomiskajām, sociālajām un kultūras tiesībām 9.pants garantē ikvienam tiesības uz sociālo drošību. No šīm tiesībām izriet valsts pienākums nodrošināt sociālās drošības sistēmas ilgtspējību.

Savukārt ilgtspējīgas attīstības princips nozīmē, ka ir jānodrošina sabiedrības labklājības, vides un ekonomikas integrēta un līdzsvarota attīstība, kas apmierina iedzīvotāju pašreizējās sociālās un ekonomiskās vajadzības un nodrošina vides aizsardzības prasību ievērošanu, neapdraudot nākamo paaudžu vajadzību apmierināšanas iespējas. Ilgtspējīgas attīstības princips visbiežāk tiek piemērots vides tiesību jomā.

Referātā tiek analizēts, ko nozīmē sociālās drošības sistēmas ilgtspēja un kāda ir ilgtspējīgas sociālās drošības sistēmas saistība ar ilgtspējīgas attīstības principu. Ar sociālās drošības sistēmas ilgtspēju parasti tiek saparasta šīs sistēmas finansiālā ilgtspēja. Taču plašākā nozīmē ar ilgtspējīgu sociālās drošības sistēmu būtu jāsaprot tāda sistēma, kas nodrošina arī adekvātu jeb pietiekamu ienākumu līmeni personai. Ilgtspējīgas sociālās drošības sistēmas jēdziens nav tiešā veidā saistīts ar ilgtspējīgas attīstības principu. Taču ilgtspējīga sociālās drošības sistēma veicina arī ilgtspējīgas attīstības principa ievērošanu.

**Sabīne Priedīte, Jūlija Vasīļevska, Aivars Vētra**

*National Rehabilitation Centre "Vaivari", Asaru pr. 61, Jurmala, spriedite@gmail.com, julija.vasilevska@gmail.com*

*Rīga Stradiņš University, Department of Rehabilitation, Dzirciema street 16, Rīga, aivars\_vetra@inbox.lv*

## **UNDERSTANDING THE TERM DISABILITY AND ITS USE IN NORMATIVE ACTS**

Introduction. According to World Health Organization statistics, more than 1 billion people in the world -- approximately 15% of the population -- live with some kind of "disability".

The terms "disability" and "invalidity" are included in various national normative acts and frequently, the meaning of their use is uniform; therefore, it is important to analyse the use of these terms in international documents to create a unified understanding on a national level of the use of these terms in national normative acts.

The aim of the study is to analyse the terms "disability" and "invalidity" as terms characterizing functioning disabilities, explore the opinions of leading World and European Union health organizations on the use of these terms, identify problems and risks in practice and suggest solutions.

Materials and methods. The study has explored the literature and prepared a systematic description of the terms "disability" and "invalidity" as terms characterizing functioning disabilities, and their use in national legislation, using grammatical and descriptive methods.

Results and conclusions. The term "disability" in the international context is used as an "umbrella" term -- a comprehensive term that is used to describe helplessness and limitations in activity and participation. The term "invalidity" in national normative acts is mainly used as a "medical model" term, thus distancing this term from the understanding of the term included in World Health Organization documents, and the understanding of the actual term characterizing functioning disability included in the International Classification of Functioning, Disability and Health (ICF), which creates complications for policy planning and policy implementation.

The results of the study give insight into the understanding of the term "invalidity" and its use in national legislation, and indicate a need for an in-depth legal analysis of the different understandings of these terms, as well as directions for further research.

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## **KRIMINĀLTIESĪBAS UN POLICIJAS TIESĪBAS**

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## **CRIMINAL LAW AND POLICE LAW**

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**Sergey Shchepanskiy**

*Kutafin Moscow State Law University, Sadovaya-Kudrinskaya str. 9, Moscow, Russia, s.shchepanskiy@gmail.com*

## **ADMINISTRATIVE AND LEGAL REGULATION OF THE STATE ACTIVITIES FOR SCIENTIFIC EXAMINATION**

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 organizations.

The analysis of the legal problems of state activities in scientific examination pointed out importance of improvement of scientific examination mechanisms for prioritized 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.

**Valdis Voins**

*State Police College, Ezermalas Street 10, Rīga, Latvia*

## **COMBATING TERRORISM AND THE SECURITY OF EU CITIZENS – 2017: THE PLACE AND ROLE OF THE EUROPEAN PARLIAMENT IN THE SYSTEM OF SECURITY MEASURES**

An analysis of the past ten years shows a steady increase in the number of terrorist attacks in Europe , as well as in the number of deaths. The same goes for Europe’s direct neighbourhood and the rest of the world, but there the increase is more profound. The terrorist surge in Europe’s ‘ring of fragility’ – especially MENA – has had and will continue to have implications for Europe. Firstly, because of the rising number of refugees towards Europe, especially since 2015, but secondly because of the stream of foreign fighters moving to and returning from MENA, battle-hardened and having been exposed to sustained radicalisation. Attacks by separatist and left-wing extremist movements have been on a steady decline, whereas these last years show an increase in right-wing extremism and jihadist extremism.

Experts and security services expect these past developments, in particular the ones of the last two years, to predict a trend that will continue into the future for the coming five years with an expected increase of attacks. This is inter alia related to the fact that over a longer period of time, a very diffuse picture appears when it comes to the targets chosen by terrorists: although vital infrastructure as a potential target shows a constant pattern, targets such as the private sector, civil society, government or civilian locations seem to be interchangeable with a decrease in one being compensated by an increase in another target. The same diffuse pattern comes up when looking at the historical differences in choice of weapons or means of attack. In a recently published report, Europol also signalled these trends and warned for emerging modus operandi, changes in target selection, and changes in profiles of perpetrators. In addition, Europol warns for the interest shown by ISIS in the use of chemical and/or biological weapons and the strong terrorism-organised crime nexus.

**Elīna Radionova-Girsa**

*Daugavpils University, Parādes 1, Daugavpils, elinaradionova@gmail.com*

## **CYBERSPACE: A NEW PLACE FOR REAL CRIME IN THE VIRTUAL ENVIRONMENT**

The purpose of the paper is to show the cyberspace has become completely real and the crimes that are happening there are not only virtual.

Main tasks and methods are to found out and analyse meaning and understanding of cyberspace, scientific literature review and analysis, European and World legislation analysis, case study analysis.

The World Wide Web has grown so widespread that people use it not only every day, but almost all-day long. The main companions of human life have become the Internet and the devices through which access to the Internet is achieved. Of course, many understand that in this case the security question is being questioned and using various tools that will be able to ensure that their data is not available. But the most difficult thing is to protect yourself and your moral health.

The author of the paper is turning to the laws and case-law of different countries in order to understand and show how important this issue is, actual and innovative. The criminal acts that are taking place in the cyberspace environment are as realistic and as damaging as any other crime in the traditional environment. First of all, the significance and peculiarities of the cyberspace will be shown, as the result of the work, the author of the work wishes to point out that the place of the crime causes the same serious damage.

**Janis Teivans-Treinovskis**

*Daugavpils University, Parādes street 1, Daugavpils, janis.teivans@du.lv*

## **DYNAMICS OF PROFESSIONAL CRIME DEVELOPMENT IN LATVIA AND EUROPE**

Professional crime is a significant part of the total crime in society and the most problematic from the point of view of influencing it.

Therefore it is of a peculiar interest for studies and developing ways and methods to reduce it. Both the level and the whole structure of crime to a great extent depend on the effectiveness of these methods.

***Jeļena Kaļiņina***

*Daugavpils University, Parādes street 1, Daugavpils, tenderness20@inbox.lv*

### **EKONOMISKĀ VARDARBĪBA ĢIMENĒ**

Ekonomiskā vardarbība oficiāli pielīdzināta pārējiem vardarbības veidiem – fiziskajai, seksuālajai un emocionālajai vardarbībai. Ciešot no šī vardarbības veida ģimenē, ir iespējams lūgt pagaidu aizsardzību pret vardarbību. Pati no sevis ekonomiskā vardarbība, reti sastopama viena un parasti tā kombinējas ar citiem vardarbības veidiem, piemēram, fizisko vardarbību vai emocionālo. Administratīvā atbildība vai kriminālatbildība par to nav paredzēta. Likumdošanā ekonomiskā vardarbība nav definēta, bet izriet no Civilprocesa likuma 250.<sup>45</sup> panta, runājot par pagaidu aizsardzības pret vardarbību pamatu. Bet šis pants nedod skaidrojumu, kā tā izpaužas.

Šī raksta mērķis ir izanalizēt vienu no vardarbības ģimenes veidiem – ekonomisko vardarbību, sniedzot ieskatu Latvijas Republikas tiesiskajā regulējumā.

***Igors Trofimovs***

*Puškina 13, Daugavpils, Latvia, dakpt@inbox.lv*

### **GENERAL CHARACTERISTICS OF INDIVIDUAL MANTIBODIES**

Criminal offenses against property, or material criminal offenses from other criminal offenses, are different from the object of the threat of crime – property. These criminal offenses endanger the property of individuals and legal entities and their property interests. They violate the principle of private property for centuries.

Among the crimes against property, the most part is theft and fraud – 53% of the total number of crimes. Crime-offending crime has been investigated and categorized according to the nature of the object of direct danger, the method of implementation and the subject of the crime and the number of subjects. Based on these studies, the peculiarities of forensic methodology have been developed. In addition to accelerating technological development in the world, criminals are also developing and using them for criminal offenses. New threats and new methods of dealing with threats are emerging, the disclosure of which would require the development of their own peculiarities of forensic methodology.

The author of the work on material crimes has been identified for research with high crime crimes: criminal offenses with the vehicle as a hazard object; theft from cultural objects; modern fraud The increased public danger is: in the circumstances of the considerable material losses caused to the victims; the victims are socially vulnerable persons (according to the data of the Central Statistical Bureau, 393 683 persons, or 70% of the recipients of state pensions, receive less than 300 EUR for the year 2016); with great resonance in mass media and in society; the object of danger is spiritual value; serial features; the proportion of recidivists; criminal international relations; use of modern technology.

Combating and preventing such crimes requires law enforcement agencies to improve their forensic methods and the theory of operational activities

***Natalja Saratova***

*Daugavpils University, Parādes street 1, Daugavpils, sanani@inbox.lv*

### **HUMAN RIGHTS OF THE VICTIM IN THE LATVIAN CRIMINAL PROCEDURE**

The essence of the Criminal Procedure Law is aimed at ensuring lawfulness and legal order in the country, protect the interests of the society and its individuals. A victim in a criminal procedure is a person who has been morally violated, suffers physically or has incurred financial damages through an offence. The victim in criminal

procedures should be in the centre of attention, with the state striving to protect the victim's honour and fundamental rights as much as possible.

In a criminal procedure, there must be both a humane punishment, and a tolerant and humane attitude towards the victim on the part of the state and its representatives. Otherwise it is not possible to achieve justice in the criminal procedure. Latvia has achieved considerable progress in implementation of human rights standards, however, the responsible state officials still need to invest a lot of effort to eliminate several significant flaws.

The author studies the most controversial aspects of the subject in relation to ensuring that human rights of victims are met in criminal procedures. There are various help mechanisms for support of victims both before procedural status is granted and after that, yet even when procedural status of a victim is obtained, often opportunities are not used to request for additional compensation for damages in accordance with the Criminal Procedure Law and the Civil Procedure Law. The author gives insight into matters of ensuring human rights of victims in criminal procedures, by analysing the Latvian practice with regard to victim's rights to compensation for the incurred damages and comparing it with the practice of the European Court of Human Rights.

***Inese Boluža***

*State Police College of Latvia, Ezermalas Street 10, Rīga, inese.boluz@gmail.com*

## **LOCAL AUTHORITIES AND POLICE**

The needs of local communities must be understood and reflected in the planning and delivery of police services at a local and national level. This commitment is built into the Latvia Government's Strategic Police Priorities.

The State Police of Latvia and local authorities engages with local authorities and local stakeholders, and local policing teams to make sure that the Board's national assurance and governance is informed by that local accountability, experience and insight.

Every local authority is invited to offer its views to shape the review of community policing, and the Ministry or Interior Affairs has a planned work programme to ensure that the Board fully understands how well policing is delivering localism.

Local Authorities have an important role to play in helping shape objectives for policing in their area, and in scrutinising how Latvia police deliver these objectives.

For example, each authority is consulted on the national Strategic Police Plan. Local authorities can specify measures they want included in their own local police plan, and the divisional police commander needs to take the local authority's views into account when developing a local police plan for the area.

And local authority scrutiny bodies – usually council committees – scrutinise how State Police of Latvia delivers the agreed priorities set out in their police plan.

***Nikolajs Jefimovs***

*Daugavpils University, Parādes street 1, Daugavpils, nikolajs.jefimovs@du.lv*

## **MEANING OF MEDIATION IN THE CRIMINAL FIELD OF LAW**

Key words: mediation, criminal offence, result of mediation.

