

**DAUGAVPILS UNIVERSITĀTE  
DAUGAVPILS UNIVERSITY**



***DAUGAVPILS UNIVERSITĀTES  
59. STARPTAUTISKĀS  
ZINĀTNISKĀS KONFERENCES  
TĒZES***

***ABSTRACTS OF  
THE 59<sup>th</sup> INTERNATIONAL  
SCIENTIFIC CONFERENCE OF  
DAUGAVPILS UNIVERSITY***

DAUGAVPILS UNIVERSITĀTES  
AKADĒMISKAIS APGĀDS „SAULE”  
2017

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

Krājumā *Daugavpils Universitātes 59. starptautiskās zinātniskās konferences tēzes = Abstracts of the 59<sup>th</sup> International Scientific Conference of Daugavpils University* apkopoti materiāli, kas tiks prezentēti konferencē organizētajās darba grupās 2017. gada 6.-7. aprīlī un kas atbilst konferences formālajām prasībām.

Krājuma veidotāji saglabāja 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 59<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, 6-7, 2017. In the abstracts published in *Daugavpils Universitātes 59. starptautiskās zinātniskās konferences tēzes = Abstracts of the 59<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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### DAUGAVPILS JEZUĪTU KOLĒĢIJA

Referāts veltīts Daugavpils jezuītu kolēģijai, tās izaugsmei no Daugavpils jezuītu rezidences, izcilākajiem mācību spēkiem un studentiem, izglītības programmām.

**o. Александр Берташ**

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### АРХИТЕКТУРА ПРАВОСЛАВНЫХ ЦЕРКВЕЙ ДАУГАВПИЛСА В КОНТЕКСТЕ ХРАМОСТРОИТЕЛЬСТВА РОССИЙСКОЙ ИМПЕРИИ ВТОРОЙ ПОЛОВИНЫ XIX - НАЧАЛА XX ВВ.

В православном церковном строительстве России 1830-х – 1910-х гг. доминировал русский стиль, ориентированный на возрождение традиций древнерусского зодчества. Несмотря на немногочисленность сооруженных в Даугавпилсе храмов, они хорошо представляют разнообразие форм первых двух этапов его эволюции – тоновского, от имени основоположника русского стиля К.А. Тона, и «московско-ярославского» узорочья XVII в. Классическим образцом соборного храма в тоновском стиле являлся Александро-Невский собор. Успенская и Никольская церкви представляют собой запоздалые реплики того же стиля на основе образцовых проектов Тона, Александро-Невская отличается богатым фольклорным орнаментом, стилистически близким «узорочью». Кафедральный Борисоглебский собор соединяет в своей архитектуре декор в духе русского узорочья XVII в. с функциональными требованиями, предъявляемыми к храмам военного ведомства. В докладе предполагается рассмотреть архитектурные особенности этих храмов и их место в истории русского церковного зодчества периода эклектики.

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### 1917. GADS DAUGAVPILĪ: BIEDRĪBU, KURSU UN SKOLU DIBINĀŠANA

Daugavpils dzīvi pirms 100 gadiem kardināli ietekmēja Pirmais pasaules karš. Tā ietekmē 1915.gadā rudenī Petrogradā tika izveidota Latgalešu bēgļu palīdzības biedrība, kurai bija daudzas nodaļas Latgalē, tostarp arī Daugavpilī. Vietējās nodaļas vadītājs bija Dievmātes katoļu draudzes vikārs Izidors Livčāns. Viņa vadībā 1915.gada novembrī tika organizēta bērnu skola – patversme. Tā bija izvietota Šosejas 96. 16 (29). aprīlī Šosejas ielā 96 notika biedrības „Saule” dibināšanas sanāksme. Biedrības dibinātāji ir Izidors Livčāns, Anna Vonoga, B.Zarāns, O.Dzens.

Biedrības „Saules” dibinātāji savu organizāciju nosauca par pirmo Latgales latviešu apgaismošanas biedrību. Biedrība „Saule” 1917.gada rudenī bija iecerējusi īstenot piecas izglītības programmas – tautskola, sagatavošanas klase ģimnāzijai, šūšanas un piegriešanas kursi, vakara kursi pieaugušiem, latviešu valodas kursi. Biedrības vairākas ieceres tika realizētas. Patversme – skola pārtapa par latviešu 1.pamatskolu, vēlāko F.Brieža skolu.

Dzīvotspējīgi izrādījās šūšanas un piegriešanas kursi, kas pārauga Latgalē un Latvijā atpazīstamā arodskolā – „Saules skolā”. Biedrība „Saule” 1917.gadā kursu organizēšanā varēja iesaistīt plašāku interesentu loku, darbā aicināt jaunus skolotājus. Viena no tām bija Elizabete Paukšta, vēlākā Saules skolas direktore.

Daugavpilī 1917.gadā politisko brīvību gaisotnē tika dibināta arī Daugavpils Latviešu biedrība. Tā izteica savu nostāju par tā laika aktualitātēm.

Minēto organizāciju darbība Daugavpilī 1917.gadā stiprināja vietējās sabiedrības pašapziņu, izglītības programmas piesaistīja jaunus atbalstītājus. Daugavpiliešu aktivitātes organiskie iekļāvās pārējo Latvijas novadu virzībā uz iecerēto mērķi – Latvijas valsti.

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## **WOMEN IN THE PROCESS OF STUDY: EXAMPLE OF FEMALE STUDENTS OF UNIVERSITY OF LATVIA (1919-1920)**

Presentation, based on documents of Latvia State History Archive, examines female students of the University of Latvia (who started study in 1919./1920) in the process of study. The aim of the paper is to analyse female student process in such aspects as study choice, pace, progress and difficulties of study. Female student with establishment of the University of Latvia in September 1919 was a new phenomenon in everyday life of Latvia and in society which still largely was patriarchal. In the first year of University of Latvia work we can observe positive attitude toward female students, but such opinion quickly changes. Through the prism of a woman in the process of study it is possible to analyse women role in Latvia's society. In general women's choices of course of studies was determined by society tradition, traditional opinion about women and suitable occupation for them, family influence, economic and social circumstances. However by examining complications of study process such as – economic difficulties, family circumstances, diseases, occupation – we can observe real social situation in women's everyday life. Significant number of female students were excluded because of failing to fulfil financial and course obligations. Less than half of female students could graduate University with diploma. Although a small number of women were able to participate actively in political and public life, chose the scientific and academic career thus contributed the formation of women intelligence, however, obstacles of female-student study process all reflected patriarchal societies opinion what role and social status women had in post-war Latvia's society.

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## **RUSSIAN SCOUTS ORGANIZATIONS IN INTERWAR LATVIA**

Presentation is dedicated to activities of the Russian scouts units in the Republic of Latvia during entire interwar period. In mentioned period, all scouts units has been united under the aegis of the L.S.C.O. (Latvijas Skautu Centrālā Organizācija) of 9000 persons in total. Despite the popularity of the movement in Latvia, russian scouts units and their activities still wasn't adequately reviewed in scientific papers or scientific works. Activities of these organisations is reviewed in context of multiform public life of Russian minority. Materials of Latvian State History Archives, periodicals of the described period and scientific literature were used in creation of the paper.

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## **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.

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## **DAUGAVPILS ZONĀLĀ VALSTS ARHĪVA 149.FONDA,,DAUGAVPILS PILSĒTAS DARBAĻAUŽU DEPUTĀTU PADOMES TIRDZNIECĪBAS NODAĻA" DOKUMENTU KLĀSTS UN IZMANTOŠANAS IESPĒJAS**

**Key words:** *Daugavpils Regional State Archives, 149.fund, documentary heritage, the department of trade.* The topic of the article is the range and opportunities of use of documents of 149. th fund "The department of trade" of Daugavpils Regional State Archives. The aim of the article is to classify documents of this fund and find out opportunities of use. The tasks of the work are to identify documents of this fund and select them. There are three chapters in the article. In the first chapter the author of the article will describe Daugavpils Regional State Archives and documentary heritage of them. The second chapter will be dedicated to 149.th fund and characteristics of it. In the last chapter the author of the article will suggest the opportunities of use of this documents. The article can be used by pupils, students and teaches.

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## **DOCUMENTS OF DAUGAVPILS REGIONAL STATE ARCHIVES ON THE HISTORY OF KALKŪNE (1945-1953)**

The aim of the paper is to determine the importance of the documents preserved at Daugavpils Regional State Archives (since 2010, a structural subdivision of the National Archives of Latvia; in Latvian: Latvijas Nacionālā arhīva Daugavpils Zonālais valsts arhīvs) for the purposes of the research into Kalkūne history after the Second World War. In the focus of the author's attention, there are archival documents – proceedings of the executive committees of local municipalities, correspondence, administrative documentation, financial records, etc., which represent various archival record groups (nos. 6, 201, 234, 1221, and others). In the paper, the types of the documents are identified, the specific features of the documentation related to the period of the Soviet occupation and the first phase of Sovietisation of Latvia are revealed, and the history of the aforementioned record groups and document storage problems are studied. Meticulous attention is paid to the historical value of these archival documents in order to reveal their informative potential for historical research. The archival records are studied applying content analysis as a basic research method for administrative documentation. An in-depth analysis of informational potential of archival documents related to the history of Kalkūne during the post-war period provides a pattern for further investigation of historical sources related to local history issues.

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## **THE CRIME OF WOMEN IN THE MATERIALS OF PROSECUTOR'S OFFICE OF THE CITY DAUGAVPILS (1953 – 1964)**

In the Soviet period, also called „Khrushchev thaw " (1953 – 1964), on the territory of Latvia, in case of the existing social and economic problems - deficit of essential goods, shortage of housing, low compensation, migration, etc.,this in turn motivated women to crimes. This problem was vividly expressed in the materials of prosecutor's office of Daugavpils.

The volume of sources for studying of a problem is limited because not all criminal cases have got to prosecutor's office and were absent in archive because of problems of safety of criminal cases, and also not all women have been convicted of commission of criminal actions. Therefore only those women who committed criminal actions are captured, coming into the view of law enforcement agencies. The analysis of materials of prosecutor's office formed a basis for reconstruction of crimes of women. In the article were analyzed 26 cases of the Daugavpils Zone Archive, the 875th fund in which as an effecter of criminal action 31 women were involved. In materials of the 875th fund also were studied such economic crimes and crimes of women, but they were provoked by the influence of social and economic conditions of this stage of the Soviet period: illegal abortions, murders and attempts of murders, prostitution and etc.

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## **THE PROBLEM OF THE CONCEPT OF HISTORICAL LITERACY IN THE FOSTERING OF HISTORICAL MEMORY**

***Keywords:*** *historical literacy, concepts of historical thinking, fostering of historical memory.*

The paper sets out to analyse the concept of historical literacy, which is considered the goal of history didactics. The cognitive interest of history teaching/learning rests on the opportunity to get to know the objective reality of the past by resorting to the methods characteristic of the science of history didactics. It is obvious that in history teaching historical literacy determines a deeper development of historical consciousness thanks to which the learner can get a better awareness of the link between the past and the present. The development of historical thinking depends on the presentation of the procedural concepts of history, such as: historical importance, continuity and changes, progress and decline, evidence and historical empathy. When historical memory is fostered on the basis of historical facts alone rather than classroom-based problem-solving, the pupil is deprived of the skills of critical thinking, resulting in the lack of empathy towards contemporary processes.

The major drawback of contemporary history teaching is the lack of consensus in historical narrative. Therefore, while developing historical literacy, it is essential to teach pupils to evaluate and update their knowledge of the past as well as develop their ability to use what they have already learned and to be able to apply this knowledge in the decision-making of the present or the future. The development of historical literacy in pupils should primarily rely on the understanding of the processes taking place in the present-day society, which should become a starting point for travelling to the past and thus creating a historical narrative, where the learner him/herself should take the researcher's role.

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## **FILOLOĢIJA: PĒTĪJUMI, AKTUALITĀTES UN DISKURSS**

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## **PHILOLOGY: RESEARCHES, TOPICALITIES AND DISCOURSE**

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## **NACIONĀLIE STEREOTIPI ILZES KALNĀRES PROZĀ**

Viena no salīdzināmās literatūrzinātnes izpētes disciplīnām ir cieši saistīta ar starpnacionālo kontaktu, attieksmju un ciltautiešu tēlu izpēti literārajā diskursā. Stereotips kā sociālais veidojums satur subjektīvus un noturīgus priekšstatus par kādas tautas pārstāvjiem, kas uz to fona ļauj izcelt savas nācijas priekšrocības un savdabību. Līdz ar to „svešie” vēsturiskās pieredzes un citu apstākļu ietekmē tiek intuitīvi uztverti gan pozitīvi (sekošanas vērts paraugs, zināms ideāls), gan negatīvi (vēsturiskie ienaidnieki, destruktīvi cilvēki u.tml.). Stereotipizētie tēli

daiļliteratūrā, kuru aktualizācijas stratēģijas un funkcijas daiļdarbos mēdz būt ļoti atšķirīgas, raksturo gan autora mākslinieciskās pasaules koncepciju, gan cilvēka kategoriju.

Ilzes Kalnāres (1918–1968) literārie darbi ir spilgts latviešu tautas nacionālās un kultūras pašidentifikācijas procesa apliecinājums. Tiem piemīt izteikta nacionālpatriotiskā ievirze. Referāta mērķis ir izpētīt nacionālo stereotipu aktualizācijas īpatnības I. Kalnāres 20. gadsimta 1. puses prozā, pievēršoties latviešu apziņā pārstāvēto cittautiešu uztveres analīzei. Latvijas telpā tēlotajiem „auto-tēliem” (*auto-images*) (latvieši – mēs / savējie) autore pretstata hetero-tēlus (*hetero-images*) (poļi, krievi, norvēģi, somi u. c. – viņi / svešie).

Nacionālo stereotipu analīzei I. Kalnāres prozā izmantota to klasifikācija – ģeogrāfiskie (*diatopical*) un sociālie (*diastritical*). Pētījumā aplūkoti nacionālie stereotipi par norvēģiem (estētiskā un intelektuālā akcentējums – „skaistie norvēģi”), somiem (uzvaras un brīvības akcentējums – „lepnie un kareivīgie somi”), poļiem (*dionīsiskā* un *erotiskā* akcentējums – „pavedēji poļi”), krieviem (*dionīsiskā* un *vulgārā* akcentējums – „skaļie dzērāji krievi”). Slāvi atveidoti kā melnstrādnieki, kuriem nav raksturīgas vispārpieņemtas ģimenes vērtības un nepiemīt ilgas pēc savām mājām. Tādējādi autore ar stereotipu starpniecību pauž ne tikai latviešu tikumības standartus un viņu ilgas pēc savām mājām, bet arī aktualizē latviešu nacionālās identitātes, piederības un nācijas nozīmību gan savā personīgajā dzīvē, gan pētāmā laika posma Latvijas kultūrtelpā.

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## ANTONS AUSTRINŠ: DZĪVE UN JAUNRADE

Antona Austrīņa (1984 – 1934) radošais talants sāka veidoties strauju pārmaiņu laikā, gadsimtu mijā, ko raksturo kā jauno garīgo meklējumu posmu. Laikmeta gars noteica arī A. Austrīņa personības izveidi. Viņa apziņu būtiski ietekmēja bērnības harmoniskā izjūta, studijas Pēterburgas Zemstes seminārā, 1905. gada revolūcijas notikumi, ceļojumi. Viena no svarīgākajām A. Austrīņa prozas un dzejas poētikas iezīmēm, kas raksturo ciešo dzīves un jaunrades mijiedarbību, ir autobiogrāfisms.

A. Austrīņam, veidojot autobiogrāfiskus tekstus, ir izdevies sabalansēt subjektīvismu, individuālā pasaules tvēruma akcentējumu ar faktoloģisko precizitāti. Tieši balstīšanās uz personīgajiem pārdzīvojumiem piešķir augstu patiesuma pakāpi tēlotajām situācijām, psiholoģisko raksturojumu autentiskumu, konfliktu un detaļu tēlojuma realitiskumu. Savos darbos A. Austrīņš veidoja subjektīvo pasauli – vienlaikus gan alternatīvu savai reālajai dzīvei, gan tās kopiju. Autobiogrāfisma akcentēšana A. Austrīņa daiļradē 20. gs 1. puses literatūras kontekstā izskan kā protests pret bezpersonisko un vispārīgo cilvēces vēstures uztveri. Par viņa darbu sīzētu kļūst nevis konkrētu faktu atstāstījums, bet gan savas dzīves analīze un unikālas identitātes apzināšanās un akcentēšana.

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## SALĪDZINĀJUMI AR RELIĢISKO KOMPONENTU ANNAS BRIGADERES DARBOS

Salīdzinājumi ir stabils un bieži lietots Annas Brigaderes daiļdarbu elements, kas uzskatāms par svarīgu rakstnieces idiosila iezīmi. Pētījumā analizēti A. Brigaderes darbos un epistolārajā mantojumā ekscerpētie salīdzinājumi ar reliģisko komponentu (131 vienība jeb 2,91% no uzkrātā salīdzinājumu kopfonda, kas pārsniedz 4,5 tūkstošus vienību):

- tiek noteikts šo salīdzinājumu lietošanas biežums un komponentu sastāvs, kā arī sniegta konstrukciju gramatiskais raksturojums (*kvantitatīvā metode*);

- pievēršoties vienību funkcionālajai, semantiskajai un perceptīvajai (no lasītāju uztveres viedokļa) analīzei, piedāvāts salīdzinājums ar hronoloģiski (arī – tematiski un žanriski) tuva krievu rakstnieka Ivana Šmeļova (1873–1950) pieeju – ekscerpētais salīdzinājumu kopfonds pārsniedz 3000 vienību, tostarp ar reliģisko komponentu – 240 vienības (*kvalitatīvā un salīdzināmā metode*);

- ņemot vērā iepriekšminēto, noteiktas un aprakstītas piecas izplatītākās A. Brigaderes reliģiskā materiāla aktualizācijas stratēģijas:

- 1) Bībeles antroponīmu aktualizācija (19 salīdzinājumi),
- 2) cilvēku savstarpējās komunikācijas raksturojums (18 salīdzinājumi),
- 3) ikdienā veicamo darbību apraksts (27 salīdzinājumi), 4) cilvēku identifikācija un emocionālais fons (23 salīdzinājumi), 5) dabas objektu attēlojums (16 salīdzinājumi).

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## **DRAVNICĪBAS LEKSIKA DAŽĀS LATVIEŠU VALODAS VĀRDNĪCĀS**

Dravniecība Latvijā ir tradicionāla nodarbošanās ar senu vēsturi un tradīcijām. Senākās liecības atrodamas Āraišu ezerpils kultūrslāņos (9.—10. gs.), kur arheologi ir ieguvuši drošus pierādījumus par dravniecības eksistenci: dzeiņa detaļas un pītas lūku virves. Medum latviešu tautas uzturā ir bijusi nozīmīga vieta. Medus un tā čaklā vācēja bite ir daudzināti tautasdziesmās, pasakās u. c. 1803. gadā izdota pirmā grāmata par biškopību latviešu valodā. Tomēr pētījumu, kuros būtu aplūkoti ar dravniecību saistītie jēdzieni resp. nosaukumi latviešu valodā lingvistiskā skatījumā, ir visai maz. Referātā analizēta dravniecības leksika, kas ekscerpēta no dažiem leksikogrāfiskajiem avotiem, piemēram, „Latviešu valodas vārdnīcas” (Mīlenbahs K., rediģējis, papildinājis, turpinājis J.Endzelīns. 1.—4. sēj. Rīga, 1923–1932), „Latviešu etimoloģijas vārdnīcas” (Karulis K., 1.–2. Sēj. Rīga: Avots, 1992.) u.c.

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## **ОБРАЗ ЛАТВИЙСКОГО РЕБЕНКА-ЧИТАТЕЛЯ (АВТОРА) ГАЗЕТЫ «СОВЕТСКАЯ МОЛОДЕЖЬ» (1953 - 1955 Г.Г.)**

«Советская молодежь» в первой половине 50-ых годов XX века, являясь современным ежедневным русскоязычным периодическим изданием Латвии, многосторонне освещала разные области советской жизни в настоящий момент времени.

Авторами большей части публикуемых в газете текстов, в рассматриваемый период, являлись дети, то есть зачастую, и адресатом и адресантом в газете выступали дети.

Анализ «детских» текстов, представленных в периодическом издании, позволил выявить и охарактеризовать образ ребенка-читателя и ребенка-автора. В настоящей статье дается первичный обзор понятий образа ребенка-читателя и ребенка-автора в рамках газеты «Советская молодежь» в период с 1953 по 1955 годы.

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## **„CITĀDĀS” JAUNIETES TĒLS ODIRAS AVAS OLAFSDOTIRAS ROMĀNĀ „RABARBERU SARKANAIS”**

Mūsdienu skandināvu autoru uzmanības centrā arvien biežāk nonāk cilvēki, kas dažādu iemeslu dēļ (trauma, slimība, iedzimtā kaite u. tml.) neatbilst sabiedrībā vispārpieņemtiem standartiem un pozicionētai normai. Rakstnieki pievēršas daudzām līdz šim noklusētām tēmām (dzimšu un seksuālās identitātes meklējumi, bezpajumtnieki, narkotikas, vardarbība, fiziskie un prāta defekti u. tml.), kas ir īpaši aktuālas mūsdienu globalizācijas un tehnokrātijas apstākļos.

Latvijas kultūras telpā līdzīgas tematikas ziemeļu rakstnieku darbi aktīvi ienāk ar tulkojumu starpniecību. Viens no tiem ir islandiešu rakstnieces un mākslas vēsturnieces Odiras Avas Olafsdotiras (Auður Ava Ólafsdóttir, 1958) debijas romāns „Rabarberu sarkanais” (Upphækkuð jörð, 1998), kas latviešu valodā iznāca 2016. gadā Dena Dimiņa tulkojumā. Romāna galvenā varone Augustīne ir iedzimtās kāju traumas un mātes vieglprātīga rakstura dēļ vēl bērnībā atstātā jauniete, kura izmisīgi cenšas pierādīt savas tiesības uz pašrealizāciju un individuālo izaugsmi. Sabiedrībai acīmredzamā aksioma „bezkāje nekur nepazudīs” ir pretrunā ar Augustīnes sarežģīto iekšējo dzīvi un pasaules uztveres loģiku. Viņa ir apdāvināta ar vairākiem talantiem (kavējas skaitļu pasaulē un sarežģītās rēķināšanas formulās, pārsteidzoši labi uzķer detaļas, patstāvīgi peld un jā ar zirgu, skaisti dzied u. c.) un, neraugoties uz fizisko izolāciju (ienīstie kruķi un dzīve uz salas), nepārtraukti meklē un atrod alternatīvas meditāciju telpas: rabarberu dārzs (Augustīnes ieņemšanas un pirmsākumu meklējumu vieta); jūras piekraste (brīvība no sociuma un dialogs ar Dievu) un visbeidzot kalna virsotne (vislielākā uzdrīkstēšanās un sapnis, kas, par spīti visam, realizēts romāna beigās). Tādējādi „Rabarberu sarkanais”, no vienas puses,

uzskatāms par islandiešiem vitāli nepieciešamās spējas „redzēt līdz pat horizontam” apliecinājumu, no otras puses – tā ir savdabīga mīta par ierobežotu spēju cilvēku trauslumu un pasivitāti dekonstrukcija.

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## DOKTORANTU SEKCIJA „LITERATŪRZINĀTNE”

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## DOCTORAL STUDENTS SECTION „LITERARY STUDIES”

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### IDENTITĀTES MEKLĒJUMI ANDREJA UPĪŠA ROMĀNĀ "PĒDĒJAIS LATVIETIS"

Nacionālās identitātes veidošanos spēcīgi ietekmē etnosa un nācijas vēsture, kā arī valsts vēsturiskie apstākļi. Spilgts piemērs šajā kontekstā ir A.Upīša romāns "Pēdējais latvietis" (1913.g.) Nacionālā identitāte, tāpat kā patriotisms, veidojas laika gaitā, proti, indivīdam ir jāpieņem un ikdienā jāpielieto nācijai raksturīgās tradīcijas, kas ir tā saucamās kultūras ikonas, kas veidojas etnosa un nācijas vēsturiskās attīstības rezultātā, laika gaitā mainoties un transformējoties. Indivīda saistības līmenis ar šīm kultūras ikonām nosaka, vai indivīds jūtas vai nejūtas piederīgs konkrētajam etnosam vai nācijai. A.Upīša apraksta cilvēku, kas atsvešinājies no sabiedrības un cieš no identitātes zuduma. Andrejs Upītis sīki pievēršies varoņa garīgajam portretējumam un pārdzīvojumiem. Identitāte cieši saistās ar patības apzināšanos, kas es esmu, no kurienes nāku, kāda ir mana dzīves jēga, vērtības un kvalitāte. Romāna pirmajā daļā "Pilsoni" akcentēts galvenā varoņa patriotisms, bet otrajā daļā "Pēdējais latvietis" - Alberts Kalve mainās, tuvas kļūst šovinistu idejas.

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### IGAUNIJAS UN SOMIJAS KULTŪRAS DIALOGS ĀDOLFA ERSA TEKSTOS

Ādolfs Erss (*īstajā vārdā Ādolfs Rūniks, 1885 -1945*) – rakstnieks un publicists. Šajā darbā tiek apskatīti viņa beletristiskie ceļojumu iespaidi un piezīmes par pieredzēto un iepazīto Igaunijā un Somijā, arī publicistika 20. gadsimta 30. – 40. gados, saistībā ar šīm valstīm. Autora konsekventi paustās idejas par dažādu tautu, šeit, - par Igaunijas un Somijas, literatūru savstarpējās sadarbības nepieciešamību ir svarīgas laikmeta kultūras liecības. Baltijas piekrastes valstu literātu ciešās personīgās draudzības saites: personīgās tikšanās, sadarbība ar Igaunijas Rakstnieku biedrības priekšnieku Maitsu Metsanurku (*īstajā vārdā Eduard Hubel, 1979 – 1957*), sarakste ar igauņu rakstnieku Augustu Gailīti (*August Gailit, 1891 - 1960*) veicināja latviešu literatūras tulkojumus. Recenzijas par igauņu rakstnieka un dramaturga Milli Mallikas (*īstajā vārdā Hugo Viktor Paul Raudsepp, 1883 – 1952*) vienlaicīgi iestudēto lugas izrādi Nacionālajā un Strādnieku teātrī, recenzija par igauņu rakstnieka Maitsa Metsanurka lugu Strādnieku teātrī, par somu rakstnieka Teuvo Pakalas (*Teuvo Pakkala, īstajā vārdā Teodor Oskar Johanipoika Frosterus, 1862 – 1925*) izrādi Nacionālajā teātrī, par somu rakstnieka Eduarda Vildes (*1865 – 1933*) latviski tulkotās grāmatu “Mahtras karš”,

iedzīlināšanās rakstniecības problēmu aktualitātēs, to risinājumu aktualizēšanu Erss uzskatīja par stratēģiski svarīgu savos tekstos.

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## **BĪBELES MOTĪVI A. ČAKA DZEJĀ: "MARIJAS IEĻA" - "LŪGŠANA"**

Bībeles motīvu analīze divos A. Čaka dzejoļos "Marijas iela" un "Lūgšana" no krājuma "Sirds uz trotuāra", skatot to kulturoloģiskajā aspektā.

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## **CONTEMPORARY WOMEN TRAVEL WRITERS AND THEIR CONTRIBUTION TO LATVIAN AND AMERICAN TRAVEL LITERATURE**

**Key words:** *contemporary, travelogue, travel literature, women travel writing*

For centuries travel literature was subconsciously regarded as masculine. Such prominent travel writers as Bill Bryson with his famous *Notes from a Small Island* (1996), Jack Kerouac with his immortal novel *On the Road* (1957) or Paul Theroux with his travel texts about Africa and Asia contributed the tradition of the present-day travelogue and seem to dominate travel literature.

However, a great number of contemporary travel texts have been written by women. It becomes more and more common to see a woman travelling (for pleasure, pilgrimage or work) and then fixing her experience in various types of travelogues (memoirs, diaries, etc.). Such names as Elizabeth Gilbert with her memoir of a year's personal exploration, *Eat, Pray, Love: One Woman's Search for Everything, Across Italy, India and Indonesia* (2006); Kira Salak, who, traveling alone in 1995, became the first western woman to traverse the remote island nation of Papua New Guinea and write about it; Ellen Meloy, who is one of the beloved nature writers of the American West (*Raven's Exile: A Season on the Green River*, 1994) or Mary Lee Settle with her *Turkish Reflections* (1991) are familiar to the majority of travelogue admirers. Contemporary Latvian travel literature is also represented by a number of women travel writers. They may seem not as distinguished as the abovementioned Americans, though they undoubtedly contributed the Latvian travelogue tradition. Inga Ābele with her traveling to Siberia (*Augšbebrī*, 2005), Andra Manfelde and her reflections on the Swedish Gotland (*Ceļojums uz mēnesi: Visbija*, 2011) or Laima Muktupāvela with her specific perspective on the life in 29 remote Latvian regions represented in her travelogue *Tas notiek Latvijā* (2006) reveal various views of the Latvians on traveling in general and on each selected country in particular.

Travel narratives by women writers certainly differ in their contents; however, they all share one essential feature: it is more than a description of places, nature or people – it is about the ability of a woman to cope with being a woman in a foreign land. That is perhaps what makes feminine tradition of travel writing different from that of the masculine. Besides, the masculine tradition of travel writing is considered to reflect public and professional concerns, whereas the feminine tradition is considered to fall into the private and personal sphere.

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## **ARTISTIC WORD OF GEORGE SHENGELI'S LYRICS**

To show to the feature lyrics work of Shengeli, last poet of silver century.

**Vera Gelfand**

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## КАК ОСТАНОВИТЬ ВРЕМЯ? МИФЫ И ИСТОРИЯ В ТВОРЧЕСТВЕ ЕЛЕНА КАТИШОНОК

Елена Катишонок решила вернуть в своих романах историю Латвии русскоязычному читателю – историю страны до 1940 года, прихода советской власти, времен Второй мировой войны и нескольких послевоенных десятилетий. Что знает русскоязычный читатель об эпохе независимой Латвийской Республики до 1940 года, о депортации латвийцев из страны в 1941 году, о трагедии еврейского народа – Холокосте. Знает, если события коснулись его семьи; имеет представление, так как с восстановлением независимости Латвии информация появляется в публицистических источниках, документальной литературе.

Что касается художественной русскоязычной литературы, романов, изображающих историю Латвии середины 20 века, не так и много. Среди них романы Елены Катишонок.

Автор уехала из Латвии в начале 90-х и писала свои книги вдали от страны, в которой родилась. У Елены Катишонок воссоздан художественный образ прибалтийского города. Отдаленный во времени, он приобретает черты мифологического пространства. Используя мифы разных уровней, автор создает свой художественный мир латвийского Города и его жителей.

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### REMAKING AS STORYMAKING IN POSTMODERN LITERATURE

While there is little consensus on the precise characteristics, scope, and importance of postmodernism, it is commonly defined in relation to a precursor. In architecture **postmodernism** began as a reactionary movement against the perceived blandness and hostility present in the Modern movement (i.e. Modernism), which dismissed frivolous ornamentation and emphasised the pursuit of an ideal perfection, harmony of form and function. Modernism's precepts, the pursuit of perfection, of 'pure' form, and minimalism, were criticised as being both subjective and totalitarian. Postmodern architecture was thus a reaction to the notion of absolutes in the principles of design and construction. Postmodernism is thus a style and concept in the arts and literature characterised by distrust of theories and ideologies and by the drawing of attention to conventions. This involves a radical reappraisal of modern assumptions about culture, identity, history, or language. The Postmodern condition is one in which the totalitarian qualities of Modernism have vanished and its "metanarratives" have lost their justifying power. Hence, modern man is now released from tradition and free and equal member of a world community in which every lifestyle and every value are deemed equally valid and are openly available.

**Postmodern literature** is characterized by reliance on narrative techniques such as fragmentation, paradox, and the unreliable narrator, which all to some extent are applicable to **post-structuralism** movement as well.

In this work the author will try to explore the source of ideas for postmodern writers, what works, characters and concepts they tried to remake and "postmodernise".

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# MĀKSLA LATVIJĀ: TRADICIONĀLAIS UN LAIKMETĪGAIS

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## ART IN LATVIA: TRADITIONAL AND MODERN

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### ARHITEKTŪRAS TAKTĪLĀ ENERĢIJA

Arhitektūra nav tikai abstrakcija, tā ir konkrēts materiāls, elements, ar ko esam saskarsmē. Cilvēks ikdienā arhitektūrai pieskaras, ir ar to kontaktā, kas rada sajūtas. Vārds „taktīls” nozīmē „saistībā ar pieskārienu”. Ar pieskārienu mēs iedarbojamies ne tikai uz receptoriem, bet arī uz to sistēmu, kura saskaņo impulsus smadzenēs un nodrošina uztveri. Pārsvārā tiešā saskarsme ir ar grīdu, kāpnēm un verot logus vai durvis. Attiecībā uz pieskāriena sajūšanu, jāņem vērā dažādās ar ādu saistītās sajūtas un to iespāids uz visu cilvēku. Uz ādas atrodas saskares, spiediena, vibrācijas, sāpju, siltuma un aukstuma receptori. Piemēram, verot durvis, ir atšķirība, vai pieskaramies metāla vai koka rokturim. Taktīlā stimulācija nozīmē apzinātu, strukturētu pieskārienu, kas aktivizē ādu, mūsu pirmo un lielāko maņu orgānu. Visuzskatāmāk tas jūtams, kapjot pa kāpnēm. Tās var būt lēzenas vai stāvas, liektas vai taisnas. Kāpņu margu rokturis var būt ērts vai neērts satverienam. Balstu margas izgatavo no koka, metāla u.c materiālim. Grīda var būt gluda, slidena, kas rada nedrošības sajūtu, kas īpaši kāpināta, ja grīda ir no stikla virs kādas telpas. Grīdas materiāls rada skaņu, kas psiholoģiski var radīt konkrētu noskaņu, iemēram, vēsturiskas telpas sena parketa skrapstēšana. Viss kopā tas pauž arhitektūras taktīlo enerģiju. Taktīlo saskarsmi var veidot apzināti. Ar to nodarbojas laikmetīgā arhitektūra, dizains. Saskarsmes sistēmas jāveido ergonomiskas ērtas. Tādēļ arhitektūrā pastāv savas likumības, kā projektējama vide ap cilvēku.

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### ARTISTIC IMAGERY OF THE 21ST CENTURY IN WORKS OF VISUAL ART

**Key words:** *artistic work, artistic imagery, graphic element, ornament, creative imagery*

The artistic result of each artist is the artistic work or artefact. The visual artistic imagery of work or the group of imageries reveals its content (idea/concept/message) or form (composition, artistic language), becoming a peculiar intermediary between author and addressee.

Modern artistic works describe the spectrum of various and subjective artistic imagery. Artists present the content of work by using graphic elements (point, line, form, colour, texture/invoice), or by motives of an ornament, or by original and creative imageries.

The aim of the research is to realize and interpret the brightest artistic imageries of modern painting, graphic and textile art content.

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## **COLOR-BLINDNESS AND ITS REPRESENTATIVES IN CONTEMPORARY ART**

**Keywords:** *color-blindness, color-blind artists, perception of colors.*

In the 21st century community the use of colors is rapidly becoming a way for exchanging information. People with colorblindness represent the biggest part of the people who see colors differently than normal people do. In Europe, one of 12 men and 200 women suffer from some form of color-blindness.

Nowadays, color is used as means of passing information. However, the most part of this information is made considering only the way people usually see colors. In contemporary community people, who see colors differently, experience difficulties in their everyday life more frequently. It is considered that color-blindness is an obstacle to studies and work that is connected with colors.

The goal of the research is to study color-blindness and the differences in color perception, to analyze the artwork of Latvian and foreign color-blind artists in contemporary art.

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## **LATGALES CULTURAL DEVELOPMENT IN LATVIA, YEARS 1917 - 2017.**

The first congress in Latgale took place in Rezekne in 1917, which was organized and led by a remarkable person not only in Latgale, but also in Latvia – Francis Trasuns. Congress was the first democratically elected meeting in Latgale by the Latvian representatives, in which was decided about Latgales unification with all the rest emerging Latvian national regions – Vidzeme and Kurzeme. These district latvians are united as one and they have to live in one land. This event was the starting point of the Latvian State Unit. Political events in the country have affected many sectoral developments, including its culture. Multiple dominion effect in Latvian State territory have left several characteristic differences in cultural sectors such as folklore, music, literature, art. The study aim is to analyze the Latgalian culture, the development of art from its connection to Latvian territory to the present days (years 1917-2017.), identify personalities, artists who actively participating accounted Latvian cultural history by their work in various cultural manifestations – Arvids Egle, Francisks Varoslavans, Osvalds Zvejsalnieks, Jazeps Pigoznis, Peteris Gleizdans, Aleksandrs Stankevics, Antons Rancans, Peteris Zeile, Janis Klidzejs, Elga Paura, Leons Tomasickis, Janis Streics, Helena Svilane Kuzmina, Silva Veronika Linarte, Juris Soikans et al. Key words: Latgale, Latgalian culture, Latgalian art, Latgales personalities, Latvian centenary.

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## **LATVIAN ORNAMENT: CLASSIFICATION, TRASFORMATIONS, ATTITUDE**

**Keywords:** *Ornament, classification, transformation, attitude*

An ornament is a decoration that consists of rhythmically organized elements. It is possible to distinguish the four groups of ornaments (geometric, floral, zoomorphic, and anthropomorphic), and to organize them in five different kinds of composition (row, belt, central, background, and symmetrically growing tracery composition). The forms of Latvian ornaments consist of 10 basic elements: the sign of the Sun, the sign of the Moon, the sign of the Star, signs of the Tree and the Sun, signs of the Cross and the Thunder Cross, the sign of Māra (the checks of Mara), the sign of the Serpent (Zalktis), the sign of Jumis, and the sign of Laima.

The use of Latvian ornaments changes with the time passing, and the meaning of the ornaments changes, too, together with the attitude towards them. A survey was conveyed during this research; the students were asked to tell about their attitude towards Latvian ornaments, the use of them, and the significance of ornaments in their lives.

The aim of this research is to actualize the classification types of Latvian ornaments, to study contemporary transformations of ornaments, and the attitude of young people towards the ornaments and their use.

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## **LIGHTING TECHNOLOGY AND HUMAN**

***Key words:*** colour, source of light, effect on people.

In 20th century there wasn't so wide light sources choice like it is nowadays. Today it is possible to get lamps and other light sources of any colour, size and brightness. Each of them affects people in their own way. Outside everyone can notice bright advertisements which use neon lamps and other types of lighting. It is obvious that that advertisements with special lights are more noticeable than other, which have only some text information. It is worth mentioning that optical cables are used to add some special effects and decorations in certain occasions, which draw even more attention.

Aim of the research is to study more about modern light sources and about their usage in different fields of interest. Also make research on how different light source types affects people and which type of lighting draws more attention than others.

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## **MANAGEMENT OF CULTURAL PROJECTS IN ZEMGALE REGION**

Management of cultural projects in Latvia has become second essential financial source for cultural projects after institutional financing, thereby situation has developed, when from different cultural project competitions depend leading process of cultural projects daily and in long term.

Zemigalians are able to take part in other region, municipality and even cross-border project competitions. Among implemented projects grow diversity and beside traditional ideas comes innovations. Due to grow of explanatory information, increases numbers and quality of submitted cultural projects, however activity in cultural branch turn out problems and difficulties.

The aim of this research is to analyse environment, tendencies, opportunities and problems of cultural project management in Zemgale region over last decade – starting from year 2007 until now.

Keywords: Cultural projects, management of cultural project, project competition, cultural process, Zemgale.

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## **MODERN – RETRO AS A CONCEPT OF CONTEMPORARY GRAPHIC DESIGN**

In nowadays, one of the actual graphic design trends is to focus on the retrospective revising foundations of culture / art / design history, by deliberate citation and rethinking its core elements. As a result – designers can

create diverse design products, presenting the ideas of the past and retro design characteristics, as their continuous and creative transformations.

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## **REPRESENTATION METHODS OF SPACE-TIME IN CONTEMPORARY PAINTING**

***Key words:*** *space-time, movement, time, space, painting.*

In the 21st century art boundaries are often disappearing between different artistic media and genres, therefore new opportunities are arising for space-time displaying in the artworks.

Space-time is characterized by movement. Time and space are necessary to identify object's position, trajectory. In painting space-time sense and process are recorded. As well, the artwork creation process itself is the movement that takes place in time and space.

The movement may take various forms, for example, such as motion, transformation, deformation, rotation, collision, etc. The movement may be fast/slow, smooth/uneven, accelerated/decelerated, clear/blurry, straightness/curved, interrupted/continuous, predictable/unpredictable, permanent/non-permanent etc. Changes occur as a result of the movement. Depending on the intention the movement in artwork can be characterized by the direction, perspective, proportions, rhythm, shape, color, etc.

The study aim is to analyze the space-time representation methods primarily based on the contemporary painting samples in foreign and Latvian art.

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## **THE ARTISTIC PRACTICES OF PEOPLE WITH DISABILITIES, PUBLIC STEREOTYPES AND OVERCOMING THEM USING ART PRODUCTS**

The majority of the Latvian society is unaware of the number of people with disabilities in Latvia. It could be explained by the fact that disabled people are seldom involved in public activities on a daily basis, including activities organised by cultural and educational institutions. Latvia has signed the UN Convention on Persons with Disabilities, and UNESCO also stands for creativity and diversity of cultural expression. However, most Latvian cultural and educational institutions still do not have an appropriate infrastructure to provide accessibility for people with disabilities. As a result, they cannot exercise their right to cultural and artistic accessibility. Lack of accessibility prevents the use of different instruments of artistic practice, as they are located only in creative centers, cultural education institutions, workshops etc. Consequently, people with disabilities do not have the opportunity to create art products.

The question is: do people with disabilities want to cultivate artistic practice themselves? I will try to answer this question in my report, exploring in detail the issue of availability of Latvian culture and art institutions. Both physical accessibility and openness towards people with disabilities will be considered.

My research subject is people with special needs, their artistic practices, and the interaction between the outcome – a work of art – and the audience, as well as its impact on the social inclusion process. Artistic practices of people with disabilities very often indirectly serve to promote social and psychological well-being and health. I will present my empirical research data showing what Latvian schoolchildren of different ages understand with the word “artist” and whether it correlates with their expectations to see a person with disabilities as an artist on the stage.\* I will also report on the feedback received from in-depth interviews with the audience of a concert, in which people with special needs participated as artists.

\* The survey was answered by school age children attending the Integrative Arts Festival Come along! The Festival participants are children and young people with special needs.

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## **THE HEDONISTIC ASPECT OF CONTEMPORARY ART MEDIA**

**Keywords:** *hedonistic aspect, contemporary art, paintings, photography, graffiti.*

The hedonistic function (the pleasure function) is one of the most important art functions. This function is connected with a positive dialogue, an emotional perception of the work of art, and the ability to provide the spiritual pleasure to the addressee, making the addressee an accomplice of the subjective world of the artist.

In the diversity of the contemporary art media, the hedonistic function can be described by individuality, by contemporary means of artistic expression, and by the context of its time. The art becomes conceptually closer to human life, it visualizes the present world, thus making the addressee to look for the non-conventional ways of spiritual pleasure.

The aim of the research is to interpret the hedonistic aspect in the examples of the contemporary art media (paintings, photography, graffiti).

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## **VIEW OF THE ASPECTS OF POWER IN TEXTILE ARTISTS' WORKS**

**Key words:** *textile art, power, tapestry, rug, printing, fiber art, artisan*

Power and its varying hierarchy exists in all forms of life, the lower is the stage of the development of life, the possibilities for the growth of the number of people. The opportunity to implement the first principles simpler is its power-sharing system. Among the most highly developed living beings, namely people, the division of power has undergone a huge evolution stage. There is a great diversity in the division of power. In the further development of civilization the human way of life has changed, opening up of the division of labor appeared, thus paving the way for the opportunity to accomplish the individual power as well.

Historically, the art was an object of ordering - artists created their artworks for churches, courts, and wealthy bourgeoisie. Later, culture and art were strongly influenced by the ideology of totalitarian regimes: fascism, nationalism, communism. In these political regimes art also served as a means of propaganda, affected the processes of art.

Owing to the works of textile artists people become aware of the historical events of their nation and the world, and with the help of the created images these events become embedded in human consciousness.

In modern understanding, the power is expressed through discourses, body, culture, activities of individuals, as well as the art. The processes of art, including the textile art, are not only influenced by power, but also possess the ability to affect a society, hence power.

The aim of the present study is to recognize the works of textile artists and artisans in which a view of the aspects of power is expressed, as well as to examine the diversity of image, technique and material.

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## **VISUAL AND FUNCTIONAL CHANGES OF LIEPAJA'S HISTORIC CENTRE SQUARES IN RESTORED REPUBLIC OF LATVIA**

Planning for Liepaja as an economically active city was determined by the main roads on economically significant sights – administrative and trade centres around squares, which affected the urban spatial composition and obtained configuration appropriate for the function, building and visual image. The Ministry of Culture of the Republic of Latvia with the Order No 128 on October 29, 1998 determined the area of national importance urban development monument “Liepaja’s Historic Centre,” where about 300 buildings, which were built during the 17<sup>th</sup>–19<sup>th</sup> century in Russian and German cultures’ interaction, are considered as architecturally and artistically important. An essential part of Liepaja’s historic urban environment is squares and greeneries. However, the peculiarities and culture-historical values can be preserved if landscaping measures are performed in a qualitative and holistic way, being aware of the urban structure development. Major changes have taken place in Liepaja’s urban environment during the restored Republic of Latvia, when due to financial capacity the

image of many squares and historic places was radically changed in a hurry without a careful architectonic and artistic research. Neglecting detailed research of urban environment, Liepaja have lost several squares – they have lost their identity, colouring and have become extensions for traffic roads. Due to major reconstructions the visual image of the Rose Square and the Square named after the President of Latvia Republic Janis Cakste, and several other squares has been changed.

**Goal of the research** – analyse the functional and visual changes of the national importance urban development monument “Liepaja’s Historic Centre” during the restored Republic of Latvia.

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## MŪZIKAS ZINĀTNE: PĒTĪJUMI UN PIEREDZE

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## SCIENCE OF MUSIC: RESEARCHES AND EXPERIENCE

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### CHOIR IN THE CREATIVE WORK OF JĀNIS LOGINS

**Keywords:** *Jānis Logins, rock band Elpa, choir, choir in rock music, folksong`s arrangement*

Jānis Logins to the wider society known as rock band *Elpa* musician, singer, songwriter, as well as a lecturer, who worked at Daugavpils University ( at that time Daugavpils Pedagogical University) from 1987 to 1995. Songs, composed by J.Logins in *art rock* style for the rock band *Elpa*, gained wide recognition not only in the nineties, but are also relevant today. Choral sound embodying into rock music was one of J.Logins innovative musical ideas. Choral sound is used both in his cantata *Ticība*, himnal *Mēs tavi bērni*, and in the last years of the creative work composed songs *Vēl viens vārds*, *Gaiša melanholija* and *Es ticu*. Interestingly built is also sole J.Logins Latgalian folksong`s arrangement *Kopu, kopu kolnā*. The aim of the research is to analyse the peculiarities of choral in the creative work of Jānis Logins.

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### JOSEPH HAYDN CONCERTO FOR PIANO AND ORCHESTRA IN D MAJOR. HOB. XVIII: 11 IN THE CONTEXT OF THE HISTORY OF GENRE

The term of concert is widely used in the different sources of musicology. Generalizing different explanations of this term from different scientists, it is possible to make a conclusion, that concert is a public musical performance in which a number of singers or instrumentalists, or both, participate. The genre of concert has many kinds. There are two subspecies of this genre – masterly and symphonic, that is characterized by different dramaturgy, concert for one instrument with or without an orchestra, concert for an orchestra (without part of soloist). The evolution of genre of concert took place in accordance with stylistics of century. In an artistic concept, Joseph Haydn has bright piano concertos. Attention attracts his *Concerto for piano and orchestra in D major. Hob. XVIII: 11* (1779–1783). The substantial stylistic signs of Haydn and the Viennese classicism are represented in three parts of this work (*Vivace, Un poco adagio un Rondo all'Ungarese*).

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### LUDVIGA VAN BĒTHOVENA KLAVIERSONĀTE NR.12. OP.26 AS DUR I DAĻAS TEORĒTISKA ANALĪZE

L. van Bēthovena sonātes klavierēm ir daļa no tā visvērtīgākā, kas vispār komponēts šim instrumentam. Darbs ar 18.–19. gadsimta komponistu skaņdarbiem ir neatņemama mūsdienu pianista izpildītāja sastāvdaļa. Atskaņojums un atskaņojuma stils mūsdienās ir ļoti atšķirīgs. Eksistē dažādas skaņdarba interpretācijas. Lai labāk izprastu *Klaviersonāti Nr.12. op.26 As dur* tēlainības saturu, skaņdarba dramaturģiju, ir jārespektē sonātes tapšanas vēsturi, L. van Bēthovena individuālo stilu un skaņdarba analīzi.

**Pētījuma mērķis ir:** izanalizēt vācu komponista Ludviga van Bēthovena Klaviersonāti Nr. 12 op. 26 As dur 1 daļu.

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## **ŠARLA BALEJĒ (CHARLES BALAYER) KLAVIERMŪZIKAS ĪPATNĪBAS**

Šarls Balejē (*Charles Balayer*) ir mūsdienu franču komponists, pianists un ērģelnieks (dzimis 1957. gadā Narbonnā, Francijā). Muzikālo izglītību ieguvis Tulūzas konservatorijā (*Conservatoire de Toulouse*) kur apguvis ērģel spēli un improvizāciju uz ērģeļiem pie Ksavjē Darassa (*Xavier Darasse*) un Jana Villema Jansena (*Jan-Willem Jansen*), ka arī studējis harmoniju, polifoniju, mūzikas teoriju un pilnveidojies ansambļa spēlē. Konservatoriju komponists beidz ar vairākiem apbalvojumiem par izcilām sekmēm un sasniegumiem. Šarls Balejē bieži piedalās starptautiskajos džeza festivālos. 1986. Komponists dibina džeza vokāli instrumentālo ansambli “Choeur Artie Shaw” ar kuru ieraksta divus albumus *Jasons Jazz !* (1994.) un *Entre Jazz et...* (1999.) Pašlaik Šarls Balejē ir Brivas konservatorijas profesors (*Conservatoire à rayonnement départemental de Musique et Danse de Brive*), kur viņš pasniedz ērģel spēli, improvizāciju uz ērģeļiem un džeza mūziku.

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## **MATEMĀTIKA**

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## **MATHEMATICS**

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### **Anita Kirichuka**

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## **DETERMINATION OF THE NUMBER OF THE SOLUTIONS FOR NONLINEAR BOUNDARY VALUE PROBLEM USING THE JACOBI ELLIPTIC FUNCTIONS**

The differential equations  $x'' = -a x + \beta(t) x^3$  is considered together with the boundary conditions  $x(-1) = 0 = x(1) = 0$ , where  $\beta(t)$  is a stepwise function that vanishes on a subinterval of  $[-1,1]$ . The number of nontrivial solutions for the problem is estimated. For evaluate number of solutions the Jacobi elliptic functions  $sn(u,k)$ ,  $cn(u,k)$ ,  $dn(u,k)$  are used.

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## **ON TWO-DIMENSIONAL TIME MAPS**

We consider two-dimensional time maps associated with an autonomous system of two the second order differential equations and their applications to Dirichlet boundary value problem.

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## **TIME-MAP TECHNIQUE FOR PERIODIC PROBLEM TO THE SECOND ORDER CONSERVATIVE EQUATION**

A periodic problem to the second order conservative differential equation of specific form is considered. It is assumed that there exist zero and non-zero singular points of the equation. We apply time-map technique to determine a solvability of given periodic problem. Method of construction of time-map is different to "small" and "large" periodic solutions. We can also determine the existence of periodic solutions with different properties of oscillation.

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## **APPLICATION OF FUZZY ANALYTICAL HIERARCHY PROCESS FOR ECOLOGICAL RISK ASSESSMENT**

Risk assessment is an important task in many areas of human activity: ecological, technical, economic, etc. Usually risk assessment is carried out on the basis of statistical methods. But in many cases environmental risk assessment is carried out on the basis of multiple and sometimes conflicting factors. Using Analytic hierarchy process (AHP) methodology is one of the possible ways to solve the problem. However, the AHP methodology involves human subjectivity, which introduces vagueness type of uncertainty. In this research, to work with uncertainty is considered to extend AHP methodology with fuzzy-based techniques. Fuzzy analytical hierarchy process will be implemented in author developed software and used to analyses the ecological risk level in case of invasive species distribution.

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**ĶĪMIJA UN BIOANALĪTIKA**

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**CHEMISTRY AND BIOANALYTICS**

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## **CHARACTERIZATION OF RAISED PEAT FROM GARKALU BOG (LATVIA)**

Humic substances are the most widely found organic substances on the Earth. Humic substances are a general category of naturally occurring, biogenic, heterogeneous organic substances that can generally be characterised as being yellow to black in colour, of high molecular weight and refractory.

Humic substances can be divided in three fractions: a) humin is the fraction of humic substances that is not soluble in water at any pH; b) humic acid is the fraction of humic substances that is not soluble in water under acidic conditions (below pH 2), but becomes soluble at greater pH; c) fulvic acid is the fraction of humic substances that is soluble under all pH conditions.

In this study we have investigated the chemical composition of raised bog peat of Latvia. Methods for preparation of a water-soluble fraction of humic substances are studied. Separation procedures of peat extracts to humic and fulvic acids are examined. Optical density spectra of obtained peat extracts at various pH are performed. As well as molecular weight and properties of isolated humic acid are determined.

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## **THE RESEARCH OF ODOUR CONCENTRATION AND ANALYSIS OF AIR POLLUTANTS IN RIGA**

Actual environmental problem is different emission sources of odours which causes negative effect on human wellbeing. More and more researchers pay attention to the odour emissions studies elsewhere in the world, as well as in Latvia. The studies of odour are necessary because it can help easier to identify source of emissions, to make more efficient control and to avoid the odour nuisance in a shortest time. The odour source emissions can be enterprise operating activities pollution, exaple, oil products terminals, chemical factory, waste storage and composting sites, sewage treatment equipment, etc. Human odor perception may be subjective, however on odour perception threshold is considered to be a such concentration of a malodorous substance, if at least half of the participants of the odour evaluation panel (in accordance with the base (benchmark) method) confirm the presence of an odour and if it is 1 odour units (OUE / m<sup>3</sup>).

Odour studies in 2016 and 2017 present that most of the people complaints have been received from following housing estate of Riga: Bolderaja, Sarkandaugava, Kundzinsala, Mangalsala, Milgravis and Vecmilgravis. Odour concentration reserch with field olfactometer Scentroid SM100 show that odour concentration can be until 3 odour units (OUE / m<sup>3</sup>) in time when citizens don't notify about smells. When citizens inform environmental authority about nuisance smells, odour concentration fixed until 7 odour units (OUE / m<sup>3</sup>). The gas analyzer Gasmeter DX-4030 indicated oil products and flue gas in this area.

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## **PREPARATION OF NEW AROMATIC POLYMERS**

The synthesis of aromatic polymers with intense luminescence in a wide spectral range is extremely important, given the potential applications of these polymers. When polymers have a wholly aromatic and conjugated structure of the main polymer chain they possess a high thermal stability, mechanical strength, environmental stability, and good conducting and opto-electronic properties.

Therefore nowadays conjugated polymers have gained widespread interest due to their useful electronic, optoelectronic, electrochemical, and optical properties. In this connection the intensive investigations for preparation methods of new fluorescent polymers now have developed. Poly(azomethines), polyimines, or poly(Schiff bases) are interesting class of conjugated polymers containing nitrogen atoms in a polymer backbone.

In our previous investigations were synthesized a number of benzanthrone N-containing derivatives, obtaining highly fluorescent compounds. Synthesized dyes are sensitive long-wavelength light-emitting fluorescent dyes, which have high photo and thermostability.

The present work focuses on the synthesis of benzanthrone azomethine derivatives and their possible polymerization reaction by cation-radical polymerization. Synthesized derivatives have from yellow to red fluorescence in organic solvents. The structure of obtained compounds was confirmed by NMR and IR spectroscopy. In addition thermal analysis and crystal structures of studied compounds have been investigated.

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## **STUDY ON SYNTHESIS OF DISUBSTITUTED BENZANTHRONE DERIVATIVES**

Benzanthrone and its derivatives have been intensively studied because of the possibility of a wide variety of applications. Namely benzanthrone dyes are well known as luminophore dyes that emit in the spectral region from yellow-green to red-purple with bright fluorescence and high photostability and thus they find use as daylight fluorescent pigments for many materials.

Many monosubstituted benzanthrone derivatives with various functional groups are described in literature. However the number of known polysubstituted benzanthrone dyes is not such significant, but some of them may be compounds with interesting and useful optical properties. In this connection our work is devoted to study of possible preparation methods for 2,3- and 3,9-disubstituted derivatives of benzanthrone.

The results reported in this paper are concerned with the preparation, characterization and structural studies of the new 2,3- and 3,9-substituted benzanthrones with amino, nitro and amidino substituents. Nitration, reduction, condensation reactions in various conditions were used for synthesis of new substances. The obtained compounds have been characterized by spectroscopic and chromatographic methods.

Acknowledgment: The studies was supported by ERAF project Nr. 1.1.1.1/16/A/211

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## **STAINING PROTOCOL OPTIMISATION FOR SARCOCYSTIS CYSTS SPECIMEN PREPARATION FOR CONFOCAL LASER SCANNING MICROSCOPY**

Nowadays, confocal fluorescent microscopy gained wide using in different disciplines such as biology, physics, chemistry, medicine due to the high- resolution optical images and multifunctionality. Confocal microscope allows examining the ultrastructure of the investigated object as well as a processes occurring in internal and external side of the cells. The aim of the investigation was to optimise sarcocysts staining protocol for the confocal microscopy using different fixatives and one dye.

Investigation was carried out in the Daugavpils University in the Laboratory of Parasitology and Histology from January till September 2016. As the object for the study was selected protozoan parasite of the *Sarcocystis* genus as there is a lack of information about application of confocal laser scanning microscopy in *Sarcocystis* investigations and only one report is known. Specimens for investigation were prepared in seven steps: cyst detection and isolation from the striated muscles of wild boars, fixation, dyeing, dehydration, decolouration, clearing and mounting in glycerine jelly. As fixatives were used 10% formalin neutral buffered solution, Bouin's solution, alcohol-formalin-acetic acid AFA solution, 96° ethanol and Carnoy's solution as well as cysts without fixation were examined. All fixed and non-fixed sarcocysts were dyed with fluorescent dye Benz[de]anthracen-7-one which was synthesized in Laboratory of Organic Synthesis of Daugavpils University. Prepared samples were examined using confocal laser Nikon Eclipse Ti-E motorized inverted microscope system, with the computer software – NIS Elements Advanced Research 3.2 64 – bit.

The obtained results showed that fixed 10% formalin neutral buffered solution specimens gives more clear structure of the cyst where cyst wall and internal saturation were distinguishable, whereas non-fixed sarcocysts were dim and unclear.

Acknowledgment: The studies was supported by ERAF project Nr. 1.1.1.1/16/A/211

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**FIZIKA**

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**PHYSICS**

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## COMPLEX SECURITY FEATURES FOR EMBOSSED HOLOGRAMS

New combined embossed hologram originating technique was developed. The technique merges deep 3D holographic images with commonly used hologram security features. Deep 3D images were first recorded on photoresist with Geola's holographic printer containing their proprietary pulsed laser. Optical security features were then overexposed onto the photoresist plates containing latent images of deep 3D scenes. The photoresist plates with several exposures (containing optical security features and deep 3D images) were developed. Embossed holograms, containing such effective public security features as full color 3D images, guilloches, rainbow patterns, micro text and etc. were manufactured. Holograms, which have started their life in consumer market as three-dimensional images on a flat medium, are nowadays widely used for security applications in the form of embossed holograms. Embossed hologram is essentially a transmission hologram embossed on a reflective surface. With the digital embossed holograms originating techniques developing, various microscopic optical features contained in embossed holograms were becoming more and more sophisticated. Modern embossed hologram used for security applications are mostly originated employing the following direct master-original writing techniques: E-beam, Dot-matrix, Image-matrix. Those techniques allow one to obtain quite sophisticated microscopic images containing various complex optical security features, usually identified with optical aids. But all modern embossed holograms originating techniques do not provide origination of deep three-dimensional image on embossed hologram. Any of those widely used techniques do not allow obtaining deep three-dimensional image and sophisticated optical security features. Thus we have seen the problem and here below we are proposing a solution. The solution we are proposing is a combination of novel master-original writing technique with conventional image-matrix techniques.

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## STRUCTURAL STUDY OF TUNGSTEN TRIOXIDE

Vibrational analysis is a powerful spectroscopical tool in structure elucidation of materials. Nowadays in many cases it is possible to determine crystal structure by ab initio calculations. It is very interesting to perform combined theoretical and experimental studies of tungsten trioxide.

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## IMPACT OF ZNO NANOSTRUCTURE MORPHOLOGY ON DETECTION SENSIBILITY OF HEAVY METAL IONS

Nanomaterials have been grabbing increased attention due its unique properties compared to bulk materials: increased surface area with greater amount of active bounds and as result better sorption and detection properties.

All samples were hydrothermally obtained via  $Zn(NO_3)_2$  and HMTA aqueous solutions on 120 nm thin Chromium electrodes sputtered on precleaned glass slides.

Morphology changes were performed through growth solution concentration and temperature variations without pouring any extraneous chemical additives.

For comparison of sensing properties three ZnO morphologies (nanotubes, nanoneedles and nanorods) with varied surface area have been chosen.

All obtained samples are chemically pure, show good crystallinity and vertical alignment. For adsorption process qualitative and quantitative process analysis a series of cyclic voltammetry measurements for each morphology was carried out in  $Pb(NO_3)_2$  and  $Cd(NO_3)_2$  aqueous solutions containing lead and cadmium ions at different concentrations.

It was found that sensing properties of ZnO morphologies are directly dependent on surface roughness (surface area) and best results were observed for ZnO nanotubes.

These results are in agreement with measurements of static adsorption coefficient, were nanotubes shows more than two time higher value compared to nanorods with the same aspect ratio.

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## **NANOSTRUCTURE GROWTH IN Ag/a-As<sub>2</sub>S<sub>3</sub> BILAYER BY FOCUSED ELECTRON BEAM AND CONDUCTIVE ATOMIC FORCE MICROSCOPY**

Metal-amorphous chalcogenide systems are used in variety of applications, including photonics, programmable metallization cells, micro-electro-mechanical systems and X-ray mask fabrication. Research of methods for modification of metal-amorphous chalcogenide systems is important for the advancement of those applications.

It is possible to grow nanodots on the surface of metal-amorphous chalcogenide bilayer by electron beam irradiation. [1] In this work we use conductive atomic force microscopy (CAFM) to research surface conductivity of nanostructures, which are obtained by irradiating Ag/a-As<sub>2</sub>S<sub>3</sub> bilayer with focused electron beam. It was discovered, that nanostructure surface can be further modified by the electric field, applied by CAFM.

1. V. Kolbjonoks, V. Gerbereders, E. Tamanis, O. Simane, Nanostructure formation on metal-chalcogenide surface using electron beam irradiation, *J. Non-Cryst. Solids* 357 (2011) 2375-2379.

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## **ENERGY LOSSES IN SOLAR CELLS ORIGINATED BY ORGANIC SEMICONDUCTORS**

Organic semiconductors successfully are integrated in industry. The solar cells, transistors, Light emission devices and displays powered by organic semiconductor materials have a lot advantages in comparison with classical semiconductors. This work is focused on Organic semiconductors Solar Cells working principles, efficiency of this type materials in solar cell devices and show the some results in energy losses, what can make the carrier transport ways in organic solar cells.

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## **PECULIARITIES OF OBTAINING OF ZnO-Ag THIN-FILM SYSTEMS**

Study of the distribution of impurity atoms in the thin-film systems ZnO-Ag was carried out. Samples were obtained by two different methods: the hydrothermal growth method and the layered deposition method with followed annealing. In both cases, the silver atoms were displaced on the film surface and were collected in the 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.

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## **GREEN TECHNOLOGY OF THE ELECTRIC CAR**

Aim: To research the electric car as transport of our future. Modern constructions of the electric car engine. Experience of operation of the electric car in Daugavpils University.

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# VESELĪBAS ZINĀTNES

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## HEALTH SCIENCES

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### DEPRESSION AND ANXIETY SEVERITY DEPENDING ON HEROIN ADDICTION FOR PATIENTS WITH ABSTINENCE SYNDROME OR REMISSION

**Key words:** Heroin addiction, depression severity, anxiety severity.

**Introduction.** Affective disorders have a high prevalence among opioid users both during the abstinence syndrome and the remission (Maremmani et al., 2015; Wong NM et al., 2015).

**Aim.** To detect the association between the heroin addiction severity and depression/anxiety for the patients with abstinence syndrome or stable remission.

**Material and methods.** The interview consists of Addiction severity index (ASI), The Hamilton Rating scale for Depression and Anxiety.

**Results.** 108 patients, 39 females and 69 males. There are 57 patients with abstinent syndrome in the first group, who intook heroin at least one time during the last month; there are 51 patients with the stable remission in the second group, who didn't intake heroin from 6 month to 3 years. Spearman's rank correlation between the addiction severity index and anxiety ( $R=0.898$ ;  $p=0.000$ ), the addiction severity index and depression ( $R=0.856$ ,  $p=0.000$ ) both established statistically significant correlations. The independent sample T-test established statistically significant difference between the patients group with the abstinent syndrome and the patients group with the stable remission, the difference between two means of addiction severity index is 4.83 points, the difference between two means of depression severity is 15.59 points, the difference between two means of depression severity is 16.33 points, all differences are statistically significant ( $p=0.000$ ) and all means are higher in the group of patients with the abstinent syndrome.

**Conclusions.** There are strong correlations between the addiction severity, anxiety and depression. The clinically stable remission achieve by the methadone or buprenorphine programs shows a significant addiction severity decrease and better results of mental health, caused by a significant decrease in depression and anxiety rate.

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### 7th EXON DELETION IN SMN1 GENE AND IT'S CORRELATION WITH SPINAL MUSCULAR ATROPHY DIAGNOSIS AND SYMPTOMS

**Key words:** Genetics. SMN1 gene. Spinal muscular atrophy

**Introduction.** Spinal muscular atrophy is rare autosomal recessive genetic disease, which was characterized by progressive muscle weakness, body muscle activity and movement control disorders.

**Aim.** Assess frequency of the symptoms in group with diagnosis spinal muscular atrophy and positive 7th exon SMN1 gene deletion test and compare it with control group with negative 7th exon SMN1 gene deletion test.

**Materials and methods.** The study group was created by retrospective design, inclusion criteria were patients from Children's Clinical University Hospital from 2006 to 2016, who underwent molecular analysis for SMN1 gene mutation, tests results was positive, and also had symptoms of spinal muscular atrophy. The control group inclusion criteria were patients from Children's Clinical University Hospital from 2006 to 2016, who underwent molecular analysis for SMN1 gene mutation, test results was negative, but also had symptoms of spinal muscular atrophy. All data were analyzed with IBM SPSS 22.0.

**Results.** 31 patients who were enrolled in the study were divided in two group – study group and control group (study group included 17 patients; control group included 14 patients). The number of patients with muscle

hypotense in study group was 15 (88,2%), in control group 7 (50%) ( $p < 0.05$ ). Low tendon reflexes in study group had 10 patients (55,8%), in control group 6 patients (42,9%) ( $p > 0.05$ ). There were no patients with psychomotor retardation in study group, but in control group were 6 patients (42,9%) ( $p < 0.05$ ). The number of patients who had labored breathing in study group was 5 (29,4%), in control group 2 (14,3%) ( $p > 0.05$ ). Weight deficit had 3 patients (17,6%) in study group and 5 (35,5%) in control group ( $p > 0.05$ ). Statistically significant differences were only in muscle hypotense symptom (38.2 % more in study group), motor development delay symptom (24.9% more in study group) and psychomotor retardation symptom (42.9% more in control group).

**Conclusion.** Current research on children with symptoms of spinal muscular atrophy indicates no clear association between positive and negative 7th exon *SMN1* gene deletion test.

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## ACTIVATION OF VALVULAR INTERSTITIAL CELLS AND EXTRACELLULAR MATRIX REMODELING IN CALCIFIC AORTIC VALVE STENOSIS

**Introduction.** Calcific aortic stenosis is the most common cause of aortic valve replacement in developed countries, and this condition increases in prevalence with advancing age, afflicting 2-3% of the population by the age of 65 years. The primary cell types in the aortic valve are valvular endothelial and interstitial cells (VIC). Abnormal aortic valve function likely results from extracellular matrix (ECM) remodeling, associated with the disequilibrium between the synthesis of ECM components and their degradation.

**Aim.** The aim of this study was to analyze the evidence of extracellular matrix remodeling and phenotypical changes occurring in the VIC of the different histological layers of aortic valves, and to describe its contribution to the pathogenesis of aortic valve stenosis. Immunohistochemical performance on 20 stenotic aortic valves and 11 control valves was studied by semiquantitative counting of alpha-smooth muscle actin ( $\alpha$ -SMA), CD34 and MMP-9 expression.

**Results.** According to our results, expression of  $\alpha$ -SMA by activated VIC was more prominent in stenotic valves compared with control valves ( $p < 0.001$ ). Furthermore, increased expression of  $\alpha$ -SMA was observed in the *ventricularis* layer both in stenotic ( $p = 0.02$ ) and control ( $p < 0.001$ ) valves. We found CD34+ interstitial cells mainly in the *fibrosa* and *spongiosa* layers. The expression of MMP-9 was more marked in stenotic valves compared with control valves ( $p < 0.001$ ). In addition, MMP-9 expression was more prominent in the *ventricularis* ( $p = 0.03$ ) layer of calcific valves. We found that the source of the MMP-9 is activated VIC and mononuclear leukocytes. Weak positive correlations between  $\alpha$ -SMA and MMP-9 expression ( $\rho = 0.1$ ;  $p = 0.05$ ), and between MMP-9 and number of CD34-stained blood vessels ( $\rho = 0.2$ ;  $p < 0.001$ ) were discovered.

**Conclusions.** Activated VIC express  $\alpha$ -SMA and significantly increase in number as respond to valve injury. Furthermore, in the *ventricularis* layer the VIC possess the greatest capacity to differentiate into myofibroblasts. The expression of MMP-9 by activated VIC and mononuclear leukocytes was increased in stenotic valves, was more prominent in the *ventricularis* layer, and weakly correlated with  $\alpha$ -SMA expression and angiogenesis, suggesting the contribution of extracellular matrix remodeling in the pathogenesis of aortic valve stenosis.

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# ACTIVATION OF VALVULAR INTERSTITIAL CELLS AND EXTRACELLULAR MATRIX REMODELING IN DEGENERATIVE MITRAL REGURGITATION

**Introduction.** In Europe, mitral regurgitation (MR) is the second most frequent valve disease requiring surgery. Reduced incidence of rheumatic fever and increased lifespan in industrialized countries have progressively changed the distribution of aetiologies, with degenerative MR now being the most common.

**Aim.** The aim of the study was to analyze morphological evidence of the extracellular matrix (ECM) remodeling occurring in valvular leaflets and chordae tendineae of control and degenerative mitral valves, and to describe its contribution to the biomechanics of MR.

**Materials and methods.** 20 patients treated at the Pauls Stradins Clinical University Hospital and undergoing mitral valve replacement were selected for this study and compared with 20 samples from the control group. The immunohistochemical performance was investigated by semiquantitative counting of  $\alpha$ -SMA, CD34, MMP-3, MMP-9 expressions. Collagen fibers were analyzed using Masson's trichrome stain, and elastic fibers - using Weigert's resorcin-fuchsin stain.

**Results.** Both intensity and area of  $\alpha$ -SMA expression by activated interstitial cells were more prominent in the degenerative valves (Md=3, Md=1, accordingly) compared with the control (Md=0, Md=0, accordingly),  $p=0.01$ . Furthermore, increased area of  $\alpha$ -SMA expression was observed in the *atrialis* layer both in the degenerative ( $p=0.01$ ) and the control ( $p<0.001$ ) valves. The expression area of MMP-3 in the degenerative valves was larger (Md=2) than in the control valves (Md=1),  $p<0.001$ . Collagen bundle disruption and loss of organization was more prominent in patients with MR (Md=2) compared with the age-matched control (Md=1),  $p=0.04$ . In regions with active ECM remodeling we found higher intensity (Md=2) and larger area (Md=2) of MMP-3 expression than in areas with a parallel arrangement of collagen fibers (Md=2, Md=1, accordingly),  $p<0.001$ . MMP-9 expression was significantly less prominent than MMP-3 expression and was found only in valvular leaflets, but not in chordae tendineae. In chordae tendineae of degenerative valves we found a marked accumulation of fragmented and granular in nature elastic fibers. In valvular leaflets elastic fibers accumulated in regions with collagen fiber derangement and degeneration.

**Conclusions.** Activated interstitial cells were more prominent in diseased valves and were found to be the source of MMP. Fragmented elastic fibers accumulated in regions with collagen fiber degeneration. These changes in collagen and elastic fiber organization are possibly the key features in the biomechanics of MR. Chaotic organization of collagen fibers promotes leaflet thickening, while fragmentation of elastic fibers decreases the elasticity of chordae tendineae.

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## AN EVALUATION OF THE EFFECTIVENESS AND SAFETY OF NARCOTREND CONTROLLED SEDATION WITH DEXMEDETOMIDINE VERSUS PROPOFOL DURING ELECTIVE COLONOSCOPY PROCEDURE

**Key words:** Dexmedetomidine, propofol, sedation, colonoscopy, Narcotrend index, TCI

**Aim:** To evaluate the effectiveness and safety of dexmedetomidine versus propofol sedation during elective colonoscopy.

**Material and methods:** 72 patients ASA I-III scheduled for elective colonoscopy, included in a prospective study, were randomized into 2 groups of 36. Dexmedetomidine (D) infusion 1 $\mu$ g/kg/10 min followed by 0,2-0,6 $\mu$ g/kg/h. Propofol (P) with Target Controlled Infusion, using *Schnider* Effect Site pharmacokinetic model 2-6 $\mu$ g/ml. Rescue analgesics were used by procedure needs. Procedure sedation levels were targeted to achieve a Narcotrend index - light anesthesia.

**Results:** In D group mean age of patients was 57.2 $\pm$ 16.8 years, in P group – 63.0 $\pm$ 15.0 years. In D group heart rate (HR) after 10 min decreased from 74.8 $\pm$ 12.0 to 59.8 $\pm$ 9.1 x/min ( $P<0.01$ ), systolic blood pressure (SBP) - from 143.1 $\pm$ 23.3 to 121.7 $\pm$ 20.7 mmHg ( $P<0.01$ ), diastolic blood pressure (DBP) - from 71.1 $\pm$ 12.1 to 64.3 $\pm$ 12.0

mmHg ( $P<0.01$ ), bradycardia required for atropine developed in 8/36 patients. In P group HR after 10 min decreased from  $80.2\pm 13.6$  to  $68.7\pm 12.1/\text{min}$  ( $P<0.01$ ), SBP - from  $142.2\pm 30.4$  to  $110.7\pm 23.7$  mmHg ( $P<0.01$ ), DBP - from  $70.6\pm 13.0$  to  $60.1\pm 12.4$  mmHg ( $P<0.01$ ). Bradycardia required for atropine developed in 1/36 patients. All patients had adequate spontaneous breathing, no patient required bag-mask ventilation or any airway device. In D group 7/36 patients required  $O_2$  supply vs 25/36 in P group. Jaw thrust was required only in P group in 10/36 cases. In D group 36/36 received rescue analgesics vs only 1/36 in P group.

**Conclusions:** To provide adequate sedation for elective colonoscopy rescue analgesics were used for all patients with dexmedetomidine and for only 1 patient with propofol. Propofol as a sole agent cause more frequently respiratory depression than dexmedetomidine sedation with addition of analgesics. Sedation with dexmedetomidine cause more frequently bradycardia than sedation with propofol.

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## **AN OBSERVATIONAL STUDY ON ADRENAL INSUFFICIENCY**

**Background.** Primary and secondary adrenal insufficiency is a rare clinical condition, which can be caused by many etiological agents. It has been reported that the most common cause of primary adrenal insufficiency is autoimmune adrenalitis and comorbidity with other autoimmune disorders is high.

**Aim.** The aim of this study was to determinate the most common causes of primary and secondary adrenal insufficiency, and to assess the prevalence of autoimmune comorbidity in patients with primary adrenal insufficiency.

**Methods and materials.** In the study retrospectively were analyzed medical records of patients who had been hospitalized in the Riga East Clinical University hospital with the diagnosis of adrenal insufficiency during time period from January 2010 till December 2016. Statistical analysis was performed using Microsoft Excel and IBM SPSS 22.

**Results.** 103 medical records of patients with adrenal insufficiency were reviewed. Mean patient age was  $53\pm 17$  years. Majority of the patients had secondary adrenal insufficiency 62 (61.8%). The most common causes were iatrogen adrenal insufficiency due to use of glucocorticoids, and adenoma of hypophysis with complications related to the treatment of adenoma. Primary adrenal insufficiency was detected in 41 (39.8%) patients. Most commonly the diagnosis was idiopathic primary adrenal insufficiency, one case was due to bilateral adrenalectomy, and one case - due to tuberculosis of adrenal glands. 24 (58.5%) of these patients had an autoimmune comorbidity which is included in the diagnosis of autoimmune polyglandular syndrome.

**Conclusions.** Secondary adrenal insufficiency is more common than primary, with most frequent etiological agents being adenoma of hypophysis, and iatrogen adrenal insufficiency. In case of primary adrenal insufficiency prevalence of associated autoimmune disorders is high, and proper screening should be conducted.

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## **ANALYSIS OF PATIENTS WITH PURE GONADAL DYSGENESIS**

**Key words:** 46,XY, female, primary amenorrhea, gonadoblastoma

**Introduction.** Pure gonadal dysgenesis or Swyer syndrome is a rare genetic disorder characterized by 46,XY karyotype and female phenotype. Patients with pure gonadal dysgenesis have increased risk for the development of malignant tumors.

**Aim.** The aim of the study was obtain and analyze data of patients with pure gonadal dysgenesis in 20 year period.

**Materials and methods.** In a retrospective study data about 37 patients were selected from the registry of the Cytogenetics laboratory and Children's Clinical University Hospital between 1996 and 2016. Patients with mixed or partial gonadal dysgenesis (46,XY/45,X) were excluded. The clinical information of the investigation and treatment was available in 15 cases. Data was analyzed using MS Excel and SPSS Statistics program 22.0.