The alternative methods of dispute resolution announce a new field of study in Latvia. In most cases such methods and their real procedures are outside of any legal regulation. One of this alternative dispute resolution methods is called mediation. Person, who is responsible for the management of this process, is called mediator. The notion of this term is known from the ancient civilization times. It is useful to understand the initial comprehension of mediation in order to successfully implement this process in the legal system of modern society. Nevertheless the elaboration of mediation procedure asks serious evaluation of possibilities to completely evolve basic principles of alternative dispute resolution methods. Answering on question whether it is possible to completely implement the concept of mediation, it is necessary to understand, what it is and how you can use the advantages of this process in the real life. Criminal field of law asks meticulous approach to the implementation of mediation. Using that approach, it is necessary to achieve a mutually acceptable resolution of criminal conflict (so called win-win result).

***Ilze Sokolovska, Valters Brigmanis***

## **NOZIEDZĪGI NODARĪJUMI PRET DABAS VIDĪ. OBJEKTA UN KAITĒJUMA NOTEIKŠANAS PROBLEMĀTIKA**

Rakstā tiks izvirzīta problemātika noziedzīgu nodarījumu izmekēšanā un atklāšanā, kas vērsti pret dabas vidi, tieši jautājumā, kas saistīts ar objekta un kaitējuma noteikšanu. Tēmas aktualitāti apliecina tas fakts, ka vides aizsardzība ir viens no vissvarīgākajiem jautājumiem gan Latvijā, gan pasaulē. Latvija kā Eiropas Savienības dalībvalsts, ar savu nostāju, tā ir pievienojusies dabas ilgtermiņa saglabāšanas un atjaunošanas programmām, kas tiek realizētas gan Latvijā, kā arī iesaistījusies dažādās ES programmās.

Raksta gaitā autori uzsvērs, kāpēc tieši norādītais jautājums ir ieguvis izpētes nepieciešamību, kāpēc nodarījuma objektam ir tika liela nozīme izmeklēšanā, kā arī dabai radītais kaitējums ir viens no pamatnosacījumiem personu saukšanai pie kriminālatbildības. Uz doto brīdi, Krimināllikumā ir izdalīta nodaļa, kuru apvieno viens grupas objekts - dabas vide, tajā ir iekļauti noziedzīgi nodarījumi, ar kuru izdarīšanu ir radīts attiecīgs kaitējums dabas videi, un tieši šie divi aspekti rada piemērošanas un interpretācijas problemātiku. Autori uzsver, ka radītais kaitējums ir primārais aspekts objekta noteikšanai, kas ir salīdzinoši grūti izprotams piemērošanas praksē.

**Janis Karsenieks**

*Daugavpils University, Parades street 1, Daugavpils, janis.karsenieks@inbox.lv*

## **PERSONAL DATA – THE RIGHT TO PRIVACY**

The economic and social integration resulting from the functioning of the internal market has led to a substantial increase in cross-border flows of personal data. The exchange of personal data between public and private actors, including natural persons, associations and undertakings across the Union has increased. National authorities in the Member States are being called upon by Union law to cooperate and exchange personal data so as to be able to perform their duties or carry out tasks on behalf of an authority in another Member State.

Rapid technological developments and globalisation have brought new challenges for the protection of personal data. The scale of the collection and sharing of personal data has increased significantly. Technology allows both private companies and public authorities to make use of personal data on an unprecedented scale in order to pursue their activities. Natural persons increasingly make personal information available publicly and globally. Technology has transformed both the economy and social life, and should further facilitate the free flow of personal data within the Union and the transfer to third countries and international organisations, while ensuring a high level of the protection of personal data.

In these circumstances, the society need for respect for the right to privacy, including the protection of personal data, has substantially increased.

The aim of the article is to investigate the notion and essence of the right to privacy, as well as to analyze legal knowledge and jurisprudence, to infer and establish the limits and prerequisites for the protection of the right of individuals to protection of their personal data. The article is the initial stage of the study on the right to privacy, which will include an in-depth study of the individual's right to the protection of his or her personal data within the framework of criminal proceedings.

**Aldona Kipane**

*Rīga Stradiņš University, Dzirciema street 16, Rīga, aldonakipane@inbox.lv*

## **THE INNOVATIVE APPROACHE FOR CRIME RESEARCH IN LATVIA: COMPARATIVE CRIMINOLOGY**

Globalization brings new challenges for political, social, economical relations of the society, including both positive and negative features. Crime and criminogenic processes are becoming more complex, more criminogenic, and more dangerous in the world. An important challenge to the world civilization is the criminalization of public, state and international relations, crime as national and transnational problem, impact of new technologies on community. Thus, a greater role and importance are given to the crime analysis and comparison.

The author concludes that it is necessary to promote the development of criminology as science and make the process of criminological research active. Comparative researches are of particular importance. Obviously using the knowledge and findings of foreign scientists the potential of national criminology is going to be promoted, developed and improved. The innovative approach for crime research has to be introduced and the development of comparative criminology has to be promoted in Latvia.

**Jurijs Fjodorovs**

*State police college, Ezeremalas street 10, Rīga, jurijs.fjodorovs@koledza.vp.gov.lv*

## **THE MEAN OF ADMINISTRATIVE VIOLATION REPORT IN ADMINISTRATIVE VIOLATION CASES**

The administrative violation report is one of the main documents in administrative violation cases. The rules of application of the report are described in the 19th chapter of the Administrative Violation Code of Latvia. Rules are obligatory and everyone is obliged to execute them. Unfortunately, not all draw due consideration to the report and don't realize its value. On the basis of the Administrative Violation Code, if the person has committed an administrative violation, an authorized person shall draw up the report, which has to contain the obligatory information. In case the report was drawn up incorrectly, there is a basis for the termination of an administrative violation case concerning the person who has committed an administrative offence. That is why, because of incorrect actions in the course of drawing up the report of an administrative violation, it is not reached – administrative prosecution of the persons who have committed violations.

***Aelita Zīle***

*Rīga Stradiņš University, Dzirciema street 16, Rīga, Latvia, aelita\_ziile@inbox.lv*

## **THEORETICAL AND LEGAL ASPECTS OF INTRODUCTION OF VISUALIZATION METHOD OF PAPILLAE PATTERN PRINTS**

In the article, the author carries out research on theoretical and legal aspects of introduction of the visualization method of papillae pattern prints by focusing on visualization of papillae pattern prints on the skin of a dead person. Concerning research and analysis carried out on practical aspects of introduction of the visualization method of papillae pattern prints on the skin of a dead person, studies and a series of experiments carried out by foreign authors, as well as a series of experiments carried by the author, the author offers a practical solution of introduction and implementation of this method in the Republic of Latvia. In the article, the author offers a model of her method which was tested in a series of experiments on visualization of papillae pattern prints and their seizure from the skin of a dead person. The author developed the model in accordance with laws and regulations and requirements for establishment of a method specified in the section 5 of the Law on Forensic Experts "Methods of Forensic Expert-Examination and Their Register". In the article, the author also argues in her opinion on the necessary changes in the regulatory framework regarding visualization of papillae pattern prints on the skin of a dead person.

***Iveta Adijāne***

*Parādes street 1, Daugavpils, Latvia, iveta.adijane@inbox.lv*

## **REVISION OF THE DUBLIN SYSTEM**

The European Parliament has urged the Member States of the European Union to agree on the necessary amendments to the Dublin Regulation. The Dublin Regulation is at the heart of the asylum system. The European Union needs a clear system for reception of asylum seekers inside the European Union. Strengthening the Common European Asylum System also means a more effective approach to abuses. At this moment, the mechanism for allocating responsibilities to examine asylum applications, the Dublin system, is not working as it should.

After the reform, the country in which an asylum seeker first arrives would no longer be automatically and solely responsible for processing his or her asylum application. Instead, responsibility for asylum seekers should be shared among all European Union countries.

Asylum applications should be processed much quicker so that those in need of protection get it sooner, while those with no right to asylum can be returned to their home country swifter.

Each country in the European Union must take responsibility for every asylum seeker. It must be understood that only joint forces can overcome the protracted crisis, which has a negative impact on the whole of the European Union.

***Irīna Poļevaja***

*Daugavpils University, 1 Parādes street, Daugavpils, irinapol19@inbox.lv*

## **THE CONCEPT AND SYSTEM OF STATE COERCION**



## IN CRIMINAL PROCEDURE

In this article the author examines various legal and doctrinal definitions of the concept and system of criminal procedural coercion and arrives at a conclusion that the notion of procedural coercion itself is being complex and multifaceted and, therefore, requires an in-depth and comprehensive analysis. The author also notes and reveals the three dimensions of criminal procedural coercion and characterizes each of them.

***Marina Proshina***

*Daugavpils University, Parādes street 1, Daugavpils, i.kurse@inbox.lv*

### **REPARATION TO THE VICTIM: A LOOK AT THE RUSSIAN PROBLEM**

Justice cannot be considered to have been accomplished unless the rights and legitimate interests of the victim of the crime have been ensured in its administration.

The mechanism of compensation for damage established by criminal and civil legislation is not effective, and article 52 of the Constitution of the Russian Federation, guaranteeing the right to compensation for damage caused, is not actually implemented in practice.

Often, the presence of a positive court decision to recover the amounts awarded does not guarantee the victim to receive them from the perpetrator.

The experience of interstate legal regulation and the accumulated practice of a number of foreign States are important for Russia in improving the procedure of compensation of harm to the victim in the criminal process.

Many foreign countries have followed the path of state support for victims who are unable to obtain compensation from the perpetrator.

In the Russian Federation compensation of harm to victims at the expense of the state in the form of monetary compensation is provided by the Federal law of 20.08.2004 N 119-FZ "About state protection of victims, witnesses and other participants of criminal proceedings", the Federal law of 06.03.2006 No. 35-FZ "About counteraction to terrorism".

These laws provide state support to certain categories of victims: victims of investigation or judicial proceedings, victims of terrorism.

Granting special rights to the above-mentioned categories of victims does not have sufficient justification and violates the constitutional principle of equality of citizens before the law and the court.

In 2014, the Federal law "On protection of the rights of victims of crime" was signed by the President of the Russian Federation, but so far has not received approval from the State Duma. The act contains the same shortcomings and is not universal for all categories of victims of crime.

Until now, in Russia, the cornerstone problem is that there is no material base, and there is no mechanism for financing state support for compensation of harm to all categories of victims, depending on the severity of the harm caused.

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# PEDAGOGIJA

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# PEDAGOGY

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**Nina Šukste**

*Daugavpils University, Parādes street 1, Daugavpils, ninashukste@inbox.lv*

## ATSKAITES SISTĒMA UZTICĒŠANĀS PARĀDĪBAS PĒTĪŠANAI IZGLĪTĪBAS ILGTSPĒJĪGAI ATTĪSTĪBAI KONTEKSTĀ

Atslēgvārdi: uzticēšanās, neuzticēšanās, izglītība, ilgtspējīga attīstība, teorētiskais pētījums.

Mūsdienu sabiedrībā neuzticēšanās ir kļuvusi par uzticēšanās trūkuma pazīmi, kas saskatāma ne tikai atsevišķo sabiedrības locekļu dzīvēs, bet arī globālajā mērogā. Pārmērīgās kontroles mēģinājumi no valdoša spēka, cinisma, kritikas, antagonisma palielināšanās attiecībās, nelojālo locekļu atstumšanā sabiedrības novārtā, sabiedrības garīguma, dzīvotspējas un dzīves enerģijas trūkums – ir acīmredzamas neuzticēšanās pazīmes un simptomi. Situācijas prognoze nākotnei neapmierinās nē mūsdienu sabiedrību, nē tās pēctečus. Tas ir ceļš un pazušanu un nebūtību. Kur ir problēma un kā to risināt? Uzticēšanās ir vienīgais priekšnosacījums visām vērtīgām sabiedriskām attiecībām, kas ļaus veidot ilgtspējīgu sabiedrību. Bet „Kas ir uzticēšanās?” Tieši šis jautājums ievēd pirmajā strupceļā uz uzticēšanās svarīguma atzīšanas ceļa, jo šeit ir atrodama viedokļu daudzveidība gan vienkāršo cilvēku starpā, gan arī zinātnieku uzskatos un darbos.

Šis teorētiskais raksts ir pirmais promocijas darba pamata atskaites sistēmas un ietvara formulēšanai. Tajā tiks piedāvāta ieskatīšanās uzticēšanās būtībā no divām pusēm, (1) balstoties uz pašreiz publicētiem pētījumiem, veiktu teorētisko pētījumu uzticēšanās atpazīšanas jomā un (2) analizējot dažādas izcelsmes, dzīves vietas, izglītības un vecuma Latvijas iedzīvotāju viedokļi par uzticēšanās izpratni un tās svarīgumu sabiedrības un izglītības savstarpēju attiecību veidošanā, ieskicēt pētījuma praktiskās daļas virzienu un jautājumus.

Rakstā piedāvāsim savu skatījumu uz parādību kopumā un atskaites sistēmas jēdzienus, kas palīdz saprast uzticēšanās-neuzticēšanās diskursa izpausmes un pazīmes.