**Results.** In all 37 cases was laboratory determined karyotype analysis. 97.3% (N=36) of women were confirmed with 46, XY karyotype, 2.7% (N=1) with karyotype 47, XY + 21. The average age of the patients at the time of diagnosis was  $15.4 \pm 8.0$  years. The study of 15 cases showed that 53.3% (N=8) were investigated for primary amenorrhea and incomplete development of secondary sexual characteristics, 33.3% (N=5) with abdominal pain and lower abdominal mass, 13.3% (N=2) were diagnosed at birth. 80% of patients (N=12) was performed gonadectomy. In 2 cases gonadectomy was made 7.3 and 5.3 years after diagnosis. In one case karyotype

analysis was performed 11 years after ovarian tumor (dysgerminoma) treatment. Histological examination showed gonadoblastoma in 4 cases, dysgerminoma in 3 cases, gonadoblastoma with dysgerminoma in 2 cases, teratoma in 1 case.

**Conclusion.** Early diagnosis is necessary to decrease the risk of malignancy that can develop at an early age. The study showed the median time between diagnosis and gonadectomy was suboptimal. In most of cases, histology showed malignancy. Further studies of this rare genetic disorder should be performed.

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## ANTIBACTERIAL THERAPY TRENDS IN PATIENTS WITH ULCERATIVE COLITIS IN RIGA EAST CLINICAL UNIVERSITY HOSPITAL

**Keywords:** *inflammatory bowel disease, antibacterial therapy, ulcerative colitis*

**Introduction:** Ulcerative colitis (UC) is one of the most frequent forms of inflammatory bowel disease (IBD). Antibacterial therapy is frequently used in ulcerative colitis treatment that is justified of cases on complication. Unjustified use of antibiotics leads to increased microbial resistance to antibacterial treatment. Often in cases of colitis antibacterial therapy is unnecessarily implemented without proper investigation of the severeness of the illness and its course, causing additional complications and problems with choosing adequate therapy.

**Methods and materials:** We reviewed all IBD hospitalization cases in time period between 2010 – 2015 of which 416 were identified as UC cases. We analysed the compliance of antibacterial therapy to the IBD treatment guidelines established by the European Crohn's and Colitis organisation (ECCO). Collected data was analysed using programme SPSS ver. 23.0.

**Results:** 700 cases of admission to the hospital were examined. There were 416 (59.4%) UC cases; out of which 221(59.8%) were female and 195(62.7%) were male patients; the average age 47,1(SD=19,8 years). 329 (79.0%) patients were urgently admitted to the hospital with exacerbation of the disease, while 11 (2.64%) patients were admitted in order to have their diagnosis clarified. Inflammatory bowel disease was detected for 76 (18.2%) patients as a co-occurring diagnosis, respectively, the patients were admitted to the hospital due to co-occurring disorders. The average number of days spent at the hospital the 8.7 days (SD = 7.4). In case of UC, metronidazole was most often used in 133 (19.0%) cases. Ciprofloxacin was used in 62 (14.9%) cases, while ceftriaxone in 62 (8.9%) cases.

**Conclusion:**

Metronidazole was the most frequently used antibacterial medication in the cases of UC, which corresponds to the ECCO IBD therapy guidelines. Ceftriaxone is the second most often used antibacterial medication, however, its use does not correspond to the ECCO IBD therapy guidelines, and use of this medication for these patients has not been justified properly in the medical documentation. Antibacterial therapy was applied for almost a half of the patients in order to specify the diagnosis which may not be explained with the health control and treatment indications, and therefore indicates certain methodological problems.

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## ANTIBIOTIC USAGE IN CROHN'S DISEASE IN RIGA EAST CLINICAL UNIVERSITY HOSPITAL

**Keywords:** *inflammatory bowel disease (IBD), antibacterial therapy, Crohn's disease*

**Introduction:** Crohn's disease (CD) is one of the IBD forms, characterised by patchy, transmural inflammation, which may affect any part of gastrointestinal GI tract. Antibacterial therapy is frequently used in CD treatment that is justified in cases on complications. Unjustified use of antibiotics leads to increased bacterial resistance to antibacterial treatment. During hospitalization, antibacterial therapy tend to be overly implemented without proper investigation of the severity of the illness and its course, causing additional complications and problems with choosing adequate therapy.

**Materials and methods:** A retrospective analysis was done on 700 IBD hospitalization cases during the period of 2010 – 2015. 199 were identified as CD patients. The compliance of used antibacterial therapy was compared to the IBD treatment guidelines established by the European Crohn's and Colitis organisation (ECCO). Data were processed using statistical programme SPSS ver. 23.0.

**Results:** 700 cases of admission to the hospital were examined. 199 (28.4%) were CD cases, among those patients 116 (29.8%) were female and 83 (26.7%) – male; the average age of all patients 47.12 years (SD=19.8). Antibacterial therapy was used in 325 (46.4%) cases: for 218 (49.8%) patients hospitalised with exacerbation of their IBD, 13 (41.9%) patients admitted for IBD diagnosis clarification, but 39 (16.8%) had IBD only as co-occurring disease. The average hospitalization length was 8.7 days (SD = 7.4). In the cases of CD, metronidazole was used most frequently, respectively, in 90 (45.2%) cases. Ciprofloxacin was used in 30 (15.0%), while ceftriaxone in 60 (30.1%) cases.

**Conclusion:** The most commonly used antibacterial medication in the cases of CD was metronidazole, which corresponds to the ECCO IBD therapy guidelines. The second most frequently used antibacterial medication was ceftriaxone, although, its use does not conform to the guidelines, and the use of this therapy for IBD patients has not been justified properly in the medical documentation. Almost a half of the patients admitted to the hospital in order to specify their diagnosis received antibacterial therapy, which may not be explained with the health control and treatment indications, and therefore indicates certain methodological problems.

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## ANTIRETROVIRAL THERAPY EFFECT ON PREGNANCY OUTCOMES AND COMPLICATIONS

**Key words:** HIV infection, pregnancy, antiretroviral therapy

**Introduction.** HIV incidence in Latvia 2016 year was 15,2 cases per 100 000 inhabitants. Till this year 54 vertical transmission (VT) cases have been documented. Antiretroviral therapy (ART) is used to reduce VT risk. ART is considered to be safe during pregnancy.

**Aim.** Analyse the effect of ART during pregnancy on pregnancy complications, outcomes and neonatal period complications.

**Materials and methods.** Retrospective analysis of 281 delivery histories (2010-2016) in Riga Maternity hospital with diagnosis B20 ICD-10. Obtained data was statistically analyzed in Microsoft Excel 2013 and IBM SPSS 22 programs.

**Results.** It was observed that women who received ART during pregnancy had antenatal care (ANC) more frequently (n=181, 97,8% vs n=20, 39,2%; p<0,0005) and earlier (Mean(M)=11,9 vs M=17,4 week; p=0,001). Women, who received ART during pregnancy more often received ART before pregnancy (23,4% vs 5,4%; p=0,015). There was no significant difference in pregnancy related complications between the groups (with vs without ART: 92,4% vs 94%; p>0,05). There were obtained association of ART with choice of delivery type (p>0,0005). 60,0% of patients with ART vs 22% without ART had elective Caesarian section (CS); 25,9% vs 30% had emergency CS; 9,7% vs 44% had physiologic delivery and 4,3% vs 4% had pathological vaginal delivery. Mean value of length (with ART vs without ART: M=50,27 vs M=49,08 cm; p=0,039), head (M=34,03 vs M=33,58 cm; p=0,046) and chest circumference (M=32,63 vs M=31,86 cm; p=0,04) were higher in newborns of mothers, who received ART during pregnancy. Neonatal period complication rate were lower in patient group with ART (46,5% vs 64%; p=0,028).

**Conclusions.** Use of ART during pregnancy is important aspect of antenatal care of HIV infected women and is efficient in VT risk reduction. There is association between ART and the choice of delivery type. ART is important for neonatal complication reduction.

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## ASSESSMENT OF VERY HIGH CARDIOVASCULAR RISK PATIENTS AND THEIR EXPECTATIONS OF EXERCISE OUTCOME

**Key words:** Cardiovascular risk factors, Multidimensional Outcome Expectations for Exercise Scale, Six Minute Walking test

**Introduction.** Very high cardiovascular risk patients in stationary rehabilitation are the ones who are already over close monitoring under general practitioners and cardiologists. Risk factor control is the main cardiovascular event predictor. Even light physical activity can control risk factors. Higher scores on the subscales of (i.e., stronger outcome expectations) would be significantly and positively associated with higher levels of physical activity and stronger self-efficacy.

**Aim.** To evaluate risk factor control of very high cardiovascular risk patients and their expected outcomes from exercises.

**Materials and methods.** The study was conducted at the NRC „Vaivari” cardiopulmonary rehabilitation unit from December 2016 to February 2017. Study included 22 people who overwent cardiac rehabilitation at that time. The data were compiled in Excel tables and processed in SPSS20.0. Six minute walk test with Vyntus Walk device was performed for all patients and depending on their tested walking distance functional class was set. Cardiovascular risks were assessed by questionnaire and laboratory findings. Multidimensional Outcome Expectations for Exercise Scale (MOEES) were handed to patients. MOEES consists of subdomains representing physical, social, and self-evaluative outcome expectations. *Physical* outcome expectations reflect beliefs about pleasant and aversive physical experiences resulting from engagement in physical activity. *Social* expectations reflect beliefs about physical activity resulting in increased opportunities for socialization and attaining social approval. *Self-evaluative* outcome expectations capture beliefs relative to the feelings of satisfaction and self-worth associated with involvement in physical activity.

**Results.** 10 (45,45%) of them were women, 12 (54,55%) men. Data of this research suggest that patients mostly expect physical improvement from physical exercise. Less likely they expect self-evaluative. The smallest expectations are associated with social outcomes. No statistically significant correlation were found between total cholesterol levels and physical, self-evaluative and social expectations ( $p > 0,05$ ). There was negative and statistically significant correlation between testing distance and physical outcome expectations ( $r_s = -0,47; p = 0,02$ )

**Conclusions.** Study show the importance of patient education of benefits what gives exercises. Risks factors should be controlled more strongly.

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## ASSESSMENT OF CEREBRAL INFARCTION RISK FACTORS AND AETIOLOGY IN MEN AND WOMEN UP TO 50 YEARS OF AGE

**Introduction.** Cerebral infarction can be found in young patients in 10–14 % of cases (Renna et. al. 2014). Such situation imposes a significant burden on the society by losing the most productive years in people’s lives and increasing healthcare expenses. Aetiology of cerebral infarction in young people is multiple and not completely researched, which obviously makes application of appropriate therapy difficult.

**Objective, Material and methods of the Work.** The objective of the work is to study the cerebral infarction risk factors and aetiology depending on gender. During the course of the work, the entire medical documentation of patients in the age group of 18–50 available in the archives of Riga East University Hospital Gailezers for the period 2014–2015 was summarized and analysed. The obtained data were processed using SPSS software.

**Results.** Medical documentation of 152 patients has been analysed. These patients included 49 women and 103 men. The average age was  $41.57 \pm 7.167$ . The most common risk factors include arterial hypertension (51.3 %), which was found in 38.8 % of women and 57.3 % of men, dyslipidemia (28.3 %) established in 36.7 % of women and 24.3 % of men, and smoking (17.1 %) – in 8.2 % of women and 21.4 % of men.

Atherothrombotic cerebral infarction was diagnosed in 43.4 % of patients, i.e., 26.5 % of women and 51.5 % of men. Cardioembolic cerebral infarction was diagnosed in 14.5 % of patients, i.e., 26.5 % of women and 7.8 % of men. Lacunar infarctions were found in 3.3 % of patients. Cerebral infarction of other specified aetiology was found in 11.8 % of patients, i.e., 14.3 % of women and 10.7 % of men. Cerebral infarction of non-specified origin was found in 25.7 % of patients, i.e., 28.6 % of women and 24.3 % of men.

### Conclusions

In patients up to 50 years of age, the most common risk factors are modifiable and therefore they can also be diminished in a timely manner. The frequency of risk factors in women and men varies. Consequently, also the lifestyle modification in women and men is different.

Cardioembolic cerebral infarction is most commonly found in women, but atherothrombotic cerebral infarction – in men.

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## ASSOCIATION BETWEEN ANGIOTENSIN CONVERTING ENZYME GENE AND ARTERIAL HYPERTENSION

**Keywords:** Angiotensin-I converting enzyme (ACE), insertion/deletion polymorphism, hypertension.

**Introduction.** Arterial hypertension (AH) affects approximately one quarter of the world's population and greatly increases the likelihood of stroke and heart diseases. AH is influenced by genetic, environmental and demographic factors. There are various studies showing controversial relation between ACE gene polymorphisms and AH.

**Aim.** Find relationship between ACE gene polymorphism and AH in Latvian population.

**Materials and methods.** In prospective study we included 100 patients with AH and 34 patients in control group without AH from Pauls Stradins Clinical University Hospital from 1/09/2016 - 17/02/2017. For all patient blood pressure (BP), biochemical test results, used treatment and comorbidities were analyzed. ACE gene I/D polymorphism genotypes were determined by using PCR. Data was analyzed using MS Excel and IBM SPSS.

**Results.** The mean age in AH group was 59.5± 8.73 years and in control group 55±5.52 years. The prevalence of II, ID, and DD genotypes were 23%, 41%, 36% in AH patient group and 20.6%, 52.9% and 26.5 % in controls (p>0.05). There was found weak negative correlation between ZBL and systolic BP ( $r_s = -0.307$ ,  $\rho=0.008$ ). Analyzing comorbidities there were identified diabetes mellitus (DM) group (n=16), analyzing DM with ACE genotype it was found that in both groups there are different genotype distribution (in DM group with II genotype 0%, ID – 37.5%, DD – 62.5%, in non DM group – II genotype for 27.4%, ID – 41.7%, DD – 31%, p=0.016). There were not found statistical correlation between other characteristics and ACE gene variant (p>0.05).

**Conclusion.**

1. There was not found association between ACE gene I/D genotypes or alleles and arterial hypertension.
2. ACE gene DD and DI genotype could be a risk factor for diabetes mellitus in arterial hypertension patients.

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## BIRTH WITH DOULA – FASHION OR NECESSITY?

**Key words:** Doula, labors, pregnant women, Cesarean section.

**Introduction:** Recently it's becoming more popular among women in the European countries to give birth with doula. In most cases doula is a woman who have no medical education that supports the other woman during pregnancy and labor. Primarily, doulas work includes informing and explaining to women about parturition and supporting women physically and emotionally. In surveys made by doulas good pregnancy results and higher level of women satisfaction have been discovered. However, despite the popularity of this movement, professional medical researches in Latvia on this topic are still not existent.

**Aim.** By analyzing data, find out profile of women who choose services provided by doula and whether it has a positive effect on pregnancy outcomes.

**Materials and methods.** The retrospective study included an evaluation of the medical history of pregnant women that was performed in three-year period between January 2014 and December 2016 in Rīga Maternity hospital (RMh). Overall 18129 labors were observed, out of which 125 labors with doulas were chosen. Data was analysed by MS Excel and SPSS. Ethics committee permission for this study was received.

**Results.** From 125 labors analysed - 43 (34,4%) were in 2014, 39 (31,2%) in 2015 and 43 (34,4%) in 2016. Only 0,7% labors in RMh are given with the help of doulas. Doula services were chosen by women with the average age of 31,5. 63 (50,4%) of women were Latvians, 95 (76%) women were married, 97 (77,6%) women had a higher education and 109 (87,2%) women had an official job. Most of doulas services were provided to women who had their first labor - 62 (49,6%) cases. In 33 (26,4%) cases with doulas service there were prolonged pregnancies. In 29 (23,2%) cases women had complications such as dysfunction of the uterus. Comparing these data with official statistics, we found that that 25,6% of labors were brought by Cesarean section in RMh, in contrast to labors with doula service, where only 10,4%, were brought by Cesarean section, which is 2,5 times less.

**Conclusion.** Services provided by doula are preferred by women with higher education, stable income and relationship status in their first labour. Giving birth with doula has potential to reduce the number of caesareans. It is necessary to continue research covering the situation throughout Latvia.

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## CATARACT PATIENTS' AWARENESS OF CATARACT SURGERY POSTOPERATIVE PERIOD

**Key words:** *Cataract, cataract surgery, postoperative complaints*

**Introduction.** Cataract surgery is the most common procedure performed by the ophthalmic surgeon. In 2015 3.6 million cataract procedures were performed in the United States and more than 20 million were performed worldwide, according to estimates. In spite of these impressive statistics, the number of patients visually handicapped by cataract globally increases every year [1].

It is important to understand whether all these people have any complications or complaints after surgery and whether they are well informed about action in postoperative period.

**Aim.** To assess patients' awareness of the post-operative period of cataract surgery procedure. To assess whether there are association between patients' awareness and their complaints during post-operative period.

**Materials and methods.** The study group was created by retrospective design, enrolling patients one month after cataract surgery from a single university hospital. Patients were selected randomly. The enquiry was performed to patients directly by questionnaire. All data were analyzed with SPSS 22.0. Research was developed within the framework of students' scientific group of ophthalmology.

**Results.** The resulting group included 50 patients, among them - 18 men (36%) and 32 women (64%). Patients' age ranged from 53 to 87 years, mean 75.0 years. Left eye was operated in 29 patients (58%), right eye in 21 patients (42%). Patients' mean visual acuity in operated eye before procedure from 0.01 to 0.3 mean 0.06; after from 0.15 to 1 mean 0.68. All respondents have additional eye diseases in corresponding or both eyes, such as fibrosis subretinalis, dystrophia retinae centralis or peripheris, subluxatio lentis, etc. All patients (100%) regularly used eye drops 4 till 6 weeks after surgery and knew that they must visit doctor, in case they feel the deterioration of vision, pain or discharge. 48 patients (96%) knew about the initial vision changes, 42 patients (84%) knew about exercise restrictions, 46 patients (92%) did not sleep on the operated eye side and 36 (72%) avoided working with the computer, reading. However, all patients had one or more complaints according to operated eye most common dry eye sensation, itching, shimmer or eye redness.

Chi-Square Fisher's Exact Test was performed to determine association between patients' awareness and their complaints in postoperative period, Fisher's Exact Test value is  $p=0.339$ .

**Conclusion.** Current research on cataract patients' awareness of cataract surgery postoperative period indicates no clear association between patients' awareness and their complaints in postoperative period.

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## CHRONIC DISEASES AND WOMEN COMPLIANCE PARTICIPATING IN NATIONAL CANCER SCREENING PROGRAM.

**Introduction.** Cancer is one of the leading death causes globally. To prevent this disease there are National screening program. There are three programs for breast, cervical and colorectal cancer. Program's fulfillment is poor despite the fact that it is paid by the government. Women in age 50 to 70 years are included in all three cancer screening programs.

**Aim.** The aim of this study is to determine if and how chronic diseases affects women's compliance participating in national cancer screening program.

**Materials and methods.** The study took place in four different GP's practices in Riga. In this study we have included women who received State funded invitation letter to screening mammography. We have collected data from national cancer screening data base. After analyzing patient ambulatory cards about anamnesis, all participants underwent questionnaire and objective investigation to determine systolic and diastolic blood pressure, pulse and body mass index.

**Results.** This study included 148 women with average age of  $59.7 \pm 5.8$  years and average BMI of  $27.8 \pm 5.5$  kg/m<sup>2</sup>. 50% of study participants were screened for breast cancer, 18.3% for cervical cancer and 22.3% for colorectal cancer. Some of patients had cervical cancer screening outside the state program. Totally 29.1% of all women were screened for cervical cancer. Further involvement in this study took 103 women's, 73 of them had chronic diseases. In all screening programs women with chronic diseases had higher participation percentage: 60.3% for breast cancer (56.4% in other group), 28.7% for cervical cancer (17.8% in other group) and 34.3% for colorectal cancer (25.8% in other group).

**Conclusion.** This study showed that women with chronic diseases more actively take part in national cancer screening program. It can be associated with more often visits to GP. Therefore better compliance was observed in patients with chronic diseases.

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## CHRONIC HEPATITIS C CLINICAL COURSE AND OUTCOME

**Keywords:** Chronic hepatitis, HCV, stage of fibrosis, genotype, complications.

**Introduction.** Each year the number of people infected with chronic hepatitis C (HCV) increases by 3-4 million, whereas in Latvia, epidemiological research data indicates this number increases by more than 1000 people. It is important to diagnose the infection as soon as possible to prevent complications such as portal hypertension, liver cell insufficiency and hepatocellular carcinoma from occurring. In order to provide the best treatment possible, it is necessary to diagnose HCV genotype and fibrosis stage.

**Aim.** To investigate HCV clinical course by analysing stage of fibrosis at the time of discovery, genotype and the most common complications documented in Riga East Clinical University Hospital.

**Materials and methods.** 137 cases of chronic HCV were gathered in this retrospective research by analyzing medical records of patients who were admitted to "Gaiļezers" centre of Riga East Clinical University Hospital from January 2014 to December 2016. Statistical data was processed by IBM SPSS and Microsoft Excel.

**Results.** From 137 total cases 64.23% (N=88) were men from whom 23.86%(N=21) *exitus letalis* and 35.77% (N=49) were women from whom 18.37%(N=9) *exitus letalis*.

Stage of fibrosis data was available for 102 cases, from which 5.88% (N= 6) had stage 0, 34.31% (N=35) had stage 1, 9.80% (N=10) had stage 2, 5.88% (N=6) had stage 3 and 44.12% (N=45) had stage 4.

HCV genotype data was available for 69 cases, from which genotype 1(undifferentiated) was determined in 17.39% (N=12), genotype 1a in 1.45% (N=1), genotype 1b in 55.07% (N=38), genotype 2 in 1.45% (N=1) cases and genotype 3 in 24.64% (N=17) cases.

HCV complications were established in 78 cases, from which the most common were – portal hypertension 84.62% (N=66), liver cell insufficiency 76.92% (N=60) and hepatocellular carcinoma 14.10% (N=11).

**Conclusion.** It was observed that male patients had higher mortality and were generally more represented in the research compared to female patients.

Almost half of the patients were diagnosed with HCV at the fibrosis stage 4.

The most common HCV genotype that was encountered in the acquired data from "Gaiļezers" Centre was 1b. The least common were 2 and 1a.

From all observed complications the most prevalent was portal hypertension.

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## CLINICAL EXPERIENCE OF ENDOVASCULAR THERAPY IN RIGA EAST UNIVERSITY HOSPITAL

**Key words:** Cerebral stroke, thrombectomy, interventional radiology

**Introduction.** Cerebral stroke is one of the leading causes of death and severe disability in the world. Every 4th minute somebody dies due to cerebral infarction while every 40 seconds a new neurological deficit appears. In Latvia 2015th 2473 patients died after cerebral infarction and 2090 patients were first time registered with primary disabilities as a result of cerebrovascular disease. In Riga East University Hospital in year 2016 - 1090 patients were hospitalized with diagnosis cerebral stroke. It is crucial to start early treatment and gain maximal revascularization of the occluded vessels.

**Aim.** To evaluate patients hospitalized with large cerebral artery occlusion that underwent thrombectomy in Riga East University Hospital from 1015 to February 2017.

**Materials and methods.** Prospective study included 13 cases with large artery occlusion. Age, comorbidities, time window from onset of the symptoms until the treatment, NIHSS, mRS before and after treatment were assessed. Data analysed by Windows Excel programme.

**Results.** From 13 cases, 8 (61%) were male and 5 (39%) female patient in age group from 24 to 84 years, with mean age - 57,08 years. Patients were hospitalized 45 to 446 minutes after onset of the symptoms, in 61% less than one hour. hospitalized Radiological examination were performed 15 to 42 minutes after hospitalization, in average 30 minutes while time from "the door to needle" were 65 to 299 minutes in average 120 minutes. Clinical improvement with enlargement of NIHSS score at least for 5 points was in 10 cases (77%) and mRS - in 5 (38%). 9 of the 13 patients had occlusion of internal carotid artery from the level of bifurcation with complete recanalization after thrombectomy with TICI score 3 in 10 (77%) cases.

**Conclusions.** First experience with thrombectomy in large artery occlusions showed high recanalization rates despite proximal occlusion level. Clinical improvement depends on time between symptom onset and recanalization. Cooperation between the specialists is crucial in better outcome of the patient. Larger series are necessary for statistically significant data.

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## COAGULATION TESTS AND THEIR CORRELATION WITH POST-OPERATIVE BLEEDING THAT REQUIRES A REOPERATION IN CARDIAC SURGERY

**Keywords:** Cardiac surgery, cardiopulmonary bypass, reoperation, INR, APTT, PT

**Introduction.** Bleeding is a common cause for early reoperation (ReOP) in cardiac surgery with cardiopulmonary bypass (CPB) and is associated with increased morbidity.

**Aims.** The aim of the study was to retrospectively analyse patient histories and identify if there is a correlation between blood loss before early ReOP and platelet count (PLT), activated partial thromboplastin time (APTT), fibrinogen (Fb), prothrombin time (PT), antithrombin III (AIII), activated clotting time (ACT) before or after cardiac surgery with CPB.

**Materials and methods.** Histories of 55 patients in a university hospital from 2015-2016 were analysed. All patients had open heart surgery using CPB after which there was increased postoperative bleeding, that was treated with a ReOP within 24 hours. The data collected was patient sex, age, length and type of surgery, CPB time, post-surgical blood loss and time until the second surgery. PLT, APTT, Fb, PT, AIII values before and after the first surgery and ACT numbers were assessed before and after CPB. All data was analysed using Statistical Package for the Social Sciences 22.

**Results.** Seven of the patients had a heart tamponade and were excluded from further calculations. 48 patients of which were 33 males and 15 females age  $70 \pm 13$ . Time in min for the first surgery, CPB and time till ReOP was  $195 \pm 83$  and  $101 \pm 48$  and  $390 \pm 271$  respectively. 8 of the surgeries were described as acute and 6 were involving the aorta and two were redo operations. The postoperative blood loss was  $1008 \pm 308$  ml or  $158 \pm 144$  ml/h. The coagulation test that correlated with blood loss per hour were before surgery APTT ( $p=0,037$ ) and post-surgery INR ( $p=0,019$ ), PT ( $p=0,01$ ), APTT ( $p=0,001$ ).

**Conclusions.** The coagulation tests that correlate with postoperative blood-loss, that is great enough to warrant a ReOP were APTT before and after the first surgery, and postsurgical INR and PT.

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## **COMORBIDITIES IN PATIENTS WITH PERSISTENT ATRIAL FIBRILLATION UNDERGOING ELECTRICAL CARDIOVERSION IN LATVIAN CARDIOLOGY CENTER**

Atrial fibrillation is the most common sustained cardiac arrhythmia and it is associated with various comorbidities. This study aims to investigate the prevalence of comorbidities among patients with persistent atrial fibrillation undergoing electrical cardioversion in Latvian Cardiology Centre and to compare to literature data. The study enrolled 150 patients with persistent atrial fibrillation undergoing electrical cardioversion. Anamnestic data were based on interview and medical records. 45 women and 105 men were enrolled. Average age in men group was 64 years (min.-33, max.-83), in women group – 67 years (min.-37, max.- 84). 51,4% out of enrolled patients were smokers or with smoking in anamnesis. The most common comorbidities were found to be arterial hypertension (98%), grade 1 in 29,1%, grade 2 in 66,2%, grade 3 in 2,6%, heart failure 90,7% and diabetes 17,2%. Old myocardial infarction is a bit less common (15,2%), metabolic syndrome was found in 11,9% , asthma in 7,9%, cerebral insults in 6,0% and sleep apnea in 3,9%. Thyroid gland diseases were rare comorbidities in this study. Hyperthyroidism was found in 3,3% and hypothyroidism in 6,0%. The prevalence of arterial hypertension and heart failure in this study was higher than in literature data. Frequency of arterial hypertension in this study was 98% and in literature prevalence varies from 50% to 70%, heart failure – 50% vs 30-40%. More common comorbidities in another paper were also cerebral insult (6% vs 5%) and myocardial infarction (15,2% vs 12%). Diabetes was a bit less common comorbidity in this study (11,9% vs 13-20%). The most common comorbidities in patients with persistent atrial fibrillation undergoing electrical cardioversion were arterial hypertension, heart failure, cerebral insult and myocardial infarction with a higher prevalence comparing to other studies. Only diabetes has shown less frequency in this study than in literature are mentioned.

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## **COMPARISON OF THE EFFICACY OF INTRA-ARTICULAR PLATELET-RICH PLASMA AND CORTICOSTEROIDS IN THE TREATMENT OF MODERATE KNEE OSTEOARTHRITIS**

**Introduction.** Osteoarthritis (OA) is the most prevalent type of arthritis, which significantly impacts patients mobility and quality of life. The present interventions including intra-articular corticosteroid (CS) injections showed the lack of beneficial long-term outcomes. Platelet-rich plasma (PRP) is an autologous blood product that has unique ability to promote tissue regeneration. PRP injections are widespread used by specialists in the treatment of knee osteoarthritis due to its high efficacy and safety.

**Aim, Material and Methods.** The aim of this study was to compare the efficacy and safety of intra-articular platelet-rich plasma and corticosteroids in the treatment of knee osteoarthritis. 30 patients, with symptomatic radiologically confirmed (II-III grade by Kellgren-Lawrence classification) knee osteoarthritis, were enrolled in a prospective randomized study. Exclusion criteria were any history of previous knee surgical procedures and use of nonsteroidal anti-inflammatory drugs during 10 days prior the injection. Two groups were created by random selection: patients in PRP group (n=15) received intra-articularly 8 cc of PRP, patients in CS group (n=15) received intra-articularly 1 cc of 40mg/mL of triamcinolone acetonide and 5 cc of 2% of lidocaine. The severity of pain and the function of the affected knee were evaluated by International Knee Documentation Committee (IKDC) scale, by Visual Analogue Scale (VAS) for pain and by Knee society score (KSS) after one week (W1), one month (M1), three months (M3) and six months (M6).

**Results.** Data of 30 patients with mean age 68±9 years were analyzed. There were no significant differences between the two groups across age, sex, Kellgren-Lawrence grade for osteoarthritis, or laterality. VAS initial values in both PRP and CS groups were equal (mean ± standard error [SE] 6±1) and improved at W1 identically (mean±SE, 3±2). However, a significant interaction between time and treatment was identified comparing the

VAS score of both groups. There was a statistically lower VAS score in the PRP group versus the CS group at M3 (mean±SE, 1±1 vs. 4±2, respectively,  $p<0.001$ ) as well as at M6 (mean±SE, 1±2 vs. 5±2, respectively,  $p<0.001$ ). A similar effect (the same primary outcomes and considerably different secondary outcomes) was observed evaluating IKDC score for comparison between PRP and CS groups at W1 (mean ± SE, 66±15 vs. 64±14, respectively,  $p<0.003$ ) and at final follow-up (mean±SE, 81±16 vs. 54±20, respectively,  $p<0.003$ ). In addition, linear contrasts identified a higher KSS score in the PRP group compared with the CS group at M6 follow-up (mean±SE, 90±14 vs. 72±15, respectively,  $p<0.006$ ). No complications were recorded in the CS group, mild synovitis was observed in 11 patients (73%) in PRP group after W1, however it absorbed spontaneously till M1.

**Conclusions.** Short-term results were similar of both intra-articular PRP and CS injections at W1. Nonetheless, PRP demonstrated a statistically significant improvement over CS at M3 and M6. Furthermore, complications of PRP injections were insignificant and self-limited.

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## COMPARISON OF THE SPO<sub>2</sub>/FIO<sub>2</sub> AND PAO<sub>2</sub>/FIO<sub>2</sub> RATIO AS DIAGNOSTIC TOOLS FOR ARDS

**Key words:** ARDS criteria, saturation, fraction of inspired oxygen

**Introduction.** Acute respiratory distress syndrome (ARDS) definition includes specific partial pressure of oxygen in arterial blood (PaO<sub>2</sub>). Arterial gas analysis is rarely performed outside ICU, so ARDS has tendency to be diagnosed late. Identifying other diagnostic parameters may improve outcome.

**Aim.** To find out if arterial oxygen saturation (SpO<sub>2</sub>) to fraction of inspired oxygen (FiO<sub>2</sub>) ratio can be used in place of PaO<sub>2</sub>/FiO<sub>2</sub> ratio.

**Materials and methods.** Retrospective multicenter study in Latvia. Exclusion criteria – NYHA class III–IV heart failure. PaO<sub>2</sub>, SpO<sub>2</sub>, FiO<sub>2</sub>, neutrophil, thrombocyte and C-reactive protein levels closest to time of diagnosis confirmation and on third day after confirmation were interpreted. Correlation between traditional PaO<sub>2</sub>/FiO<sub>2</sub> parameter and SpO<sub>2</sub>/FiO<sub>2</sub> was investigated.

**Results.** 25 clinical cases were included in further analysis. The correlation (r) between SpO<sub>2</sub>/FiO<sub>2</sub> and PaO<sub>2</sub>/FiO<sub>2</sub> was 0,79 ( $p<0,001$ ) on the day of diagnosis and 0,631 ( $p<0,05$ ) on the third day. Difference in SpO<sub>2</sub>/FiO<sub>2</sub> on third day after diagnosis confirmation between non-survivor (132,74 ±SD 31,18) and survivor group (168,85 ±SD 43,38;  $p<0,05$ ) was found, no correlation was found for PaO<sub>2</sub>/FiO<sub>2</sub> meanings.

**Conclusion.** SpO<sub>2</sub>/FiO<sub>2</sub> ratio can be used as diagnostic test in patients with ARDS.

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## COMPLIANCE OF MAMMOGRAPHY SCREENING

**Key words:** mammography screening; compliance

**Introduction.** Although mammography screening programs have been in existence in several countries since the 20th century, the world is still in a continuing broad discussion on the impact of mammography screening on women's health. The main benefit of mammography is the reduction of mortality from breast cancer. To achieve maximum effect, screening attendance in each participating country should be at least 75%.

**Aim.** To determine a mammography screening compliance level in the selected study group and to analyse the compliance affecting factors.

**Materials and methods.** A retrospective cohort study was carried out within a GP practice which included 100 patients who agreed to the selection criteria. The study group included women who born in 1942 till 1962, and had no history of malignant breast disease. In this study patient's mammography attendance data were used from the screening registry cases. Data about screening attendance and non-attendance reasons were collected from a telephone interview. At least once during the period from 01 January, 2010 till 31 December, 2014 screening attended approximately 62% of the study participants. Compliance level in screening performance in 2010 was 35%; 2012 - 49.5%; 2014 - 22.5%.

**Results.** From the telephone interview data: mammography attendance rates with the invitation letter, which was sent in 2014, could increase 1.5 times and reach 56.25%. In the first 6 months, after invitation letter was sent,

screening carried out 79.6% of cases. The highest screening visit was in the first 60 days after sending the letter. The main motivating factors for screening attendance were: care about health – in 58% of cases; found changes in breast structure during the BSE - 19%. Main reasons for non-attendance were: having confidence in the good health - 26% of cases; lack of time - 24%.

#### **Conclusion.**

Compliance performance of screening mammography is not at a satisfactory level. Increasing GP participation level in screening could improve mammography participation rates.

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## **CONGENITAL COMPLETE ATRIOVENTRICULAR BLOCK ETIOLOGY AND TREATMENT PRINCIPLES**

**Key words:** Pediatric Cardiology. Congenital complete atrioventricular block. Neonatal lupus

**Aim.** The primary objective was to identify the most common etiology for congenital (CAVB) and treatment principles.

**Materials and methods.** A retrospective analysis was done enrolling 13 patients diagnosed with complete atrioventricular block CAVB from December 2003 to 2016 at the Children's Clinical University Hospital in Riga, Latvia. Collected data included age at diagnosis, gender, maternal or newborn anti-Ro/La antibodies, structural heart disease, ventricular rhythm at birth, type and time of treatment, and outcome. Diagnosis was compared in two groups of patients- neonatal lupus patients and non-immune patients. Neonatal lupus patients were defined if maternal anti-Ro/La antibodies were found and non-immune patients were defined if anti-Ro/LA antibodies were absent. Patients with primary implantation of electrocardiostimulator were defined by an implantation at first admission to hospital and delayed implantation was defined by indications later in life.

**Results.** Out of 13 patients 38,5% (N=5) were boys and 61.5% (N=8) were girls. Maternal anti-Ro/La antibodies were found in 92,3 % (N=10) of cases and in 23.1% (N=3) of cases, maternal anti-Ro/La antibodies were absent. One (7,7%) patient had a structural heart disease- right atrial isomerism, atrial and ventricular septal defect. In 12 (92.3%) patients structural heart defects were absent. 11 (84,5%) patients (100% (N=10) neonatal lupus and 33,3% (N=1) non-immune congenital CAVB patients) were diagnosed prenatally with a mean age of  $24,82 \pm 6,9$  gestational weeks and postnatal 3 patients (15,4%) with a mean age of  $97 \pm 134,3$  months. Prenatally diagnosed patient mean ventricular rate at birth was  $62 \pm 11,6$  beats per minute. Of all patients with congenital CAVB 10 (76.9%) underwent implantation of electrocardiostimulator and 3 (23.1%) had no indications for pacing so far. Of patients that underwent the implantation surgery 6 (60%) had primary implantation of electrocardiostimulator with mean implantation in  $8,3 \pm 4$  days and 4 (40%) had delayed implantation with mean implantation in  $21,02 \pm 17,76$  month. One (7,7%) patient from the total died.

**Conclusions.** Neonatal lupus is the most common cause of congenital CAVB. Non- immune congenital CAVB was mostly diagnosed later in life, when compared to neonatal lupus patients. Due to the small number of patients there is insignificant data showing the difference between groups and time of electrocardiostimulator implantation.

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## **CONTRACEPTION METHOD CHOISE AMONG YOUTH IN LATVIA: THE IMPORTANCE OF CONTRACEPTIONS PRICE**

**Key words:** Contraception, youth, price

**Introduction.** There is no contraceptive method compensated in Latvia. World Health Organization has said that one of the reasons why contraception is not used is limited access to contraception, particularly among young people and poorer segments of populations.

**Aim.** The aim of the study was to evaluate which contraceptive method is mostly used by youth and to identify if contraception price influences the choice of contraceptive method.

**Materials and methods.** 188 respondents from Rīga Stradiņš University, University of Latvia, Rīga French lycee and some interest groups were included in research. A questionnaire was used to collect self-reported data

from respondents about their choice of contraceptive method and factors influencing it. All data was analysed using SPSS 22.0 and Excel 2010.

**Results.** Research included 188 respondents. 73 % (n=138) were women and 27 % (n=50) were men. The age of respondents was between 18 and 22 years. The mean age was 19 years. 89,4 % (n=168) of participants was sexually experienced. 35 % of respondents (n=66) have always used a contraception during a sexual activity, 4,8 % of respondents (n=9) have never used a contraception during a sexual activity. The most used contraceptive method was a condom (78 %, n= 147). 30 % of participants (n=58) marked a *coitus interruptus* as a birth control method they used. 17 % (n=31) used hormonal contraceptive pills and 10 % (n=19) used emergency contraception. The greatest importance (20 %) on choice of contraceptive method was answered to be a partners wish. 19 % of respondents said that the most important factor is doctors consultation. 7 % of participants did not use a contraception because of a wish of partner. Almost half of the participants (46,3 %, n=87) answered that the price of contraceptive method has influence on their choice. Meanwhile only 28,7 % (n= 54) said that contraceptive methods are not easy to access because of the price.

**Conclusion.** The results showed that the usage of contraception is not highly used among youth, because only 35 % had always used a contraceptive method during sexual intercourse. Although the price has not the greatest impact on contraceptive choice, almost half of participants admitted that the price is important when choosing a contraception and 28,7 % of respondents said that it is too expensive. This conclusion evokes a discussion why one of the least effective contraceptive method as *coitus interruptus* is used so often when we know that this method has no price.

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## CORRELATION BETWEEN GLUCOSE LEVEL AND ICU LOS

**Key words:** Glucose, LOS, ICU

**Introduction.** Stress hyperglycemia is common in critically ill patients and appears to be a marker of disease severity. Furthermore, both the admission as well as the mean glucose level during the hospital stay is strongly associated with patient outcomes.