**Viktorija Baranovska**

*Daugavpils University, Parādes street 1, Daugavpils, viktorija190@inbox.lv*

## BĒRNU AR VALODAS SISTĒMAS TRAUCĒJUMIEM IEKĻĀUŠANA VISPĀRIZGLĪTOJOŠAJĀ SKOLĀ 1. KLASĒ

Atslēgas vārdi: iekļaujoša izglītība, iekļaujoša skola, pedagogu sadarbība iekļaujošas izglītības jomā, bērni ar valodas traucējumiem.

Pēdējos gados ir izglītības sistēma jauninājumi, notiek izmaiņas sabiedrības attieksmē pret bērniem ar attīstības problēmām un, protams, tiek risināti jautājumi par to bērnu izglītības un audzināšanas apstākļiem nākotnē. Pētījums “Bērnu ar valodas sistēmas traucējumiem iekļaušana vispārīzglītojošajā skolā 1.klasē”, ar mērķi īzvētīt bērnu ar runas valodas traucējumiem nosacījumu veiksmīgai iekļaušanai. Pētījumā analizēts, kā bērnu ar valodas traucējumiem iekļaujas vispārējā vispārīzglītojošā skolā.

**Jūlija Semjonova, Elga Drelinga**

*Daugavpils University, Parades street 1, Daugavpils, julijaaleksejeva2@inbox.lv, elga.drelinga@du.lv*

## FIRST GRADERS' SOCIAL ADAPTATION AT SCHOOL: PROBLEMS AND SOLUTIONS

Key words: first graders, social adaptation, parents, teachers, teaching process and environment.

A successful first grader's social adaptation in not only oneself but also child's inclusion into the teaching environment is the work, which is done by the teacher. It involves collaboration with pupils and their parents and collaboration between pupils. The child has to get accustomed to the new environment, new people, he/she has

to learn how to build mutual relationships and how to find mutually beneficial solutions in complex situations through collaboration with others. How can a 6-7-year-old accomplish it? What help can the teacher provide? How can parents support their children in this process? A study was carried out to find answers to the above mentioned questions. The first part contains information from scientific literature about the nature of 6-7-year-old children's social adaptation and communication problems at this age, as well as the influence of the family on the child's social adaptation at school. In the second part, a methodology was developed to promote a positive social adaptation of pupils at school under supervision of the teacher. The methodology includes: (1) collaboration promoting exercises for pupils; (2) collaboration forms with parents; (3) purposefully organized excursions in the school and its surrounding area. In the third part, the approbation of the developed methodology and the study on social adaptation of first graders was carried out. The study lasted from 28.08.2017 till 31.12.2017 in the first grade of one city school. Pupils (n=27) and their parents, as well as the teacher of the first grade participated in the study. The author of the paper was involved in the study as observer and assistant. Data collection methods: observation of the teaching process, parents' survey. From the summary and analysis of the data, it can be concluded that by applying the developed methodology the teacher promotes a successful pupils' social adaptation, the parents engage in the pupils' life and it helps to overcome difficulties.

***Līvija Jankovska***

*Rezekne Academy of Technologies, Atrbrīvošanas aleja 115, Rēzekne, Latvia, livija.jankovska@gmail.com*

## **IMPLEMENTATION OF INNOVATIVE STUDY PROCESSES IN DAUGAVPILS UNIVERSITY AGENCY DAUGAVPILS MEDICAL COLLEGE**

Employment of innovative study processes is essential to ensure positive learning outcomes in an environment of limited educational resources and rapidly changing job market. This study seeks to analyse the employment of contemporary study processes in Daugavpils University Agency Daugavpils Medical College (DUADMC) with a particular emphasis on its effects on students' active involvement in the day-to-day learning experiences and the congruence of the attained knowledge and skills with the competences required for the successful entry in the future job market.

The study employs content analysis and surveying as the primary methods for analysing the process of implementation of innovative study processes in DUADMC. In particular, 137 students were surveyed to explore their views on the competences required in the job market and the effectiveness of various study processes.

The study confirms the effectiveness of implementation of innovative study processes to improve learning outcomes in the context of DUADMC. In particular, it was found that focus on teaching the students the latest technological advances and their usage was especially useful, as well as preparing the students to be well acquainted with the professional conduct standards appropriate for their field. Among the classroom teaching methods, explanation and demonstration were found to be the most effective for ensuring reciprocal link with the students. The study supports the growing body of evidence of effectiveness of implementation of innovative study processes to ensure continued adequacy of study process in the environment of fast-paced technological and societal advancement.

***Elfrīda Krastiņa, Elga Dreliņa***

*Daugavpils University, Parades street 1, elfridak@inbox.lv, elga.drelinga@du.lv*

## **INNOVATIVE AND TRADITIONAL IN DEVELOPING MATHEMATICAL NOTIONS IN ANNA JURANE WORKS**

Key words: innovative, traditional, teaching math, preschool, school.

Developing mathematical notions of preschool children is the first step in learning math that requires from the teacher a huge responsibility, creativity and patience. Knowledge and skills that are obtained is a bases for a further success in learning. At this age acquired knowledge is the bases for a successful life. Mathematician Anna Jurāne together with her students were searching for the possibility to make teaching math scientific and sustainable. The authors have carried out the analyses of Anna's Juranas students' bachelor works in order to find out traditional and innovative in teaching math, as well as the methods and means in developing mathematical competency.

As the result of analyses it was discovered that at math lessons she has offered practical work with the models that helped to understand mathematical relationships by the use of senses in developing understanding. In the analyses of students' works one can notice positive attitude towards a child and trust in his/her abilities.

**Laima Tukāne-Grosa, Eridiana Oļehnoviča, Dzintra Iliško**

*Daugavpils Universitāte, Parādes street 1, Daugavpils, laina.tukane@gmail.com, eridiana.olehnovica@du.lv, dzintra.ilisko@du.lv*

## **INTERDISCIPLINARY APPROACH IN TEACHING AND LEARNING MATH**

Key words: interdisciplinary approach, process of teaching and learning maths.

According to UNESCO Sustainable Development Goals posed in 2015 and Latvian Education Development Guidelines for 2014 – 2020 there are now new challenges in education, namely people with increasingly better skills are needed to facilitate the development of economy. Therefore, while being a pupil one should learn to transfer and meaningfully use acquired knowledge and skills in novel situations, to improve and expand these knowledge and skills, and to use them in life to solve practical problems. Consequently, teachers should also master the competences which correspond to 21<sup>st</sup> century paradigm. Collaboration of teachers, acquisition of interdisciplinary skills and supporting interdisciplinary approach are the main directions of changes.

Interdisciplinary approach in the teaching and learning process in secondary school facilitates entrepreneurship and entrepreneurial business (Oganisjana, 2015), develops information literacy and promotes mastering studying skills.

The master paper is focused on the following questions: 1) how understanding of the concept of "interdisciplinary approach" has developed in pedagogical theory and in practice of organising the process of teaching mathematics, 2) what the regulatory framework for such mathematics in a secondary school is to implement the interdisciplinary approach; 3) what math teachers' experience is and what the possibilities for promoting students' meaningful studies are while implementing the interdisciplinary approach. In the empirical research viewpoints secondary school students and teachers have been employed.

The study right lights the cases of school practice in teaching math in a interdisciplinary discourse as a result of engagement in international projects that were contextualized the context of Latvia. It has been discovered that most of the questioned math teachers communicate with other teachers on a regular basis, they also search for new approaches to acquisition or reinforcement of certain points of teaching and learning content. However, small minor of the teachers focus on teaching their subject in the traditional way pointing out at such restrictions as educational curricular and final examination, which obstruct implementing the interdisciplinary approach in the wider context.

**Andris Kriekšis**

## **LATVIJAS SĀKUMSKOLĒNA (2., 3. KLASE) – LASĪTĀJA – RAKSTUROJUMS**

Atslēgas vārdi: sākumskolēns, lasītprasme, sākumskolēna lasītprasmes attīstība.

Pirms tiek uzsākts darbs pie sākumskolēna lasītprasmes attīstības veicināšanas, ikvienam, kas vada šo procesu, nepieciešams izprast, kāds ir šodienas sākumskolēns – lasītājs. Pētījumā apkopotas pedagogu un psihologu atziņas par sākumskolēna vecumposma attīstības iezīmēm, kā arī Latvijas izglītības telpā veiktā pētījuma "Sākumskolēna – lasītāja – portrets" iegūto datu analīze. Pētījumā tiek meklētas atbildes par to, kā sākumskolēni izprot lasītprasmes jēdzienu un nozīmi, ar kādām lasītprasmes grūtībām saskaras skolā, kādus resursus izmanto informācijas iegūšanai, ko un kāpēc lasa mūsdienu sākumskolēns.

**Alexander Boche**

*Daugavpils University, Parādes street 1, Daugavpils, makslas.studija12@gmail.com*

## **METHODS OF VISUALIZATION AND CONTEMPLATION IN PEDAGOGY**

Key words: perceptive experience, visualization, contemplation and contextual learning.

The educational problem addressed in the research: the application of methods of visualization and contemplation in pedagogy and at studying art subjects.

The conceptual framework of the research, which creates the basis for the practical research, is the attitude of world famous and Latvian artists towards contemplation as well as the way they have used it in their creative

work. The concepts of *perceptive experience, contemplation and visualization* are being investigated and the interconnectedness between them and possibilities of their mutual supplementation are being looked for. The interconnectedness between the perceptive experience, contemplation and visualization is viewed from the perspective of a contextual learning.

In the practical part of the research, learners were offered the views on contemplation held by the artists they had studied, and they tried them out in practice at the drawing lessons. After that, a learners' survey was conducted on the experience they had gained in this process, and they were asked to express their opinion about the results obtained during these activities. Works created by the learners were also analyzed.

The data obtained in the qualitative research involving experimental situations have been qualitatively and quantitatively analyzed. The research gives the opportunity to have an insight into learners' reaction to the methods of visualization and contemplation. In the research, an in-depth exploration of these methods has been already undertaken. The research is done about how these methods could influence learners' attitude towards drawing and in what way contemplation is related to perceptive experience and activity.

The research defines how and when the contemplation methods can be appropriately used at drawing lesson and for contextual learning purposes.

***Marija Romanova, Eridiana Oļehnoviča, Dzintra Iliško***

*Daugavpils University, Parādes street 1, Daugavpils, marija-romanova@inbox.lv*

## **RECOGNITION OF THE PREVIOUS EDUCATIONAL EXPERIENCE IN THE SECTOR OF THE HIGHEST EDUCATION: A NORMATIVE BASE AND PRACTICE**

Key words: previous education, informal education, recognition of learning experience, university setting.

The technological changes and peoples' dynamic rhythm of life in all spheres of life allows to conclude that there is not enough with the formally acquired education to work productively. It is necessary to improve and to refresh knowledge and competences constantly. Modern person needs new skills and supplementary knowledge as an part of one's professional life. By developing the sustainable educational system for adults in Latvia, government has created a normative base, which was directed to the improvement of acknowledgement previously obtained informal education in the institutions of higher education in Latvia. Evaluation of the obtained knowledge and skills is one of the prior questions in the European Union in order to plan a sustainable long-life learning process, which is carried out by people themselves. There is an advancement in the elastic approach towards the teaching process and the content in Latvia in a way of approaching formal and informal education.

In the article the authors analyze the legislative context of the previous educational and professional experience leading to the acknowledgement of the achieved results. The authors analyze adults' system of education as well as summarize the experience of this ratification process at Daugavpils University and Rēzekne Academy of Technologies.

***Austra Reihanova***

*Daugavpils University, Parādes street 1, Daugavpils, reihanova\_a@inbox.lv*

## **SELF-MOTIVATED HIGH SCHOOL STUDENT IN MATHEMATICS LEARNING PROCESS**

Key words: ability, interests, goal, own-experience, learning model.

This article examines the learning process of high school mathematics, in which students develop the ability and interest in mathematics that is needed to obtain sustainable education.

The aim of the study is to create an improved learning process that provides meaningful education that matches each student's abilities and interests. A student develops his own cognitive activity on the basis of his own experience and will be able to use it in any science that he will learn in depth.

Author in the article proposes a learning model in which each student can learn at his own pace, in his own group, and develop his mathematical abilities, on the basis of the subjects of interest.

The case study method was used to process the research data and it was concluded that there is a correlation between the student's learning pace and the level of mathematical knowledge.

**Marina Strode**

*Daugavpils University, Parādes street 1, marina\_strode@inbox.lv*

## **SKAŅU IZRUNAS ATĪSTĪBA 1,5 – 2 GADUS VECIEM BĒRNIEM PEDAGOĢISKAJĀ PROCESĀ**

Atslēgas vārdi: skaņu izrunas attīstība, 1,5 – 2 gadus veci bērni, pirmsskolas pedagoģiskais process.

Mūsdienās skaņu izrunai ir liela nozīme pirmsskolas izglītības pedagoģiskajā procesā. Bērna skaņu izrunas attīstībā vecumā no 1,5 – 2 gadiem attīstās tikai saskarsmē ar pieaugušajiem, tāpēc pieaugušā runai jābūt skaidrai un pareizai. Pedagoģiskajā procesā skaņu izrunas attīstība notiek caur rotaļām, kas sekmē skaņu izrunas attīstības pozitīvas pārmaiņas.

Analizēta skaņu izrunas attīstības vispārīgais raksturojums, 1,5 -2 gadu vecu bērnu raksturojums, pedagoģiskais process skaņu izrunas attīstībā.

Tika veikts pētījums par skaņu izrunas attīstības pārmaiņām 1,5 – 2 gadus veciem bērniem, pēc piedāvātājām rotaļnodarbībām. Pētījuma mērķis: ir izpētīt kādas izmaiņas ir vērojamas runas attīstībā 1,5- 2 gadus veciem bērniem, izmantojot rotaļnodarbības skaņu izrunas attīstībai.

Pētījuma uzdevumi:

1) izanalizēt zinātnisko literatūru par skaņu izrunas attīstību 1,5 -2 gadus veciem bērniem pirmsskolas pedagoģiskajā procesā;

2) izstrādāt un apkopot rotaļnodarbības skaņu izrunas attīstībai;

3) veikt pētījumu par bērnu skaņu izrunas izmaiņām, pēc piedāvātājām rotaļnodarbībām.

Pētījuma jautājums: kādas izmaiņas ir vērojamas runas attīstībā 1,5 – 2 gadus veciem bērniem, izmantojot izstrādātās rotaļnodarbības skaņu izrunas attīstībai?

**Irina Zeņina, Eridiana Oļehnoviča**

*Jekabpils evening high school, Palejas street 32, Jekabpils, zeninairina@inbox.lv*

*Daugavpils University, Parādes street 1, Daugavpils, eridiana.olehnovica@du.lv*

## **STRENGTHENING OF PEDAGOGUES' HORIZONTAL MANAGEMENT CAPACITY FOR THE IMPLEMENTATION OF COMPETENCE-BASED-APPROACH IN THE EDUCATIONAL PROCESS**

Key words: horizontal management, competence-based-approach, pedagogues, educational process, collaboration, educational institution.

The research is based on the opinion that it is necessary to improve the inner communication of an educational institution, using horizontal management opportunities for the implementation of the competence-based-approach. Currently, one of the most essential problems in management of educational institutions is that professional communication is mainly understood as a linear information flow. By promoting the dynamic interpersonal collaboration and optimally involving a greater number of staff in the management process, it is possible to evaluate every person's individual investment in the development of educational institution, particularly supporting creative and innovative ideas.

Successful implementation of competence-based-approach in the educational process foresees the development of supportive collaboration mechanism not only for students and their parent, but also for pedagogues and administration. Strengthening of horizontal management capacity provides to the head of the educational institution greater opportunities to focus attention on pedagogues' professional relationships and needs, implementing the new teaching and learning approach.

An effective method how to improve inter-coordination of pedagogues in the educational process is to unite staff into teams, which would be responsible for the implementation of particular tasks. It is possible to create teams of pedagogues that would deal with short-term issues or – permanent teams, where participants maintaining positions of their subjects/fields, at the same time would be group members who would continue to implement particular, wider defined, with the relation to the improvement of educational process didactic and methodological tasks. Teams could seek solutions for both inner and outer issues in the optimization of organization of educational process.

The participation of pedagogues in the establishment of externally appointed reforms is supported by the need, on the one hand, to consider oneself to be a part of the educational system, learning together how to improve

professionalism within the framework of a common vision; however, on the other hand, to notice and use the potential of individuality and diversity in the organization of educational process.

***Mārīte Kravale-Pauliņa, Ilona Fjodorova***

*Daugavpils University, Parādes street 1, Daugavpils, marite.kravale@du.lv, ilona.micule@du.lv*

## **TEACHERS' CAREER MANAGEMENT SKILLS AND PROFESSIONAL ACTIVITIES DURING EDUCATIONAL CHANGES**

Key words: professional identity, teacher's identity, career management skills, professional activities, changes in education.

In the context of changing political, economic, cultural and many other areas of the world today, education should also be able to flexibly follow changes. Large European projects are being implemented in Latvia (e.g., "Competency approach in the content of the curriculum"), which involves changes in the content of education and the implementation of this content, thus, teachers' insecurity and uncertainty are observed in educational institutions. Changes in education are a great challenge for the teacher not only professionally but also personally. By conducting a case study and qualitative analysis of the obtained data, the aim of this research is to find out the teachers' opinion on the personal development of career management skills and the possibility of developing this competence in students. Research data show that teachers would like to receive support and professional encouragement through implementing changes in the educational process.

***Sandra Zariņa, Ilga Salīte, Maritana Gorina***

*Daugavpils University, Vienības street 13, Daugavpils, sandra.zarina@du.lv, ilga.salite@du.lv, gorina@inbox.lv*

## **THE PEDAGOGY OF FOSTER FAMILIES – A SECTOR OF INNOVATION IN PEDAGOGY**

Key words: foster family, foster child, family.

The necessity to understand the essence and to create the system of upbringing the founders of pedagogy – Karlis Dekens (1866–1942), Janis Grete (1867–1951), Julijs Students (1898–1964), E. Petersons (1923–1998), created a special science – pedagogy. It studies how to transfer the accumulated experience of society to the next generation and how to prepare this generation for the further development of the experience accumulated.

These days the movement of foster families is an actual phenomenon. Since foster families have chooses to work with children, this work is a kind of profession and they need certain professional skills. Irrespectively how significant the personal qualities of each foster family are, they need a certain amount of pedagogical knowledge. To bring up a someone else's child is not the same as to bring up one's own child. These might be two different things since foster children as a rule come from violent families where they have experienced emotional, physical or sexual abuse.

Each foster child arrives in a foster family with his or her life experience. Foster families have acquired different experience in solving problem situations. A lot of foster families have obtained extra skills and knowledge so that they are able to provide the necessary support for the children. Since foster families carry out not only the family function in many cases, they are also caregivers, teachers and social supporters. Each child has his own story and experience behind and sometimes dubble patience, understanding and a special help are necessary to improve the situation.

The pedagogy of foster families would focus on foster families (parents-upbringers) who foster children who have experienced the lack of their mothers, insufficient love and care which lie on the basis for the development of a self- sufficient personality and trust towards the surrounding world.

**Beata Frolenoka**

*Latvijas University, Riga, beata.frolenoka@gmail.com*

## **THE QUALITY OF WORKING LIFE, SUBJECTIVE WELL-BEING AND PERSONNEL ADAPTATION IN THE WORKPLACE**

Key words: Personnel adaptation, quality of working life, motivation, corporate culture, professional wellbeing, job-related stress, involvement in one's job.

The process of personnel adaptation in the workplace is reviewed in this paper. In many works, this question is regarded as involvement in someone's job. The analysis of scientific publications has shown that personnel adaptation in the company directly depends on a company's corporate culture. Successful adaptation influences an employee's quality of working life and professional wellbeing. The model describing professional wellbeing, taken from the field of psychology, has been commented on in this paper. In addition, topical issues regarding personnel adaptation types and stages are addressed. The approaches to designing organizational programmes, which aim at improving and optimising adaptation process, at decreasing stress levels during adaptation and at increasing professional wellbeing are outlined in the paper.

The secondary research on personnel adaptation, the quality of working life and professional wellbeing was carried out within the present work.

The following methods were used to achieve the aim of the research:

1. Peter Warr, Job - related affects and behaviours, 2014;
2. A questionnaire based on problems arising during adaptation in the workplace was designed.

The total number of employees that took part in the research was 200 (academic personals and pedagogical personals). The research was carried out from October 2016 till February 2018.

It is necessary to plan development and to examine how the set goals can be attained to increase the personnel competitiveness in the labour market, to decrease the influence of stress and to raise and improve personnel well-being. It is crucial to help personnel to adapt to a new workplace, to overcome stress, to strengthen self-esteem and to increase confidence in oneself and in one's profession; thereby, improving the quality of working life and increasing personnel's well-being.

**Irina Strogonova, Anita Pipere**

*Daugavpils University, Parādes street 1, Daugavpils, Latvia, irina.strausova@inbox.lv, anita.pipere@du.lv*

## **THE USE OF PICTOGRAMS IN THE EDUCATIONAL PROCESS OF CHILDREN WITH MODERATE AND SEVERE INTELLECTUAL DISABILITIES**

Atslēgas vārdi: piktogrammas, garīgās attīstības traucējumi, mācību process, audzināšanas process, komunikācijas attīstība, runas attīstība, neverbālās komunikācijas līdzekļi.

Saskarsme ir sarežģīts cilvēku savstarpējās mijiedarbības process, kas ietver informācijas apmaiņu, kā arī partneru savstarpējo uztveri un sapratni. Saskarsmes vajadzība nav iedzimta, tā veidojas bērna kontaktēšanās procesā ar apkārtējo vidi. Bērni ar vidējiem un smagiem garīgās attīstības traucējumiem (GAT) izjūt saskarsmes deficītu, kas negatīvi ietekmē viņu tālāku attīstību. Aktīva runa, kam ir vadošā loma bērna kognitīvajā un emocionālajā attīstībā, ir galvenais sociālās mijiedarbības līdzeklis, kas vairumā gadījumu šādiem bērniem nav pieejama. Šī raksta aktualitāti nosaka nepieciešamība pēc šādu bērnu alternatīvas komunikācijas sistēmas, kas palīdz atvieglot saskarsmi, uzlabot bērnu vispusīgu attīstību, kā arī aktivizē viņu dalību izglītošanā, tādējādi veicinot integrāciju sabiedrībā. Raksts veidots, balstoties uz pētījuma mērķi izpētīt piktogrammu izmantošanas metodisko paņēmieni efektivitāti bērnu ar vidēji smagiem un smagiem GAT saskarsmes un runas attīstībā. Pētījuma izlasē tika ietverti Rīgas X. speciālās internātpamatskolas 1. klases 4 skolēni, 14 skolēnu vecāki, 18 šīs skolas skolotājas. Lai izvēlētos piktogrammu sistēmu komunikācijai ar skolēniem, ar pedagoģiskās novērošanas palīdzību tika noteiktas viņu iemaņas un spējas 1. semestra sākumā. No dažādām piktogrammu sistēmām tika izvēlētas PECS piktogrammas, jo bērni ar zemām intelektuālām spējām vieglāk uztver krāsainu attēlu vai fotogrāfijas. PECS ir piemērotas bērniem, kas labi atšķir fotogrāfijas un attēlus, bet kuriem ir problēmas ar kustību imitāciju. Ar pedagoģisko situāciju analīzes palīdzību tika noteikti bērnu izaugsmes rezultāti, izmantojot piktogrammas. Visi izglītojamie ar prieku pieņēma neverbālā komunikācijas līdzekļa ieviešanu un sāka aktīvi tos izmantot. Piktogrammu izmantošana mācību un audzināšanas procesā bērniem ar GAT deva teicamus rezultātus. Pateicoties piktogrammu ieviešanai, samazinājās bērnu agresīva uzvedība, bērni varēja izpaust savas vajadzības un jūtas nevis ar emocijām, bet izmantojot kartiņas. Aptaujājot vecākus par bērnu komunikācijas iemaņu attīstību, tika noskaidrots viņu viedoklis par to, ka alternatīvās komunikācijas līdzekļi sniedz bērnam sociālās



komunikācijas paņēmienus ar citiem cilvēkiem. Skolotāju aptauja liecina, ka pedagogi, strādājot ar bērniem, kam nav attīstīta aktīva runa, cenšas izvēlēties vispiemērotāko piktogrammu sistēmu skolēna komunikācijai ar apkārtējo pasauli. Raksta noslēgumā tiks piedāvātas rekomendācijas sekmīgai piktogrammu izmantošanai mācību un audzināšanas procesā bērniem ar vidēji smagiem un smagiem GAT.

**Jelena Fedosejeva**

*Daugavpils University, Parādes street 1, Daugavpils, jelena.stagorsne@inbox.lv*

## **TRANSDISCIPLINARY ORGANIZATION OF A LEARNING PROCESS IN A VOCATIONAL SCHOOL TO FOSTER A SUSTAINABLE DEVELOPMENT**

Key words: vocational school, team work, business communications, creativity, transdisciplinarity.

This article provides an insight into the results of a designed of a learning process and carried out at PIKC Daugavpils Technical school in the study of program “Railway transportation”. The aim of this study is to explore the impact of the organization of a learning environment for the juvenile groups while teaching technical study subjects.

In particular, the research conducted at this vocational secondary school focused up on introducing a particular form of integrative collaboration amongst the learners. A formative teaching experiment, which analyses learner’s integrative collaboration through structured observation at the beginning and the end of acquisition of the study subject “*Railway transport*” points at positive changes associated with the model criteria: working in a team, mutual learning, business communication and creativity.