**Aim.** Find out if it is the correlation between glucose level and patients sex, age, LOS (hospital and ICU), CRP, leu, RR, SpO<sub>2</sub>, HR, MAP, diuresis, creatinine.

**Materials and methods.** Retrospective study of 200 medical histories with diagnoses N<sub>00</sub>-N<sub>99</sub> and J<sub>00</sub>-J<sub>99</sub>, 122 of them were included in further analysis. Exclusion criteria were non-survivors and refusal of treatment. Patients were separated by glucose level in the blood in five groups: <4.4 mmol/l, 4.4-6.1 mmol/l, >6.1-7.9 mmol/l, >8-10 mmol/l and >10.0 mmol/l. Sex, age, LOS (hospital and ICU), CRP, leu, RR, SpO<sub>2</sub>, HR, MAP, diuresis, creatinine and glucose level were interpreted in admission, first, third and fifth day in ICU. Data analysis using SPSS and MS Excel programs.

**Results.** 122 clinical cases (79 males, 43 females) with diagnoses N<sub>00</sub>-N<sub>99</sub> – 47% and J<sub>00</sub>-J<sub>99</sub> – 53% were included in further analysis. Median age was 64.5 (SD 16.7) years. Median length of hospital stay was 14 (SD 12) days. Median length of ICU stay was 4 (SD 6) days. Independent- Samples Kruskal- Wallis test showed the correlation between glucose level and ICU LOS (p=0.018), diuresis (p=0.045) in first day; MAP (p=0.031) in admission day; age (p=0.046) in third day; diuresis (p=0.030) in fifth day. No other correlation was found.

**Conclusion.** Glucose level can't be a predictor of LOS in patients admitted to an ICU in all days. There is no correlation between glucose level and metabolic, cardiovascular and immune effects in all days. Further analysis is required.

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## CURRENT USE OF ANTIBACTERIAL AGENTS MAY ACT AS A RISK FACTOR FOR GUT COLONIZATION WITH ESBL PRODUCING *ENTEROBACTERIACEAE* IN ULCERATIVE COLITIS PATIENTS

**Background.** Several risk factors for gut colonization with ESBL producing *Enterobacteriaceae* have been studied in the general population. The described risk factors include advanced patient age, severe comorbid conditions and surgical treatment, use of immunosuppressive medication, previous and prolonged hospital stay, previous antibiotic use and travel to other countries. The aim of the study was to determine whether these risk factors for gut colonization with ESBL producing *Enterobacteriaceae* remain true also in ulcerative colitis patient population.

**Methods.** Rectal swabs were collected from all consecutive patients hospitalized in Riga East Clinical University Hospital and Pauls Stradins Clinical University Hospital 2012 – 2015 with clinically, endoscopically and histologically confirmed ulcerative colitis (UC) diagnosis. *Enterobacteriaceae* were cultured and analyzed for ESBL presence according to EUCAST guidelines. Demographic and IBD related data was collected, patients were interviewed regarding the risk factors for gut colonization with ESBL producing *Enterobacteriaceae* in the past year.

**Results.** A total of 92 patients with confirmed UC diagnosis were included in the study. We found that 11 (12%) of the UC patients were colonized with ESBL producing *Enterobacteriaceae*. We found out that 60% (n=3) of the patients who were currently using antibiotics were colonized with ESBL producing *Enterobacteriaceae*, whereas 40% (n=2) of the current antibiotic users were not colonized with ESBL producing *Enterobacteriaceae* (p=0,001). Such differences were not observed in the past antibiotic use trends. Also no statistically significant differences were found between patients with and without gut colonization with ESBL producing *Enterobacteriaceae* regarding other risk factors, such as advanced age, severe comorbid conditions and surgical treatment, use of immunosuppressive medication, previous and prolonged hospital stay and travel to other countries.

### Conclusions

Current antibacterial medication use might be a risk factor for gut colonization with ESBL producing *Enterobacteriaceae* in UC patients. Different acquisition risk factors may apply for gut colonization with ESBL producing *Enterobacteriaceae* in UC patients comparing to general patient population.

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## DATA ANALYSES FROM LABORS WITH THE DOULA PARTICIPATION IN RIGA MATERNITY HOSPITAL BROUGHT BY 2014, 2015 AND 2016 YEARS

**Key words:** Doula, labors, pregnant women, Cesarean section

**Introduction:** Recently it's becoming more popular among women in the European countries to give birth with doula. In most cases doula is a woman who have no medical education that supports the other woman during pregnancy and labor. Primarily, doulas work includes informing and explaining to women about parturition and supporting women physically and emotionally. In surveys made by doulas good pregnancy results and higher level of women satisfaction have been discovered. However, despite the popularity of this movement, professional medical researches in Latvia on this topic are still not existent.

**Aim.** By analyzing data, find out profile of women who choose services provided by doula and whether it has a positive effect on pregnancy outcomes.

**Materials and methods.** The retrospective study included an evaluation of the medical history of pregnant women that was performed in three-year period between January 2014 and December 2016 in Riga Maternity hospital (RMh). Overall 18129 labors were observed, out of which 125 labors with doulas were chosen. Data was analysed by MS Excel and SPSS. Ethics committee permission for this study was received.

**Results.** From 125 labors analysed - 43 (34,4%) were in 2014, 39 (31,2%) in 2015 and 43 (34,4%) in 2016. Only 0,7% labors in RMh are given with the help of doulas. Doula services were chosen by women with the average age of 31,5. 63 (50,4%) of women were Latvians, 95 (76%) women were married, 97 (77,6%) women had a higher education and 109 (87,2%) women had an official job. Most of doulas services were provided to women who had their first labor - 62 (49,6%) cases. In 33 (26,4%) cases with doulas service there were prolonged

pregnancies. In 29 (23,2%) cases women had complications such as dysfunction of the uterus. Comparing these data with official statistics, we found that that 25,6% of labors were brought by Cesarean section in RMh, in contrast to labors with doula service, where only 10,4%, were brought by Cesarean section, which is 2,5 times less.

**Conclusion.** Services provided by doula are preferred by women with higher education, stable income and relationship status in their first labour. Giving birth with doula has potential to reduce the number of caesareans. It is necessary to continue research covering the situation throughout Latvia.

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## **DAUGAVPILS UNIVERSITY STUDENTS' TRAINING IN LABOUR PROTECTION DURING PRACTICE IN THE HEALTH AND AND SOCIAL CARE OFFICES**

**Key words:** *Students, occupational health and safety, training, practice, health and social care*

Nowadays, many scientific studies have focused search for causes and consequences, why the young employees casually refer to preventive measures at places of work and as a result accidents often occur.

In 2004 Salminen has already pointed out that the young employees (15 – 24 years) have much more injuries in their workplace than older employees. Tucker and Turner (2011) concluded that one of the main causes could be that far too little and with incorrect methods is discussed with young employees for their safety in the workplace. The research of Laberge M. (2014) reveals, that acquired in the theoretical training is not always perceived and consolidated in a practice.

The question arises, what is the quality and results of Daugavpils University students' training in labour protection, who had practice in the institutions of health and social care.

**The aim** of the study was to assess the quality of the training of employees in the health and social care institutions.

**Methods:** theoretical - an analysis of the regulatory documents; empirical – surveys and interviews of heads of the health and social care institutions (employers), students of Daugavpils University (employees) who are studying in the professional bachelor study program “Physiotherapy”.

**Results:** Results show that in enterprises with number of employees more than 51, student's training in labour protection is done more frequently compared with companies containing a smaller number of employees. Students practice assessment shows that knowledge and skills acquired in Daugavpils University regarding labour protection is also strengthened in practice.

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## **DELIRIUM AFTER CARDIAC SURGERY INCIDENCE AND RISK FACTORS**

**Introduction.** Post-operative delirium (POD) is serious complication in older people because delirium episode can cause a range of adverse events including serious postoperative complications.

**The aim of our study** – to identify reasons of cognitive dysfunction in patients after cardiac surgery.

**Materials and Methods.** The research was carried out in Pauls Stradins Clinical University Hospital in Cardiac surgery anaesthesia and intensive care unit (ICU). Research included all patients for whom the cardiac surgery was planned and performed during time period from 4 January to 1 February 2016. There was created research protocol where in the course of research pre-operative indicators, data fixed during surgery, and post-operative indicators were recorded and analysed.

Correlation of two independent groups was considered to be statistically significant if the p-value in the results was less than 0,05.

**Results.** The study involved 47 patients after heart surgery. After heart surgery POD was developed in four patients (8,5%). For patients with POD found in postoperative period ICU stay was longer -  $3,5 \pm 1,29$  days, while for a control group  $1,58 \pm 0,9$  days ( $p=0,0049$ ). For patients with POD found the hospital stay was longer -  $18,25 \pm 2,25$  days, while for a control group  $13,41 \pm 4$  days ( $p=0,006$ ).

By analysing impact of pre-operative indicators and adjacent diseases on cognitive function after cardiac surgery it was concluded that strokes and history of sleep disorders have statistically credible impact on development of POD.

By analysing post-operative outcomes in patients after cardiac surgeries it was concluded that the following factors have statistically credible impact on development POD: duration of artificial lung ventilation and re-surgery.

**Conclusion.** POD was found for patients after heart surgery during the postoperative period. For patients with POD found after heart surgery ICU stay was longer than for patients who haven't got POD.

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## DELIRIUM ASSESSMENT IN THE ICU

**Key words:** Delirium, screening, ICDSC

**Introduction.** Delirium defined as a disturbance of consciousness with inattention accompanied by a change in cognition or perceptual disturbance that develops over a short period of time (hours to days) and fluctuates over time. It is independently associated with significant increases in the LOS, inpatient mortality, long term mortality, cognitive decline, requirement for institutional care, functional impairment, healthcare costs, distress to the patient and family distress.

**Aim.** Find out if it is possible to apply description of patient to assessment scale and compare clinical diagnosis with scale result.

**Materials and methods.** Retrospective study of 130 medical histories with diagnosis delirium, 101 of them were included in further analysis. Intensive Care Delirium Screening Checklist (ICDSC) was used to assess state of patients. Data analysis using SPSS program.

**Results.** 101 clinical cases (79 males, 22 females) were included in further analysis. Median age was 50 (23-89) years. Median LOS was 8 (1-41) days. 89% of patients confirmed alcohol use and 72% were unemployed. Most common hospitalization causes were poisoning (39,6%; 95% CI= 30,7-49,5%), injury (23,8%; 95% CI=14,9-31,7%) and diseases of digestive system (15,8%; 95% CI=8,9-22,8%). According to ICDSC only 10,9% (95% CI=5,9-17,8%) had delirium, 76,2% (95% CI=67,3-84,2%) had subsyndromal delirium. 12,9% (95% CI=6,9-19,8%) were unable to assess by ICDSC with any of criteria.

**Conclusion.** Checklist provides more accurate diagnosis of delirium which affects further therapy tactics. It is possible to evaluate patient's state in progress by certain symptom. Checklist admits to assess patient in systemic way for better cooperation between medical professionals.

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## DEPRESSION AND ANXIETY AMONG STUDENTS AND NOT-STUDYING YOUNG PEOPLE

**Key words:** Depression, anxiety, students, young people

**Introduction:** Anxiety is the most common mental health diagnosis in students' population. Depression is characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness and poor concentration. Depression is a common mental disorder worldwide, with an estimated 350 million people affected (WHO, 2016). Depressive disorders reach its peak in people who are in their twenties to early thirties.

The aim of the study was to determine existence of depression and anxiety among students and compare it to the people in the same age who are not studying.

**Methods and materials:** In the study was used self-reported questionnaire. Depression was assessed by the Patient Health Questionnaire PHQ 9, but anxiety by the Taylor Manifest Anxiety Scale (Taylor, 1953). Statistical data was processed in MS Excel and IBM SPSS Statistics.

**Results:** 231 respondents took part in this study. 67,1% (n=155) of them were women and 32,9% (n=76) men. Mean age was 25,3 years (SD=3,5). Depressive symptoms were observed in 58% respondents. High level of anxiety were in 51,9% respondents, but 45,5% of respondents - moderate anxiety. 43,3% (n=100) of respondents were students, 56,7% (n=131) were non-students, but 75% were employees. 25,5% of students were working too.

There was no statistical significant correlation between studying and prevalence of depression or anxiety ( $p > 0,05$ ). Employees had a statistical significant correlation with a prevalence and severity of depression. Respondents who had an employment, they had significantly rarer depression symptoms than not-working young people ( $p < 0,05$ ). Students who were working had no statistical significant difference of prevalence of depression or anxiety compared to not-working students.

**Conclusion:** There was no significant difference between students and non-students. In both groups anxiety and depression prevalence were high.

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## DIAGNOSTICS OF PULMONARY EMBOLISM ON COMPUTED TOMOGRAPHY ANGIOGRAPH

**Keywords:** *Pulmonary embolism, computed tomography angiography.*

**Introduction.** Pulmonary embolism (PE) is a common and potentially lethal condition. Computed tomography angiography (CTA) remains the first imaging study that helps to diagnose this emergent condition.

**Aim.** To find out the most common localization of blood clots in lung arteries in patients, who were diagnosed with PE with the help of CTA.

**Materials and methods.** This research is a retrospective data analysis from medical case reports from the archive of Riga East University Hospital. Study included 160 patients who were hospitalized in period of 01.01.2014 – 31.12.2015 (61 men and 99 women, in age 21 to 96, average age – 70,4 years). Research included patients who underwent CTA because of suspected PE. CTA findings were analyzed in all cases.

**Results.** Our study found massive bilateral pulmonary embolism in 78,8% (126) of cases, right-sided unilateral pulmonary embolism in 18,8% (30) of cases and left-sided unilateral pulmonary embolism in 2,5% (4) of cases. For almost all patients (93,1%) multifocal obstruction was discovered in different pulmonary arterial tree levels. Frequency of embolism in bifurcation of pulmonary trunk was found in 7,5% (12) of all cases, in main pulmonary arteries (MPA) in 48,1% (77) of all cases. In lobar pulmonary arteries embolism was found in 63,8% (102) of all cases, in segmental pulmonary arteries lodging of an embolus was observed in 63,1% (101) of all examinations, but in 17% (27) of all cases obstruction was in sub-segmental pulmonary arteries. In 74,8% (119) of all cases radiologist did not report about condition of sub-segmental pulmonary arteries.

**Conclusions.** 1. In most of the cases (78,8%) - patients had massive bilateral pulmonary embolism. 2. It is very important to carefully evaluate all pulmonary arterial tree levels, in order to discover all blood clots. In 93,1% occasions blood clots obturated lung arteries and affected several pulmonary arterial tree levels.

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## DIAGNOSTICS OF PULMONARY EMBOLISM ON COMPUTED TOMOGRAPHY ANGIOGRAPHY, ECHOCARDIOGRAPHY AND PLAIN CHEST RADIOGRAPHY

**Keywords:** *Pulmonary embolism, echocardiography, plain chest radiography*

**Introduction.** Pulmonary embolism (PE) is a common and potentially lethal condition. Correctly chosen diagnostic method can help to diagnose the emergent condition and to evaluate the severity of complications of PE. Computed tomography angiography (CTA) remains the first imaging study; however, other visual diagnostics methods such as echocardiography and plain chest radiography can also be used.

**Aim.** Comparison of diagnostic effectiveness of echocardiography and plain chest radiography for diagnosing PE and its complications, comparing with CTA.

**Materials and methods.** This research is a retrospective data analysis from medical case reports from the archive of Riga East University Hospital. Study included 160 patients who were hospitalized in period of 01.01.2014 – 31.12.2015 (61 men and 99 women, in age 21 to 96, average age – 70,4 years). Research included patients who underwent CTA because of suspected PE. CTA findings were analyzed in all cases, echocardiography or conventional radiography findings were analyzed if they were done.

**Results.** In 76 (47,5%) tested cases, when chest conventional radiography was conducted, 52 (88,4%) occasions showed no pathology. In remaining 21 (27,6%) patients, the chest radiography showed some indirect findings – prominent central pulmonary artery, pleural effusion, atelectasis or parenchymal density. Echocardiography was performed on 46 (28,9%) patients and was not used on 113 (71,1%) patients. From 46 examinations 23 (50%) cases did not display echocardiographic features of pulmonary embolus, but remaining 23 (50%) showed some changes which would lead to conclusions about pulmonary embolism.

**Conclusions.** As diagnostic tools, plain chest radiology and echocardiography was not highly sensitive and too specific to prove pulmonary embolism - it is computed more accurately by tomography angiography which still remains the first imaging study.

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## **DIFFERENTIAL DIAGNOSIS IN PATIENT WITH EARLY ONSET DEMENTIA AND EXTRAPYRAMIDAL SYSTEM DISORDERS: A CASE REPORT**

**Key words:** dementia, Alzheimer's disease, Lewy Body disease

**Introduction:** Dementia is a progressive, chronic, and incurable neurodegenerative disorder that results in suffering and gradually loss of patients' memory, language, behavior, and executive functions. The prevalence of dementia increases with age from roughly 1% in persons from 60 to 65 years old to approximately 40% in persons at 85 years old (Jennifer M. Kapo et. al., 2011). Multiple types of dementia have been defined, but Alzheimer's disease (AD) is the most common type, followed by vascular dementia and Lewy Body disease.

**Case report description:** 34 years old man for several years suffers from sleep disorder of unknown origin. Later started movement disorders, uncontrolled arms, legs jerking, which was followed by memory impairment, which in one year period rapidly progressed. Patient was admitted to Pauls Stradins Clinical University Hospital with objectively expressed cognitive defects (MOCA score -12 points). A rigid gait, *marche à petits pas*, myoclonic jerks, ataxia in both legs and positive Romberg's sign was also of notice. Magnetic resonance imaging of brain revealed diffuse cortical and hippocampal atrophy that points to neurodegenerative disorder and AD is quite possible taking into consideration the predominant temporal lobe atrophy. AD specific laboratory examination showed a slightly reduced B42 amyloid level, but the Tau-protein was within normal range, which generally is not specific to AD and, thus, the diagnosis of AD couldn't be based on biomarkers. The patient's clinical presentation could comply with Dementia with Lewy body and Parkinson's disease dementia but with a high probability any of these diagnoses cannot be held. Huntington's chorea and Wilson's disease were excluded through genetic testing. Laboratory testing also ruled out Creutzfeldt-Jakob disease, neuromuscular disease and autoimmune encephalitis. After the council, the diagnosis of early sporadic Alzheimer's dementia had been established according to NINDCA-ARDA criteria. Patient did not show any improvement from anti-parkinsonian therapy, but myoclonous diminished significantly with Clonazepam.

**Conclusion:** In this case, patient should be followed-up. In the presence of dementia, clinical overlap poses significant challenges in differential diagnosis and, brain biopsy is essential to obtain a definitive diagnosis.

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## **DIPHTHERIA VACCINATION COVERAGE AMONG ADULTS IN GENERAL PRACTICE**

**Key words:** Diphtheria vaccination coverage (DVC), adult vaccination, General Practice

**Introduction.** Diphtheria is a vaccine preventable infectious disease with serious potential consequences up to disability and death. DVC among adults in Latvia (56%; 2015) doesn't reach recommended level – 80%.

**Aim.** To analyze DVC among adults in General Practice (GP) and identify reasons for avoiding vaccination.

**Materials and methods.** In our longitudinal research, medical documentation of 620 adult patients in one GP practice was analyzed. Patients with no revaccination filled in a questionnaire, containing questions regarding participant's gender, age, education level and reasons for avoiding vaccination. Data was statistically processed in SPSS Statistics 22.0.

**Results.** Medical documentation of 620 adult patients was analyzed. 44% (n=271) of adult patients haven't received diphtheria revaccination. The results of questionnaire regarding patients' revaccination failure were as follows: respondents in age group of 25 to 40 (A) (81.1%; p=0.001) and people with high school education (B) level (89.7%; p=0.013) received vaccines during their childhood more frequently than people older than 65 years (69.2%; p=0.001) and elementary school level educated participants (54.5%; p=0.013). The main reasons for vaccination avoidance among elementary education level responders were high price (33.3%; p=0.003) and unavailability of vaccination facilities among B responders (47.6%; p=0.003). People with professional education level claimed to have received little information regarding effectiveness of vaccination procedure (57.9%; p=0.003). Respondents in A group (69.8%; p=0.034) and people who do not have children of their own (73.2%; p=0.01) were unfamiliar with manifestation of diphtheria infection. The respondents with secondary professional school education level had no information regarding free availability of diphtheria vaccine (61.9%; p=0.01). Male patients were more uninformed regarding revaccination possibilities than female patients (65.2%; p=0.024). The responders group A lacked knowledge regarding tetanus transmission route (52.8%; p=0.008), but it was well known fact to the respondents with children (69.5%; p=0.037).

**Conclusions.** DVC among adults in GP doesn't reach the recommended population protective level. Communication strategies focused on education of patients may result increase of vaccination coverage.

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## **DO RA DISEASE ACTIVITY, SEROPOSITIVITY AND SEVERITY PREDICT CEREBROVASCULAR EVENTS?**

**Background.** In line with the EULAR 2015/2016 update for cerebrovascular disease risk management in patients with rheumatoid arthritis, disease duration does not seem independently to affect cerebrovascular risk. However, disease activity and novel risk factors including presence of carotid plaques and seropositivity do contribute to the risk of cerebrovascular events.

**Objectives.** To detect cerebrovascular events and estimate intima-media thickness (IMT) and plaque formation in RA patients with relation to age, sex, RA severity, seropositivity and smoking history.

**Method.** A case controlled retrospective study was performed in 105 RA patients, of which 81% were female, aged 21-84. Cases were 10 patients who developed stroke after diagnosis of RA. The case and control groups were matched by sex and disease duration. RA activity and severity were determined by DAS28 scores and HAQ questionnaires. X-rays were performed of the small joints to detect erosion and ultrasonography for synovitis in small joints. Information was gathered about joint replacement surgery status as a cause of severe joint destruction. Traditional and disease-specific risk factors for stroke were collected. The AIP (atherogenic index of plasma (log<sub>10</sub> TG/HDLC) was calculated. Carotid artery hemodynamic parameters, IMT and plaques were assessed. Statistical analysis was performed by using IBM SPSS21.0

**Results.** Patients with stroke were mostly females, 81%, with a mean age of 66.30 (± 9,673), but mean disease duration of 6.135 (± 8,8487) years. Stroke patients were older than control (p=0.046). About 50% of the stroke patients were smokers. Neither smoking status nor gender were statistically significantly associated with stroke cases p>0.05. Disease duration did not differ between case and control groups (p=0.644) as well as gender (p=0.05). Synovitis was observed in 95.2% of the case group. Although seropositivity did not differ between case and control groups p=0.609, it was found in 80% of stroke cases. We examined small joints for erosion detection and found 46.7% of stroke patients suffering from joint erosive disease, (p=1,000), but 9.1% of stroke patients needed joint replacement surgery (p=1,000). Primary arterial hypertension was detected in 100% of patients with stroke p=0.005. Atherosclerotic plaques in brachiocephalic vessels were found in 90% of cases, (p=0.40), statistically significantly differing between case and control groups.

**Conclusion.** In our case-control study seropositivity, disease duration and severity, erosions and joint replacement surgery were not associated with the development of cerebrovascular events in patients with RA, despite that non-fatal stroke was observed in older individuals being positively associated with systolic arterial hypertension and non-stenosing arterial atherosclerotic plaques, protruding lumen less than 50%.

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## **Dozēta soļošana kā fiziskās rekreācijas līdzeklis ķermeņa kompozīcijas un veselības rādītāju uzlabošanā, tās emocionāli-atjaunojošais efekts**

Sēdošs un mazaktīvs dzīvesveids ir viens no faktoriem, kura rezultātā ik gadu pasaulē mirst apmēram 5,5 milj. cilvēku. Daudzās valstīs liels skaits iedzīvotāju nerasniedz minimāli nepieciešamo fiziskās aktivitātes līmeni, ko rekomendē (PVO) (Lee, I-M. et al, 2012). Soļošana ir pieejams fiziskās aktivitātes veids, kas neprasa lielu fizisko slodzi, liekus tērpiņus un ir pieejams jebkuram sabiedrības lokam. Neseni pētījumi rāda, ka pastāv sakarība starp soļošanu un mirstības samazināšanos, 19-30% atkarībā no soļošanas regularitātes un ilguma (British Medical Association, 2012).

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## **EATING HABITS AMONG PREGNANT WOMEN IN LATVIA**

**Key words:** Nutrition, pregnancy

**Introduction.** In 2016 Latvian recommendations on healthy nutrition during preconception period, pregnancy and lactation were published. The aim of these recommendations is to reduce the rates of non-communicable diseases by improving the lifestyle of women in reproductive age and by educating healthcare professionals about the principles of healthy nutrition.

**Aim.** To evaluate eating habits among pregnant women in Latvia.

**Methods.** A descriptive cross-sectional study of 110 pregnant women was carried out in Riga Maternity Hospital. Statistical analysis was performed using IBM SPSS Statistics 24.0 software.

**Results.** For the majority of respondents 64,7% whole grains made the biggest part of consumed carbohydrates. Only 6,4% of pregnant women ate fresh fruit and vegetables 5 or more times a day. 89% of participants preferred seasonal products and 81,7% - local products. 20,9% of women marked processed meat products as one of the most frequently consumed type of meat, 58,7% - used liver products in their diet. Only 13,8% of respondents ate fish 2 times per week. For 23,5% of women frying in oil was the most often used cooking method. 49,1% of respondents drank sweetened beverages. 41,7% of interviewed women consumed products with artificial sweeteners, but 25,9% - did not know if they did. 56,5% of pregnant women tried to reduce salt consume in their diet, 36,4% - used iodized salt. 73,8% of pregnant women did not drink enough water and 22,9% - consumed a bigger amount of caffeine than allowed. 17,4% of study participants used non-pasteurized dairy products, 21,1% - ate raw or dried meat and fish, 5,5% - admitted drinking alcohol during pregnancy.

**Conclusion.** Although the majority of respondents avoided risky or unhealthy products, some women should be advised to choose healthier alternatives. Educational tools, based on Latvian recommendations on healthy nutrition during preconception period, pregnancy and lactation should be developed.

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## **EFFECT OF PATIENT'S WEIGHT, BODY MASS INDEX AND POSITION ON THE DIAMETER OF THE RIGHT INTERNAL JUGULAR VEIN**

**Introduction.** Right internal jugular vein (RIJV) is the most common choice for obtaining central venous access. Complications during cannulation can arise, but their incidence is less if puncture of the vein succeeds on first attempt and largeness of the diameter of RIJV is significant for that. Several methods are known to obtain better filling of central veins and accordingly expand their diameter, though not all of them are studied in patients undergoing general anaesthesia (GA). Weight and body mass index (BMI) also might affect the diameter.

**Aim.** The aim was to evaluate how BMI correlates with the diameter of RIJV before and after induction of GA, and specify which of already known manoeuvres for cannulation of RIJV provides the largest diameter of it during GA.

**Materials and Methods.** We conducted prospective observational study, 30 patients (18 female, 12 male) undergoing GA were enrolled. All patients were over 18 years ( $56.5 \pm 16.6$ ), BMI  $28.1 \pm 4.9$  kg/m<sup>2</sup>. We visualised RIJV at level of cricoid cartilage with high-resolution ultrasound using linear probe and minimal pressure on the neck. We measured the diameter ( $0.84 \pm 0.32$ cm) and area ( $1.03 \pm 0.64$ cm<sup>2</sup>) of the vein before induction of GA and during following manoeuvres after GA: head in neutral position (P1), head rotation 30° to the left (P2), elevation of patient's head using 5cm high cushion (P3), using pressure on the contralateral jugular vein (P4) and using PEEP 5cmH<sub>2</sub>O (P5).

**Results.** There was a correlation among BMI and the diameter of RIJV ( $t=2.79$ ,  $df=28$ ,  $p=0.009$ ; CI 0.09-0.69), and the area of RIJV ( $t=2.55$ ,  $df=28$ ,  $p=0.017$ ; CI 0.13-0.71). There was no difference in the area of RIJV before and after GA in P1 ( $1.22 \pm 0.82$ cm<sup>2</sup>). After GA the area of RIJV in P5 is significantly larger than in P4 ( $1.29 \pm 0.91$ cm<sup>2</sup> vs.  $0.98 \pm 0.72$ cm<sup>2</sup>; mean difference  $0.31$ cm<sup>2</sup> (CI 0.03-0.59);  $p=0.02$ ). The area of the vein was larger in P5 than before induction of GA (mean difference  $0.25$ cm<sup>2</sup> (CI  $-0.03$ -0.54);  $p=0.10$ ). None of the manoeuvres affected anteroposterior (AP) diameter of RIJV predictably.

**Conclusions.** Patient's weight and BMI predictably correlates with the diameter of RIJV- patient with a higher BMI has a larger diameter of the vein. In patients under GA the best manoeuvre of positioning for RIJV cannulation is P5, whereas P4 tends to reduce its area. The AP diameter of RIJV was not affected by positioning.

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## EFFICIENCY OF THE TRUST AND TRACK PERIOPERATIVE BLOOD TRANSFUSION PREDICTING SCALE IN PATIENTS UNDERGOING OPEN HEART SURGERY

**Introduction.** The main task of anesthesiologist is to maintain patients homeostasis in perioperative period. Patient evaluation and risks assessment is main tool of physician to predict and avoid serious complications associated with allogenic blood transfusion.

**Aim.** The aim is to evaluate predictive strength of TRUST and TRACK scales in patients undergoing elective open heart surgery.

**Materials and methods.** Medical history data of 172 adult patients undergoing elective open heart surgery in Paula Stradin's Clinical University Hospital were enrolled into a retrospective study. Exclusion criteria: cardiopulmonary bypass time >120 minutes; reoperation; thrombocytopenia and/or coagulopathy; off-pump cardiac surgery. Preoperative data were collected: Age, gender, body weight, haemoglobin (Hb)g/dl and haematocrit (Ht)% level, type of surgery, creatinin level. For each patient TRUST and TRACK score was calculated. Descriptive statistics for analysis of baseline demographics and clinical data were used. We evaluated the sensitivity and specificity of both scales to predict allogenic blood transfusions by using receiver operating characteristic (ROC) curve analysis. We defined  $P < 0.05$  as statistically significant. As an outcome allogenic blood transfusions during the perioperative period, the length of stay in ICU and hospital were determined.

**Results.** 47 patients were excluded. Of the 125 (females 68) remaining patients 54(43.2%) had aortocoronary bypass grafting, 47(37.6%) valve replacement, 11(8.8%) combined and 13 (10.4%) other type of surgery. Totally 30 patients (24%) received haemotransfusions, presenting preoperatively older age ( $p = 0.005$ ), lower body weight, Hb, Ht levels ( $p < 0.001$ ), lower red blood cell ( $p=0.001$ ) and platelet count ( $p = 0.016$ ). Age <67 years (AUC = 0.7;  $p=0.01$ ), body weight <75 kg (AUC = 0.8;  $p < 0.001$ ), Hb < 133.5 g/dL (AUC = 0.8;  $p < 0.001$ ) and female sex (AUC = 0.7;  $p < 0.001$ ) were independently associated with postoperative haemotransfusions. Creatinin showed AUC = 0.56 without reaching statistical significance ( $p=0.3$ ) in predicting haemotransfusions.

Maximal TRUST score reached was 6 out of 8. The highest rate of hemotransfusions was detected in patients with 4 and 5 TRUST score points, (24/14) 56% and (7/5) 71% received allogenic blood transfusions, respectively.

Maximal TRACK score reached was 24 out of 32. The highest rate of hemotransfusion was detected in patients with 20-24 TRACK score points, (4/4) 100% received allogenic blood transfusions.

The transfusion rate of red blood cells (RBC) correlated with TRUST and TRACK score rate,  $r=0.446$ ,  $p<0.001$  and  $r=0.376$ ,  $p<0,001$  respectively. Higher TRUST score were not associated with longer stay in ICU  $r = 0.17$

p>0.1, but associated with longer hospital stay  $r=0.182$   $p<0.05$ . In its turn TRACK score associated with both, longer ICU and hospital stay,  $r=0.189$ ,  $p<0.05$  and  $r=0.319$ ,  $p<0.001$  respectively.

**Conclusion.** Both predictive scores could be a helpful tool in assessment of elective open heart surgery patients. Age, body weight and preoperative Hb levels may be the most informative values.

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## ENDOVASCULAR EMBOLIZATION IN PATIENTS WITH MASSIVE LARGE INTESTINE BLEEDING, EFFICIENCY, COMPLICATIONS AND ITS MANAGEMENT. 5 YEARS DATA FROM SINGLE CENTER EXPERIENCE

**Key words:** LGIB, digital subtraction angiography (DSA), endovascular embolization (EVE)

**Introduction:** Massive lower gastrointestinal bleeding (LGIB) usually leads to hospital admission with invasive diagnostic evaluations (Strate 2016). It is important for the interventional radiologist to be well versed in the endovascular therapeutic options of LGIB (Navuluri 2012).

**Aim:** To find out clinical and laboratory results after EVE of LGIB and its complications in Rīga East University Hospital, Interventional radiology department. Verify treatment technique and complications linked to embolization material. Identify frequency of surgical treatment application of complications.

**Materials and methods:** 21 patients, retrospective study. Patients had 2 following criteria - massive LGIB and DSA with or without EVE. EVE technique, Hgb levels before and after treatment, complications, treatment of complications were assessed. Allocation to 4 groups by EVE technique – coils, glue, microspheres, combine material. Data analysis: SPSS.

**Results:** 16 patients (76,2%) had EVE. Median Hgb rise with EVE - 3,39 g/L. Median Hgb rise without EVE - 1,60 g/L. Role of EVE is on the border of significance ( $p=0,050$ ), EVE efficacy can be inferred clinically. EVE by coils  $n=4$  (25%), showed no complications; Glue  $n=2$  (12,5%), had 100% complications; Microspheres  $n=3$  (18,75%),  $n=2$  (66,7%) had complications; Combine  $n=7$  (43,75%),  $n=2$  (28,6%) had complications. There is no statistically significant dependence between concrete EVE and summoned complication ( $p=0,070$ ). Mortality  $n=1$  (16,7%). Complication had  $n=6$  (37,5%),  $n=2$  (33,3%) had surgical treatment. There is no statistically significant dependence between EVE complications and surgical treatment ( $p=0,071$ ).

**Conclusion:** EVE is effective treatment for patients with massive LGIB with clinical efficacy and increase of Hgb level. It shows tendency of lower complication rate for treatment technique using coils, without statistical significance.

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## EPIDURAL ANALGESIA COMPARED TO FEMORAL NERVE BLOCKADE AFTER TOTAL KNEE JOINT REPLACEMENT.

**Background.** Total knee joint replacement (TKJR) is associated with significant postoperative pain.

Both femoral nerve blockade (FNB) and epidural analgesia (EA) have been described for postoperative pain control. The goal was to compare safety and efficiency between techniques after total knee joint replacement surgery.

**Methods.** A retrospective analysis was done enrolling 57 patients undergoing TKJR surgery from 2015 to 2017 January at the Orto Clinic, Rīga, Latvia. Two groups of patients were compared – EA group ( $n = 32$ ) and FNB group ( $n = 25$ ). EA or FNB was administered each 8 hours or when the patient complained about the pain. For EA solution of Marcaine 0.25% - 20 ml and Morphine 2 mg was used in a dose from 5 to 10 ml. For FNB solution of Marcaine 0.25% - 20 ml was administered. Pain intensity assessed by Visual Analogue Scale (VAS) was analysed as a primary outcome. Secondary outcomes included incidence of complications such as

hypotension, nausea and vomiting, dizziness, itching, head and back pain. Moreover, motor block and urinary retention was secondary reported outcome parameters as well.

**Results.** Median age differed between the analysed groups, in FNB group (n = 25) it was  $66.20 \pm 10.41$  in EA (n = 32)  $59.16 \pm 10$  years, respectively, MD 0.7; 95% CL 0.15-1.24; P = 0.012. Median weight in FNB was  $91.16 \text{ kg} \pm 14.56$  in EA group  $86.44 \text{ kg} \pm 19.69$ . Of 36 women- 24 (66.7%) have EA (p=0.034). Other demographic parameters were similar between both groups. Pain intensity by VAS score was similar in both groups at the rest position 0-12h and 12-24 h after surgery (p = 0.12; p = 0.1). In contrast at the movement, VAS score was higher 12-24 h after surgery in EA group 4 vs 3, p = 0.049. There was not difference in association with higher risk of postoperative nausea and vomiting between both groups. Hypotension (SBP < 20% from MAP) occurred more frequently among patients who received EA 8 (25 %) vs. 0 (0%) FNB group (MD 0.51 95% CL 0.15-0.87; p = 0.007). Although, higher incidence of head and back pain was found in EA group (p = 0.03; p = 0.046), correlation between head pain and hypotension was not detected. Dizziness was more frequently observed in EA group compared to FNB group, respectively, 13 patients (40.6%) vs. 1 (4%), p = 0.002. Moreover, aslo pruritis was significantly more often seen in EA group 6 vs 0, p = 0.03. Motor block, urinary retention, failure of catheter insertion were constant in both groups.

**Conclusions.** FNB and EA is equally effective analgesia techniques for postoperative pain management after TKJR. In comparison to EA, FNB is associated with significant lower complications rates. Such aspects as age, gender and patients weight may affect the selection for best postoperative pain management technique.

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## EVALUATION OF TENDENCIES FOR LABORATORY TESTINGS FOR CHILDREN FROM 3 MONTHS TILL 3 YEARS WITH INITIAL DIAGNOSIS: FEVER WITHOUT SOURCE

**Key words:** fever without source, laboratory investigations.

**Introduction.** Fever is one of the main complaints of children seeking medical attention. Many have fevers without an apparent source (FWS) that requires further investigations to ascertain the diagnosis.

**Aim.** To assess the tendencies of done laboratory investigations and their values in children with FWS.

**Materials and methods.** The study incorporate children aged 3-36 months hospitalized at Children's Clinical University Hospital from 2014 - 2016 who presented with fever without obvious focus. Retrospective study data were compiled in Excel tables and processed with SPSS 16.0 data processing method.

**Results.** At the initial evaluation, there were 102 patients but valid were 30 according to definition of diagnosis. The median age was 21.5 months (min. - 3, max. - 35). The average temperature was  $39.10^{\circ} \text{C}$  (min. -  $37,7^{\circ} \text{C}$ , max. -  $40^{\circ} \text{C}$ ). Full blood count analysis were done in 100% (30) patients. According to the age, leukocytosis had 33.33% (10) patients, 19.99%(6) had leukopenia and 46.67% (14) had normal white blood cell count. Increased immature granulocyte count had only 9.99% (3) of patients and generally this analysis were done to 96.57%(29). C-reactive protein were done for 96.57% (29) patients and it was increased above 40 mg/L for 16.65% (5) patients, above 100mg/L - 3,33% (1) patients. Il6 were done in 43.29% (13) patients and median Il6 was 23.3(min.-2, max-275).Blood culture were done in 16.65%(5) patients and it was negative for all patients. Inflammatory changes in urine determined for 6.66% (2) of 89.91% (27) patients. Lumbar puncture were done 6.66% (2) children and the results were negative. 23,31% of patients had done fecal culturing but none of them were positive.

**Conclusion.** There is no relevance between doctors appointed examination in children with similar initial diagnosis. There is no single algorithm executed by all doctors. According to laboratory findings-various values differ in frequency.

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## FACTORS INFLUENCING PROGRESSION OF SECONDARY PROGRESSIVE MULTIPLE SCLEROSIS

**Background.** Multiple sclerosis is one of the most common chronic neurodegenerative conditions, which progresses the patient leads to work disability and a significant impact on patient quality of life.