**Dileta Jatautaite, Jelena Kazimianec**

*The General Jonas Žemaitis Military Academy of Lithuania, Šilo g. 5a, dileta.jatautaite@mil.lt, kazimelen@gmail.com*

## **АУДИОВИЗУАЛЬНЫЙ МЕТОД НА ЗАНЯТИЯХ ПО ИНОСТРАННОМУ ЯЗЫКУ В ЛИТОВСКОЙ ВОЕННОЙ АКАДЕМИИ (НА ПРИМЕРЕ ПРЕПОДАВАНИЯ РУССКОГО ЯЗЫКА)**

В настоящее время идёт активный поиск новых методов и приёмов обучения иностранным языкам, отвечающим современному состоянию методической науки и стремительному развитию мирового сообщества в целом. Интенсивная технологизация и компьютеризация всех сфер жизнедеятельности человека, повлёкшая за собой прочно укоренившуюся привычку молодых людей к восприятию информации с экрана, обусловила активное проникновение аудиовизуальных средств обучения в систему обучения как в школах, так и в вузах. В преподавании иностранных языков всё больше используются аутентичные видеоматериалы и различные видеосюжеты, созданные методистами специально в учебных целях, ибо с видео на занятие приходит сама жизнь во всём объёме реального речевого общения. Следует подчеркнуть, что использование видеосюжетов на занятиях по иностранному языку как нельзя лучше соответствует задачам, стоящим перед преподавателями иностранных языков в контексте развития активного многоязычия литовского общества. В докладе освещается использование аудиовизуального метода в обучении иностранным языкам на занятиях в военной аудитории, даётся анализ преимуществ и недостатков этого метода, предлагается обзор существующих учебных пособий по русскому языку, базирующихся на аудиовизуальном методе обучения, а также рассматриваются требования, предъявляемые к аудиовизуальным материалам, используемым в учебных целях. Особое внимание уделяется технологии методической разработки аутентичного видеоматериала для использования его в учебных целях.

*Detlev Lindau-Bank, Margit Stein, Lukas Scherak*

## **CURRICULUM DEVELOPMENT IN VOCATIONAL TRAINING AND 17 SDG'S (SUSTAINABLE DEVELOPMENT GOALS)**

Integrating Sustainable Development Goals into curricula of different vocational trainings is a challenge we face in our ERASMUS+-project "MetESD" (Methods and curriculum development in Vocational schools towards Education for Sustainable Development). The contribution will elaborate that the Curriculum Framework for the 17 SDGs allows an appropriate implementation into vocational training and curricula because of the non-prescriptive nature of its content. The results of our project could serve as a guide for European countries to conceptualise, review or further develop their vocational training curricula and ensure that education for sustainable development is an integral part of teaching a resilient generation that will advocate for action and the attainment of the SDGs in a holistic, integrated manner according to the challenges of a future labour market. It will provide conceptual support for teacher training, adult learning and community development.

*Ināra Laizāne*

## **EKOLOĢISKIE RISKI, TO APZINĀŠANĀS JAUNIEŠU VĒRTĒJUMĀ**

Key words: awareness and ecological risk awareness, environmental risk identification and assessment of ecological risk mitigation, the ecological risks.

Typical of this century, the threat is different ecological disasters caused by both natural processes and human activity.

The aim is to carry out the environmental consciousness of young people in research, on the basis of notions about the environmental risk assessment.

The object of the study is the ecological risks, and the study of environmental awareness among young people, is the subject of components (solicitude for the environmental degradation, the knowledge of the environment-degrading factors and the willingness to invest time / resources for the maintenance of the environment) as the type of evaluation of environmental risks. The empirical study analysed the ecological risks Latvia view of young people.

The article also analysed studies to date, which deals with the environment, protection of the environment, environmental risk problems.

The central idea: there are a number of objective factors, which shows the ecological risk increase in population, but it is not being followed by the appropriate reaction – ecological manifestation of consciousness – this risk reduction. This makes it necessary to address youth environmental consciousness component content analysis and factors affecting their mutual commitment to research.

*Edgar Petrinko*

*Daugavpils University, 13 Vienības Street, Daugavpils, edgar.petrinko@gmail.com*

## **TEACHERS' OPINION ON THE IDEA OF WISE EDUCATION**

Key words: wisdom, teachers, experience, complex approach, dynamic process.

Objective. The aim of this research is to probe into the teachers' notion of wisdom and the teachers' wisdom itself.

Design and methods. The study uses a phenomenological approach where the experience of teachers was studied using semi-structured interviews. The interview data were analysed availing to the qualitative content analysis complemented by some elements of quantification.

Results. The phenomenon of wisdom is described on the basis of teachers' values and experience. According to the teachers, wisdom comprises several aspects and is viewed as a dynamic process.

Conclusions. The conclusions reflect the integrity of the phenomenon of wisdom, as well as the importance and prospects of further study of wisdom for its use in the work of teachers.

*Loreta Juškaite*

*Riga Technical University, Kaļķu iela 1, Rīga, Loreta.Juskaite@rtu.lv*

## **THE GAP BETWEEN HIGH SCHOOL AND UNIVERSITY EDUCATION IN STEM SUBJECTS**

Key words: STEM (science, technology, engineering and mathematics) disciplines, sustainable education, knowledge, career education.

The goals of STEM education are to increase the proficiency of students in the STEM and increase the number of students who pursue STEM careers in advanced studies. This is because STEM occupations remain influential in driving economic growth and innovations. Profiled teaching introduced in schools raised a choice problem for teenagers and their parents. This choice is closely related to the choice of high school and future profession for the most of schoolchildren. After finishing their secondary education many young people plan to continue their education in technology and engineering specialities in technical universities, but for successful studies in this field, it is necessary to have very good or excellent knowledge of mathematics, physics and chemistry. Young people with completed secondary education do not always have sufficient knowledge in these subjects, but at the same time, not all of them have equal opportunities in this field. Each year about twenty five thousand young people begin studies at higher educational establishments in Latvia. However, some of them drop out and fail to continue their studies. In Latvia, there is no comprehensive education policy in terms of career education and at the national level appropriate professional competence training for early maturity age group is not available.

The aim is to discover the reason for different knowledge levels in STEM disciplines during the period of secondary education (among 19-25 year olds) and to explore the reasons why young people with completed secondary education do not always have sufficient knowledge in the field of exact sciences.

Research methods:

- 1) analysis of scientific literature;
- 2) analysis and comparison of the State Exams results;
- 3) a representative sample survey of students in groups.

***Eļžbeta Krumļevska, Irina Kazakevica***

*Daugavpils University, Parādes street 1, Daugavpils, elzbetakru@inbox.lv, kazakevi4a@inbox.lv*

## **DEVELOPMENT OF PHYSICAL READINESS FOR CHILDREN AGED 5 – 7 IN FIGURE SKATING CLASSES**

The research was carried out in cooperation with the Daugavpils Ruģeli pre-school educational establishment. Children from the age of 5 to 7 years, once a week, attended the figure-skating lessons at the Daugavpils Ice Hall. For classes, a set of exercises was developed, after which the children trained for six months. After this period, a final performance was organised to aggregate the results based on the training outcomes. Moreover, parents of the children were questioned to determine the child's attitude towards the lessons and their well-being during the training process.

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# MENEDŽMENTS

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# MANAGEMENT

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**Alona Eisenberg, Svetlana Ignatjeva**

*Daugavpils University, Parādes street 1, Daugavpils, alonaeisenberg@hotmail.com, svetlana.ignatjeva@du.lv*

## **AN INVESTIGATION OF THE ROLE OF ORGANIZATIONAL CITIZENSHIP BEHAVIOR IN ISRAELI LOCAL AUTHORITIES**

Key words: Organizational Citizenship Behavior, OCB multi-dimensional instrument.

During rapid and dynamic changes, the development of technologies and increasing competition, there is a need to create and increase the productivity of organizations within the organization without increasing expenditures. Organizations that are capable of maintaining the behavior of employees beyond the definition of their role, beyond the requirements of the job, are able to survive in a competitive environment. B.K. Organ (1988) called such behavior "Organizational Citizenship Behavior" (OCB) and emphasized its being an important factor in assisting the organization to reach its goals.

OCB is multifactorial phenomenon and its perception is multidimensional. This research selected 3 dimensions that were interpreted as: Job dedication, Civil virtue and Loyalty. This research classified employees according their orientation toward their behavior at work that were interpreted as: Job orientation, Civil service orientation, Career orientation and Calling orientation.

This study examined 529 OCB questionnaires, filled out by municipal employees in 12 local authorities in Israel from all parts of the country and from all types of local authorities: municipalities, regional and local councils. The research developed methodology, adapted and practical approbated on the context of Israeli local authorities.

The proposed methodology allows classifying employees in relation to their organization to develop methods to improve the efficiency of the organization. The methodology that tested in Israeli local authorities can be applied to various public sector organizations.

Research aim: to provide the practical tools for monitoring and evaluation Organizational Citizenship Behavior (OCB) of employees. The study provides guidelines for further encouraging OCB among employees for the purpose of increasing efficiency the organization by classifying that behavior and correction .

**Stefani Velicko**

*Daugavpils University, Parādes street 1, Daugavpils, i.kurse@inbox.lv*

## **ANALYSIS OF EMPLOYEE MOTIVATION FACTORS "CHILDREN'S CLINICAL UNIVERSITY HOSPITAL"**

It is a wide spread opinion among all types of stakeholders that the main human resource problem is a shortage of healthcare personnel that has been caused by various reasons, including comparatively low remuneration of the healthcare workforce and attractive alternative employment in other related sectors or abroad.

**Anna Veise**

*Daugavpils Universitāte, Parādes iela 1, Daugavpils, Latvija, anna.veise@yahoo.com*

## **DARBA MOTIVĀCIJAS UN GARĪGAS IZAUGSMES SAIKNES IZPĒTE ZALĀ UZŅĒMUMĀ "X"**

Darba tiek izpētīts garīgums, kas nav saistīts ar cilvēka reliģisko piederību, tā definīcijas, realizēšanas iespējas darba vietā un tā lomu darba motivēšanā un cilvēka labklājībā; tiek apskatīti motivācijas veidi, kas saistīti ar cilvēka garīgumu un to raksturojumi; neliela uzmanība ir veltīta garīgai vadībai, ka arī tiek piedāvāti priekšlikumi

vadībai darbinieku motivācijas un garīgās izaugsmes sistēmas izveidei. Pētījums tiek veikts uzņēmumā “X”, kas nodarbojas ar atkritumu pārstrādi un ražo videi draudzīgu produktu.

Par svarīgākiem secinājumiem var izcelt to, ka garīgā motivācija kā iekšējais dzinējspēks virza darbiniekus pilnībā atdoties darbam, attīstīt un rast jaunas idejas, rast progresu, parealizēties, tā piešķir cilvēkam enerģiju un velmi pildīt darbu, izbaudot gandarījumu no paveiktā, tādējādi uzlabojot viņa labklājību. Tā var turpināties arī bez apbalvojumiem un ārējiem materiāliem mudinājumiem. Taču izvēlētajā uzņēmumā cilvēki ir vairāk ieinteresēti un orientēti uz materiālu motivāciju un līdz pētījumam vadība nav veltījusi uzmanību garīguma izpētei darba vietā.

### ***Silvija Dzalbe***

*Daugavpils University, Parādes street 1, Daugavpils, silvija.dzalbe@gmail.com*

## **DZĪVE PĒC AUGSTSKOLAS IZLAIDUMA – IESPĒJAS UN IZAICINĀJUMI**

Mūsdienu straujais laikmets ar milzīgo informācijas daudzumu pārsātina pasaules un lietu uztveri, tāpēc jauniešiem kļūst arvien grūtāk tajā ieraudzīt un sadzirdēt sevi, savu patieso aicinājumu un dzīves mērķi. Rezultātā, neīstā augstskolas programma un profesija var sarežģīt ceļu uz laimīgu un produktīvu dzīvi. Maģistra darbā tiek aplūkotas un pētītas iespējas un izaicinājumi pēc augstskolas izlaiduma:

- kas sagaida jaunieti pēc pirmā augstskolas diploma iegūšanas,
- vai diploms un augstskolā gūtās zināšanas ir *īstās*, lai *veidotu* kvalitatīvu un kvantitatīvu turpmāko dzīvi,
- vai iegūtais diploms nodrošina ar darbu profesijā vai arī tiek strādāts darbs citā jomā/profesijā,
- vai un kāda līmeņa studijas tiek turpinātas/uzsāktās pēc pirmā augstskolas diploma iegūšanas,
- vai ir nepieciešamība pēc kursiem, semināriem un apmācībām turpmākai profesionālajai, sociālajai, emocionālajai un garīgajai attīstībai.

Kāda ir dzīve pēc augstskolas?

### ***Madara Svirkoviča, Irēna Kokina***

*Daugavpils University, Parādes street 1, Daugavpils, madinsone@inbox.lv, irena.kokina@du.lv*

## **EFEKTĪVAS PIRMSSKOLAS IESTĀDES FAKTORU ANALĪZE**

Atslēgas vārdi: faktoru analīze, pirmsskolas iestāde, veiksmīga organizācija.

Organizācijai jāattīstās līdzī laikā – mūsdienu tendencēm, mainīgajām vērtībām, lai tā veiksmīgi varētu pastāvēt ilgtermiņā.

Pētījuma mērķis ir izstrādāt veiksmīgas pirmsskolas iestādes attīstības modeli, paņēmienus, lai veicinātu organizācijas attīstību.

Tēmas kontekstā tiks pētītas veiksmīgu organizāciju attīstības teorijas un attiecinātas uz pirmsskolas iestādes faktoriem, pētīta pasaules pieredze, analizēti veiksmīgu pirmsskolas izglītības iestāžu faktori un noskaidrots, kā šīs iestādes risina problēmas, kāds risinājums tiek pielietots.

### ***Antoņina Jemljanenko***

*University of Latvia, Faculty of Pedagogy, Psychology and Art, Jūrmalas gatve 76, Rīga, Latvia, Antoninajem@gmail.com*

## **IMPACT OF EU GENERAL DATA PROTECTION REGULATION ON MANAGEMENT OF EDUCATION**

On 25 May 2018 the European Union's (EU) General Data Protection Regulation (GDPR) will come in force (EU regulation 2016/679 of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data). The GDPR strengthens and harmonises the rules for protecting privacy rights within and outside the EU territory. The GDPR provides stricter general rules applying to any kind of personal data processing. For educational sector this creates new legal and operational risks, the severity of which may result in enormously high fines. For educational institutions the minimal compliance means requirement to appoint Data Protection Officers, limitations and restrictions on usage of personal data and its application within the defined legal scope. These changes will bring significant impact on management of

education, where personal data is an integral part of daily operations, as well as on the academic research, where personal data is frequently used in large amounts.

With the introduction of the GDPR, the rights of the data subject are substantially strengthened. Consequently, the responsibilities of the data processor become more comprehensive. One of the legal bases for processing personal data, which applies to the educational sector, is the legitimate interest of the data processor, but these interests are not absolute. Data processor must evaluate and inform the data subject who can decide accordingly whether the legal interest is not excessive. This is a significant change, as data subjects are often not aware of the legal basis for the processing of their personal data.

This research article aims to provide an overview of the GDPR to be considered for management of educational sector, where personal data is used in daily operations of both public and private institutions, as well as for scientific projects, which often include the processing of personal data, the use of which is strictly regulated by the GDPR. The aim is to give the main key facts to educational managers and researchers to adapt in their practices, evaluate readiness to be compliant to the GDPR and draw out basic recommendations for educational sector about compliance to the EU GDPR that will be enforced in May 2018.

***Maija Ivanova, Irēna Kokina***

*Daugavpils University, Parādes street 1, Daugavpils, maija-ivanova@inbox.lv, irena.kokina@du.lv*

## **INFLUENTIAL FACTORS OF ORGANIZATION CULTURE IN PUBLIC ADMINISTRATION**

Key words: personal values, organizational culture values, organization culture, influential factors.

In today's world, there are many theories about the impact of the organizational culture, but the company's efficiency as part of any successful organization is based on the employees. These people create great organization, because their emotions and feelings about the work affect their willingness and ability to be accomplices in providing their knowledge and skills. When creating effective organizations organization's culture assessment, that reflects the organizational structure of the elements, processes and their mutual interactions, allowing a better understanding of the interaction between organization and individual as efficiency factor, is needed. In the article, the results of the study "About personal and organization's cultural values in public administration" are reflected. Based on which individual's personal as well as organization's values are analyzed, in addition the contributing factors of public administration and work incentives are named. Research shows that employees' attitudes toward work get better depending on the factors such as relationships, reward, sense of security about the future, professional growth and recognition. In this study, the resulting factors help identify cultural features of organization, discover the main focus of the organization and its activities, priorities, as well as work atmosphere and employee confidence in the organization. While working in the public administration, employees are not only investing their work, experience and knowledge, but also somehow benefit themselves, so it is important to understand not only the professionalism of employees, but also to create the working conditions and environment so that they would be interested in staying at the organization and work towards the aims of.

***Laura Dzalbe***

*Daugavpils Universitāte, Parādes iela 1, Daugavpils, dzalbe\_laura@inbox.lv*

## **INTEGRĒTO RESOCIALIZĀCIJAS PROGRAMMU ĪSTENOŠANA UN TO VADĪBA OLAINES CIETUMA ATKARĪGO CENTRĀ**

Atslēgas vārdi: resocializācija, notiesātie, Atkarīgo centrs, integrētās programmas.

Pētījums ir veltīts tam, ka Latvijā ieslodzījuma vietās ir daudz ieslodzīto, kuriem ir atkarības problēmas. Ieslodzījuma vietu pārvalde izvirzīja uzdevumu pievērsties šīs mērķauditorijas resocializēšanai un 2016.gadā tika atklāts Olaines cietuma Atkarīgo centrs, kura darba metodika tika aizgūta no Norvēģijas un Polijas cietumiem. Tika pielāgotas resocializācijas programmas "Atlantis" un "Pathfinder" Latvijas apstākļiem. Pētījuma gaitā tika apskatīts, kādi resocializācijas pasākumi tika aizgūti un integrēti pielāgotajās programmās. Pētījuma rezultātā autore piedāvā vienotu pieeju integrēto resocializācijas programmu īstenošanā un to vadībā Olaines cietuma Atkarīgo centrā.

***Elina Radionova-Girsa***

*University of Latvia, Aspazijas 5, Riga, Latvia, elinaradionova@gmail.com*

## **LOYALTY ON THE INTERNET: INFLUENCING FACTORS**

Key words: customer loyalty, internet trading, factor analysis, customer behaviour.

Everyday we live at an accelerated pace, which determines the peculiarities and specificities of our lives. We move quickly, eat fast and shop quickly. Undoubtedly, it's easy to do it on the Internet, where the connection between speed and capabilities is straightforward. Companies have long been concerned with the issue, which makes consumers loyal in this dimension and what factors influence it.

It is necessary to understand that there is a close connection between the techniques that operate in the traditional environment and those operating in the Internet environment. This link is very close, but methods of marketing techniques have peculiarities when it comes to the internet environment.

Of course, loyalty in the Internet dimension and the offline dimension will be somewhat different, let alone the factors affecting it. If loyalty to the offline environment has been studied for a long time, then the online environment simply overwhelms it, rather than adapts it.

The aim of the work is to find the factors that influence the most consumer loyalty in the Internet environment.

The main tasks are to study relevant scientific literature, to collect data on the basis of which factor analysis will be carried out.

The methods used are both theoretical scientific literature analysis and data factor analysis.

As a result, the main factors affecting consumer loyalty in the Internet environment will be raised. The results of the work can be used not only theoretically, but also practically when the company wants to continue its activities on the Internet.

***Diāna Džepa***

*Daugavpils Universitāte, Parādes iela 1, dzepa@inbox.lv*

## **PERSONĀLA DARBA ORGANIZĀCIJAS MODEĻA PIELĀGOŠANA ATKARĪGO NOTIESĀTO VEIKSMĪGAI RESOCIALIZĀCIJAI OLAINES CIETUMA ATKARĪGO CENTRĀ**

Atslēgas vārdi: ieslodzījuma vietu pārvalde, Olaines cietuma Atkarīgo centrs, personāls un tā apmācība, programmas – atkarīgo notiesāto resocializācija, darba organizācija.

Pētījums ir veltīts tam, lai jaunizveidotajā Olaines cietuma Atkarīgo centrā, izpētītu un apskatītu no ārvalstīm aizgūto un pielāgoto programmu, personāla darba organizācijas modeli - atkarīgo notiesāto resocializācijā. Pētījuma gaitā tika apskatīts kā ieslodzījuma vietā var veiksmīgi organizēt personāla darbību, aizgūstot ārvalstu pieredzi, lai atkarīgo notiesāto resocializācija būtu vienota un kvalitatīva. Pētījuma rezultātā autore piedāvā pielāgot personāla darba organizācijas modeli atkarīgo notiesāto veiksmīgai resocializācijai, balstoties uz pastāvošo modeli un, autore skatījumā, tā trūkumiem.

***Iveta Katelo***

*Daugavpils University, Parādes street 1, Daugavpils, Latvia, iveta.katelo@inbox.lv*

## **PROBLEMS OF EVALUATION OF THE QUALITY OF PUBLIC SERVICES**

Key words: quality assesment, public service quality, customer's satisfaction.

With the development of public administration, the problem of evaluation of the quality of public services becomes topical.

This problem could be addressed introducing in the public administration modern methods of service quality assessment and monitoring quality indicators.

The aim 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 of Latgale region; analyze the results of the examination and draw conclusions about the possibilities of using the method.

The research was carried out in the state institutions of Latgale region of Latvia, providing social assistance services, employment promotion services; implement state environmental protection policy; provides legal assistance services. The satisfaction of the customers of the institutions and the quality of the services provided were assessed.

The method approved in the study could be used in the Latvian public sector for service quality assessment. Quality assessment of services provided by public authorities and regular evaluation of their – monitoring should become an integral part of public administration.

***Andžela Veselova***

*University of Latvia, Aspazijas blvd 5, andzela.veseova@lu.lv*

## **QUALITY AND ITS MEANING IN THE CONTEXT OF CONSUMERS BEHAVIOR**

Key words: consumer, quality dimension, goods, services.

Everybody understands the term “quality” in some other manner. Traditionally, quality means an intangible concept of beauty and excellence. Quality is hard to explain, yet people do recognize it and are ready to pay more for better quality products and services.

Quality is a significant parameter for goods and services. D. Garvin’s quality characteristics (dimensions) for goods and services provide useful arsenal of tools to be used by the author in the present research. D. Garvin’s quality characteristics for goods include performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality. Quality characteristics of services, in their turn, include tangibles, service reliability, responsiveness, assurance, empathy, availability, professionalism, timeliness, completeness and pleasantness. The research will show what kind of quality characteristics produce an impact to the choice of goods/services made by Latvian consumers.

The aim of this paper is to explore a perceptions the dimensions of quality and customers perceptions of quality in the services and products what they purchase in order to provide a framework for a better understanding of the various dimensions of product and service quality and their impact on consumer perceptions. Tasks of the research include the necessity to provide explication of quality characteristics, carry out a questionnaire of the inhabitants of Latvia aimed to find out, what quality characteristics determine the consumers’ perception of quality, and, finally, to come to conclusions on how quality is perceived. The methods applied in research are referential analysis of literature and survey of inhabitants (questionnaire).

***Evita Beņķe, Andris Deniņš***

*Latvijas Universitāte, Latvija*

## **REGULĒJOŠĀ VIDE TELEKOMUNIKĀCIJAS NOZARĒ LATVIJĀ, TĀS IETEKME UZ VADĪŠANAS EFEKTIVITĀTI**

Regulējošās vides vispārējs raksturojums (instances un regulējumi, kas saistoši nozarei). Aktuālās saistošās izmaiņas un jauninājumi regulējumos. ES regula par viesabonēšanas tarifu izmaiņām – tās būtība, Latvijas telekomunikāciju uzņēmumu reakcija un preventīvās darbības tās ieviešanai. Karteļa risks ES regulas ieviešanas soļos. Aktualitātes telekomunikāciju nozarē Latvijā.

***Olga Arhipova, Irēna Kokina***

*Daugavpils University, Parādes street 1, Daugavpils, olga\_arhip@inbox.lv, irena.kokina@du.lv*

## **SCHOOL PRINCIPAL’S PROFESSIONAL DEVELOPMENT AND RESPONSE TO WORLD-WIDE EXPERIENCE**

Key words: competences, leadership, education managers, professional development, world-wide experience.

Inequalities in education, institutional improvement and effectiveness lie at the heart of reform in both local and international contexts. This provides a broad base for researching the role of leadership and the nature of education (broadly defined) and learning. Emphasis is placed on the development of the professional skills necessary to address the persistent changes and their potential impact on those who run and manage schools, public and private sector institutions and other teachers and educators. School principals must develop and improve knowledge, understanding and practice as educational managers and leaders by critically analysing and synthesising national, international research and policy. They have to communicate outcomes in clear and convincing ways so as to enhance institutional performance. It is beneficial to practice the following learning activities: group work, research and case-studies, learning alongside other students, e-learning, student support



service for learning. The result of the study showed the impact of culture, philosophical approaches, hierarchical structures, and especially technology, on leadership development.