**Purpose.** To clarify the speed of progression of disability in patients with secondary progressive multiple sclerosis, depending on the progression of disease, disease of age, disease duration, and sex therapy.

**Materials and Methods.** Retrospective study of patients were viewed outpatient cards with secondary progressive multiple sclerosis Latvian Maritime medical Centre Latvian Multiple sclerosis center. Overall, 80 patients were examined outpatient cards of the disease until the last entry in the outpatient card. It was analyzed by the age, sex, EDSS, therapy and MRI findings diagnosis of the approval.

**Results.** Confirmation of disease at the time of the mean EDSS  $2.99 \pm 1.17$  for both sexes. The average age of disease for both sexes is  $39.59 \pm 11.75$  years (95% CI 36.93 ...42.08 years) with an interval of 14 to 61 years. A decrease in the time between the first symptoms and diagnosis confirmation, decreasing EDSS level of the first examination. Increasing age, reduce the period for which is reached EDSS 6.0. With the increase in EDSS level of the first inspection, reduce the period for which is reached EDSS 6.0. EDSS 3 the medium need to  $3.50 \pm 4.31$  years, and then to reach EDSS 6 to  $8.23 \pm 3.74$  years. In order to achieve a certain level of EDSS, women take longer than that for men. 98% at the time of MRI diagnosis confirmation deposit has multiple CNS demyelinating foci.

**Conclusions.** The study concluded that secondary progressive multiple sclerosis affects the progression of the patient's age at the time of illness, sex, EDSS during the first visit and the time between the first symptoms and diagnosis confirmation. The older the patient is at the time of illness, the more rapid progression of the disease, and the disease progresses more rapidly in men. It was obtained results that the disease is diagnosed to have a neurological deficit and if the first visit is higher EDSS, the disease progression takes place more rapidly. EDSS 3.0 rashness not affect the achievement of reaching EDSS 6.0 speed. The larger the time between the first symptoms and diagnosis approval of accelerates the progression of the disease. Field MRI diagnosis of the approval no relation to neurological deficits.

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## **FEMALE SEXUAL DYSFUNCTION IN ASSOCIATION WITH DIABETES MELLITUS**

**Key words:** Female sexual dysfunction, diabetes mellitus

**Introduction.** Sexual dysfunction (SD) in up to 60% is one of the most significant complications in women with diabetes mellitus (DM)[Lindau ST, et al., 2007]. According to latest studies, female sexual dysfunction (FSD) with DM is associated with many complications such as depression, decreased sexual desire and arousal [Shalender B., et al., 2016].

**Aim.** To explore the prevalence and associated complications of FSD in women with DM.

**Materials and methods.** The study was conducted among women with DM, who completed a questionnaire *Female Sexual Function Index* (FSFI). Evaluation criteria were sexual desire, arousal, lubrication, ability to reach orgasm, sexual satisfaction and pain level. Each section consists of 5 points (p). Overall assessment 26,55 p and less of FSFI indicates SD. Data collection and statistical analysis was performed using SPSS 22.0 and Excel 2010.

**Results.** The study included 100 women with mean age of 53,82 ( $\pm 14,33$ ) years. 75 % of all patients had type 2 DM, 19 % - type 1 and 6 % had other type of DM. 32 % of participants had DM less than 5 years. The average duration of DM were between 10 and 20 years. According to the FSFI scores, 71 % of the women had SD. From the FSFI sections the highest rated were arousal(2,97 p), pain(2,84 p) and satisfaction(2,82 p). The lowest score was evaluated for sexual desire(1,61 p). Lubrication and ability to reach orgasm scored 2,75 points.

**Conclusion.** DM is an important cause of FSD. Result of this study of 71% female DM patients having SD is high comparing to other available data. The highest rated sections are controversial - although women have SD, the satisfaction with their sexlife and sexual arousal is also rated as one of the highest criteria. The lowest rated section with a significant difference from other criteria was sexual desire. This conclusion raises a discussion about psychological aspects of DM that are involved in the development of FSD.

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## FEVER OF UNKNOWN ORIGIN: SITUATION IN LATVIA

**Key Words:** *Fever of unknown origin(FUO)*

Definition of Fever of unknown origin (FUO) was made in 1961, yet it still presents a diagnostic challenge in clinical practice. Current FUO definition is a body temperature above 38.3°C on several occasions with fever duration (FD) of at least 3 weeks and no diagnosis made after 3 days of hospital admission, or 3 outpatient visits. FUO is classified into four distinct classes: classic, nosocomial, neutropenic, and HIV-related. FUO Etiology is very broad, which is why clinical approach must be narrowed by means of potential diagnostic clues (PDC). Despite thorough investigations the cause of FUO remains unclear in approximately 15% of patients. The Aim of our research was to analyze initial diagnostic approach and final diagnosis among Latvian infectology center (LIC) classic FUO patients. We retrospectively reviewed case files of 389 patients who were admitted with FUO diagnosis to LIC between January and December 2016 year. 301 patients were excluded due to failure to fulfil FUO time criteria (N=265) and required investigation amount criteria (N=235). The remaining 88 patients were further evaluated. Median FD before diagnosis was 42 (min=20; max=1504) days. FUO causes were infections (N=43), malignancy (N=4), noninfectious inflammatory disease (N=8), miscellaneous (N=20), unknown (N=11) and combined causes (N=2). Diagnosis establishment was early in 44,3%, intermediate in 28,4, % and late in 27,3% of cases. In 57 of cases PDC were identified, which were helpful in 41 cases and misleading in 16. There was no statistically significant difference in performed diagnostic investigations amount regarding PDC type ( $p>0,05$ ;  $p = 0,426$ ). Most of referred patient with FUO diagnosis do not meet FUO criteria. Diagnosis is established without proper time and qualitative investigation criteria. This situation leads to unrequired hospital admission and extensive investigation amount. The main cause of classic FUO are infections.

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## HNF1B AND CYP19A1 GENES VARIATIONS GENOTYPE FREQUENCIES CORRELATION WITH ENDOMETRIAL CANCER INCIDENCE AMONG DIFFERENT POPULATIONS

**Keywords:** *Endometrial cancer, HNF1B, CYP19A1*

**INTRODUCTION.** Endometrial cancer (EC) is the most common gynecological malignancy in developed countries, but EC incidence varies among different countries and populations. Genome-wide association studies have discovered several EC susceptibility loci e.g. *HNF1B* and *CYP19A1* genes loci.

**AIM.** The aim of this study was to investigate whether the *HNF1B* gene variants rs4430796, rs7501939 and *CYP19A1* gene variants rs727479 genotype frequencies in general population can explain the EC incidence difference among different populations.

**MATERIALS AND METHODS.** The design of this study is – correlation study. Frequency of genetic variants' genotypes in different populations was obtained from The 1000 Genome project, HGDP and HapMap studies. The EC age standardized incidence was extracted from the WHO database and regional registries. Data of 17 populations was available for the analysis. Data analysis was performed using the SPSS 22.0 software. Correlation between variants and EC incidence in different populations were calculated using Spearman's rank correlation ( $r_s$ ). To calculate the predictive power of variants on EC incidence linear regression was used.

**RESULTS.** Analyzing genotype frequencies it was found that rs727479 dominant genotypes (CC+CA) strongly correlates with EC incidence ( $r_s=0.58$ ,  $p=0.015$ ). CC+CA genotypes frequency among general population may explain 31% of the EC incidence variability among different populations ( $R^2 = 0.31$ ). *HNF1B* gene variants rs4430796, rs7501939 were not associated with EC incidence ( $p>0.05$ ).

### CONCLUSIONS

1. *CYP19A1* gene variation rs727479 CC+CA genotypes are correlated with EC incidence among different populations.
2. Diverse occurrence of variation rs727479 CC+CA genotypes could clarify the variability of EC incidence among different populations.
3. *HNF1B* gene variations rs4430796, rs7501939 were not associated with EC incidence among different populations.

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## HOW STAFF MEMBERS DEAL WITH CASES OF STILLBIRTH REGARDING THEIR AGE AND EXPERIENCE

**Key words:** stillbirth, staff, experience

**Introduction:** Stillbirth is an adverse pregnancy outcome, defined by fetal death prenatally. Both families and staff have to go through many challenges dealing with stillbirth. Young staff members sometimes have to work with these cases without any experience or insufficient experience, which could be emotionally challenging. Experience helps staff to provide support and information for parents, however, experienced doctors may feel guilt and depression following a diagnosis of stillbirth.

**Aim:** To find out how staff members deal with stillbirth cases regarding their age or experience.

**Materials and methods:** Research method was surveying midwives and obstetricians in maternity wards. Surveying was done at Riga Maternity Hospital and Pauls Stradins Clinical University Hospital Perinatal Care Center in January 2017. Survey consisted of questions about experiences working with stillbirth cases. Statistical analysis was done in IBM SPSS Statistics v23.

**Results:** 106 respondents completed the survey. 66% (N=70) were midwives and 34% (N=36) obstetricians. Regarding age there were 26,4% (N=28) respondents below the age of 30, there were 35,8% (N=38) respondents with work experience less than 10 years and 24,5% (N=26) staff members were only in learning process. Staff members aged <30 y. and those with experience <10 y.; expressed confusion working with cases of stillbirth more than others (p=0.002;p=0.002). Those who were <30 y.o. felt embarrassed more than others (p=0.026). Staff members aged >50 y. and with experience >30 y. agreed that their working ability is not affected, while 30-50 y.o. and those with work experience 10-30 y. expressed lowered working abilities more frequently than others (p=0.006 for age, p=0.003 for experience).

**Conclusions:** There are differences in the way staff members deal with cases of stillbirth regarding their age and experience. Younger and less experienced staff tend to have more challenges than others. Staff members with experience 10-30y. feel that their ability to work with other patients is affected, but those with experience over 30y. think their working abilities are not affected at all.

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## IMPACT OF AORTIC CROSS-CLAMP TIME DURING VSD CORRECTIVE SURGERY ON EARLY POSTOPERATIVE PERIOD IN CHILDREN

**Key words:** Ventricular septal defect (VSD), cardiopulmonary bypass (CPB), postoperative period

**Introduction.** VSD is the most common congenital heart defect that is mainly treated surgically with CPB use during operation.

**Aim.** To determine if CPB time is affected by the patient's preoperative condition and whether it has a significant effect on postoperative period.

**Method.** Retrospective study was carried out using the data of 85 patients who had undergone VSD corrective open heart surgery till two years of age between the years 2011 and 2016. The analysis of data was carried out using IBM SPSS 22.0.

**Results.** 46 male and 39 female patients with the mean age of  $9.5 \pm 4$  months were included in the study. Average size of VSD was  $8.7 \pm 2.1$  mm, average CPB time was  $98 \pm 30$  min. At least one chronic illness was found in 38.8 % of patients. On average,  $4.5 \pm 2.2$  days were spent in ICU. Postoperative supportive inotropic therapy was used in 86.4 % of patients; 70.3 % received milrinone lactate and 16.1 % received milrinone lactate with adrenaline. The average time of milrinone use was  $2.6 \pm 1.5$  d, the mean duration of intubation was  $28.0 \pm 24.7$  h.

It was found that combined inotropic therapy was associated with longer CPB time ( $p=0.007$ ), analysis showed significant correlation between CPB time and rhythm disturbances after CPB ( $p=0.015$ ), the time of inotropic drug use ( $p=0.389$ ;  $p=0.001$ ), intubation time ( $p=0.383$ ;  $p=0.001$ ), time of removal of the pleural drain ( $p=0.286$ ;  $p=0.011$ ) and total days spent in ICU ( $p=0.374$ ;  $p=0.001$ ). CPB time shows significant correlation with defect localization ( $p=0.007$ ), defect size ( $r=0.461$ ;  $p<0.0005$ ), CTI ( $r=0.402$ ;  $p= p<0.0005$ ), pro-BNP ( $p=0.557$ ;  $p<0.0005$ ).

#### **Conclusions.**

The longer the CPB time the higher the possibility that combined inotropic therapy will be used and patients' recovery will take longer. The longer the CPB time the higher the risk of rhythm disturbances after CPB. CPB time varies depending on the localization and size of VSD.

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## **IMPORTANCE OF OBSTETRIC ULTRASONOGRAPHY IN PRENATAL SCREENING**

**Key words:** prenatal diagnostics, trisomy(T), amniocentesis(AC), chorionic villus sampling(CVS), ultrasonoscopy (US)

**Introduction.** Pregnant women undergo 1st trimester prenatal screening, where US is done. As it cannot detect all visual fetal anatomical pathologies, 2nd trimester US is done also. It can reveal additional markers, which can increase a risk of fetal chromosomal pathology.

**Aim.** To evaluate the findings of US during the 1st and 2nd trimester screening and to compare the results of diagnostic procedures performed due to US findings.

**Materials and methods.** 174 women, who had done 1st and 2nd trimester US, AC or CVS procedures, in Riga Maternity Hospital (2014, 2015 years) were included in study group. Data from medical record was collected and processed with SPSS22 and Microsoft Excel 2013.

**Results.** The mean age of women was 32.96 years (SD=6.254).

In 32 cases fetal structural anomaly was detected in 1st trimester US. The frequency of fetal chromosomal anomalies were as follows: 6.3 % (N=2) for T21, 18.8% (n=6)-T18, 6.3% (n=2)-T13, 18.8% (n=6) for other chromosomal anomalies and normal karyotype was found in 16 cases (50%).

In 33.1% (n=42) 1st trimester US screening was found negative, but pathology was found in 2nd trimester ( $p<0.0005$ ).

82 women had pathological US at 2nd trimester US. 17% (n=14) of them had abnormal karyotype fetus and 83% (n=68) with normal karyotype.

Totally 28 women had medical abortion because of fetal pathology, found by US. In 46.4% (n=13) of cases termination of pregnancy was done due to chromosomal disorder and in 53.6% (n=15) due to non-chromosomal pathology.

**Conclusions.** The majority of fetal chromosomal pathologies were detected on 1st trimester US. However, some markers can be found on 2nd trimester US only and most of monogenic/multifactorial disorders with prenatal expressivity could not be found on 1st trimester which confirm the necessity of both trimesters US marker evaluation for effective prenatal diagnostics.

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## **INCIDENCE OF COMPLICATIONS DUE TO FEMORAL NERVE BLOCK COMPARED TO EPIDURAL ANALGESIA PERFORMED AFTER KNEE JOINT REPLACEMENT**

**Background.** Total knee joint replacement (TKJR) is associated with significant postoperative pain. Both peripheral nerve blockade (PNB) and epidural analgesia (EA) have been described for postoperative pain control. The goal was to compare the outcomes of techniques and evaluate pain control protocols.

**Methods.** A retrospective review were done on 57 patients- 32 with EA were compared with 25 FNB following total knee joint replacement from 2015 to 2017 january at the Orto Clinics, Riga, Latvia. Pain intensity assessed on visual analogue scale(VAS) , hypotension, nausea and vomiting, dizziness, pruritis, head and back pain, motor block and urinary retention was the reported outcome parameters.

**Results.** Median age in FNB (n=25) group was  $66.20 \pm 10.41$  in EA ( n = 32)  $59.16 \pm 10$  years (MD 0.7; 95% CL -0.15-1.24, P=0.012). No difference in association with higher risk of postoperative nausea and vomiting between both groups. Hypotension (SBP<% from MAP) occurred more frequently among patients who received EA 8 vs FNB 0 patients. (MD 0.51 95% CL 0.15-0.87; p=0.007). In EA group 40.6% (n=13) of all patients complains about dizziness (p=0.002) in FNB only 4% (n=1). Also complains about pruritis was significant frequently in EA group p =0.030. Moreover, incidence of head and back pain was significant higher in EA group (p=0.03; p=0.046). There wasn't correlation between head pain and hypotension. Motor block, urinary retention, failure of catheter insertion were constant in EA and FNB group.

**Conclusions.** FNB and EA is equally effective analgesia techniques for postoperative pain management after total knee joint replacement. In comparison to EA, FNB is associated with significant lower complications rates.

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## **INTRA-ABDOMINAL PRESSURE AND ABDOMINAL CIRCUMFERENCE EVALUATION IN NEONATES WITH NECROTIZING ENTEROCOLITIS**

**Key words:** *Necrotizing enterocolitis, intra-abdominal pressure (IAP), abdominal circumference (AC)*

**Introduction.** (NEC) remains a major cause of morbidity and death in neonates. Fast diagnosis of NEC is essential for successful management and is mostly based on ultrasonography and radiography findings.

**Aim.** To determine whether there is significant difference in intra-abdominal pressure and abdominal circumference in neonates with different stage of the disease using Bells staging system.

**Materials and methods.** Retrospective data analysis was performed on 24 neonates with diagnosed or suspected NEC (Bell stage 0-3) and measured intra-abdominal pressure and abdominal circumference acquired data was compared to dr.Ilze Meldere et.al developed specific formula for estimating normal abdominal.Statistical analysis was carried out with IBM SPS 22.0.

**Results.** Data of 24 neonates was collected and analyzed. Average time of birth in neonates was 29 gestational weeks. Mean difference from normal values in AC depending on babys weight was +1,87 cm (min-3,6; max+9,4cm). One way ANOVA with Post Hoc analysis showed statistically significant difference in Bell stage groups (p=0,046), specifically of ACD in Bell stages I and III (P=0,039) and tendency between stages II and III (P=0,138).

IAP was elevated in all measurements. Median IAP was 8mm/Hg (min2; max14), intra-abdominal hypertension (IAP>10mm/Hg) was observed in 14 measurements (20%). Positive pressure ventilation, that can change IAP in healthy babys up to 8mm/Hg and was used during treatment was taken into account, and in 67,6% of cases IAP still was elevated. Kruskal-Wallis analysis showed that distribution of IAP is not the same across Bell stages (p=0,044), specifically between stage I and III (p=0,038)

**Conclusion.** IAP and ACD are easy, safe and available measurements with potential of being developed into effective tool for fast initial diagnosis of NEC and prediction of clinical worsening.

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## **KIDNEY DONOR RISK INDEX AS A PREDICTIVE VALUE OF KIDNEY TRANSPLANTATION OUTCOME**

**Introduction:** Renal transplantation outcome depends on different factors. Several indexes are used in clinical practice for donor factors evaluation. One of such scoring system is the Kidney Donor Risk Index (KDRI), that include information about donor age, height, weight, history of hypertension and diabetes, cause of death, serum creatinine level, hepatitis C serology and donation after cardiac death.

**The aim:** Theaim of our study was to analyze usefulness of KDRI as a predictive value of kidney transplantation outcome in our center.

**Materials and methods:** This retrospective study performed in a single transplantation center between January, 2004 and December, 2007 included 241 consecutive kidney transplantations cases ( 127 males, 114 females, mean age  $45,41 \pm 14,49$  years) from 173 donors ( 95 males, 78 females, mean age  $43,69 \pm 12,37$  years). Mean KDRI was  $1,28 \pm 0,31$ . Mean creatinine level was  $0,11 \pm 0,04$  mmol/l. We analyzed association of KDRI with posttransplantation outcomes (delayed graft function (DGF), patient exitus letalis, graft loss and acute rejection). **Results:** DGF was observed in 56 patients (23, 8%), exitus letalis in 55 patients (23,2 %), graft lost in 67 patients (27,8%) and acute rejection in 60 (25, 2%). KDRI showed association with DGF ( $p=0,047$ ), patient exitus letalis ( $p < 0,001$ ) and graft loss ( $p = 0,055$ ). There was no association between KDRI and acute rejection ( $p=0,183$ ). **Conclusion:** KDRI can be used as a predictive value of kidney transplantation outcome.

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## KNOWLEDGE AND COMFORT LEVEL OF MIDWIVES AND OBSTETRICIANS DEALING WITH BEREAVEMENT AFTER STILLBIRTH

**Key words:** stillbirth, knowledge, staff

**Introduction:** Case of stillbirth is defined by fetal death after 20th week of gestation. In 2014 the World Health Organization released a statement on preventing disrespect during facility-based childbirth. Worldwide in 2015 about 2.7 million babies were stillborn; in Latvia there were 106 cases of stillbirth in 2015. A systematic review, published in 2016, showed that behaviors and actions of staff have a memorable impact on parents.

**Aim:** To determine knowledge and comfort level of staff dealing with bereavement after stillbirth.

**Materials and Methods:** Research was done by surveying midwives and obstetricians. It consisted of open- and close-ended questions about working with patients in case of stillbirth. Surveying was done at Riga Maternity Hospital and Perinatal Care Center of Pauls Stradins Clinical University Hospital in Riga. Statistical data was processed in IBM SPSS 23.0.

**Results:** 106 respondents completed the survey: 103 women and 3 men; 66% were midwives and 34% obstetricians. 24,8% of the staff were in learning process and 75,2% certified specialists. Respondents were asked about knowledge and confidence dealing with stillbirth and did they get appropriate information during education. 19,4% stated that their knowledge is not enough to deal with stillbirth cases; 21,4% have knowledge, but do not have experience; 47,6% have enough knowledge and experience, but still have to endure emotional difficulties. 53,4% never heard how to deal with it during their education. Total 81,2% mentioned insufficient education about stillbirth cases.

**Conclusion:** Majority of staff do not feel confident dealing with cases of stillbirth. Young generation of healthcare professionals justify their lack of knowledge by absence of training on stillbirth cases during education. Midwives and obstetricians should receive special and adequate training to get personal ability and knowledge about how to act and feel confident in cases of stillbirth.

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## LATE RADIOLOGICAL OUTCOMES AFTER ARTHROSCOPICALLY ASSISTED AND TRADITIONAL SURGICAL TREATMENT OF COMPLETE ARTICULAR DISTAL RADIUS FRACTURES

**Introduction.** In twenty first century traditional surgical treatment of complete articular DRF is combined with intraoperative arthroscopical management of the entire articular surface and structures. Postoperative radiological assessment of the joint is mandatory in evaluation of surgical outcomes.

**The aim** of this study was to compare late radiological outcomes between traditional surgical (TS) and arthroscopically assisted (AA) approach of complete articular DRF.

**Materials and methods.** In this retrospective study we included 37 patients from 2009-2014 with DRF (AO 23-C) who were treated with either TS or AA approach. Data included patients sex, age, injured and dominant hand, high or low velocity trauma, surgical approach and technique and late radiological outcomes  $\geq 1$  year after surgery (radial inclination (RI), radial height (RH), volar tilt, articular surface). Collected statistical data were analyzed with SPSS v.20.0 software.

**Results.** Research included 25 women, 12 men, average age of both groups was  $48 \pm 2,6$  yrs. Left hand injuries were in 22 cases, right hand- 15, 18 patients had trauma in their dominant hand, 30 patients were with low velocity trauma, 7 - high. There were 23 patients with AA and 14 with TS treatment. Volar locking plate was used in 85% AA and 52% TS patients, K-wires and external fixation devices were used in 25% and 48%, respectively. Smooth articular surface was present in 64% AA and 57% TS patients. Analyzing independent sample test, RI was significantly smaller in AA group (AA=19,5 $\pm$ 0,7 vs. TS=24,0 $\pm$ 0,9, P=0,02), RH also was smaller in AA group (AA=10,7 $\pm$ 0,7 vs. TS=12,4 $\pm$ 0,5, P=0,042). Although visual analog scale showed AA=1 point, TS=2 points, it was not significant.

**Conclusion.** Late radiological outcomes after complete articular DRF have better outcomes in TS group than in AA group. However, further longitudinal research for evaluation of functional and radiological outcomes of AA is needed.

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## LIVER TRAUMA TREATMENT AND MANAGEMENT IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL – COMPARISON OF TWO PERIODS (2006 - 2010, 2010 - 2015)

**Key words:** Child, Liver trauma, Blunt abdominal trauma, Intraabdominal injury

**Introduction.** Child injuries is a growing global public health problem. According to World Health Organization (WHO) and UNICEF it is a significant area of concern regarding children from the age of one year and older. Abdominal trauma is the third most common type of injury, with mortality rates reaching up to 8,5 %. More than 80% of pediatric trauma admissions are the result of a blunt mechanism. The liver is the second most commonly injured intraabdominal organ. Management may involve non-operative measures or surgical treatment, as appropriate.

**Aim.** This study is aimed to re-evaluate and determine possible differences in epidemiology, treatment and management of the hepatic trauma during two periods of time including 2006. - 2010 and 2010 - 2015 respectively.

**Materials and methods.** A retrospective evaluation of clinical data was conducted for patients hospitalized between 2006 and 2015 at Children's Clinical University hospital with the injury of liver diagnosis (ICD 10 – S36.1). Data were collected on age, sex, residency, mechanism of trauma, associated injuries, length of stay, management and outcome. Liver injuries were graded per The Organ Injury Scaling (OIS) Committee's classification of liver trauma.

**Results.** Total of 17 patients with injury of liver were admitted to Children's Clinical University hospital during 2006 – 2015. Of the total number of cases, 10 had an isolated hepatic injury and 7 suffered multiple injuries. The reasons of the trauma for most patients are fall from height (29.4%) or bicycle handlebar injuries (29.4%). More than 94% of admissions were the result of a blunt mechanism, but only 5,9% were penetrating injuries. Boys accounted for 70% of all accidents. The median age was 9.3 years and the age range was 4 years-17 years. During the period from 2006 only three patients (50%), one with grade III and two with grade IV, were treated surgically. Meanwhile only two patients (18.2%), with grade IV injury, underwent surgery. Overall there were 6 operations during 2006-2015, but all 17 patients received infusion and antibacterial therapy. Tests have shown that there might be only statistically significant difference in distribution of hospital stay comparing two time periods, although it is doubtful due to small number of cases in this study (p=0,149).

**Conclusions.** Young boys are at a higher risk of hepatic trauma, with boys accounting for approximately 40% more accidents than girls. Although a slight decrease in need of surgery was seen during 2010-2015, which

might relate to the grades of injuries received in this period, it is undoubtable that both conservative and operative treatment methods can be used depending on the grade of injury and hemodynamic stability

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## **LUNG TRANSPLANTATION PATIENT IN LATVIA - LONG TERM RESULTS**

**Key words:** *Idiopathic pulmonary arterial hypertension, lung transplantation, complications, immunosuppressive therapy*

**Introduction.** Pulmonary hypertension (PH) is defined as an increase in mean pulmonary arterial pressure (mPAP)  $\geq 25$  mmHg at rest. There is a pathogenetic therapy available for a pulmonary arterial hypertension (PAH) patients. For those who fail on drug treatment and remain in WHO functional class III-IV, lung transplantation is a treatment option to increase survival and gain a good quality of life.

**Case report description.** A 32-year-old female with anamnesis of idiopathic pulmonary arterial hypertension (IPAH) for 3 years is in high risk group – predicted one year mortality  $>10\%$  (based on these findings: progression of symptoms, clinical signs of right heart failure, repeated syncope, WHO functional class IV PAH, BNP plasma level  $\sim 5000$  pg/ml, right atrium area  $42\text{ cm}^2$ , pericardial effusion, right atrial pressure  $125$  mmHg). According to the medical reports patient is a potential candidate for transplantation procedure. A double lung transplantation under ECMO support was performed on April 2014. Patient has to use immunosuppressant drugs for life (tacrolimus, everolimus, prednisolone).

On follow-up visits after transplantation patient is in a good general condition. Significant complications (severe infections or graft versus host disease) have not developed. Spirometry shows normal lung ventilation function. Echocardiography show normal heart function and there are no data about PH (right ventricular systolic pressure  $\sim 30$  mmHg, inferior cava diameter  $19$  mm with inspiratory collapse  $>50\%$ , right atrial area  $15\text{ cm}^2$ ).

On follow-up visit (17.03.2015.) there are some side effects of immunosuppressive therapy present – chronic kidney disease (CKD) 3A (creatinine  $121\text{ }\mu\text{mol/l}$ ; GFR  $54,9\text{ ml/min/m}^2$  (Cockcroft-Gault)), anemia (hemoglobin  $98\text{ g/l}$ ), hepatotoxicity (AlAT  $47\text{ U/l}$ ), hypercholesterolemia (total cholesterol  $7,0\text{ mmol/l}$ ).

On follow-up visit (8.12.2016.) there is CKD 2 present (creatinine  $107\text{ }\mu\text{mol/l}$ ; GFR  $62,1\text{ ml/min/m}^2$  (Cockcroft-Gault)).

**Conclusion.** Lung transplantation procedure has improved survival and quality of life for patient with WHO functional class IV IPAH. Significant complications after transplantation have not developed, but side effects of immunosuppressive therapy (tacrolimus, everolimus, prednisolone) are present.

**Summary.** The case report demonstrates a 32-year-old female with WHO functional class IV IPAH. A double lung transplantation was performed on April 2014. Patient is in a good general condition 1 and 3 years after transplantation. Significant complications have not developed, but there are such side effects of immunosuppressive therapy present like CKD and hypercholesterolemia.

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## **MASTERS BASKETBALL PLAYERS HEART RATE AS INDICATOR OF TRAINING AND COMPETITION INTENSITY**

**Introduction.** Increasing count of older athletes and their desire to compete is new phenomenon around the world. One way to estimate exercise intensity is to see how hard heart is beating during physical activity.

**Aim.** To evaluate masters basketball training and competition intensity by using players heart rate.

**Materials and methods.** There were sixteen ( $n = 16$ ) male basketball players included in the study. Measurements were taken by the CONTEC<sup>TM</sup> Pulse Oximeter CMS50D1. The experiment was carried out in real training and competition conditions. Heart rate was measured before warming-up, three times during process (training/game) and after stretching. Maximum heart rate ( $HR_{MAX}$ ) for each participant was calculated by formula “ $220 - \text{age}$ ”. Collected statistical data were analyzed by MS Excel and SPSS V20.0 softwares. A significance level of  $P < 0.05$  was applied.

**Results.** The mean age  $\pm$  standard deviation (SD) of participants was  $49.4 \pm 6.3$  [95% confidence interval (CI) =  $46.1-51.9$ ] years. Maximum value of HR during training (dT) was  $157\text{ bpm}$ , but during competition (dC) –  $194$

bpm. The average HRdT was  $133 \pm 10$  [128-138], bpm but HRdC  $148 \pm 13$  [142-154], bpm which showed statistically significant difference between both events ( $p = 0.000$ ). HR of two participants ( $n = 2$ ) during training was between 60-70% of  $HR_{MAX}$ ,  $n = 8$  between 70-80% of  $HR_{MAX}$  and  $n = 6$  in zone 80-90% of  $HR_{MAX}$ . During game:  $n = 2$  between 70-80% of  $HR_{MAX}$ ,  $n = 11$  in zone 80-90% of  $HR_{MAX}$  and  $n = 3$  between 90-100% of  $HR_{MAX}$ .

**Conclusion.** Competition cause more pronounced increase in heart rate than training. Heart rate of most players is between 70-90% of  $HR_{MAX}$  during training and competition which point out to moderate and high intensity.

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## MEN'S KNOWLEDGE OF CONTRACEPTION DEPENDING ON THE THEIR LEVEL OF EDUCATION

**Keywords:** Men, contraception, knowledge, education level

**Introduction.** Contraception has become a widely discussed issue around the world. Men are used to mostly looking for information in media or asking their friends. Nowadays because of the huge information amount accessible, having critical thinking is more important than ever. Having critical thinking often correlates to the level of education, so if a person has a higher level of education, than the knowledge of contraception should be better. There is a lack of information about this issue in Latvia. Because of that it is more interesting to get to know the results.

**Aim.** The aim is to find out if the men's and women's (control group) knowledge of contraception depends on the level of their education.

**Materials and methods.** The study includes 493 men's and 297 women's (control group) voluntary answers on 16 questions obtained using originally created study protocol, collected from September 2015 to September 2016 in Riga, the capital city of Latvia. Information about participant's level of education was collected using the questionnaires. The level of knowledge was estimated as good if the amount of correct answers was  $\geq 9$  and as bad if the amount was  $\leq 8$ . Analyzing was done using IBM SPSS software, 20.0 version.

**Results.** A total of 493 men and 297 women (control group) from Latvia participated in the study. Age of men ranged from 16 to 70 years (mean  $29,05 \pm 22,32$ ), but in control group from 16 to 48 years (mean  $24.54 \pm 4.64$ ) 60% ( $n=296$ ) of all men and 86.9% ( $n=258$ ) of all women have showed good knowledge of contraception

Distribution of correct answers ( $\geq 9$ ) by education levels:

Of respondents with secondary education or lower 57,9% ( $n=106$ ) of men and 86.8% ( $n=92$ ) of women had good knowledge of contraception, professional education - 50,0% ( $n=47$ ) of men and 83.7% ( $n=41$ ) of women, bachelor's degree - 63,6% ( $n=83$ ) of men and 88.5% ( $n=92$ ) of women and master's degree - 70,1% of men and 86.8% ( $n=33$ ) of women.

None of 493 men gave answers to all 16 questions. 0.6% ( $n=3$ ) answered 15 questions. 1.7% ( $n=5$ ) of women answered 16 questions and 6.4% ( $n=19$ ) - 15 questions.

Chi-Square test showed that men's knowledge of contraception depends on the level of education, men with higher level of education have better knowledge of contraception ( $p=0,034$ ), but for the control group Chi-Square test did not show statistical significance ( $p=0.7$ ).

**Conclusions.** We have found that in men's group there is a statistically significant correlation between education level and contraception knowledge. Men with higher level of education have better knowledge of contraception. This correlation was not found in the control group.

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## METASTATIC CLEAR CELL RENAL CELL CARCINOMA: A CASE REPORT

**Introduction.** Renal cell carcinoma (RCC) accounts for 3% of adult malignancies. The most common observed histologic subtype is clear cell RCC. Its major metastatic sites are lungs, bones, regional lymph nodes and liver (Pili et al, 2014).

**Case report.** 50-year-old male is regularly attending oncologist since 2009. Due to CT data patient had metastasis (MTS) in vertebrae L2, and he has received palliative actinotherapy (AT) 13 GY in 2009. Further investigations have revealed primary right side RCC. In 2010 patient had consultation of oncurologist in Oncology Centre of Latvia and palliative right-sided nephrectomy was performed. Histology result: clear cell RCC with signs of severe intratumoral inflammation, GIII according Fuhrman. Patient received therapy with INF alpha-2a till April 2011, in dosage 3 – 9 MIU 3x/weekly. In March 2011 patient appeared with pain in left shoulder, MTS in the head of left humerus on skeletal scintigraphy and X-ray. Due to pain syndrome patient received AT and started therapy with bisphosphonates. In May 2012 AT course was repeated (3 GY x 10), because of negative dynamic of disease and MTS (40x66 mm) finding in the head of left humerus on X-ray. In September on X-ray pathologic fracture of left humerus without dislocation and on CT solitary MTS in left lung (19x23 mm) appeared. In January 2013 patient had consultation in the Hospital of Traumatology and Orthopaedics in Riga and resection of proximal part of left humerus and endoprosthesis with Delta Extend followed, later therapy with Pazopanib was started. In November - no data of disease progression, no pathologic findings in chest and abdomen, patient continues treatment with Pazopanib. In November 2016 patient had complete disease remission.

**Conclusion.** It is proven that pathologic stage of RCC is most important prognostic factor for cancer outcome. If distant MTS occurs in RCC 5-year survival is 0-10% (Campbell et al, 2016), but there also were reported cases with prolonged survival

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## MICROVESSEL DENSITY IN PDAC

**Introduction.** Pancreatic ductal adenocarcinoma (PDAC) is the most common pancreatic malignancy with a very poor prognosis. Tumour growth is highly dependent on angiogenesis, and tumour will not exceed the size of 1-2 mm<sup>3</sup> without induction of angiogenesis (Carmeliet et al., 2000). Therefore, it is essential to understand mechanisms of tumour angiogenesis (TA), in order to find new anti-angiogenic therapies, and develop prognostic factors for treatment and patient outcome.

**Aim.** The aim of this study was to evaluate relationship between TA and tumour size in PDAC.

**Materials and methods.** The retrospective study included 24 cases of PDAC operated in a single university hospital from 2011 till 2013. Microvessel density (MVD) in histological tumour sections was used as a marker of TA. Microvessels (MV) were identified by immunohistochemical staining for CD34. In each case, three most vascularized areas (*hotspots*) were selected at low power magnification (X40). Then MV were counted in each *hotspot* at high power magnification (X200). For each case, an average of three MV counts was used to calculate MVD (MV/mm<sup>2</sup>). Statistical analysis was performed by IBM SPSS software. Significance was considered with  $p < 0.05$ .

**Results.** Mean size of tumour was 3.1 cm [2.6-3.5] with range 0.1 - 4.8 cm. Mean TV was 10.58 cm<sup>3</sup> [6.62-14.54], median TV - 7.48 cm<sup>3</sup>, maximum TV - 36.36 cm<sup>3</sup>. Mean MVD was 206.3 MV/mm<sup>2</sup> [178.4-234.3] with range 121.9 - 326 MV/mm<sup>2</sup>. A weak positive correlation was found between MVD and tumour size, but was not statistically significant ( $r_s = 0.244$ ;  $p = 0.250$ ). Similarly, a weak positive correlation was found between MVD and TV, but was not statistically significant ( $r_s = 0.288$ ;  $p = 0.173$ ).

**Conclusions.** This study demonstrated positive correlations between MVD and tumour size and between MVD and TV, implying that a relationship may exist between tumour growth and TA, even though the correlations were weak and not statistically significant. Thus, further studies are needed.

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## MORPHOLOGICAL AND CLINICAL CHARACTERISTICS OF PATIENTS WITH PRIMARY MYELOFIBROSIS

**Background:** Primary myelofibrosis is rare hematological disease in which atypical megakaryocytes and granulocytes proliferate in bone marrow causing formation of fibrous tissue. PM clinical signs include hepatomegaly, splenomegaly, anemia, leukopenia or leukocytosis and thrombocytopenia or thrombocytosis. The aim of the study was to determine morphological and clinical findings in patients with primary myelofibrosis.

**Methods:** In retrospective study morphological data of bone marrow biopsies, clinical blood count and visual diagnostic tests were evaluated in 130 patients with PM between 2010 and 2015. IBM SPSS Statics was used to analyze acquired data.

**Results:** Of 130 patients 60 (46,2%) were males and 70 (53,8%) females. Average age was 67,1 years. In 73 (56,2%) cases PM was diagnosed in fibrotic stage, while in 57 (43,8 %) cases in pre-fibrotic stage.

Hypocellularity was observed in 13 (10%), normocellularity in 39 (29,9%) and hypercellularity in 78 (60,1%) cases. Following stages of myelofibrosis was recognized: MF0 44 (33,8%), MF1 23 (17,7%), MF2 38 (29,2%), MF3 25 (19,2%).

Atypical, hyperlobulated megakaryocytes were observed in 69 (55,1%) cases, atypical, hyperlobulated and hypolobulated megakaryocytes in 42 (32,3%) cases and atypical hypolobulated megakaryocytes in 15 (11,5%) cases. Cluster forming megakaryocytes were found in 108 (83,1%) cases, while diffuse placement was noted in 22 (16,9%) cases.

In radiological studies splenomegaly was detected in 111 cases with average spleen size of 18,3 cm. Hepatomegaly was found in 26 cases with average liver size of 16,1 cm.

**Conclusions:**

- 1) Statistical analysis demonstrated significant variations in clinical findings depending on stage of the disease.
- 2) Mild negative correlation was found between extent of fibrosis in bone marrow and red blood cell, white blood cell and platelet count.
- 3) The study hypothesis was affirmed – extent of fibrosis correlates with clinical findings in patients with PM.

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## **MOST COMMON CAUSES OF SMALL BOWEL BLEEDING AND THEIR CORRELATION WITH VASCULAR PATHOLOGIES (PSEUDOANEURYSM, AVM, AVF), ENDOSCOPIC AND RADIOLOGICAL FINDINGS**

**Key words.** Bleeding, angiography, endoscopy, interventional radiology

**Introduction.** Despite the fact that small bowel is less common source of gastrointestinal bleeding than stomach and large bowel, it's more often associated with diagnostic and treatment problems, leads to anaemia, may be obscure, require multiple hospitalizations and blood transfusions, but may be overt and life-threatening.