**Ieva Strode**

*Daugavpils University, Parādes street 1, Daugavpils, ieva.rimeicane@gmail.com*

## **SĒLIJAS NOVADU APVIENĪBAS PAŠVALDĪBU SOCIĀLEKONOMISKĀS SITUĀCIJAS IZVĒRTĒJUMS UN ATTĪSTĪBAS IESPĒJAS NAP2020 KONTEKSTĀ**

Ņemot vērā gaidāmo jaunās Administratīvi teritoriālās reformas ieviešanu, kas, saskaņā ar šobrīd spēkā esošajām prognozēm, varētu noslēgties jau līdz nākamajām pašvaldību vēlēšanām, tas ir, līdz 2021.gadam, ir lietderīgi izpētīt, kāds ir Sēlijas novadu apvienībā (SNA) ietvertu pašvaldību potenciāls, nodrošināto pakalpojumu klāsts un turpmākās attīstības iespējas. Saskaņā ar NAP2020 noteikto rīcības virzienu un valdības piedāvāto attīstības centru modeli, visas 7 SNA pašvaldības tiks apvienotas un/vai pievienotas kādam no 30 noteiktajiem attīstības centriem.

Pētījuma mērķis ir veikt Sēlijas novadu apvienības pašvaldību pašreizējās sociālekonomiskās situācijas analīzi un, balstoties uz iegūtajiem datiem un NAP2020 noteikto, noskaidrot, kādas ir šo pašvaldību turpmākās attīstības iespējas.

Izvirzītie pētījuma jautājumi:

1. Kā pašvaldību vadītāji/attīstības plānošanas speciālisti vērtē pašreizējo novadu sociālekonomisko situāciju? 2. Kā tiek vērtētas novadu attīstības iespējas tālākajā perspektīvā? 3. Kāds ir novadu iedzīvotāju viedoklis par pašreizējo situāciju novadā (izglītības, nodarbinātības, atpūtas u.c. iespēju un pakalpojumu pieejamība)? 4. Kādi ir priekšlikumi turpmākai novada attīstībai? 5. Kādas ir SNA pašvaldību attīstības iespējas dažādu plānošanas dokumentu (galvenokārt, NAP2020) un pašreizējās situācijas kontekstā? 6. Kā NAP2020 noteiktās rīcības, lai sasniegto tajā izvirzītās prioritātes, vērtē eksperti mediju vidē?

Pētījumā izmantotās datu ieguves metodes:

1. Daļēji strukturētās intervijas ar pašvaldību vadību un attīstības plānošanas speciālistiem; 2. Iedzīvotāju aptauja; 3. Iepriekšējo pētījumu analīze; 4. Mediju telpā pieejamās informācijas analīze attiecīgās tēmas kontekstā; 5. Dokumentu analīze

Pētījuma bāze:

1. Sēlijas novadu apvienības pašvaldību teritorijas; 2. Dokumentu analīze.

**Viktorija Teličene**

*Daugavpils University, Parādes street 1, Daugavpils*

## **ANALYSIS OF SOCIAL HELP AND SOCIAL SERVICES IN DAUGAVPILS CITY IN THE PERIOD 2007 – 2017**

The successful management of the social support system and the support of citizens in difficult situations are one of the most important tasks of the municipality. The local government needs a clear picture of the situation in the city and in the whole country in order to adapt regulatory frameworks and provide the sustainable planning for the benefit of the citizens.

The work aim to investigate and analyse the social help and social services provided by the municipality of Daugavpils City in the period 2007-2017, during the period when the country experienced an economic crisis and recovery. In the period of economical problems people need support from state and local governments the most.

**Karīna Krilova**

*Daugavpils University, Parādes street 1, Daugavpils, kariina.krilova@gmail.com*

## **ŠŪŠANAS UZŅĒMUMA "X" PERSONĀLA MOTIVĀCIJAS SISTĒMAS ANALĪZE**

Speciālistu trūkuma problēma ir ļoti aktuāla Latvijas darba tirgū. Kopš 2000-šo gadu sākuma Latviju raksturoja vienmērīga, sistemātiska bezdarba līmeņa krišanās un nodarbinātības līmeņa augšana, tā tas turpinājās līdz 2008.

gada otrajai pusei, kad arī Latvijas ekonomiku skāra krīze. Kopš 2008. gada vidus līdz pat 2010.gada aprīlim Latvijā notika bezdarbnieku līmeņa straujš palielinājums. No 2010.gada aprīļa līdz 2017.gada aprīlim bezdarbs no 20.8% samazinājās līdz 8.8%, kas ir vairāk nekā divas reizes, bet tagad radās cita problēma- kvalificēta darba spēka trūkums.

Darba mērķis- Izskatīt motivācijas sistēmu teorētisko aspektu pamatus, un, lai noskaidrotu speciālistu trūkumu dotajā nozarē, izanalizēt šūšanas uzņēmuma darbinieku apmierinātību ar motivācijas paņēmieniem, kādas uzņēmuma vadība izmanto praksē.

Darba priekšmets ir personāla motivācijas sistēma šūšanas uzņēmumā. Darba objekts ir šūšanas uzņēmums X.

**Valdis Jukšs**

*Daugavpils University, valdis.jukss@rs.gov.lv*

## **SUSTAINABLE STRATEGY OF PERSONAL DEVELOPMENT IN STATE BORDER GUARD ORGANIZATION IN DAUGAVPILS**

Key words: professional development, border guards, security.

Among the main responsibilities of the state's border guard organization is a patrolling of the borders as well as a control of foreigners in the territory of Latvia to ensure the security of the country. Therefore, one of the major managerial tasks of Border Guard institutions is training professional and motivated border guards. The main aim of this study is to outline strategies for the professional development of border guards, by reshaping the elements of existing quality management system. The main research methodology employed for this study is focus group interviews, and a questionnaire of personal on their self-evaluation of their professional development. This was concluded that societal respect and faithfulness can be reached only by carrying one's duties responsibly and with high honor. Professionally trained border guards are the guarantee of the securability of the state.

**Helēna Skadiņa, Rosita Zvirgzdiņa**

*Turība University, Graudu street 68, Riga, helena.skadina@gmail.com, rosita@turiba.lv*

## **THE EFFECT OF MACROECONOMIC FACTORS ON BUSINESS MODELS IN FINTECH INDUSTRY**

The Internet and technological capabilities contribute to changes in the business environment and force companies to reconsider the use of new technologies in their businesses and to make decisions about improving their competitiveness through the benefits of the digital age.

The decision to use new technologies makes it possible to open new market segments as well as to expand the business beyond one country's borders. This trend brings new business potential, but at the same time it involves new risks, which must be qualitatively and timely managed to ensure the sustainability of the business model. Business modelling is an excellent tool which entrepreneurs can use in order to adapt their activities to a new market challenges and predict the consequences as well as improve their management skills for risk assessment. The aim of this research is to find out what and how macroeconomic factors affect business modelling of the financial technology (FinTech) at both company and product level. In this research the authors used a continuous comparative analysis method as well as content analysis method (Martinsone et al, 2016). In interviews, experts were asked to assess the significance of specific macroeconomic factors by using the Likert scale. As a result of the research, the difference of the influence as well as their dependencies and modifications on different levels of business modelling was determined. This result forms the basis for conclusions about the most important impact factors, the areas of their influence and possible consequences that affect business modelling at both company and product level.

**Karīna Juhņeviča, Dzintra Iliško**

*Daugavpils University, Parādes street 1, Latvia*

## **THE IMAGE OF COMPETITIVE WOMAN IN A CONTEMPORARY SOCIETY**

While the world and the government of majority of countries are implementing equality principle in all spheres of life, women are still lagging behind when it comes to leadership roles in the top positions. In large

organization, as women climb up the corporate ladder they vanish. This is an extremely consistent pattern. At the lowest levels, more than half of the employees in organizations are female. As you move to each successively higher level in the organization, the number of women steadily shrinks. The topicality of the issue of this study concerns women in leadership and it is related how the society views women's image. The image of a successful woman is part of a success story and is a part of women's successful career. Unfortunately, it is surrounded by a negative stereotyping and certain expectations from the society.

In the article it has been discussed what are the main competencies and the requirements of a successful leader. In order to build the image of a successful leader woman needs to develop one's abilities to succeed in work, to be able to present oneself, to strengthen one's ability of be flexible in a changing requirement. There were 144 participants who took part in this research and evaluated leader's competencies and stereotypes about the image of a woman. Research results indicate that one of the strength of women leaders is to adapt to changing contexts and circumstances but as a weakness the participants have mentioned a stereotypical notion of a women leader. The authors analyse theories on women's image and requirements for their competitiveness. The methodology employed in the article are interviews with women on their career advancement and the factors of success and failure.

***Andra Strautiņa***

*Liepāja University, Lielā street 14, Liepāja, strautinaan@gmail.com*

## **THE ORGANIZATION'S LEARNING CULTURE AS A PREREQUISITE FOR MAXIMIZING THE SOCIAL IMPACT OF A SOCIAL ENTERPRISE**

Key words: organization's learning culture, social impact measurement, social enterprise, theory of change.

Social impact is the long-term changes created by activities and investments of a social enterprise and it is helpful both for demonstrating the value of the organisation's activities to funders or investors, and for improving its service delivery. To manage and control the process of creating social impact in order to maximise or optimise it, different approaches of measurement are applied. Theory of change is one of them – a commonly used framework (based on theories of Weiss (1995)) that helps to describe how organization's program will lead to results (the process of change by outlining causal linkages in an initiative – a link between organization's actions, outputs and outcomes and its social impact). It is a continuous process of innovation and adaptation; therefore, social enterprises need to be continually learning how to improve their performance in order to maximise social impact and learning how to learn how to improve performance. By undertaking and learning from and during the process of social impact measurement, a social enterprise can achieve its goals and maximize social impact more effectively. Developing and fostering the learning culture at social enterprise is an important prerequisite to do so. This article aims to describe the characteristics of an organization's learning culture (based on theories about organizational learning (Watkins & Marsick (1993), Argyris (1997), Senge (1990) etc.), an organizational change and culture (Burke (2008), Trompenaars (2004), Schein (2004), etc.) in conjunction with social impact management of a social enterprise (based on social impact measurement theories by Epstein (2014), Dees (2002), Hehenberger et al (2015)) and their interconnectedness. The article concludes with theoretical considerations and suggestions for implementing theories into practice.



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# PSIHOLOĢIJAS AKTUĀLĀS PROBLĒMAS

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## CURRENT ISSUES OF PSYCHOLOGY

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**Santa Ozoliņa**

*Daugavpils University, Parādes street 1, Daugavpils, ozolina-santa@inbox.lv*

### **CHARACTER ACCENTUATION AND SELF- PERCEPTION AMONG ADOLESCENT**

Key words: character accentuation, self-perception, adolescent.

Adolescence is the developmental period occurring between childhood and adulthood. To know human character it means to know qualities that are important to him, which determine his behavior. As one of the determining individual typological features of self – concept are considered accentuation of character. The aim of the research is to find out what kind types of accentuation is more typical to adolescent and find out if self – perception affected character accentuation types.

The selection of research consists 32 participants aged 13 – 17 years old in 2x children's shelter and 1x crisis center. Within the framework of the study made a program for developing character accentuation and self – perception. In the course of the study, the relationship between character accentuation and self – perception has been established.

Using the K. Leonhard – S. Shmishec character accentuation questionnaire and S. Harter Self – perception method "What I am like". Data processing was performed using a SPSS data processing program.

**Bartłomiej Skowronski**

*University of Warsaw*

### **DETERMINANTS OF QUALITY OF LIFE IN PEOPLE SERVING PRISON SENTENCES IN PENITENTIARY INSTITUTIONS**

The aim of the study was to analyze the determinants of self-perceived quality of life in prison inmates in the context of risk and protective factors for their wellbeing. The research questions are the following research Q1: What are the determinants of quality of life in prison inmates? Q2: Which variables are protective factors for prison inmates' quality of life? Q3: Which variables are risk factors for prison inmates' quality of life? Methods: 390 men imprisoned in penitentiary institutions, aged 19 to 68 (M = 35.19, SD = 9.65) were assessed. Research methods were characterized by high validity and reliability. Using multiple regression analysis we assessed factors important for quality of life. Results: The protective factors for global quality of life and all of its dimensions are: self-efficacy and sense of coherence, and particularly – meaningfulness. For prison inmates, another significant factor protecting their sense of quality of life (except the metaphysical dimension) is social support; a particularly important factor is appraisal support. Our research shows that personal coping skills and tolerance of negative emotions explains prison inmates' global, psychophysical, an subjective quality of life particularly well. The present study reveals that the risk factors for prison inmates' quality of life are: depression (state and trait) as well as anger and anxiety (states). Conclusion: The most important determinants which account for quality of life are: self-efficacy and sense of coherence, social support, personal coping skills, tolerance of negative emotions.

**Alisa Žuravļova**

*Daugavpils University, Parādes street 1, Daugavpils, alisa.zuravlyova@inbox.lv*

### **DEVELOPMENT OF CREATIVITY TO PROMOTE SELF-ESTEEM OF PRESCHOOL-AGE CHILDREN**

Key words: creativity, self-esteem, preschool-age children.

The aim of the research: to find out whether with special prepared developing program it is possible to enhance creativity indicators and promote self-esteem indicators of preschool-age children.