**Aim.** To evaluate the most common causes of small intestine bleeding in patients that underwent the procedure of visceral angiography in the Department of Interventional Radiology in Rīga East Clinical University Hospital and to compare it with endoscopic and radiological findings.

**Materials and methods.** The retrospective study included evaluation of medical history of patients with small bowel bleeding, in whom the angiography was performed in three-year period between January 2014 and December 2016. Angiographic, endoscopic and radiological findings were evaluated and compared. Data analyzed by SPSS.

**Results.** A total of 32 patients were included. 59,4 % men (n=19) and 40,6% women (n=13). The age of patients ranged from 33 to 91 years with mean age 65,9. The most common site of hemorrhage was duodenum, in 75% (n=24) of cases, followed by jejunum in 15,6% (n=5) and ileum 6,3% (n=2). In one case (3,1%) the precise source of bleeding hasn't been diagnosed after endoscopic, radiological and angiographic evaluation.

In majority of cases bleeding occurred because of ulcers (in 62,5%), all of them found in duodenum. In 12,5% AVM were diagnosed (n=4). Dieulafoy lesion was the source of bleeding in 6,3% (n=2). Postoperative bleeding occurred in 6,3% (n=2). Tumor found in 1 case (3,1%). One case of diffuse angiopathy and coagulopathy in patient with lymphoma was found during the study. In two cases the exact cause of bleeding has not been documented.

In 84% of cases the endoscopic and angiographic findings were similar: detected presence of bleeding and its location. In other 16% of cases the results of endoscopy were different from angiography. Endoscopy showed negative results in 22,6% of all cases, but more often when bleeding was located in jejunum (66%) and ileum

(33%), but all of duodenum lesions were seen during endoscopy. Angiography was non-informative in 2 patients (6.3%)

**Conclusions.** Recognizing small bowel bleeding remains a diagnostic challenge, especially if it is present in distal parts of intestine. Most common source of bleeding, duodenum ulcers, are diagnosed by endoscopy. But it is less useful in visualising processes in ileum and jejunum.

Vascular pathology is relatively frequent cause of bleeding.

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## **MOST COMMON CAUSES OF SMALL BOWEL BLEEDING AND THEIR CORRELATION WITH VASCULAR PATHOLOGIES (PSEUDOANEURYSM, AVM, AVF), ENDOSCOPIC AND RADIOLOGICAL FINDINGS, THERAPEUTIC MODALITIES AND OUTCOMES**

**Introduction.** Despite the fact that smallbowel is less common source of gastrointestinal bleeding than stomach and large bowel, it is more often associated with diagnostic and treatment problems, leading to anaemia. It may be obscure, requiring multiple hospitalizations and blood transfusions and may be overt and life-threatening.

**Aim.** To evaluate the most common causes of small intestine bleeding in patients who underwent the procedure of visceral angiography in the Department of Interventional Radiology, Rīga East University Hospital, compare endoscopic and radiological findings, to assess treatment and early complications.

**Materials and methods.** Retrospective study included evaluation of medical history of patients with small bowel bleeding who underwent angiographic examination in three-year period between January 2014 and December 2016. Angiographic, endoscopic and radiological findings were evaluated and compared. Data analyzed by SPSS.

**Results.** A total of 32 patients were included. 59,4 % men (n=19) and 40,6% women (n=13). The age of patients ranged from 33 to 91 years with mean age 65,9. The most common site of hemorrhage was duodenum, in 75% (n=24) of cases, followed by jejunum in 15,6% (n=5) and ileum 6,3% (n=2). In one case (3,1%) precise source of bleeding hasn't been diagnosed after endoscopic, radiological and angiographic evaluation.

In majority of cases bleeding occurred because of ulcers (in 62,5%), all of them found in duodenum. In 12,5% AVM were diagnosed (n=4). Dieulafoy lesion was the source of bleeding in 6,3% (n=2). Postoperative bleeding occurred in 6,3% (n=2). Tumor found in 1 case (3,1%). One case of diffuse angiopathy and coagulopathy in patient with lymphoma was found during the study. In two cases the exact cause of bleeding has not been documented.

In 84% of cases the endoscopic and angiographic findings were similar: detected presence of bleeding and it's location. In other 16% of cases the results of endoscopy were different from angiography. Endoscopy showed negative results in 22.6% of all cases, but more often when bleeding was located in jejunum (66%) and ileum (33%), but all of duodenum lesions were seen during endoscopy. Angiography was non-informative in 2 patients (6.3%)

**Conclusions.** Recognizing small bowel bleeding remains a diagnostic challenge, especially if it is present in distal parts of intestine. Most common source of bleeding, duodenum ulcers, are diagnosed by endoscopy. But it is less useful in visualising processes in ileum and jejunum. Angiography in these cases is more useful for diagnosis.

Endovascular embolization is relatively safe and effective treatment method.

Vascular pathology is relatively frequent cause of bleeding.

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## NEUROLOGICAL OUTCOMES IN PATIENTS WITH CARDIAC ARREST ACHIEVING RETURN OF SPONTANEOUS CIRCULATION AT PREHOSPITAL STAGE

**Introduction.** Despite rapid development of technologies in emergency medicine and reanimatology the prognosis of patients suffering from sudden cardiac arrest still is doubtful.

**Purpose.** The objective of the study was to assess the mortality and survival rates of patients suffering from out-of-hospital sudden cardiac arrest with achieved return of spontaneous circulation (ROSC) at prehospital stage and to evaluate the neurological outcome of patients at the time of discharge from hospital.

**Materials and methods.** 206 patients undergoing cardiopulmonary resuscitation (CPR) from 1<sup>st</sup> January 2015 until 31<sup>st</sup> August 2016 with achieved ROSC at prehospital stage, who were admitted either in Pauls Stradiņš Clinical University Hospital or Rīga Eastern Clinical University Hospital "Gaiļezers" were included in this study. The medical documentation (State Emergency Medical Service of Latvia electronic medical records and medical histories of hospital) was analysed retrospectively. The neurological outcomes of patients who survived until discharge from hospital were evaluated according to Cerebral Performance Category (CPC) scale based on records in patient medical histories. Statistical analysis of data was performed by using *Microsoft Excel* and *IBM SPSS 20.0* softwares.

**Results.** The average age of patients was  $63,9 \pm 15,7$  SD years. In 50.97% of the cases the cardiac arrest occurred before arrival of emergency medical service (EMS) staff. In 27,61% of these cases bystanders performed CPR until the arrival of EMS. In 45,9% cases the initially detected rhythm was ventricular fibrillation, 2,9%- pulseless ventricular tachycardia, 28%- pulseless electrical activity, 19,8%- asystole. The average duration of CPR performed in prehospital settings was  $16,2 \pm 15,7$  minutes. In 59,2% cases there was a recurrent cardiac arrest at the hospital. 42,5% of patients survived until discharge from hospital. In 44,3% of patients who were discharged from hospital the neurological state was ranked with CPC-1, 30,6% of patients with CPC-2, 18,1% of patients with CPC-3 and 6,8%- with CPC-4. There were no significant correlation found between duration of CPR at prehospital stage and neurological outcome ( $p=0,035$ ).

**Conclusions.** The rates of survival in patients with achieved ROSC in prehospital stage are relatively low. The most of patients who survived until discharge of hospital had satisfactory neurological outcomes with none or mild to moderate consequences (CPC-1, CPC-2).

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## NEUROSARCOIDOSIS: MRI FINDINGS AND CORRELATION WITH DURATION OF THE DISEASE

**Background:** Sarcoidosis is chronic, systemic disease of unknown etiology, in which inflammatory cells form non-caseous granulomas in organs and tissues. In Neurosarcoidosis granulomatous inflammation can emerge in several sites of CNS therefore clinical symptoms are mostly non-specific. The goal of the study is to characterize clinical presentation and radiological findings of neurosarcoidosis and correlation with duration of the disease.

**Methods:** In retrospective study data of patients with diagnosis sarcoidosis (ICD-10 D86) between 01.01.2012 and 01.12.2015 was evaluated. 22 patients aged 22-65 met selected criteria. MRI findings were categorized by process localization and correlated with duration of disease.

**Results:** Of 22 patients, pathological leptomeningeal enhancement were found in 19 (86,4%) cases. Dura mater involvement were found in 7 (32%) cases. 10 (45,4%) patients had lesions in white matter. 16 of 19 (84,2%) patients had cranial nerve involvement.

Dura mater involvement was observed more frequently (44% - 4 of 9 cases) in group where disease duration was over 5 years in comparison to group where disease duration was under 5 years (23% - 3 of 13 cases). Hypothalamus-hypophysis involvement were found more often (46% - 6 of 9 cases) in patients with disease duration under 5 years compared to group where disease duration was over 5 years (23% - 3 of 13 cases).

**Conclusions:**

- 1) In patients with proven neurosarcoidosis most frequently process is localized in leptomeninges with combination of cranial nerve involvement.
- 2) Dura mater involvement is usually associated with elderly patients with long disease duration.

3) Hypothalamus-hypophysis is involved more frequently in patients with shorter disease duration.

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## OBSTRUKTĪVAS MIEGA APNOJAS RISKS PACIENTIEM AR PLAUŠU SLIMĪBĀM

**Key words:** Obstructive sleep apnea, pulmonology, shortness of breath, comorbidities

**Atslēgvārdi:** obstruktīva miega apnoja, pneimonoloģija, elpas trūkums, blakus slimību risks

**Ievads:** obstruktīvu miega apnoja (OMA) ir slimība, kuras klīnisko izpausmju dēļ pacienti atrodas hroniskā hipoksijas stāvoklī. Slimībai nereti novēro pārklāšanās formas ar plaušu slimībām, kas var apgrūtināt diagnostiku.

**Mērķis:** Identificēt OMA risku pacientiem ar plaušu slimībām, kas ārstēti stacionāri.

**Materiāli un metodes:** Prospektīvā pētījumā tika iekļauti 227 pacienti ar plaušu slimībām. Pacienti tika novērtēti pēc starptautiski atzītas STOP-BANG anketas, nosakot OSA risku. Datu statistiskā apstrāde veikta ar programmu SPSS 23.0.

**Rezultāti:** Augsta riska grupā visvairāk bija pacienti ar sadzīvē iegūtu pneimoniju (n=42), bronhiālo astmu (n=24), hroniski obstruktīvu miega apnoju (n=20).

**Secinājumi:** Pētījums pierāda, ka pacientiem ar plaušu slimībām ir augsts OSA risks un šai riska grupai būtu jāveic polisomnogrāfija.

Obstructive sleep apnea risk assesment among patients with pulmonary disease

**Introduction:** Obstructive sleep apnea (OSA) is a disease that induces a persistent/periodic hypoxia condition. OSA often have an overlap syndrome between other lung disease therefore it is difficult to get a correct diagnosis.

**Aim:** To identify the risk of OSA among patients, who were hospitalized due to a pulmonary disease.

**Materials and methods:** A prospective study of 227 patients with a pulmonary disease. Patients were assessed using the STOP-BANG questionnaire. Statistical analysis was conducted using SPSS 23.0 software.

**Results:** The high-risk group consisted of patients with community acquired pneumonia (n = 42), bronchial asthma (n = 24) and chronic obstructive pulmonary disease (n = 20).

**Conclusions:** The study confirms that patients with pulmonary disease tend to have a high risk of OSA and they should be examined using polysomnography.

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## OPPORTUNISTIC INFECTIONS IN FATAL HIV/AIDS CASES IN LATVIA

**Key words:** HIV, opportunistic infections (OI)

The most common reason for hospitalization of HIV/AIDS patients in Latvia are OI (Seikals K., Sture G., 2016). As a rule HIV patients are terminally ill on admission and despite advanced approach the investigation is limited by patient poor condition and time. (L.Vīksna 2016, G.Stūre et al., 2017). In such cases autopsy is the only option left for establishing the diagnosis. The aim of our study was to evaluate the spectrum of OI in lethal HIV/AIDS cases in Latvia. We retrospectively reviewed HIV/AIDS patient autopsy protocols for years 2010 – 2016. Gender, age and stage at the time of death, pathological and clinical diagnosis on last admission were considered. In 455 HIV/AIDS patient autopsies we identified 71 Pneumocystis jiroveci and 40 Cytomegalovirus pneumonias, 114 Candidosis (19 invasive), 47 Cryptococcosis (25 extrapulmonary), 27 cerebral toxoplasmosis, 10 atypical mycobacteriosis, 5 Aspergillosis cases and various combinations of OI causing predominantly pneumonia (74%), liver (58%) and brain (34%) lesions. Hepatitis C virus (HCV) and tuberculosis (TB) were identified in 42% and 25% of cases respectively. In 73% TB was disseminated. Age range at the time of death was from 22 to 68. 82% of patients died at C3 stage. We conclude that OI are the leading cause of mortality in

HIV/AIDS patients in Latvia. Dissemination and a combination of several OI at the time of death are common. Most common HIV co-infections in Latvia are HCV and TB.

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## OROFACIAL CLEFTS AFFECT ON INFANT FEEDING

**Key words:** *Orofacial clefts, feeding, parent knowledge*

**Introduction.** Cleft lip and/or palate are the most common form of craniofacial defects. Each year in Latvia, about 30-40 babies are born with an orofacial clefts (OFCs). Children with OFCs often require multiple surgeries, procedures, due to potential feeding problems, speech and language development. The feeding process is complicated due to nasal regurgitation of food, excessive air intake that results in frequent burping and choking.

**Aim.** The purpose of this study was to identify and analyze the prevalence of feeding problems faced by parents of children with OFCs.

**Materials and methods.** Total of 93 parents were surveyed in Riga Cleft Lip and Palate Centre. The questionnaire consisted of 29 questions asking parents about child's feeding problems, complications and concomitant diseases. Parents were also asked about the accessibility of information. Data was statistically analysed with Microsoft Excel, IBM SPSS 22.0.

**Results.** In total, 93 questionnaires were included in this study. Fifty-nine percent of the parents reported that the presents of cleft influenced the choice of type of infant feeding. The expressed breast milk using a bottle was the most common choice of first infants feeding (46 %), nasogastric feeding (11 %), and breastfeeding (21 %). After the first feeding 53% of the parents have changed the way of feeding their child.

When fed 58% babies experienced nasal regurgitation of food, 46% food leakage around the mouth, 41% excessive air intake, 40% choking, 24% fatigue and 20% coughing.

Only 45% of parents have received sufficient information in hospital about the child care and feeding.

**Conclusion.** Study results showed that children with OFCs are at high risk of developing feeding difficulties. Bottles with extracted milk, nasogastric feeding and breastfeeding are the most common choice.

Our survey revealed that many parents were unsatisfied with the initial information received at the hospital.

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## OSTEOPLASTIC FLAP PROCEDURE AND SINUS OBLITERATION IN PATIENT WITH POSTOPERATIVE COMPLICATIONS OF CHRONIC FRONTOETHMOIDITIS

**Introduction:** Surgical treatment of chronic frontal sinusitis is a complex procedure demanding good knowledge of sinus anatomy. Surgical approach should be chosen according to patients' specific anatomical features because of great anatomical variability of frontal sinus structure. The aim of surgery is to restore sinus drainage pathway.

**Case report:** 64 years old woman presented to the otorhinolaryngology clinic in April 2016 due to facial pain and pressure sensation in her left frontal region, recurrent subcutaneous inflammatory processes above the left eyebrow. Patient had chronic frontoethmoiditis for six years with three following functional sinus surgeries including *trepanopunctio sinus frontalis sinistra* and *frontoethmoidotomia sinistra*. Computed tomography (CT) showed opacification of frontal sinus with a discharge of sinus content into the subcutaneous space through the bony defect in the anterior wall of frontal sinus after previous *trepanopunctio sinus frontalis sinistra*. It has been decided to perform frontal sinus surgery and frontal sinus obliteration with autologous fat material and an osteosynthesis of the anterior wall of frontal sinus. Surgery has been performed in external approach through bitemporal coronal incision.

After the surgery patient was prescribed three-day intravenous antibiotic course and analgesia. Surgical wound healed primarily. Three days after surgery patient was discharged from clinic for further treatment at home. On control visit to otorhinolaryngologist six months after operation the patient did not have any complaints and control CT showed no pathology.

Conclusion: Long-term surgical outcome depends on the selection of adequate surgical approach. Osteoplastic flap procedure and sinus obliteration is appropriate for management of chronic frontitis complications.

Summary: We present unusual case of recurrent chronic frontoethmoiditis with complications. External surgical approach was indicated for complication treatment.

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## **PARENTS ROLE IN DEHYDRATION TREATMENT IN THE CASE OF PEDIATRIC ACUTE GASTROENTERITIS IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL**

**Introduction.** Often pediatric acute gastroenteritis is considered a benign disease but according to World's Health Organization data it remains a major cause of morbidity and mortality in children younger than 5 years or roughly 15% of all child deaths.

**Aim.** The aim of the study was to evaluate parental knowledge and attitude of dehydration treatment in the case of pediatric acute gastroenteritis and to find out if on guideline based rehydration treatment is used in emergency settings in Children's Clinical University Hospital (CCUH).

**Materials and methods.** A questionnaire consisting of 16 questions was completed by child's parent in the Emergency department in CCUH and a questionnaire consisting of 8 closed-answer questions was fulfilled by the attending physician, data were also compared with objective signs and information in medical charts.

**Results.** All together 60 questionnaires were collected. From all children only 3% (2/60) had severe dehydration, 23% (14/60) had moderate and 74% (44/60) had mild dehydration. Surprisingly 10% of the parents answered that child should not drink more fluids as usual. Two thirds of parents answered that the most effective way how to replace the fluid loss is with intravenous rehydration when only 33% were sure that oral rehydration is the most effective way. Only 13% (8/60) parents answered correctly to the question how much their child should drink fluids every day according to their age. The second part of the study was to find out if on guideline based rehydration therapy is used in emergency settings in CCUH. While there were 74% children with mild dehydration only 36% (22/60) received oral rehydration and nobody received rehydration through nasogastric tube. Mostly, children in CCUH received intravenous rehydration (63% all together).

### **Conclusions.**

Study proved that parental knowledge about rehydration treatment of pediatric acute gastroenteritis is far from being satisfactory and further parent education should follow. More targeted and on guidelines based rehydration therapy should be used in CCUH emergency settings and also the role of rehydration through nasogastric tube should be considered more often.

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## **PARENTS' TRUST IN GENERAL PRACTITIONER COMPARED TO TRUST IN EMERGENCY DEPARTMENT OBSERVATION UNIT (EDOU) IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL**

**Keywords:** *Parents, children, trust, communication, general practitioner (GP), emergency department (ED)*

**Introduction:** Every day dozens of parents seek help at the ED OU due to their children's health issues. These health situations are often not very serious and the patients are sorted into white, green or yellow priority and wait in queue for a pediatrician's consultation for several hours. This causes overcrowding in the ED and frustration among parents and personnel. Only in about 20% of cases the patients actually need hospital treatment, the others are sent back home after examination. Help of a GP could be more helpful in most of these cases.

**Aim:** To determine parents' trust and communication quality with their GP and find reasons for not visiting GP in cases of children's health problems.

**Materials and methods:** This prospective study was carried out in 2017 by a random survey of parents and their children (n=300 patients), who have received a lower priority (yellow, green, white) in the sorting process of ED OU. Statistical analysis was performed using MS Excel, IMB SPSS Statistics 22 software and  $p < 0.05$  was considered statistically significant. Cross tabulation with  $\chi^2$  test and Fischer's exact test were used.

**Results:** A total of 300 pairs of parents and their children (age 0-17) were surveyed. 53% (157) of parents came to the hospital without any referral from a GP or ambulance. 41% (123) of the parents had not contacted their GP during this particular illness, and 64% (192) had not seen the GP prior to coming to the hospital. The most common reasons for not going to the GP were: in 45% (85) – GP does not work in this hour/date; 46% (87) “other” reasons (GP is on a sick leave, GP is not a pediatrician etc.) in 13.8% (26) parents thought they could handle this on their own.. On a scale of 1 to 10 (1- the worst, 10-the highest) parents rated their trust in GP as an average of 7.8 (median 8, min 1, max 10), trust to the hospital as 8.7 (median 9, min 1, max 10) and the communication with their GP as 8.3 (median 9, min1, max 10). Those parents, who came to the hospital without referral, trust their GP less (on average 7.8) than those, who come with a referral from a GP (on average 8.7, p = 0.04). Those parents, who live outside Riga (64%), go to their GP less often, before coming to the hospital, than those, who live in Riga (48%, p=0.05). 46% (135) of the surveyed parents rate their trust to the hospital higher than their GP; 42% (125) rate their trust the same for hospital and for GP and 12% (34) rate trust to the hospital worse. 19% (57) of all patients were hospitalized, 81% (243) were classified as primary care patients and sent to home. **Conclusions:** 46% of parents prefer to seek the hospital help according to the higher hospital trust level comparing to GP (despite their trust in GP (8)). According to the results many aspects of the children’s primary health care system need improvements and parent cooperation with GP should be promoted.

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## PATHOLOGICAL FRACTURE IN VERTEBRA WITH LYTIC DESTRUCTION DUE TO PRIMARY ANGIOSARCOMA

**Key words:** *Vertebra, angiosarcoma, pathological fracture*

**Introduction.** Primary angiosarcoma (AS) of bone occurs very rare, less than 1% of all primary bone tumors. AS is aggressive tumor derived from mesenchymal cells.

**Case report description.** 04/2013 72 year old female presented with severe pain in the back and left thigh, difficulty in walking. Significant deterioration of well-being and increased pain level approximately one 1 month long. Patient received therapy with painkillers, gabapentin.

X-ray results: pathological fracture in vertebra L3 with lytic destruction; vertebral osteoporotic compression of L4-L5.

Patient was admitted to the Hospital of Traumatology and Orthopedics in Riga for operative treatment. 05/2013 – L1-L2, L4-L5 transpedicular screw fixation with Expedium, L3 *laminectomy*, partial resection of tumor, L3 vertebroplasty, L3-L4 rediculolysis decompression.

Histology results from operation material: hemorrhagic and reactive infiltration found in fragments of bone; tumor tissues confirms AS.

*Ex. Consilio* 05/2013 – recommended actinotherapy and monitoring by cardiologist.

From 12/06/2013 till 12/07/2013 – palliative actinotherapy to *vertebrae* L3 (44GY) and tumor in *m.psoas sin.* (46.2 GY), found on CT scan 30/05/2013.

In general – patient was feeling better, pain syndrome gone.

CT results 08/2013 – AS in retroperitoneal cavity with negative dynamic compared to 05/2013.

From 19/08/2013 till 08/01/2014 patient received 6 cycles with Doxorubicin. On control CT Mar/2014 - retroperitoneal tumor without dynamics, stable, but in liver 4 metastases suspected. Due to progression of oncological process patient received second line palliative chemotherapy with 6 cycles PTX.

Partial remission of disease.

On control CT 04/2015 – retroperitoneal tumor size was smaller, old metastases in liver with no dynamics, but one new metastasis in liver. *Patient received palliative chemotherapy from 30/09/2015 till 20/04/2016: 5 cycles with Gemcitabin and 3 cycles with Docetaxel.* Complications of treatment - leukopenia, neutropenia. Patient reached partial remission. Death from progression of disease in 2016 autumn.

**Conclusion.** Approximately fourth part of AS are found in deep tissues. Metastatic disease and oncopathology with operative therapy that has no clear margins has poorer prognosis for 5 year survival. Chemotherapy can be used before and after surgery.

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## **PATIENTS' LEVEL OF KNOWLEDGE OF STATE-FUNDED SCREENING PROGRAMS IN FAMILY PHYSICIAN'S PRACTICE**

**Key words:** Screening, cancer, general practice

**Introduction:** Screening tests have been shown to find cancer early and to reduce the risk of dying from cancer. Last years in Latvia morbidity and mortality rates of cancer had increased, especially of high ratio in late-stage cases. In Latvia from 2000 - 2015 registered oncological patients had increased. At the end of year 2015 was registered 74540 patients with oncology. Timely diagnosis of cancer in most cases, patients can be completely cured of cancer. Screening is meant for overall population health improvement.

**Aim:** Evaluate respondents knowledge about screening and the reasons for non-use screening.

**Materials and methods:** A cross-sectional study using a survey of family physician's patients. Responded data was summarized and processed with IBM SPSS 23 descriptive and analytical statistics.

**Results:** In this study are used 102 patient survey data, at age group from 50 to 74 years. 67% (n=68) from of overall respondents were women, and 33% (n=34) of respondents were men. 35% of respondents visited family doctor 5 to 10 times per year, 29% 2-5 times per year, 19% more than 10 times per year and 17% once per year. Knowledge about screening programs of all respondents: 53% (n=54) rated it as good, 26% (n=27) rated it is bad and 21% (n=21) rated it average. 49% of respondents said that screening includes colorectal cancer test, 65% that screening includes cervical cancer test, and 62% noted that screening includes mammography. Respondents identified the following reasons why they can not use screening: 22% lack of informative material, 11% fear that diagnosed oncology, 14% do not feel that this is important, another 53% of respondents always use screening. Correlation was found between the number of family doctor visit per year and respondents knowledge about screening programs (p=0.015, r=0.24).

**Conclusion:** Despite the increased number of health improvement campaigns, lack of knowledge about screening programs still exists. The results show that half of respondents still do not use screening. Population health and knowledge can be improved by regular health check through family physician.

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## **PITX2 GENE VARIANT RS2200733 PREDICTS RISK OF LONE ATRIAL FIBRILLATION DEVELOPMENT IN LATVIAN POPULATION**

**Key Words:** atrial fibrillation, PITX2

**Introduction.** Term "lone atrial fibrillation" (LAF) was first introduced in 1953 and defined an atrial fibrillation (AF) in otherwise healthy patients without any structural heart disease. Contemporary medicine has revealed multiple risk factors, which are associated with development of AF, but still there are cases of unknown etiology. In previous studies genetic variants located near paired-like homeodomain transcription factor-2 gene (*PITX2*) were found to be associated with development of AF in different populations.

**Aim.** The aim of our study was to investigate the role of *PITX2* variant rs2200733 in development of LAF in Latvian population.

**Materials and methods.** We included 17 patients with LAF and 86 healthy controls from Latvian population in our study. LAF was defined as AF in patients younger than 65 years and no history of thyroid dysfunction, chronic obstructive pulmonary disease, chronic kidney disease, systemic inflammatory disease, diabetes, hypertension, coronary heart disease, valvular heart disease, cardiomyopathies or any other structural heart abnormalities. DNA was extracted from peripheral blood samples, and genetic analysis was accomplished via PCR-RFLP assay. Statistical analysis was performed in SPSS 20.0 software.

**Results.** Mean age of LAF patients was  $52.7 \pm 5.9$  years and  $56.84 \pm 6.6$  years in control group ( $p=0.019$ ). In a binary logistic regression model dominant pattern of T allele inheritance (CT or TT genotypes) predicts development of LAF (OR=7.8, 95%CI=2.32–26.26;  $p=0.001$ ). Homozygosity for T allele alone did not reached a statistically significant level of prediction (OR=3.6, 95%CI=0.56-23.69;  $p=0.176$ ).

**Conclusion.** Genotypes CT and TT at *PITX2* rs2200733 predict risk of development of lone atrial fibrillation in Latvian population.

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## POLYPHARMACY AND QUALITY OF LIFE IN SENIOR POPULATION

**Introduction.** As the population gets older and medicine develops, the consumption of medication raises. According to CDC/NCHS 2008, the percentage of 2 and more prescription drugs reach 76% over the age 60 monthly. When a new complaint appears, another drug is added to the therapy.

**Aim** is to find significant relation between amount of drugs patients use and health according to SF-36.

**Materials and methods.** A cross-sectional study was conducted with 107 seniors (age > 65 years). Questionnaire and SF-36® Health Survey were completed. Collected statistical data were analysed by SPSS V20.0 software. Impairments in physical functioning, physical pain, social functioning, emotional health, vitality and general health were compared between two groups – seniors who use 1 or less medication (non-polypharmacy; NP) and seniors who use 2 or more medications (polypharmacy; P).

**Results.** The average age of seniors was 71.6 years. 37% of respondents do not use any medication, 36% use 1 drug, 27% use 2 and more drugs. Analysing Spearman's correlation coefficient, there was found statistically valid correlation between age and physical health ( $r = -0.240$ ;  $p = 0.013$ ) and more significant in seniors affected by P ( $r = -0.402$ ;  $p = 0.031$ ), but unconvincing in NP group ( $p > 0.05$ ).

ANOVA test brought out significant differences between P and NP groups in physical functioning ( $76.7 \pm 3.7$  vs.  $88.0 \pm 1.7$ ;  $p = 0.002$ ), physical pain ( $72.2 \pm 5.5$  vs.  $84.4 \pm 2.6$ ;  $p = 0.026$ ), social functioning ( $74.8 \pm 5.1$  vs.  $88.6 \pm 2.7$ ;  $p = 0.012$ ). Independent sample test was used for nonparametric data and revealed differences between P and NP groups in emotional health ( $80.1 \pm 2.3$  vs.  $85.2 \pm 1.3$ ;  $p = 0.035$ ), vitality ( $73.3 \pm 2.3$  vs.  $80.9 \pm 1.3$ ;  $p = 0.004$ ) and general health ( $44.5 \pm 2.8$  vs.  $56.1 \pm 2.2$ ;  $p = 0.004$ ).

**Conclusion.** Our results suggest that multiple drug therapy is an indicator of decreased quality of life in seniors in all scales of SF-36 Health Survey.

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## POSTERIOR VITREOUS MEMBRANE DETACHMENT BEFORE CATARACT SURGERY

**Key words:** posterior vitreous detachment, cataract, cataract surgery.

**Background:** Posterior vitreous detachment is a separation of the posterior vitreous cortex from the internal limiting membrane of the retina. Vitreous traction at sites of significant vitreoretinal adhesion is responsible for more retinal breaks that lead to retinal detachment [1]. On the other hand risk of retinal detachment is increased for up to 20 years after cataract surgery. At eight years of follow-up, retinal detachment has been described in 2.3% of postoperative cataract patients [2].

**Aims:** To detect posterior vitreous membrane detachment frequency in patients before cataract surgery procedure.

**Methods:** The study group was created by retrospective design, enrolling persons before cataract surgery from a single university hospital. Patients were selected randomly. The selection was performed by optical coherence tomography. All data were analyzed with SPSS 22.0.

**Results:** The resulting group included 47 patients, among them - 15 men (31,9 %) and 32 women (68,1 %). Patients' age ranged from 49 to 90 years, mean 82.0 years. Left eye was operated in 19 patients (40,4 %), right eye was operated in 28 patients (59,6 %). 36 patients have posterior vitreous membrane detachment.

**Conclusion:** Current research on posterior vitreous membrane detachment before cataract surgery procedure revealed that 3 of 4 patients have detachment.

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## POSTNATAL FACTORS ASSOCIATED WITH ANAEMIA OF PREMATURITY AND NEED FOR RED BLOOD CELL TRANSFUSION

**Key words:** *Anaemia of prematurity, transfusion of red blood cells.*

**Introduction.** Anaemia is a common multifactorial issue in very premature infants hospitalised in Neonatal Intensive Care Unit. A lot of different factors and their combinations may trigger development of anaemia and consequently a transfusion of red blood cells (RBC).

**Aim.** The aim of this study was to determine the most common possible postnatal causes that may exacerbate anaemia of prematurity and to detect their connection with the need of RBC transfusion.

**Materials and methods.** A retrospective medical record review was done for 70 preterm neonates who were admitted to Neonatal Intensive Care Unit at Children's Clinical University Hospital from September 2014 till November 2016. The first four weeks of hospitalisation were analysed and included neonates with birth weight <1.500g or gestational age <32 weeks.

**Results.** In total 79% (n=55) of neonates had anaemia, 36% (n=25) of neonates received transfusion of RBC. The most common triggers were identified: blood loss due to phlebotomy or various bleeding, surgical manipulations and infections. Blood loss due to phlebotomy experienced 100% (n=70) of neonates. The average blood volume collected per four weeks was 14.7 ml/kg (0.53 ml/kg/day) or around 14.7 % of total blood volume. Altogether 40% (n=28) of neonates had loss of blood ≥10% of total blood volume. We were comparing data between two groups: neonates who underwent RBC transfusion and neonates who did not. Results show that those who underwent RBC transfusion lost on average 20.23 ml/kg due to blood sampling per four weeks. Those who did not undergo RBC transfusion – 9.62 ml/kg. Blood loss due to other causes were found in 70% (n=49), the most frequent type of bleeding was intraventricular hemorrhage – 66% (n=46) of all neonates. 80% (n=20) of them who underwent transfusion of RBC had some type of bleeding simultaneously and 64% (n=29) of neonates who did not undergo transfusion. Surgical manipulations experienced 10% (n=7) of neonates. 49% (n=34) of neonates were diagnosed with infection. Among those neonates who underwent transfusion of RBC 60% (n=15) had infection, among those who did not undergo transfusion 40% (n=19) had infection. 56% (n=14) of neonates who underwent transfusion of RBC had all three main triggers simultaneously: phlebotomy, various bleeding and infection.

**Conclusions.** Three most common triggers were identified: blood loss due to phlebotomy, bleeding and infections. All these triggers were found more often between those neonates who underwent transfusion of RBC. And very often they have affected neonate at the same time.

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## PREDICTION OF REGIONAL LYMPH NODE METASTASES OF COLORECTAL ADENOCARCINOMA USING MORPHOLOGIC CHARACTERISTICS

**Key words:** *colorectal adenocarcinoma, regional metastases, surgery*

**Introduction:** Despite the remarkable progress in the diagnostics, treatment and scientific studies of colorectal cancer (CRC), it still represents one of the most frequent malignant tumours not only in Latvia, but also in Western countries (1-3). Adenocarcinoma (AdCA) represents the vast majority of CRC (4). Regarding the outcome and the selection of treatment, presence and number of regional lymph node (LN) metastases (MTS) are of utmost importance. However, LN retrieval can be difficult and thus it represents a hot topic in research. The analysis of correlation between regional lymph node status and other characteristics would provide diagnostic protocols for preoperative assessment or in controversial cases.

The **aim** of this study was to identify the association between the presence and extent of regional LN MTS and both classical and innovative tumour characteristics in colorectal adenocarcinoma.

**Objectives:**

1) In order to reach the set aim, a representative study group of colorectal adenocarcinoma cases was created by archive search. The inclusion criteria comprised morphologically verified primary colorectal adenocarcinoma while other carcinomas, non-epithelial and secondary tumours were excluded from the study. 2) The cancers were characterised by demographic, clinical and morphologic parameters as described in the Methods. 3) The correlations between pN and classic (cancer grade, invasion depth, histological type) and innovative (cancer volume, nuclear atypia, type of the invasive border) tumour characteristics were searched for.

**Methods:** A retrospective study design was selected as appropriate. All consecutive patients who underwent colorectal cancer surgery with potentially curative intention were identified by archive search in a single clinical university hospital, 2011 – 2014. The following demographic, clinical and morphological data were studied: patients' age and gender; tumour characteristics by local spread (pT), regional lymph node metastases (N), distant metastases (M), grade (G) and resection line status (R) summarised into pTNMGR parameters (4,5); number of retrieved LN; presence and quantity of MTS in LN and in pericolonic fat as well as volume and localisation of the tumour. By light microscopy, histological cancer specimens were analysed to evaluate the nuclear atypia in three-tiered scale and invasive border (rounded versus streaming dissection). SPSS and CIA software was applied for descriptive and analytical statistics involving 95% confidence interval (CI) for proportions and means, interquartile range (IQR) and Pearson correlation.  $p < 0.05$  was considered significant.

**Results:** The archive search yielded 429 cases of colorectal cancer including 373 adenocarcinomas. The study group comprised 51.9% women [95% CI: 46.8 – 57.0], and 48.1% men [43.0 – 53.2]. The median age of colorectal adenocarcinoma diagnosis was 71.0 year (IQR: 13). The AdCAs predominantly affected the distal part of large bowel – 61.3% [56.4 – 66.2] of cases were located in sigmoid colon and rectum. In 26.2% [21.7 – 30.7] of patients, the tumour was situated on the right side of colon. The tumours mostly were locally advanced, as pT3 comprised 51.1% [46.0 – 56.2] cases and T4: 32.4% [27.7 – 37.2]. Regarding grade, G2 was predominating 70.4% [65.8 – 75.0]. The regional lymph node status was following: pN0 was observed in 55.1% [50.0 – 60.1] cases, pN1: 26.6% [22.1 – 31.1] and pN2: 18.5% [14.6 – 22.5]. pN showed direct relation with tumour volume ( $p < 0.05$ ), pT ( $p < 0.05$ ) and G ( $p < 0.05$ ). pT4 constituted 60.3% of pN2 [48.7 – 71.9], 37.4 % pN1 [27.9 – 46.9] and 20.5% of pN0 cases [14.8 – 26.0]. G3 comprised 41.2% cases of pN2 [29.5 – 52.9], 22.0% of pN1 [13.8 – 30.1] and 9.8% of pN0 [5.7 – 13.9] AdCA. By tumour localisation, rectosigmoid AdCAs were N2 in 24.6% cases [19.7 – 32.2]. The invasive border showed streaming dissection in 70.6% [66.0 – 75.2] pN2 AdCA cases. In contrast, the border was rounded in 88.8% [85.6 – 92.0] pN0 tumours. There was positive correlation between LN MTS and high nuclear atypia ( $p < 0.05$ ).

**Conclusion:**

1) Surgically resectable colorectal cancer in our study group was diagnosed at the median age of 71 year. There was almost equal male and female proportion. It was characterised by predominant left-sided location. 2) The surgically treated colorectal adenocarcinomas were mostly locally advanced and of moderate grade. 3) Presence and extent of LN MTS is significantly associated with higher tumour volume ( $p < 0.05$ ), locally advanced spread reflected by pT ( $p < 0.05$ ), high tumour grade ( $p < 0.05$ ) and high nuclear atypia ( $p < 0.05$ ). 4) There is significant association between pN values and invasive border – pN0 cancers generally have rounded invasion border while high pN is associated with streaming dissection ( $p < 0.01$ )

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## PREDICTORS OF EFFECTIVE ELECTRICAL CARIOVERSION OF ATRIAL FIBRILLATION

**Key words:** atrial fibrillation, electrical cardioversion

**Introduction:** Atrial fibrillation is the most common cardiac arrhythmia. Atrial fibrillation is characterized by high morbidity and mortality as well as it becomes more persistent over time. Maintenance of sinus rhythm depends on the duration of atrial fibrillation. Electrical or pharmacological cardioversion is a standard procedure to restore sinus rhythm.

**Aim:** to evaluate the correlation between the amount of electrical shocks as well as the total energy applied with maintenance of sinus rhythm 30 days after electrical cardioversion.

**Materials and methods:** In this retrospective study data from 150 patients were collected in Pauls Stradins Clinical University Hospital's Department of Arrhythmology which holds information about patients who had undergone electrical cardioversion to restore sinus rhythm. Questionnaires were administered and follow-up data were collected by phone patient survey from 30 days after ECV.

Statistical analysis was conducted using SPSS 20.0 software. Crosstabulation with multiple variables, Fisher's Exact Test, Mann-Whitney U Test were applied ( $p < 0.05$ ).

**Results:** 150 patients were questioned – 70% male ( $n=105$ ) and 30% female ( $n=45$ ) with a mean age of 65 (56-74) years. Electrical cardioversion was performed to all patients in this study. Sinus rhythm was restored in 145 of patients (96.7%). The success rate after a single discharge was 87.3%. 2 electrical shocks were required for 9.3% of patients and 3.3% of patients benefited from a third shock. A single discharge has a greater success rate for maintaining sinus rhythm for 30 days ( $p=0.003$ ). In 10% of all patients cardioversion began with 150 J. Initial discharge was 200 J for 76.7% of patients, the total energy applied was 300 J for 6% of patients and 360 J for 3.3% of patients. The success rate for maintaining sinus rhythm for 30 days was greater with higher initial discharges ( $p=0.004$ ).

**Conclusions:** Electrical cardioversion is a standard procedure and is very effective in the treatment of atrial fibrillation. It has a high rate of success in restoring sinus rhythm. A successful single discharge and higher total energy applied correlate with more stable sinus rhythm 1 month after electrical cardioversion was performed.

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## PREGNANCY YOGA CLASSES – POTENTIAL BENEFITS FOR MOTHER HEALTH

**Key words:** Yoga, physical activity, pregnancy, labor

**Introduction.** A regular moderate intensity physical activity during pregnancy is recommended by international guidelines. Health benefits include reduced risk of excessive gestational weight gain and conditions such as gestational diabetes and preeclampsia. Psychological benefits to physical activity during pregnancy include reduced stress, as well as improved well-being and satisfaction with the childbirth experience. Prenatal yoga classes provide moderate intensity physical activity and are available for pregnant women in Latvia.

**Aim.** To find out how yoga practice affects the course of pregnancy and childbirth outcomes compared pregnant women who attend yoga with a control group - pregnant women who do not attend yoga.

**Materials and methods.** Study was conducted in 3 yoga studios in Riga. Women who attended "Prenatal yoga" were surveyed. The second part of survey was carried out after the childbirth. The control group consisted of women in postpartum period, who do not attended yoga.

**Results.** A total of 58 women (29 in yoga group and 29 in control group) participated in a study. Mean age  $\pm$  SD was 31,59 $\pm$ 4,14 in yoga group and 29,83 (SD $\pm$ 5,31) in control group, the mean body mass index-20,93(SD $\pm$ 1,51) vs. 23,16(SD $\pm$ 2,62).

Women in yoga group had less weight gain than control group- mean 14,55(SD $\pm$ 2,68) kg vs. 17,03 (SD $\pm$ 3,61) kg. The rate of Caesarean section was 6,9% ( $n=2$ ) vs. 20,7 % ( $n=6$ ), using of epidural anesthesia-34,5 % ( $n=10$ ) vs. 20,7 % ( $n=6$ ), labor complications - perineal tears – 20,7 % ( $n=6$ ) vs. 37,9 % ( $n=11$ ). Psychological aspects-satisfaction with the childbirth experience, which was rated from 1-5, shows mean 4,45 vs. 4,03. Rating about how labor proceeded according to expectations shows mean 3,97 vs. 3,38.

**Conclusion.** Prenatal yoga has positive role on pregnancy course and labor. Women, who practiced yoga, had better results in psychological aspects, physical conditions and partly in perinatal outcomes.

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## PREVALENCE OF DEPRESSION SYMPTOMS AMONG PROGRAMMERS, COMPARING WORK EXPERIENCE AND GENDER

**Key words.** Programmers, Depression, *PHQ-9*.

**Introduction.** With evolving information technologies and technological innovations, the concern for physical health of programmers is increasing. Countless risk factors can raise depression rates in information technology professionals, some being associated with workplace environment, isolation and stress. Work in smaller and financially less stable enterprises can also contribute to mental health decrease.

**Aim.** The aim of this study was to determine if programmers have higher risk of having depression symptoms and the potential risk factors.

**Materials and methods.** Data was gathered from December 2016 until February 2017. Programmers were interviewed online using *Patient Health Questionnaire 9* and questions about their work environment. Statistical data interpretation and procession was performed with MS Excel 2013 and IBM SPSS 20.0.

**Results.** In total 90 computer science specialists were surveyed, age 22 to 54 (mean  $29.17 \pm 5.53$ ), 25,6% women and 74,4% men. Respondent evaluation using *PHQ-9* revealed; 61.11% (n=55) of all respondents did not score enough points ( $\geq 10$ ) for diagnosis of depression. 38.89% (n=35) had a total score  $\geq 10$  points. *PHQ-9* score  $\geq 10$  has sensitivity of 88% and a specificity of 88% for Major Depressive Disorder. In male group 25,37% (n=17) presented with mild depression symptoms, 33,3% (n=30) of the respondents presented with moderate and above moderate depression symptoms. In female group 43,48% (n=10) had mild symptoms and 21,74% (n=5) presented with moderate and severe depression symptoms. Depression rates being higher in smaller enterprises accounted for 23,01%. There was no significant correlation found between work experience and depression ( $p=0,912$ ).

**Conclusions.** This study concludes that prevalence of depression symptoms is higher among programmers employed in smaller enterprises. Prevalence of depression symptoms among computer science specialists is higher in males compared to females.

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## PROGNOSTIC BIOMARKERS IN PATIENTS WITH ISCHEMIC STROKE WHO RECEIVED THROMBOLYTIC THERAPY

**Background.** The aim of the research was to evaluate the association between C-Reactive protein (CRP), troponin I, d-dimer, creatinine, glucose, glomerular filtration rate (GFR) and low density lipoprotein cholesterol (LDL-C) levels at the admission and the results of thrombolytic therapy.

**Materials and methods.** 113 patients who underwent thrombolytic therapy for acute ischemic stroke in Pauls Stradins Clinical University Hospital from 01.01.2015 till 01.01.2016 were studied retrospectively. Blood samples were collected in the emergency department. Neurological status was estimated using the National Institute of Health Stroke Scale (NIHSS). The efficacy of thrombolytic therapy was assessed by comparing NIHSS score at the admission and after treatment. Afterward all patients were divided into three groups – the major improvement (NIHSS $>4$ ), minor improvement (NIHSS $\leq 4$ ) and no any clinical effect.

**Results.** Only the median levels of GFR were significantly ( $p=0.015$ ) lower in patients who didn't have any clinical improvements after thrombolytic therapy as compared to patients with the major or minor improvements (60.0, interquartiler range [IQR] 42.4-72.3 ml/min/1.73m<sup>2</sup>; 83.2, IQR 65.3-98.3 ml/min/1.73m<sup>2</sup> and 75.9, IQR 59.2-94.6 ml/min/1.73m<sup>2</sup>). Based on the receiver operating characteristic (ROC) curve, the optimal cut-off value of GFR level as an indicator for prediction of worsen clinical outcome after thrombolytic therapy was projected to be 61.65 ml/min/1.73m<sup>2</sup>, which yielded a sensitivity of 71.4% and a specificity of 24.5%, the area under the curve was 0.788 (95% confidence interval [CI], 0.648-0.928). According Spearman rank correlation test was founded statistically significant indirect correlation between GFR level and NIHSS score after treatment ( $r=-0.410$ ,  $p=0.020$ ) in patients with severe stroke (NIHSS  $>14$ ).

**Conclusion.** GFR level lower than 61.65 ml/min/1.73m<sup>2</sup> at the admission could be predict a worse outcome, especially in patients with severe stroke.

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## PUERPERAL WOMEN'S OPINIONS OF NECESSITY TO TALK WITH GYNECOLOGIST ABOUT THEIR SEXUAL LIFE

**Keywords:** Pregnancy, childbirth, sexual life, gynecologist advice.

**Introduction.** Nowadays people get more and more interested in topic about sexual health/life. Pregnancy is particularly important period when this topic becomes especially sensitive. Studies have confirmed that the most of the pregnant women feel the need for reliable information about sexual activity during pregnancy. Problem is that they rarely find the opportunity to discuss this issue with their physicians. More often they are looking for answers on the internet, in books or ask friends.

**Aim.** The aim of this study is to collect and analyze the information given by patients in postpartum units in the Maternity Department about their opinions of necessity to talk with gynecologist about sexual life in pregnancy and postpartum period.

**Materials and methods.** Cross-sectional study was carried out, involving 351 women in postpartum period in Rīgas Maternity Hospital. Data were collected from August 2016 until December 2016, using patient questionnaires. The data were analyzed by MS Excel and SPSS, using Chi-square test. Statistical significance were reached when  $p < 0,05$ .

**Results.** Research included 351 women at a mean maternal age of 30 years (SD 5,1; range, 18 – 43 years). 52,1 % (n=183) participants reported that they were primiparous, and 47,9% (n=168) reported that they were multiparous. 92% (n=323) had coitus during pregnancy and 8% (n=28) did not have coitus during pregnancy. 49,6% (n=174) of the pregnant women got advice from gynecologist about their sexual life during pregnancy, but 50,4 % (n=177) did not get advice from gynecologist. 26,2% (n=92) of participants would want to talk generally about sexual life, but 73,5% (n=258) would not.

**Conclusion.** Most of the women are sexually active during pregnancy. For most of them questions about sexual life are topical. Our study confirmed that the more important sexual life is to woman, the more is she willing to talk about it with her physician.

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## RADIOLOGICAL ASSESSMENT OF FEMOROACETABULAR IMPINGEMENT IN HIP OSTEOARTHRITIS PATIENTS

**Key words:** Femoroacetabular impingement, hip osteoarthritis

**Introduction.** In adult population femoroacetabular impingement (FAI) has been recognized as a risk factor for hip osteoarthritis (OA) development. FAI is caused by morphological abnormalities of the hip joint that result in abnormal contact during motion. Various radiological parameters and statistical shape analyses have been developed for the assessment of FAI.

**Aim.** To determine the prevalence of FAI in patients with and without radiological signs of hip OA by assessing anteroposterior pelvic radiographs.

**Materials and methods.** 50 pelvic radiographs of unilateral hip OA (Kellgren/Lawrence (K/L) grade  $\geq 2$ ) patients (Arthritic group) and 50 patient (aged at least 65 years) radiographs with no definite signs of OA (K/L grade 0/I) (Control group), who were hospitalized in Hospital of Traumatology and Orthopedics during the period from year 2014 to 2015, were analyzed. In both groups, alpha angle, lateral center edge angle, neck shaft angle, acetabular depth, coverage was measured and the presence/absence of pistol grip deformity and crossover sign was assessed using the *Impax-Orthopaedic-Tools 3.0.2.3* program. SSMs were

created using the *BoneFinder 1.2.0* program, which automatically sets 65 landmark points on the contour of the proximal femur.

**Results.** In the Arthritis group there were significantly more cases of pathological alpha angles ( $>50^\circ$ ) 66.0% vs. 28.0% ( $p<0.001$ ), pistol grip deformities 56.0% vs. 12.0% ( $p<0.001$ ) and acetabular protrusion 30.0% vs. 10.0% ( $p=0.02$ ) comparing to Control group. There were significantly more cases with at least two signs of FAI in the Arthritis group – 74.0% vs. 34.0%. ( $p<0.001$ ), at least three signs- 38.0% vs. 6.0% ( $p<0.001$ ) and four signs- 16.0% vs. 0.0% ( $p=0.003$ ). Two of eight proximal femoral modes (mode 2, mode 4) were associated with hip OA characteristics ( $p=0.002$ ;  $p=0.03$ ).

**Conclusions.** The majority of OA patients have at least two radiological signs of FAI (alpha angle more than  $50^\circ$ , pistol grip deformity, center edge angle more than  $39^\circ$ , crossover sign). Morphological abnormalities of the hip joint such as FAI and two specific shape modes (mode 2, mode 4) of the proximal femur are contributing factors for hip OA development.

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### **Real-time ultrasound-guided percutaneous dilatational tracheostomy: a feasibility study**

**Introduction.** Patients in ICU frequently require tracheostomy for long-term ventilator support, and the percutaneous dilatational tracheostomy (PDT) is the method of choice.

**Aim.** Our objective was to demonstrate the feasibility of innovative in Latvia method of PDT under real-time US guidance.

**Methods.** Mechanically ventilated patients, without cervical spine lesions, poor anatomy, obesity (Body Mass Index  $\geq 30$  kg/m<sup>2</sup>) and previous tracheostomy, underwent US guided PDT (US-PDT). *Propofoli 1%* infusion titrated to deep sedation (RASS -5) was used for all patients during the procedure and local anesthesia with *S. Lidocaini 2%*. Initial neck anatomy was examined using palpation as well as the US. Firstly, endotracheal tube cuff was visualized during US by inflating it with saline solution. Then the tube was withdrawn until the cuff was positioned immediately inferior to the vocal cords. The trachea was punctured under real-time US guidance using the acoustic shadows of the tracheal rings to identify the level of puncture. A 2 cm horizontal incision and blunt dissection was carried out after puncture. The point of tracheal puncture was selected using the following criteria: the space between the second and third rings or the third and fourth tracheal rings, as close as possible to the midline and no vascular structure in the path of the needle. Advancement of the needle was halted, when the aspiration of air into a saline-filled syringe and a palpable change in resistance was noted. Then guidewire was passed following dilatation and tube placement.

**Results.** A total of 10 patients underwent US-PDT. They were aged between 33 and 66 years (median 48 years, IQR 36-60). Diagnoses were: aneurysmal subarachnoid hemorrhage ( $n = 4$ ), severe traumatic brain injury ( $n = 4$ ), intracerebral hemorrhage ( $n = 2$ ). We successfully performed US-PDT in all 10 patients. Following patients for up to 1 week (median 5 days, IQR 4-6) revealed no new complications.

**Conclusion.** US-PDT may become an alternative method to bronchoscopy assisted tracheostomy if several conditions will fulfill: available bed-side US, optimal patient neck anatomy.

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## **REASONS FOR BLOOD DONOR DEFERRAL IN DAUGAVPILS REGIONAL HOSPITAL**

Blood donation involves a lot of risks and striving for enlargement of number of donations is accompanied by means of maintaining blood safety. The procedure of blood donation becomes a complex process that includes evaluation of each individual donor according to strict selection criteria and involves screening of blood for transfusion-transmitted disease. Donors who do not meet the selection criteria are deferred on a temporary or permanent basis (WHO, 2012). The prevalence of transfusion-transmissible infections (TTI) in blood donations in high-income countries is considerably lower than in low- and middle-income countries (WHO, 2014). The blood donation rate in high-income countries is 33.1 donations per 1000 people, 11.7 donations in middle-income countries and 4.6 donations in low-income countries, respectively (WHO, 2017). According to WHO (World Health Organization), the gender profile of blood donors shows that globally 28% of blood donations are given by women while this range varies widely. The aim of the current research is to summarize reasons for donor deferral during 2015 and 2016 in the city of Daugavpils and to search for the gender-related differences in reasons of donor deferral. The data of donation rates have been recently collected, while the rates of donor deferral and the reasons for these are undergoing analysis. We expect that the results will reveal the most common reasons for donor deferral and possible gender-related differences in the incidence of donor deferral.

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## RECOVERY OF MUSCLE FUNCTION AFTER STABLE ELBOW FRACTURES

**Key words:** *elbow, muscle function, strength, dynamometry, manual muscle testing, centimeters of arm and forearm.*

**Problem statement:** The elbow joint is an important link in the kinematic chain of the upper limb. It allows the hand to be placed at different heights and position in space for various daily, self-service and occupational activities. Functional recovery of the elbow joint after fractures is a challenging problem. Following various specialized literature we did not have described an algorithm for physiotherapy and deadlines to restore the muscle function of the elbow joint after stable intra-articular fractures treated conservatively.

**Purpose:** To follow the recovery of the muscle function of the elbow joint after intra-articular stable fractures treated conservatively by applying own methodology of physiotherapy.

**Methods:** Within the period of two years, the functional recovery of 30 patients with stable intra-articular fractures of the elbow joint, treated with conservative methods (immobilization), was monitored. Own physiotherapy methodology was applied to patients. The patients were put under control for three months with physiotherapy procedures. During that period of time data of the end dynamometry, manual muscle testing and centimeters of arm and forearm was collected.

**Results:** After removing of the immobilization were established hypotrophy and suppression of muscle function among patients manifested in weakness and inability to perform active movements. At the end of the follow-up of functional recovery were achieved 95,28 % of strength of the hand and more than 50% of patients have maximal evaluation of manual muscle testing of flexors, extensors and rotators of elbow joint. Centimeters of arm and forearm shows that muscle trophic is restored.

**Discussion:** During the course of recovery procedures the trophics and muscle strength were gradually recovered. At the end of the study did not detect a significant difference in the analyzed indicators compared to the healthy upper limb.

**Conclusions:** Careful selection of tools of physiotherapy designed to restore muscle function gives result and allows early involvement of upper extremity in daily and work activities.

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## RESEARCH ON THE ASSOCIATION BETWEEN DYSPEPSIA AND AFFECTIVE DISORDERS AMONG YOUNG PEOPLE

**Key words:** Dyspepsia, dyspeptic syndrome, anxiety, depression, somatisation  
**Introduction.** Dyspeptic syndrome includes symptoms such as epigastric pain, bloating, early

satiation, fullness, epigastric burning, belching, nausea, and vomiting (Tack et al., 2016). Several pathophysiologic mechanisms have been suggested to underlie dyspeptic symptoms. One of them is somatization. It considers the psychological discomfort conversion into a physical symptom and is directly related to the gut-brain axis (Carabotti, et al., 2015).

**Aim.** To research the prevalence and association of dyspeptic symptoms with affective disorders.

**Materials and methods.** The questionnaire consists of sociodemographic information, questions concerning evaluation of dyspeptic symptoms prevalence and duration, Hospital Anxiety and Depression Scale. Data is statistically processed in Microsoft Excel and SPSS 20.

**Results.** 196 respondents, 163 females (83,2%) and 33 males (16,8%). Minimal age 18 years, maximal age 47 years; median 23,45 years, moda 23. Spearman's rank correlation between the anxiety and epigastric pain ( $R = -0,299$ ,  $p = 0,000$ ), nausea ( $R = -0,232$ ,  $p = 0,001$ ), bloating ( $R = -0,247$ ,  $p = 0,000$ ) established statistically significant reverse correlations. Spearman's rank correlation between the depression and dyspeptic symptoms didn't establish statistically significant correlations. 93,9% respondents had the same dyspeptic symptoms during the last 6 months. The most frequent symptoms were bloating and fullness, but the rarest ones - vomiting and epigastric burning. 144 respondents (73,5%) had bloating at least once during the last week, 131 respondents (66,8%) had fullness, but only 6 respondents (3%) had vomiting and 56 respondents (28,6%) had epigastric burning.

**Conclusion.** Several dyspeptic symptoms are associated with anxiety, but the correlations are reversed. The more severe dyspeptic symptoms are, the lower the level of anxiety is. The pathophysiological mechanisms are described in the article.

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## **RISK OF OBSTRUCTIVE SLEEP APNEA SYNDROME IN LATVIA**

**Key words:** Obstructive sleep apnea, neck circumference, arterial hypertension

**Introduction.** Obstructive sleep apnea (OSA) is characterized by recurrent airway collapse during sleep associated with oxygen desaturation and leading to development of several chronic diseases, including arterial hypertension (AH), diabetes mellitus, coronary heart disease, stroke and even death. It is most common type of sleep-disordered breathing and its prevalence in developed world ranges between 3-7%. OSA prevalence studies in Latvian population are lacking.

**Aim.** To determine the prevalence of high and intermediate risk OSA (HR-OSA, IR-OSA) in primary care population and identify OSA risk correlation with AH, neck circumference (NC) and body mass index (BMI).

**Material and Methods.** The survey is carried out in general practices in Latvia. 132 patients, aged 22-79, from eight general practices (GP) in Latvia underwent standardized OSA questionnaire, blood pressure (SBP, DBP), BMI, NC were taken. Data statistically processed in Microsoft Excel and SPSS 20.

**Results.** 12 patients were identified with HR-OSA, 41 patients with IR-OSA (31,06%). 11 of HR-OSA group (91,66%), 27 of IR-OSA (65,85%), but just 7 of LR-OSA (8,86%) had AH. Our current study shows that 10 patients of HR-OSA group (83,33%), 22 of IR-OSA (53,66%), but just 5 of LR-OSA (6,33%) has elevated NC. 4 patients of HR-OSA (33,33%), 6 of IR-OSA (14,63%), but 1 of LR-OSA (1,27%) patients had BMI greater than or equal with 35. Spearman's rank correlation between OSA risk and SAP ( $p = 0,000$ ;  $R = 0,570$ ), DAP

( $p=0,000$ ,  $R=0,345$ ), BMI ( $p=0,000$ ;  $R=0,478$ ), NC ( $p=0,000$ ,  $R=0,486$ ) established statistically significant correlation.

**Conclusion.** The risk of OSA is strongly associated with SAP, DAP and NC. The BMI greater than 35 is not as sensitive indicator of increased risk of OSA as NC greater than 40cm. Thereby, in patients with an increased NC it is important to perform OSA questionnaires to diagnose, prevent and treat this illness timely.

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## **SAFETY OF AMIODARONE IN PRE-TREATMENT IN PATIENTS WITH PERSISTENT ATRIAL FIBRILLATION UNDERGOING ELECTRICAL CARIOVERSION**

Electrical cardioversion (ECV) is an effective and widely used treatment method for the restoration of sinus rhythm in patients with persistent atrial fibrillation (AF). Literature data has shown that only 23% of patients remain in sinus rhythm one year after ECV. To reduce recurrency of arrhythmia pre-treatment with amiodarone can be used. Amiodarone is the most effective agent at preventing relapse of AF after ECV. The use of amiodarone is related with serious changes in electrocardiogram (ECG) and increasing risk of life-threatening arrhythmias. The given study aim was to clarify amiodarone pre-treatment safety before ECV. We have enrolled 150 patients with persistent AF undergoing ECV in this study. 101 patients (66.9%) used oral amiodarone 400 mg daily at least two weeks before procedure. For the last 49 patients (30.1%) intravenous amiodarone infusions were used before procedure at 600 mg dosage. ECG data were analyzed before and after ECV. Considering sexual differences in ECG male and female data were analyzed separately. In women group ( $n=45$ ) minimal heart rate (HR) was 59 beats per minute (bpm), maximal - 137 bpm (mean 91 bpm.). After ECV minimal HR was 36 bpm, maximal 106 bpm (mean 61 bpm.). QRS complex before ECV was in ranges from 76 to 197 ms (mean 106,93 ms) after ECV from 80 to 170 ms (mean 105,64 ms). QT interval before ECV varies from 233 ms to 477 ms (mean 372,8 ms), after ECV from 324 ms. to 549 ms (mean 442,33 ms). In men group ( $n=105$ ) maximal HR before ECV was 51 bpm, minimal 141 bpm. QRS width before ECV varies from 84 ms to 222 ms (mean 116 ms), after ECV from 78 ms to 209 ms QT interval before ECV was from 290 ms to 535 ms (mean 393 ms), after ECV from 360 ms to 557 ms (mean 450 ms). The use of amiodarone in pre-treatment in patients with persistent AF is a safe method to increase efficiency of ECV and reduce recurrency of arrhythmia. There was not found any significant changes in ECG before and after ECV.

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## **SCIENTIFIC PAPERS DEVELOPED BY PROFESSIONAL BACHELORS' STUDY PROGRAMME "PHYSIOTHERAPY" STUDENTS - EVIDENCE BASED APPROACH**

One of the basic approaches of professional education is acquisition of evidence based knowledge and practical skills. In order to facilitate the academic and professional growth of students, studying the professional programme "Physiotherapy", every year they have to write a scientific paper.

Many factors determine successful completion of this task: personal involvement and working capacity, cooperation with lecturers, as well as acquisition of new competences, including the ability to find the corresponding experience of renowned professional physiotherapists and apply it for theoretical background.

The current research encompasses qualitative and quantitative analysis of bibliographical sources used in scientific papers of one hundred students in study year 2015/2016.

Authors of the study determined the general amount of bibliographical sources, as well as particular shares of journals, books and e-sources, with particular regard to the newest sources and those in English. In the first year students devote their scientific works to more detailed acquisition of human anatomy and mostly use monographs, anatomy atlases and manuals. During the second year students conduct practical research in Daugavpils' schools. The third and fourth year students develop scientific works in physiotherapy. The first and the second year students mostly use monographs, anatomy atlases and manuals (61% and 65% from the general amount), still there are not enough scientific articles. The third and fourth year students more often use clinical guidelines, scientific literature (42% and 40% accordingly), as well as articles on current research in diverse physiotherapy magazines and databases (31% and 42%). All in all, the amount of bibliographical sources used by fourth year students is three times higher than it is during the first year of studies, the use of scientific journals rises six times.

**Conclusion.** In order to improve the quality of scientific works, students should use relevant scientific literature, should have better access to various data bases and should be provided with more specific principles of development and assessment of scientific works.

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## SECONDARY HYPERTENSION BETWEEN PATIENTS WITH AORTIC COARCTATION

**Keywords:** Secondary hypertension, pediatrics, aortic coarctation.

**Introduction.** Hypertension is known to be a major cause of morbidity and mortality in the world. Child population contains individuals who have hypertension, mostly with secondary hypertension (SH) which is caused primary by cardiovascular system, kidneys or endocrinological pathology. The most common primary cause of SH from the standpoint of cardiovascular system is coarctation of aorta (AoC) (Greena Kim et al., 2016).

**Aim.** This study determines how many patients are diagnosed with SH, and what genesis it is Determine how many patients are diagnosed with coarctation of aorta (CoA).

**Materials and methods.** Retrospective study was made, including patients from Children's Clinical University Hospital with diagnosis SH and CoA in period of 01.01.2010 – 31.10.2016. The grid of normal and elevated BP depending on child's age, height and gender was use to analyze data, after which all patients were divided into the following groups: prehypertension, stage I hypertension, stage II hypertension (Rodriguez-Cruz et al., 2015). Necessary data was collected from medical documentation and analyzed using IBM SPSS Statistics 24.

**Results.** The study included 134 patients, 33,6% (n=45) were girls and 66,4% (n=89) were boys. The mean age was  $11,04 \pm 4,8$  years. Data was collected from 73 (54,48%) patients whose primary diagnosis is SH and 61 (45,52%) patients whose primary diagnosis is CoA. SH diagnosis was mentioned as side diagnosis in 33 (54,10%) patients with existing AoC medical history. Thus, SH was determined in 106 (79,10%) patients from all researched population. From all patient's prehypertension condition was observed in 2,2% (3) of cases, stage I hypertension was observed in 19,4% (26) of cases, stage II hypertension was observed in 70,10% (94) of cases, but in 8,20 % (11) of cases children diagnosed with SH average BP was below the 90th percentile. In 85,07% (114) of cases patients received anti-hypertension medications.

**Conclusion.** More than a half (54,10%) of all subjected AoC patients have SH.

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## SILENT SINUS SYNDROME: A CASE REPORT

**Keywords:** *Silent sinus syndrome, enophthalmus, hypoglobus, maxillary sinus.*

**Introduction:** Silent sinus syndrome (SSS) is a rare condition, characterized by spontaneous enophthalmus and hypoglobus and is associated with obstruction of the ostiomeatal complex (OMC) in the absence of any signs or symptoms of inflammatory sinonasal disease. Negative pressure due to obstruction of OMC is assumed to cause a gradual collapse of the maxillary sinus (MS), resulting in contraction of MS, deformity of orbital wall and increased orbital volume. Computed tomography (CT) is optimal imaging modality when SSS is suspected. The definitive treatment for SSS is surgical, and consultation of otorhinolaryngologist may be necessary. Simple uncinectomy and maxillary antrostomy may be effective for treating SSS.

**Case report description:** A 25-year-old Caucasian male presented at the Ophthalmology Emergency room with complaints of light discomfort, small subcutaneous hematoma under the left eye and sudden “fall in” of the left eyeball. Complaints occurred suddenly at the waking up and lasted 2 days. There was no history of previous trauma or systemic diseases. There was a history of unspecified sinonasal surgery in the childhood. Vision with best correction was 1.0, intraocular pressure was within normal limits. Light conjunctival irritation and some full-blooded vessels were found in the lower vault of conjunctiva. Lower eyelid fold was vastly deeper than in the other eye. CT with contrast was performed. Deformity of MS with pathological content (blood or pus) and bone defect in the upper-medial and posterior MS wall was found. Patient rejected further evaluation and treatment in the Otorhinolaryngological Department.

**Conclusion:** Due to unconcerned attention to personal health condition patient did not proceed evaluation and did not receive treatment. It is predictable, that patient will seek medical care repeatedly if life quality deteriorating complaints (e.g. diplopia) join.

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## **SINGLE DOSE INTRAVENOUS PARACETAMOL IN PATIENTS AFTER HIP AND KNEE REPLACEMENT SURGERY**

**Introduction.** Intravenous paracetamol is widely used drug in Hospital of Traumatology and Orthopaedics and is a part of standard post-operative analgesic protocol after major operations. But there are concerns about its haemodynamic effects in patients with cardiovascular risk factors.

**Aim.** To study incidence of clinically significant hypotension and changes in heart rate during intravenous paracetamol infusion and one hour after it.

**Materials and methods.** 96 patients (male 32(33%), age 64.9±9.7y, BMI 31.2±7.2 kg/m<sup>2</sup>) that have undergone knee or hip replacement surgery were enrolled in this prospective observational study. Inclusion criteria: administration of intravenous paracetamol infusion for analgesia within 24 hours of surgery. 7 patients were excluded due to advanced cardiac failure (NYHA III-IV), previous myocardial infarction, significant aortic stenosis. Following characteristics were collected: age, gender, height/weight, ASA class, blood loss and infusion time. Systolic/diastolic/mean blood pressure and heart rate were measured every 5 minutes during infusion and 15 minutes for an hour after. Data were analysed using linear mixed effects model and patients with change in haemodynamic parameters of 15% or more were obtained.

**Results.** Time from start of infusion significantly influenced systolic blood pressure (log likelihood 17.9, p=0.007). Systolic blood pressure was significantly reduced from baseline 30 minutes after end of infusion (difference 3.9 mm Hg (CI -7.3 -0.6); p=0.01). Heart rate did not significantly change during or after infusion. 3 of 89 patients but 2 of 7 initially excluded patients had 15% or more decrease in systolic blood pressure from baseline.

**Conclusion.** Intravenous infusion of paracetamol causes statistically significant decrease of systolic blood pressure 30 minutes after end of infusion but its extent is not clinically relevant. The incidence of hypotension might be more prevalent in patients with serious cardiovascular disease.

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## SKIN GRAFT HEALING AFTER AUTODERMOPLASTIC SURGERY FOR THERMAL BURNS

**Introduction:** Skin grafting is a golden standard procedure for achieving wound closure in IIB-III grade burn trauma. Despite its widespread use, there is little objective information about the outcomes of skin-grafted burn wounds.

**Aim:** To determine the length of time it takes to achieve complete wound healing in split-thickness skin-grafted burn wounds and to identify factors that affect time to complete wound healing.

**Material and methods:** Prospective study of 20 thermal burn trauma IIB, III grade patients, who underwent autodermoplastic surgery. After transplantation patients were observed during 1<sup>st</sup>, 2<sup>nd</sup>, 4<sup>th</sup> wound dressings and on discharge. Percentage of wound surface epithelialization, presence of exudate, graft color and any possible complication were assessed. Time to complete wound healing was defined as the number of days from skin grafting until the wound was 100 percent epithelialized.

**Results:** Median patients age was 54 years *IQR* [38 – 67.25]. 80% had IIB grade burns, 1 patient III grade burn, 3 patients had both IIB and III grade burns. All patients were transplanted 0.3 mm thick skin autograft. 65% of skin grafts were meshed. Median time to complete wound healing is 5 weeks, minimal 3 weeks (n=3) and maximum 12 weeks (n=1). 50% of skin grafts had 90% wound closure at postoperative day 12. No grafts were lost to infection. Factors that significantly affected time to complete wound healing were age ( $r=0.46$ ;  $p=0.05$ ), wound epithelialization percent observed during dressings ( $r=0.53$ ;  $p=0.02$ ) (Spearman rank test). Wound epithelialization percent statistically significantly differs in patient groups with pale or rose skin grafts, with or without exudation in wound, with or without diabetes ( $p<0.05$ ) (Mann-Whitney rank-sum test).

**Conclusion:** Skin grafting is an effective method for treating IIB, III grade burn wounds. Evaluation of wound epithelialization gives information about skin graft healing already on the 3<sup>rd</sup> postoperative day (1<sup>st</sup> dressing). Results demonstrate that all patients will have 100 percent wound closure at discharge. Factors thought to influence time to complete wound healing, such as total body surface area burned, burn grade, sex, graft type, donor site, smoking and infection, did not significantly affect the authors' patient group. Antimicrobial agents in high-risk patients have made graft loss by infection a problem of the past.

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## SPINAL CORD IMAGING IN MS PATIENTS AND CORRELATION WITH BRAIN LESIONS AND OPTIC NERVE INVOLVEMENT

**Background:** Multiple sclerosis is most prevalent immune-mediated disease affecting CNS. Despite the fact that MS MRI findings are amply described in literature, the relation between lesion distribution in spinal cord and brain is still unclear. The goal of the study was to analyze lesion distribution in spinal cord and correlation with brain and optic nerve involvement.

**Methods:** In this retrospective study MRI data of 32 patients between 01.01.2014 and 31.12.2015 with diagnosis multiple sclerosis (ICD-10 G35) was interpreted. Acquired data was statistically analyzed and categorized by lesion type, location, size and activity.

**Results:** 126 spinal cord lesions were found in total, on average 3.9 (SD 2.4) per patient, with mean median lesion length 14.4 (SD 7.3) mm. 74 (59%) lesions were detected in cervical and 52 (41%) in thoracic spinal cord. 20 (16%) lesions were active (contrast enhancing). Regarding length of lesions, most lesions (76%) were equal or less height of one vertebral body. Lateral and posterior axial distribution of lesions were predominant compared to anterior and central. 102 (81%) lesions were focal, well defined but 24 (19%) were characterized in the MRI description protocol as diffuse lesions involving entire spinal cord.

A significant correlation between number of lesions and presence of optic neuritis ( $p=0.938$ ,  $R=-0.14$ ) or between number of lesions and presence of active lesions in the brain ( $p=0.895$ ,  $R=0.25$ ) was not found.

### Conclusions:

- 1) Most MS lesions were located in cervical spinal cord.
- 2) Involvement of lateral and posterior spinal columns was predominant compared to anterior columns and central part of spinal cord in axial MRI scans.
- 3) No significant correlation between activity of lesions in brain, demyelization of optic nerves, number and activity of pathological foci in spinal cord was detected.

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## **SPONTANEOUS BACTERIAL PERITONITIS: ANALYSIS OF CONDITION AMONG DECOMPENSATED LIVER CIRRHOSIS PATIENTS IN A SINGLE CENTRE IN LATVIA**

**Key words:** Spontaneous bacterial peritonitis(SBP).

SBP is most frequent and potentially fatal infection in decompensated liver cirrhosis (DLC) patients and is a reason of hospitalization in more than 10% of cases. Early paracentesis (PC) with subsequent peritoneal fluid (PF) analysis (cell count, differential, bacterial culture(BC)) is the main diagnostic procedure. Polymorphonuclear cell (PMN) count in PF of >250cells/mm even with negative PF culture is considered to be diagnostic. Our research aim was to study SPB incidence and diagnostic approach in patient with DLC. All patients with DLC, who were admitted in hospital from January 2011 to October 2016 in "Gailezers" hospital (Riga), were retrospectively reviewed. Patients' anthropometric data, initial complains, day of hospital stay (DHS), amount and results of non- and specific laboratory and instrumental investigations, AT regimes were considered. From 546 DLC patients, in 28 patients were selected. From them SBP was suspected in 10 and identified in 18 patients. Median DHS was 13 days, SPB median establishment day was 3,5. Therapy was successful in 16 cases; 12 patients died. From all patients, only in 67,9%(N=19) PC was performed, from which PMN count was measured in 8 cases, protein in 7, LDH in 10. BC of PF was performed only in 68,4%(N=13), and was positive in 6 cases. Only in 25% of all SBP patients recommended diagnostic volume was performed. Estimated incidence of SPB among DLC patients was 3,6%, 1,1 %, 5,7%, 7,1%, 7,3% and 8,7% in the years 2011-2016 respectively. We concluded, that SPB incidence in DLC patients was lower than was anticipated, but the numbers of established SBP diagnoses tend to increase. Currently complete diagnostic evaluation for SBP is performed only in 25% of patients. The tactics of establishment of SBP diagnosis are not strictly determined and we conclude that a uniform diagnostic algorithm is required.

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## **SUICIDE RISK AMONG PARANOID SCHIZOPHRENIA PATIENTS WITH DEPRESSION**

**Keywords:** Paranoid schizophrenia, depression, suicide risk.

**Introduction.** A significant problem is the high rate of committed suicides among persons with paranoid schizophrenia(PS)(Simeone JC et al., 2015). It is necessary to differentiate between negative symptoms and depression, because it is proved that the risk of committing suicide among people who suffer from PS is even up to 38% (Mensi et al., 2016).

**Aim.** To detect the association between the depression severity and suicide risk among PS patients.

**Material and methods.** The interview consists of Calgary Depression Scale for Schizophrenia(CDSS), Columbia – Suicide Severity Rating Scale(C-SSRS).

**Results.** 44 questionnaire respondents. Spearman's rank correlation established statistically significant correlation between the depression severity according to the CDSS and suicide risk according to the C-SSRS (R=0.540, p=0.000). Depression was detected in 31 (70.5%) and the suicide risk in 20 (45.5%). Most of the patients-33 (79.5%) suffer from the stable PS. The reminding 9 patients have episodic PS with increasing or stable residual symptoms. 8 of these 9 patients are females. During two independent sample T-tests it was established that the average score in accordance with the CDSS for males and females varies by 3.9 points. This difference is statistically reliable (p=0.005), the level of depression is higher among females. Also the average score according to the C-SSRS for patients with a stable course and episodic course of PS varies by 1.14 points. This difference is statistically reliable (p=0.038), and the suicide risk is higher among patients with episodic course of PS.

**Conclusions.** There is a high prevalence of depression among patients with PS, and the suicide rate among them is high. There is a strong correlation between the severity of depression and the suicide rate. Females with PS are more susceptible to depression and suffer more often also from episodic PS with residual symptoms.

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## **SUMMARY OF THE 10 YEAR EXPERIENCE OF APPLICATION OF BIOLOGICAL TREATMENT IN CHILDREN WITH JUVENILE ARTHRITIS**

**Introduction.** Juvenile idiopathic arthritis (JIA) is the most common autoimmune inflammatory disease among children. For the treatment of JIA used several groups of drugs, but only immunosuppressive and biologic therapy stops the development of destruction and disability.

**The aim.** To evaluate the efficiency of biological therapy after 1 year, using the American College of Rheumatology criteria (ACR) for JIA and to assess disease activity using JADAS (Juvenile Arthritis Disease Activity Score)–before biologic therapy and one year of treatment.

**Materials and methods.** A retrospective analysis of 55 patients with JIA were treated with biological medicine at the Children's Clinical University Hospital Latvia.

**Results.** 67% patients were treated with only one biological medication, 33% of patients had been replaced one biological drug to another. The drug Abatacept was used in 14% cases, in 18% of patients with JIA stated improvement at ACR30, 37% improvement at ACR50,18%-ACR70. Remission-9% of cases. Disease activity scale JADAS after a year of treatment: 55% of the decrease in activity, 45%of disease activity without changes. Adalimumab was used in 33% cases, 12% of patients stated improvement at ACR30, 24% improvement at ACR50,40%-ACR70. Remission 4% of cases. Disease activity scale JADAS after a year of treatment:56% of the decrease in activity, 44% - of disease activity without changes. Etanercept-36%, 7%-ACR30, 26% improvement at ACR50,30%-ACR70. Remission 4% of cases. Disease activity scale JADAS after a year of treatment: 44% decrease in activity, 52% - disease activity unchanged 4% increase in activity. Tocilizumab 17%, 7%-ACR30, 31% improvement at ACR50,31%-ACR70. Remission 23% of cases. Disease activity scale JADAS after a year of treatment: 85% decrease in activity.