The subject of research: creativity, self-esteem.

The object of research: 20 participants – children from X preschool educational institution aged 5 – 6 years.

The methods of research:

1. A theoretical study method: the analysis of scientific literature and other sources.
2. Empirical methods: Torrance Test of Creative Thinking – Figural TTCT, D. Lampen methodic "Tree".
3. Mathematical statistical data processing methods.

***Lelde Jegermane, Svetlana Guseva***

*Daugavpils University, Parādes street 1, Daugavpils, ly13@inbox.lv*

## **EMOTIONAL INTELLIGENCE AND POSITIVE THINKING AT THE ADOLESCENT AGE**

Key words: emotional intelligence, positive thinking, adolescents.

Adolescence is one of the most important periods in the way to the adult life. This is the time to make important choices in own life, but not yet clarity about one's future. At the same time, during this period an emotional difficulties and a danger of increase of a deviant behaviour risks exist, as the adolescent is not yet fully mature and is in the seeking of his self-image.

The aim of the research is to find out whether the adolescent looks on his life with positive or negative view and what level of his emotional intelligence is. Not only academic knowledge, but also skills such as awareness and control of one's own and other emotions, maintenance of interpersonal relations, skills to work in a team, ability to withstand stressful situations and solve problems are essential in life. People with these inherent skills can be more successful in forming relationships and more efficiently acts in the career field.

The research sample consists of 53 participants aged 14 – 17 years old of 3 X schools. Within the framework of the study, a program for developing emotional intelligence and positive thinking has been developed. Within the scope of the research, it was ascertained whether it is possible to improve the indicators of positive thinking and emotional intelligence in adolescent's age. In the course of the study, has been clarified whether the link between emotional intelligence and positive thinking indicators exists. Such studies in Latvia have not been carried out so far.

Using the Bar-On Emotional Intelligence Inventory (EQ- i) and the E. Diener's Positive Thinking Scale, the indicators of positive thinking and emotional intelligence for adolescents were clarified, following which the selection for participation in the developing program was made. Data processing was performed using the SPSS data processing program.

***Marina Sokola-Nazarenko, Malgožata Raščevska, Solvita Umbrasko, Andra Vabale, Madara Orlovska***

*Latvian University, Jūrmalas gatve 76, Rīga, Latvia, marina.sokola-nazarenko@lu.lv, malgozata.rascavska@lu.lv, solvita.umbrasko@lu.lv, andra.vabale@lu.lv, madara.orlovska@lu.lv*

## **SECOND AND THIRD GRADE STUDENTS' EARLY LITERACY SKILLS DIBELS NEXT LATVIAN VERSION INDICATORS: DATA COMPARISON FROM 2012/2013 AND 2017/2018 STUDY YEAR**

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS Next) is a set of measures which provide understanding of early literacy skills in children from preschool to six grades (Good et al., 2011). In Latvia DIBELS Next is standardized for pupils from preschool to third grade. The aim of this study is to compare early literacy skills DIBELS Next Latvian version indicators (Oral Reading Accuracy and Fluency, and Reading Comprehension) data of representative samples of second and third grade students from 2012/2013 and 2017/2018 study year. In this cross-sectional study, representative sample of randomly selected 276 students of 2<sup>nd</sup> grade in 2012/2013 and 137 students in 2017/2018, and 160 students of 3<sup>rd</sup> grade 2012/2013 and 205 students in 2017/2018 study year from different regions of Latvia. Students were examined three times during 2012/2013 academic year and same in 2017/2018 study year. Oral Reading Accuracy, Fluency, and Reading comprehension indicators comparison for 2<sup>nd</sup> grade showed that these indicators in average were significantly higher for pupils in 2017/2018 study year than in 2012/2013. Same indicator comparison in 3<sup>rd</sup> grade showed that only Oral Reading Fluency indicators average were significantly higher for pupils in 2017/2018 study year than in

2012/2013. Results showed that in last years 2<sup>nd</sup> grade students' Oral Reading Accuracy and Fluency, and Reading comprehension and 3<sup>rd</sup> grade students Oral Reading Fluency significantly increased. It is necessary to discover reasons of such changes between study years. This study is developing with the support of ESF VISC projects "Izglītojamo ar funkcionāliem traucējumiem atbalsta sistēmas izveide" Nr.2010/0330/1DP/1.2.2.4.1/10/IPIA/VIAA/001.

**Dzintra Iliško, Vitālijs Raščevskis**

*Daugavpils University, Parades 1 Daugavpils, dzintra.ilisko@du.lv*

## **SOCIAL ADAPTATION OF RETURN IMMIGRANT FAMILIES' CHILDREN IN BASIC SCHOOLS**

Key words: social adaptation, repatriated children, Latgale region.

Globalization processes that are taking place everywhere in the world concern migration processes in Latvia as well. The phenomenon of return migration becomes topical not only for the European countries but for Latvia as well. The topicality of the issue is determined by the lack of strategies and approaches and number of problem related to the process of social adaptation of return immigrant children. The study describes the discourse and legislative bases regarding repatriated children as well as point to a number of issues teachers encounter in the process of social adaptation of return immigrant family children in the comprehensive schools of Latvia. The study is based on the questionnaire of teachers from Latgale region and their view on repatriated children and the analyses of factors that facilitate and that slows down social adaptation processes of children. The study draws suggestions for the organization of more efficient social adaptation process of repatriated children.

**Zane Ulmane, Kristīne Šneidere, Jeļena Harlamova, Voldemārs Arnis, Ainārs Stepens**

*Ieslodzījuma vietu pārvalde, Stabu street 89, Riga, Latvia*

*Rīga Stradiņš University, Dzirciema street 16, Riga, Latvia, kristine.sneidere@rsu.lv, voldemars.arnis@rsu.lv*

*Rīga East Clinical University Hospital, Hipokrāta Street 2, Riga, Latvia, jelena.harlamova@rsu.lv*  
*Rietumu Clinic, Pernavas street 10, Riga, Latvia, Ainars.Stepens@rsu.lv*

## **THE RELATIONSHIP BETWEEN PERSONALITY TRAITS IN SENIORS WITH DIFFERENT AEROBIC PHYSICAL ACTIVITY EXPERIENCE**

Introduction: personality traits are stable and function as basis of an individuals' behavior not only in daily activities, but also regarding their choice of physical exercise type, intensity and frequency (Allen Greenlee, & Jones, 2011). Relationship between personality traits and physical activity is rather undetermined as some studies indicate that lower levels of Neuroticism and higher levels of Extraversion and Conscientiousness might predict one's physical activity level (Terracciano, Schrack, Sutin, Chan, Simonsick, & Ferrucci, 2013), while other studies show that long-term involvement in physical activities can change the intensity of expression in conscientiousness as a personality trait (Sutin, Zonderman, Ferrucci, & Terracciano, 2013). We aimed to explore personality traits associate with long-term aerobic physical activity and physical activity level in healthy Latvian seniors.

Materials and methods: participants were 52 adults, aged from 65 to 85 years ( $M = 71.79$ ,  $SD = 4.92$ , 21% male), native Latvian speakers without major health problems. The participants were divided into three groups based on the length and regularity of aerobic physical exercise in their daily lives. In the first group we included seniors with regular long-term aerobic physical exercise experience, in the second group we included seniors with short-term regular aerobic physical exercise experience and in the third group we included seniors that have chosen sedentary lifestyle. The data on personality traits were obtained with self-report questionnaire – *Latvian Personality questionnaire* (LPA-v3, Perepjolkina & Reņģe, 2013). The data on physical activity experience were obtained with a modified version of *Social Determinants of Health Behaviours* questionnaire (FINBALT, 2014). Participation in the study was voluntary and all patients signed Informed Consent Form. Results: between the three groups significant differences were observed only in Neuroticism scale ( $F(51) = 10.62$ ,  $p < .00$ ) and Honesty/Humility scale ( $F(51) = 3.16$ ,  $p < .05$ ). There were significant correlations between longer involvement in aerobic exercise and lower levels of Neuroticism ( $r = -.54$ ,  $p < .01$ ) and higher levels of Honesty/Humility ( $r = .28$ ,  $p < .05$ ). Vice versa results were found in seniors with sedentary lifestyle, with significant correlation between higher levels of Neuroticism ( $r = .34$ ,  $p < .05$ ) and lower levels of Honesty/Humility ( $r = -.51$ ,  $p < .01$ ).

Conclusions: the study results indicate that personality dimensions Neuroticism and Honesty/Humility experience might be related to the length of involvement in aerobic physical exercise. Another and possibly more significant limitation is the lack of more regular and vigorous exercise in the group with long-term aerobic physical activity experience, which is higher in some of the participants with short-term experience. This creates a challenge in creating objective physical activity measure that retrospectively assesses physical activity and the mean metabolite equivalent (ME) spent per day throughout life. The study was funded by the Latvian National Research Programme BIOMEDICINE 2014-2017

***Ija Karole***

*Daugavpils University, Parādes street 1, Daugavpils, ijakarole@inbox.lv*

## **THE TEENAGER'S IDENTITY AND SELF-ESTEEM IN THE SECONDARY SCHOOL**

Keywords: teenager, identity, self-esteem.

The aim of the research: The research of the interrelations of the teens identity and self-esteem features of the school pupils of the secondary school.

The subject of research: identity, self-esteem.

The object of research: 59 participants, teenagers from X secondary school, aged 13 – 15 years old.

The methods of research:

1. A theoretical study method: the analysis of scientific literature and other sources.
2. Empirical methods: Harter S. Manual: I and the world around me, K. Rogers Manual: The method of the self-esteem of the personality
3. Mathematical statistical data processing methods.

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**Layout of Manuscripts for the collection  
“Proceedings of the 60<sup>th</sup> international scientific conference of Daugavpils University”**

“Proceedings of the 60<sup>th</sup> international scientific conference of Daugavpils University” publishes original papers, based on the presentations at the international conference, held in Daugavpils, 26–27 April, 2018. 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.

**Language.** All submitted articles need to be written in English (Latvian, Russian, German, Spanish, French, Polish, Lithuanian, Swedish – in the corresponding linguistic work groups of the humanities).

**The rules for the paper setting:**

- The article should be written in a version of *MS Word*, adapted for the *Windows* operating system (DOC/DOCX file). If non-standard font is used, please send it along with the article by e-mail.
- **Structure of the article:**
  - the full Title of the article (font size – 16; **bold**; Caps Lock);
  - Author’s full name(s) (font size – 14; **bold**);
  - Institution, Address, e-mail (font size – 12);
  - Abstract in English and Latvian – 1500 characters (font size – 10; line spacing – 1);
  - Key words (5–6) should be in abstract language (font size – 10; *italic*);
  - Text of the article. The recommended length of submissions is 12 000 – 15 000 characters (font size – 12; line spacing – 1,5; margin – 2.0 cm). It is recommended to divide the body of the text into the following chapters (humanities and social sciences): *Introduction (the Aim of the Article, Material and Methods)*, *Discussion*, *Conclusions*, *Acknowledgement*, *References*. It is recommended to divide the body of the text into the following chapters (natural sciences): *Introduction*, *Material and Methods*, *Results*, *Discussion*, *Conclusions*, *Acknowledgement*, *References*.
  - Pictures, figures, charts and diagrams should be attached as jpg, gif or tif separate files, as well as must be included in the manuscripts text. Tables should comprise only vertical and horizontal lines. Tables, graphs, diagrams, charts and other illustrative materials should be presented indicating the source of the material and, if necessary, the methods applied to draw up tables, graphs, diagrams, charts (calculation, data summarizing and so on). All these materials should have a number and a heading;
  - Remarks and explanations should be placed at footnotes;
  - References (font – 12, line spacing – 1).
- References and remarks:
  - References should be indicated in the text by giving the author’s surname with the publication year, e.g., (Turner 1990), and if from concrete page, e.g., (Turner 1990: 12);
  - if abbreviations are used in references (e.g. titles of dictionaries, etc.) they must be deciphered in bibliography but in the text reference just the volume and page

numbers may be indicated without mentioning the year of publication, e.g. (LKV II: 81);

- all the sources referred to in the text must be included in the References in the alphabetical order, by the author's (authors') surname(s) or by the title (font size – 12; line spacing – 1).
- An electronic version of the article must be provided to the editor by e-mail (**konference@dukonference.lv**) until **May 20, 2018**.

**!** In order to maintain the high standards, all contributions received are submitted for review by members of the editorial board who will consider the following parameters:

- 1) novelty of the theme and scientific level of manuscript;
- 2) style and compliance of key words and summary with the content of manuscript;
- 3) compliance with conventions for publication.

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*Sample*

# IMPROVEMENT OF QUALITATIVE RURAL LIVING ENVIRONMENT IN LATVIA IN LEADER PROGRAM FRAMES

**Inga Kurse**

Daugavpils University, Parādes street 1, Daugavpils, Latvia, LV-5401, [in\\_ku@inbox.lv](mailto:in_ku@inbox.lv)

## 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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