**Conclusion.** Treatment of biological medicines affect the severity of the disease, in most cases, stated the improvement and reduction of JIA activity.

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## **SURVIVAL PREDICTORS IN PATIENTS WITH HEPATOCELLULAR CARCINOMA UNDERGOING TRANSARTERIAL CHEMOEMBOLISATION**

**Introduction.** Hepatocellular carcinoma (HCC) is the 3<sup>rd</sup> leading cause of cancer deaths worldwide. When surgical resection is not an option transarterial chemoembolization (TACE) is a possible treatment but there is still no consensus on factors affecting survival after TACE.

**Aims.** To assess overall survival (OS) and identify independent survival risk factors in patients with HCC before undergoing TACE.

**Materials and methods.** Over a five-year period (2011-2015), 34 unique patients undergoing TACE in Clinical University Hospital were retrospectively assessed before their first TACE. Data included patients sex, age, previous therapy, presence of liver cirrhosis, distant metastases, hepatitis, oesophageal varices, ascites, diabetes, number of nodules, diameter of largest nodule, Barcelona Clinic Liver Cancer (BCLC) stage, MELD score and laboratory values before treatment (ALAT, ASAT, total bilirubin, alkaline phosphatase, albumin, INR, alpha fetoprotein). Data were analysed with SPSS v.20.0.

**Results.** Out of 34 patients, 64.7% were male and 35.3% – female. Median age was 65.5±14.5. Median OS was 15.00±6.47 months. Independent survival risk factors on Cox regression univariate analysis were hepatitis B infection (p=0,044, HR=5.722), diameter of the largest nodule ≥5cm (p=0,015, HR=7.214), serum

sodium level of  $\geq 140$  mEq/L ( $p=0,012$ ,  $HR=0,175$ ). ASAT and alkaline phosphatase had no effect on survival ( $p<0.05$ ;  $HR=1,00$ ). Kaplan-Meier analysis showed that absence of distant metastases, stage B tumour (BCLC) and patients with previous liver surgery had higher OS but it was not statistically significant ( $p>0.05$ ).

**Conclusions.** A factor associated with higher OS was serum sodium level of  $\geq 140$  mEq/L and with lower OS – presence of hepatitis B infection, diameter of largest nodule  $\geq 5$ cm. ASAT, alkaline phosphatase, previous liver surgery, presence of distant metastases and BCLC stage (B or C) had no significant effect on OS when performing TACE.

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## SURVIVAL PREDICTORS IN PATIENTS WITH UNRESECTABLE PERIHILAR CHOLANGIOCARCINOMA UNDERGOING PALLIATIVE BILIARY STENTING

**Introduction.** Perihilar cholangiocarcinoma (PCCA) is a rare bile duct malignancy. Only 30% of them are resectable. The rest can be managed by biliary stenting but there is still no consensus on factors before this procedure that affect survival.

**Aim.** To find out prognostic survival factors in patients with unresectable PCCA before undergoing palliative biliary stenting.

**Materials and methods.** This retrospective study included 36 patients from 2011-2015 with unresectable PCCA who underwent palliative biliary stenting in Clinical University Hospital. Data included patients sex, age, presence of liver cirrhosis, esophageal varices, ascites, hepatitis B virus infection, method of stenting, stent material, laboratory values (ALAT, ASAT, total bilirubin, albumin, creatinine, sodium, INR), tumor markers CEA, CA19-9, MELD criteria, size of the tumor, presence of extrahepatic metastases. Data were analysed by SPSS v.20.0 (Kaplan-Meier method for survival, Cox regression univariate analysis for independent risk factors assessment).

**Results.** Of 36 patients 47.2% were female and 52.8% – male. Mean age was  $67.33 \pm 18.25$  ranging from 45 till 89. Mean overall survival (OS) was 6.43 months. 22.2% had endoscopic and 77.8% - percutaneous stenting. In 54.8% plastic stent was used and in 45.2% - metal stent. Metal stent group was associated with higher OS compared with plastic stent group ( $p=0.041$ ). Patients with MELD score of  $\geq 23$  had statistically higher OS ( $p=0.033$ ). Independent risk factors were presence of oesophageal varices ( $p=0.043$ ;  $HR=2.973$ ), extrahepatic metastases ( $p=0.039$ ;  $HR=4.112$ ), albumin ( $p=0.035$ ;  $HR=0.887$ ),  $INR \geq 1.4$  ( $p=0.025$ ;  $HR=3.069$ ),  $CA19-9 \geq 200$  ( $p=0.049$ ;  $HR=3.261$ ),  $CEA \geq 14$ ng/ml ( $p=0.005$ ;  $HR=5.014$ ).

**Conclusions.** Patients in metal stent group had better OS than those in plastic stent group. Most important prognostic factors before stenting were presence of oesophageal varices, albumin level, INR, CA19-9, CEA, MELD score and presence of extrahepatic metastases.

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## THE ANATOMICAL CHARACTERISTICS OF N.TRIGEMINUS BLOCKADE SITES

**Introduction.** Blockade of trigeminal nerve (*n. trigeminus*) is an important stage before the surgical procedures, which are connected with skin aging, congenital facial defect correction or injuries. More often a local anesthesia is carried out of places where *n. trigeminus* branches leave bone channels through the openings – *foramen supraorbitale*, *foramen infraorbitale* and *foramen mentale*. Through the literature sources these openings are projected on the same imaginary line located 2.5 cm lateral to the midline of the face. It is very important to understand and clarify some outer features that could show us the most precise location of each opening. The foramen supraorbitale and mentale are palpable, but finding the exact location of foramen infraorbitale may still be problematic.

**Aim.** Dissect *foramen supraorbitale*, *foramen infraorbitale* and *foramen mentale* with outgoing nerves. Verify the location of the openings on the skulls, as a reference point assuming a median line of the face. Analyze

obtained results and find an indicators on a human face that would help to diagnose an exact location of these openings.

**Materials and methods.** A cadaver of Anatomy and Anthropology Institute and 20 exhibited skulls in Anatomy museum of J. Primanis were used. As sources of literature other studies on the subject of the PubMed database, anatomical atlases and ClinicalKey database were used.

**Results.** From cadaver`s facial area skin, subcutaneous tissue, *corpus adiposum buccae*, some part of muscles were removed. *A. et v. facialis*, *n.facialis* branches and *glandula parotidea* with *ductus parotideus* were dissected. *M. orbicularis oculi* was partly detached to expose the *foramen supraorbitale* with an outgoing *n. supraorbitalis* and *foramen infraorbitale* with an outgoing *n. infraorbitalis*. Also *m. mentalis*, *m depressor labii inferioris*, *m. depressor anguli oris* were partly detached to expose the *foramen mentale* with an outgoing *n. mentalis*. *Foramen supraorbitale* is located 2,5cm, *foramen infraorbitale* – 2,4cm and *foramen mentale* – 2,6cm from facial midline.

On the skulls *foramen supraorbitale* is located 2,0-2,8cm from facial midline, *foramen infraorbitale* 2,5-3,0cm and *foramen mentale* 2,4-2,9cm from the midline. Skull openings distance is shifted up to 0,5cm from the literature landmarks.

There are concrete indicators that can help to find these openings with high accuracy.

**Conclusion.** Each individual may have a variety of projection spaces of these three openings, which can lead to have complications in cases where local anesthetics are necessary.

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## THE BICAMS BATTERY FOR ASSESSMENT OF COGNITIVE IMPAIRMENT IN MULTIPLE SCLEROSIS

**Key words:** Cognitive impairment, cognitive monitoring, BICAMS, multiple sclerosis, MS.

**Introduction.** In people with multiple sclerosis (MS) cognitive impairment is common, but usually underreported. It can appear in any subtypes or stages of the disease. Cognitive impairment, including memory and mental processing speed, has significant impact on employment, health – related quality of life and disease management. Recent survey shows that MS pathogenesis is connected with not only multifocal inflammatory process and dysfunction of CNS repair mechanisms, but also with early neurodegenerative process, cause of such symptoms as cognitive impairment and fatigue. Full neuropsychological testing is complicated, time consuming and expensive, therefor expert committee recommends easily enforceable Brief International Cognitive Assessment for Multiple Sclerosis (BICAMS) battery that allows to assess cognitive impairment in MS.

**Aim.** Use BICAMS Battery to assess cognitive impairment for relapsing remitting multiple sclerosis patients and compare the results with a healthy control group, matched for age, gender and years of education.

**Materials and methods.** The cross-sectional study included 43 relapsing remitting multiple sclerosis patients in Pauls Stradiņš Clinical University Hospital MS Center from May to November 2016, compared with 73 control participants matched for age, gender and years of education. Both groups were assessed with the BICAMS Battery, which includes the Brief Visuospatial Memory Test (BVMT), the Symbol Digit Modalities Test (SDMT) and the California Verbal Learning Test – Second Edition (CVLT2). For statistical analysis SPSS 22.0 was used.

**Results.** The average BICAMS test result for MS patients group (n = 43) was 20.30 ± 7.92 for BVMT, 47.12 ± 12.04 for SDMT and 51.05 ± 10.98 for CVLT2, but for control group (n = 73) results were significantly better, respectively 26.43 ± 4.70, 60.16 ± 7.17 and 61.82 ± 8.59. There was no statistically significant difference between the both groups in age (p = 0.284), years of education (p = 0.278) and gender (p = 0.981). Cognitive impairment in these tests was defined as value below controls` group average results.

**Conclusion.** Relapsing remitting multiple sclerosis patients, evaluated by BICAMS Battery tests, including BVMT, SDMT and CVLT2, performed significantly worse in all three tests compared to healthy control group, matched for age, gender and years of education.

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## THE IMPACT OF COLD ISCHEMIA TIME AND DONOR'S AGE ON LONG-TERM SURVIVAL AFTER KIDNEY TRANSPLANTATION

**Key words:** *Kidney transplantation, cold ischemia time, donor's age, patient's survival*

**Introduction.** Kidney transplantation is the treatment of choice for patients with end stage renal disease. Prolonged cold ischemia time (CIT) and older donor's age have been associated with worse 10 year survival rates.

**Aim.** The goal was to evaluate the combined effect of cold ischemia time and donor's age on 10 year survival after kidney transplantation results.

**Materials and methods.** Included in the study were all consecutive deceased donor kidney transplantations performed in one transplantation center during the period between 2004 and 2007. Exclusion criteria were donor's age under 18 and also 51-59 years and CIT 13-17 hours in order to ensure more precise results. After the selection procedure 10 year survival results of 115 kidney transplantation cases (62 males, 53 females, mean age  $46.8 \pm 13.2$  years SD) from 85 deceased donors were studied. Recipients were divided into 4 groups based on donor's age and cold ischemia time (group 1 – CIT 4-12 h, donor's age 18-50 years, group 2 – CIT over 18 h, donor's age 18-50 years, group 3 – CIT 4-12 h, donor's age over 60 years, group 4 – CIT over 18 h, donor's age over 60 years). Kaplan-Meier survival analysis was used to compare 10 year survival between the groups.

**Results.** Overall patient 10 year survival was 67,6%. Ten year survival was 75,9%, for group 1, 70,8% for group 2, 60% for group 3 and 22,2% for group 4. Overall estimated life span was  $96,2 \pm 3,9$  months (Std.Error). Mean estimated life span was  $102,4 \pm 6,9$  months for group 1,  $99,4 \pm 4,6$  months for group 2,  $91,6 \pm 19,7$  months for group 3 and  $55,7 \pm 15,3$  months for group 4. Overall comparisons were statistically significant ( $p=0,002$ )

**Conclusion.** Older donor's age combined with longer CIT reduces 10 year survival after renal transplantation. In cases of elderly donors CIT should be kept as short as possible.

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## THE INFLUENCE OF CD4+ CELL COUNT AND CD4+/CD8+ CELL RATIO ON THE RADIOLOGICAL DIAGNOSTICS OF OPPORTUNISTIC CENTRAL NERVOUS SYSTEM INFECTIONS IN HIV PATIENTS

**Key words:** *HIV, CD4+ cell count, CD4+/CD8+ ratio, radiology*

**Introduction.** HIV-related opportunistic infections of the central nervous system (CNS) are a significant threat to the health of the affected patients. Even though, most of these infections are diagnosed clinically and with the help of specific laboratory tests, when the aforesaid are not decisive, radiological findings can confirm or deny the diagnosis.

**Aim.** To evaluate the impact of CD4+ cell count and CD4+/CD8+ ratio on the radiological diagnostics of opportunistic CNS infections.

**Materials and methods.** A retrospective study of the CD4+ cell count, CD4+/CD8+ ratio and the radiological findings of HIV patients at the time of diagnosing an opportunistic CNS infection. All patients were examined at Riga East Clinical University Hospitals "Gaiļezers" and "Latvijas Onkoloģijas centrs" between January 1st, 2013 and October 19th, 2016. The frequency of the radiological symptoms of the encountered infections, previously identified in literature, was compared to the laboratory measurements.

**Results.** The mean CD4+ cell count and CD4+/CD8+ ratio values were respectively: 104,03 cells(c.)/ml and 0,185. As the CD4+ cell count decreased below 200 c./ml the frequency of radiological symptoms increased for both computed tomography (CT) and magnetic resonance imaging (MRI). The CD4+/CD8+ ratio below 0,1 was shown to be connected with increased findings on MRI in the majority of encountered infections, except for PML, in which for both MRI and CT the ratio above 0,1 was prognostic of a more distinct radiologic symptomatology.

**Conclusion.** The decrease of CD4+ cell count and the CD4+/CD8+ ratio is connected to an increase of radiological findings. The radiological symptoms of PML are seen more frequent at higher CD4+/CD8+ ratios as opposed to the other CNS infections encountered in this study.

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## THE PREVALENCE OF DEPRESSION AMONG THE ELDERLY PEOPLE AND THE INFLUENCING FACTORS

**Key words:** Family medicine, elderly person, depression.

**Introduction.** According to WHO data population ageing is happening more quickly than in the past. It is estimated that in 2030 22% of the Latvian population will be between 60 to 79 years old and 6% of the population will be above the age of 80. Depression is a common mental disorder. Globally, an estimated 350 million people of all ages suffer from depression.

**Aim.** To evaluate elderly people and their mental status by comparing the level of depression detected. By using the means of questionnaires, analyze whether the depression as a mental disorder is common among the elderly as well as understand which factors influence the development of depression.

**Methods.** The research included 100 respondents- 67 women and 33 men. A questionnaire was used to gather data. Respondents answered 20 questions about their general state of health and completed a short depression test designed to evaluate the level of depression. Data was compiled in Excel tables and processed with SPSS 16.0 data processing method.

**Results.** From the 100 respondents with an average age 75 years the depression test showed average depression level 4,3 points Std.Dev =3,3 ( $p < 0,05$ ), which means these people do not have depression. Study showed that people who have tendency to depression visit their family doctor twice as often as those who do not have such a tendency. It could also be seen that for people who have a hobby the average level of depression ranges 2 - 3 points, but those who do not have any hobbies average depression level is 3-7 points. Nevertheless the study did not reveal the relationship between physical activity and depression levels. At the same time it did not demonstrate a clear correlation between age and depression. People with signs of depression have indications of cognitive dysfunction. From those people who live in a nursing home 20,6% show signs of depression, whereas from those people who live at home 45 % have signs of depression.

**Conclusion.** After compiling the results it is clear that the age does not affect level of depression, but many other factors are significant. Study showed that those people which have a hobby also have a lower risk of suffering from depression and it does not have to be linked to physical activity. At the same time the study showed that those people who are in nursing homes suffer from depression less often, however it should be noted that the study did not indicate whether these people use any kind of medication to treat symptoms of depression.

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## THE ROLE OF COMPUTED TOMOGRAPHY IN DETECTION OF TUMOUR INVASION BEYOND THE BOWEL WALL OF COLON CARCINOMAS

**Keywords.** Computed tomography; colon cancer; T staging

**Introduction.** Colorectal cancer is the third most common tumour in men and the second in women. It is one of the leading causes of death related to cancer. The depth of tumour invasion beyond the bowel wall (T stage) is one of the factors that affect prognosis in colorectal tumours. With current discussion about the use of neoadjuvant chemotherapy for colon cancer patients, accurate evaluation of T stage is essential for the planning of optimal therapy.

**Aim.** To determine the accuracy of a preoperative computed tomography (CT) scan in detection of tumor invasion beyond the bowel wall of colon carcinomas.

**Materials and methods.** Data on the preoperative CT scans of 101 patients, who underwent resectional curative surgery for colon cancer at the Oncology Centre of Latvia in period of 01.12.2015.-30.11.2016. were reviewed retrospectively, evaluating the T stage of the TNM system. The histopathological findings served as the reference standard. Statistical analysis was performed with SPSS.

**Results.** For evaluating tumour invasion beyond the muscularis propria (T3/T4 vs T<sub>≤</sub>2), CT imaging had 81,2% accuracy, 90% sensitivity, 64% specificity, and the positive and negative predictive values were 84% and 75%, respectively. Overstaging of T stage by CT imaging occurred in 15 of 101 (15%) patients, and understaging occurred in 16 (16%) patients. The T stage determined by CT and pathology had moderate agreement with a kappa coefficient of 0,481, with statistical significance ( $p < 0,0005$ ).

**Conclusion.** This study shows that CT has an overall good sensitivity of 90% for detecting, whether the tumour had invaded beyond the MP. CT can be effectively used to identify high-risk colon cancer patients and could play a role in future treatment stratification.

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## THE USABILITY STUDY OF THE INTERACTIVE EDUCATIONAL TOY

**Key words:** usability, children, toy.

**Introduction:** "Cubies" toy is an interactive educational product invented by Latvian producers. According to our research, usability study has never been carried out in Latvia.

**The aim:** was to assess the usability of the toy amongst children of different age and gender.

**Methods:** "task-based scenarios", contextual interview, visual analogue scale, retrospective testing of video recordings were used for evaluation.

A sample of 109 children (51.4% males) from Latvian kindergartens were involved in the study. All the participants were divided into 3 age groups: 2-3, 4-5, 6-7 years old; Descriptive statistics and nonparametric tests for comparison of groups were used for data analysis.

**Results:** More than a half of participants did not identify pictures of "badger", "lizard", "sparrow", "lynx" and only 6.4% identified the picture of the 'moss' on the cubes. The groups of children who did not identify the pictures of 'lynx' and 'badger' was statistically significantly associated with the younger age ( $p=0.00009$ ,  $p=0.01$ , respectively); However, ability to identify said animals was not associated with average 'free playing time' ( $p=0.82$ ); There was no statistically significant difference in the average 'free playing time' between the gender groups ( $p=0.96$ ) and between the mean ranks of three age groups ( $p=0.69$ ); 93.6% evaluated the toy as an 'interesting' or 'very interesting' according to visual analogue scale, 92.7% of participants would like to have similar toy for their private use.

**Conclusion:** Results of our study allow us to conclude: the toy can be used amongst 2-7 years old healthy children, but at least 5 pictures on the cubes have to be improved for more successful usage. We are planning this research to be the basis for a number of subsequent studies related to the developmental and therapeutic effect of the "CUBIES" toy.

**Conflict of interests:** Scientific group did not receive any financial support for this study.

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## TRANSARTERIAL CHEMOEMBOLIZATION OF UNRESECTABLE LIVER METASTASES FROM COLORECTAL CANCER IN PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL, RIGA, LATVIA

**Key words:** Transarterial chemoembolization, colorectal cancer, liver metastases

**Introduction:** About half of the patients with colorectal cancer develop liver metastases. Resection is possible for only about 20% of the patients. Without treatment, the median survival of patients with colorectal liver metastases is 6–12 months. Transarterial chemoembolization (TACE) is a treatment option for unresectable liver metastases. It is a minimally invasive palliative procedure conducted in an interventional radiology unit in order to improve survival rates of such patients by selectively injecting chemotherapeutic drugs into an artery directly supplying the tumor and then blocking the blood supply in the artery. Interventional radiology unit of Pauls Stradins Clinical University hospital has been performing TACE since 2011.

**The aim:** The aim of the study was to evaluate the results of the TACE in the interventional radiology unit of Pauls Stradins Clinical University hospital.

**Case series description:** The study reports of 19 patients (10 men, 9 women), who underwent DEB-TACE with Irinotecan in Pauls Stradins Clinical University hospital within a period from 2011 to 2016. In total, 52

procedures were performed, mean 3 sessions per patient. Mean age at the time of the first TACE was 67 years (range 52 –75). 58 % (11 patients) were first diagnosed with stage IVA. All the patients received palliative chemotherapy, in 16 of the patients it overlapped with the TACE. By the end of the follow up there were 17 cases of exitus letalis. Mean survival after the first embolization was 15,04 months, median 13 months (11 – 15). First-year survival rate after the first TACE was 42,11% (8 patients), second-year survival rate 15,79% (3 patients) and third-year survival rate 10,53% (2 patients). 10 patients experienced TACE side-effects such as pain, nausea, appetite loss and constipation.

*Conclusion:* However, the small number of patients makes statistical assessment of the results less significant, obtained survival rates correspond with similar more profound studies.

*Summary:* Many patients are diagnosed with colorectal cancer when it has already spread to other parts of the body, such as liver. Unresectable colorectal cancer liver metastases can be treated palliatively with transarterial chemoembolization.

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## **TWIN TO TWIN TRANSFUSION SYNDROME (TTTS) MANAGEMENT – TWO COMPARATIVE CASE REPORTS**

**Key words:** *Twin-to-twin transfusion syndrome (TTTS), monochorionic diamniotic (MCDA) pregnancy, fetoscopic laser photocoagulation, Quintero staging*

**Introduction:** TTTS is a serious condition that can complicate 8-10% of twin pregnancies with monochorionic diamniotic (MCDA) placentation. The diagnosis of TTTS requires 2 criteria: 1) the presence of a MCDA pregnancy; and 2) the presence of oligohydramnios (defined as a maximal vertical pocket of <2 cm) in one sac, and of polyhydramnios (a maximal vertical pocket of >8 cm) in the other sac. The Quintero staging system appears to be a useful tool for describing the severity of TTTS in a standardized fashion. Serial sonographic evaluation should be considered for all twins with MCDA placentation, usually beginning at around 16 weeks and continuing about every 2 weeks until delivery. Many patients with stage I TTTS may often be managed expectantly. The natural history of advanced (eg, stage ≥III) TTTS is bleak, with a reported perinatal loss rate of 70-100%, particularly when it presents <26 weeks. Fetoscopic laser photocoagulation of placental anastomoses is considered by most experts to be the best available approach for stages II, III, and IV TTTS in continuing pregnancies at <26 weeks. [1]

**First case report description:** Pregnant woman K was 37 years old – third pregnancy, she has had two deliveries. At that moment the patient was pregnant with monochorionic diamniotic (MCDA) twins. Patient had an ultrasound on 24<sup>+4</sup> gestational weeks and the conclusion was: MCDA pregnancy. Fetus 1 (F1) was like 21<sup>+1</sup> gestational week old, fetus 2 (F2) was like 25<sup>+1</sup> gestational weeks old. F1 is having intrauterine growth restriction. F2 – polyhydramnios. Twin to twin transfusion syndrome. Patient was referred to Belgium for surgical treatment. In Belgium they revealed 54 % growth discordance and it has been decided to perform selective termination of severely affected twin. They did that – there were no complications, the patient was followed-up and the pregnancy progressed without complications and planned Caesarean section was performed on 40<sup>th</sup> gestational week.

**Second case report description:** A pregnant woman E was 37 years old. She was having second pregnancy, before - one delivery. In this particular pregnancy she is having monochorionic diamniotic twins. While pregnancy is progressing, there are multiple ultrasonography's performed starting from 17<sup>+6</sup> gestational week quite often. The conclusion of ultrasound on 20<sup>+0</sup> gestational week was: F1 polyhydramnios and F2 oligohydramnios and growth discordance (28%). There was consilium arranged and a decision for further treatment in Belgium made – patient was going there for fetoscopic laser therapy. The diagnosis at that point: TTTS I stage, progressing (by Quintero classification). The procedure was done a couple of days later and the patient afterwards was closely followed-up. After procedure the pregnancy turned into dichorionic monoamniotic twin pregnancy and it resulted in twins delivery at 35<sup>th</sup> gestational week.

**Conclusion.** Close monitoring in MCDA twin pregnancies is really important. The right timing is also crucial, because then the procedure brings better results. Also knowledge about the newest available procedure is important for offering all the treatment possibilities for patients.

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## ULTRASONOSCOPY AS BLOOD CIRCULATORY VOLUME EVALUATION METHOD

**Key words.** *Ultrasonography*, central venous pressure (CVP), vena cava inferior (VCI)

**Introduction.** In Intensive care units, bed-side ultrasonography is used to evaluate the patient in real time. CVP is widely used to evaluate patient hemodynamics, however, the change is not an accurate indicator due to delay in response. In comparison, direct visualisation of VCI with ultrasonography can be measured and evaluated.

**Aim.** Evaluate the efficacy of ultrasonography as a diagnostic tool of blood circulatory volume in patients after heart operations by detecting VCI *caval index*.

**Materials and methods.** A prospective study took place in Pauls Stradins Clinical University Hospital Department of Cardioanaesthesiology and Intensive care during September 2016 and February 2017. Patients after coronary artery bypass surgery were evaluated with ultrasonoscopy at the time of arrival in department, 3 and 6 hours postop. VCI was measured by a single operator.

**Results.** In the research 39 patients were included - 22 men, 14 women. Mean age was 67 (SD 6.8), BMI 29 (SD 3.3), 82% were above normal BMI, EF 52% (SD 11.0). 8% declined the evaluation because of pain. There is no significant correlation between fluid balance and *caval index* - Spearman's rho was -0.86 (p= 0.391), -0.78 (p= 0.439), 0.00 (p= 1.000) at arrival, 3 hours and 6 hours postop respectively. No significant correlation is seen between CVP and fluid balance - 0.32 (p= 0.054), 0.24 (p= 0.166), 0.26 (p= 0.121).

**Conclusions.** This study did not show significant benefit from measuring VCI *caval index* in patients after coronary artery bypass surgery with regard to the assessment of blood circulatory volume. In patients with BMI > 24.9kg/m<sup>2</sup> or low affixed patch, detecting VCI is complicated. The ultrasonoscopic method is limited by operator specificity as mentioned in literature. More patients should be included in this research in order to increase the statistical credibility of the method assessment.

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## USE OF MECHANICAL CHEST COMPRESSION DEVICE IN PROLONGED CPR IN OUT-OF-HOSPITAL CARDIAC ARREST

**Introduction.** Qualitative chest compressions are the key determinant of successful cardiopulmonary resuscitation (CPR) with good neurological outcome. Only effective and uninterrupted chest compressions can create life-sustaining circulation of heart and brain. The role of mechanical chest compression devices in prolonged CPR is underestimated.

**Case report description.** A 53-year-old Caucasian female (85 kg), called Emergency service complaining of a pain in the chest with irradiation to the left scapula. ST segment elevations in ECG approved the diagnosis of myocardial infarction. Objectively: pulse was palpable on a. radialis, blood pressure were 126/80 mmHg, SpO<sub>2</sub> 96%, visually no signs of cardiogenic shock. During transportation to ambulance patient lost consciousness, on monitor Ventricular fibrillation (VF) was detected. Defibrillation (DF) at 200J was delivered and manual CPR started. We continued CPR by advanced cardiac life support (ACLS) algorithm and called for help, which arrived in 23min. During this time 6 unsuccessful DF were performed. With following rapid sequence intubation and mechanical ventilation. Mechanical chest compression device (AutoPulse) was established. Automated CPR started. Shockable rhythm alternated with PEA. Returning of spontaneous circulation (ROSC) was achieved in 55 min. On the way to the hospital 3 times VF, automated CPR restarted, successfully defibrillated. 8:08 a.m. patient delivered to the ICU. Objectively: rhythmic pulse 80 x', 90/60 mmHg on inotrope support, SpO<sub>2</sub> 100% on mechanical ventilation. Acute percutaneous coronary intervention was performed. Revascularized LAD and LCX coronary arteries with stents. Intraaortic balloon counterpulsation (IABCP) was initiated.

**Summary.** Total time of CPR 80 min. Manual CPR provided for 25 min with 6 DF, continued with automated CPR for 55 min with 4 DF. Totally 16 DF were done for 6 VF. 14.01 6:00 a.m. patient was conscious, extubated. After two days patient mentally was active and adequate, complained of pain in the chest after CPR, evacuated

IABCP catheter. On the 4<sup>th</sup> day patient was transported from ICU to the cardiac therapy ward. On the 9<sup>th</sup> day the patient was discharged from hospital without neurological dysfunction - Cerebral performance category 1

**Conclusion.** Quick response, correct diagnosis and treatment following to ACLS algorithm, with use of mechanical chest compression device can improve survival and neurological outcome in patients with out-of-hospital prolonged cardiac arrest.

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## USE OF PLATELET RICH PLASMA MIXED WITH HYALURONIC ACID IN KNEE OSTEOARTHRITIS PATIENTS. 6 MONTHS FOLLOW UP.

### Introduction

The hyaluronic acid (HA) has been used for OA treatment for more than 20 years, its clinical effect is well known, however its combination with the platelet rich plasma (PRP) has been marginally studied. Platelets contain alfa granules which in turn contain various growth factors like vascular endothelial growth factor, fibroblast growth factor, insulin-like growth factor and others.

### Aim.

to evaluate whether the platelet rich plasma mixed with the hyaluronic acid can reach minimal important change (more than 10 points improvement in "Knee osteoarthritis and outcome score" (KOOS) score.)

### Materials and methods.

This is a prospective study done in Riga Hospital of Traumatology and Orthopedics. The main inclusion criteria: Kellgren Lawrence grade I-III knee OA, patient age 18-65 years.

Patients received 1 injection of mixed platelet rich plasma with hyaluronic acid in 0, 2 and 6 months. The clinical evaluation using KOOS was performed before and 8, 12, 26 weeks after. Statistical analysis was performed with IBM SPSS 22.0.

### Results.

16 patients (Mean age =58.8, SD=12) participated in the study.

At 6 months minimal important change had 50%(n=8) of patients in KOOS Symptoms subscale, 56.25%(n=9) in KOOS Pain, 43.75%(n=7) in KOOS Activity and daily living, 50.00%(n=8) in KOOS Sport and 37.5%(n=6) in KOOS quality of life.

Mean improvement from baseline after 6 months is: in KOOS symptoms 12.7 (SD=13.3, p=0.003), KOOS pain 10.2 (SD=12, p=0.008), KOOS activity and daily living 10.4 (SD=12.9, p=0.011), KOOS quality of life 10.4 (SD=19.7, p=0.05)

### Conclusions

The clinical improvement of PRP+HA has continuously increased until 6 months

PRP + HA provides clinically and statistically significant improvement in early and moderate knee OA patients at 6 months

PRP + HA is safe method for relieving knee OA symptoms

Controlled studies with higher patient count and longer follow up are necessary to better evaluate the effect of addition of PRP to HA.

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## USE OF URINE NITRITE TEST FOR DETECTING ASYMPTOMATIC BACTERIURIA DURING PREGNANCY

**Key words:** asymptomatic bacteriuria, nitrite test, antibacterial therapy, risk factors

**Introduction.** Urine nitrite test is used as asymptomatic bacteriuria (ABU) screening method (specificity 92-100%, sensitivity 46%, it is associated with *Enterobacteriaceae spp.*). It should be done every time urine analysis is performed. If test is positive, urine culture, following antibacterial therapy course and control urine

culture month after therapy should be done. Guidelines recommend to do urine culture in 12-16 weeks of gestation, if woman has urinary tract infections risk factors, despite negative nitrite test.

**Aim.** Find out the use of nitrite test during pregnancy, analyze prenatal care tactics, ABU treatment, its conformity to guidelines and recommendations.

**Materials and methods.** For the retrospective research were randomly selected 180 women in puerperal period in Riga Maternity Hospital Mothers and child cares unit (1.12.16-31.01.17). Collected data was processed with SPSS22 and Microsoft Excel 2013. The research was accepted by RSU Ethic Commission (29.09.2016).

**Results.** The average age of women in study group is 30,44 years (SD=5,49, min=15, max=43). All women had antenatal care and urine analysis with nitrite test. Nitrite test was positive in 6,1% (N=11). Urine culture was made in 4 of these cases (45,5%), and in 3 cases it was positive. Bacteria's found were: *GAH Streptococcus*, *Enterobacteriaceae sp.*, *E. Coli*. In positive nitrite test group therapy received 8 women (72.7%). Antibacterial therapy was prescribed to 5 women: in 2 cases therapy was empiric, in 3 cases – depending on urine culture results. Urinary tract infections risk factors had 83.3% of women. None of them had had urine culture made because of risk factors.

**Conclusions.** Positive nitrite test incidence in the study group support evidences found in academic literature. There is a need in improvement of antenatal care in case of ABU, as sometimes it might differs from the recommendations.

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## USED TREATMENT TACTICS IN NEWBORNS WITH NECROTIZING ENTEROCOLITIS IN TWO DIFFERENT TIME PERIODS: SINGLE CENTRE EXPERIENCE

**Key words:** necrotizing enterocolitis, newborns, demographics, treatment, mortality.

**Introduction:** Necrotizing enterocolitis (NEC) is the most common surgical emergency in newborns (1-3:1000), and despite both medical and surgical treatment advancements mortality is still high (20–40%). Surgical intervention is used only for advanced cases, but there is still no sufficient data on which treatment tactic has an advantage.

**Aim:** The study aim was to describe the difference in NEC patient demographics and to evaluate used treatment tactics and their impact on mortality reduction in newborns admitted to Children's Clinical University Hospital NICU during the time period from year 2006 until 2015.

**Material and Methods:** A retrospective study was conducted analysing 195 newborns with NEC using patient data from medical archives. Patients were divided into two groups according to time period of treatment – group 1 - 2006–2010 (n=128) vs group 2 - 2011-2015 (n= 67). Demographic data, used treatment options and mortality was compared between the groups. Data was analysed using *IBM SPSS Statistics 22.0*.

**Results:** There was a 47.7 % decrease in NEC patient cases between group 1 and group 2, n=128 vs n=67 respectively. Median gestation age (*Md*= 29.5 (27;33) vs *Md*=28 (25;31), p=0.018) and birth weight (*Md*= 1267.5 (962.50; 1772.50) vs *Md*=970 (810; 1640), p=0.02) were lower in group 2. Whereas no gender disparity was found between the two groups (p= 0.695). Surgical treatment was used for 28 patients (21.9%) in group 1 and 18 patients (26.9%) in group 2. No difference was found in used treatment options between both groups regarding conservative treatment 78,1% vs 73,1% (p=0.436), peritoneal drainage (PD) 7,3% vs 3% (p=0.183), laparotomy 8,6% vs 16,4% (p=0.101) and combined therapy of peritoneal drainage and laparotomy – 5,5% vs 4,5% (p=0.766). Out of all laparotomy cases with or without prior PD (n=34), only 2 primary anastomoses were placed, with bough being in group 2. There was a tendency for drop of mortality in group 2 (30% vs 21%), but it was not statistically significant (p=0.154). When evaluating efficacy of treatment options based on patient mortality between groups, only conservative treatment showed a significant improvement in group 2 (27% vs 10.2%, p=0.019).

**Conclusions:** During past five years there has been a significant drop in cases of NEC with significantly more preterm and underweight newborns being affected, yet with a slight decline of mortality. Treatment tactics have not changed, but there is a significant increase in conservative treatment efficiency. In future we must re-evaluate our treatment strategies regarding NEC to continue decreasing the mortality rates.

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## VACCINE PREVENTABLE DISEASES IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL IN THE TIME PERIOD FROM 2005 TO 2016

**Key words:** *Pediatrics, vaccine, vaccine preventable disease.*

**Introduction.** The National Immunization Program (NIP) is successful example of effective preventive care for children. The NIP helps to reduce morbidity and mortality of vaccine preventable diseases (VPD) but despite that parents more often choose to skip or partly skip the vaccination.

**Aim.** The aim of the study is to collect statistics of VPD in the Children's Clinical University hospital (CCUH) in Riga, Latvia from 2005 to 2016 year and to prove that VPD still quite often emerge among children in CCUH.

**Results.** Despite the NIP 883 cases of VPD conformed to selection criteria in CCUH in the time period from 2005 to 2016. During the period there was 0 cases of tetanus or poliomyelitis, more detailed information was collected of patients with diphtheria and pertussis. All together 64 patients with diphtheria and 80 patients with pertussis were hospitalized at CCUH. From all the patients 39.64% were girls, 60.36% were boys. The mean age was  $65.72 \pm 65.01$  months, with an interval from 1 to 215 months. Confidence interval (CI 95%) of age mean value is from 52.75 to 78.68 months. 10% patients with diphtheria and 8.2% patients with pertussis received treatment in ICU. Results show that diphtheria is observed on mean for older children, and the difference is significant. For all VPD average length of treatment in hospital was  $12.45 \pm 7.10$  days, with an interval from 2 to 31 days. The study also included questionnaire that was sent to parents whose child was hospitalized in CCUH in 2014 with VPD. 52% answered that child was not vaccinated according to vaccination calendar.

### **Conclusions.**

- 1) VPD are important issue to deal with in Latvia because during 12 year period 883 patients received medical treatment in CCUH with the mean length for  $12.45 \pm 7.10$  days.
- 2) Every hospitalization with VPD is painful, e.g., full blood count was taken in 90%.
- 3) In 2014<sup>th</sup> 52% of patients with VPD were not vaccinated according to vaccination calendar.

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## VACCUUM EXTRACTION – MATERNAL AND NEONATAL COMPLICATIONS

**Key words:** *Vacuum extraction. Operative vaginal delivery.*

**Introduction.** Vacuum extraction are in use as delivery instruments. It is traction of the fetal head by a created negative pressure through a cup applied to the head. Vacuum-extraction indications: prolonged second stage of labor, maternal exhaustion, dysfunction uteri or fetal distress. Use of vacuum extraction is variable in different countries. In the world it is average 1.2-8.4% every year, in Latvia 2014 2.2%, 2015 3.1 %, in Riga Maternity Hospital 2014 2.77%, 2015 3.23%, 2016 4.18%. As any other medical procedures, vacuum extraction also may have some complications.

**Aim.** The purpose of this research was to evaluate the complications for the mother and newborn, using vacuum extraction, and to compare them with spontaneous delivery.

**Materials and methods.** This study included group of vacuum-assisted deliveries in time period 2014-2016 (n=726) in Riga Maternity Hospital, and it was compared to the group of spontaneous vaginal deliveries (n=726). Data statistically processed in Microsoft Excel and SPSS Statistics 22.0. Retrospective longitudinal study.

**Results.** Results of the study are divided into two categories. The first category includes comparisons of the complications between two groups, and the differences are statistically significant ( $p < 0.005$ ): in vacuum-assisted deliveries episiotomy was made 63.4% more, vaginal lacerations was 36.4% more, cervical lacerations was 9.8% more than in group of spontaneous vaginal deliveries. But rupture of labia minora was 5.9% less, perineal lacerations were 35.8% less in group with vacuum extraction. In these category also is includes neonatal complications like cephalohematoma, which was 26.9% more, and clavicle fracture was 24% more in vacuum-assisted deliveries. The second category includes comparisons of the complications between two groups, and the differences are not statistically significant ( $p > 0.005$ ) like subinvolutio uterus, superficial scalp wounds, retinal hemorrhage, facial nerve and brachial plexus damage, intraventricular haemorrhage, subgaleal hematoma. In vacuum-assisted deliveries was prolonged second stage of labor, mean 1 hour 22 minutes (ST=3.2) in comparison with group of spontaneous vaginal deliveries, mean 40 minutes (ST=2.71). In group with vacuum-extraction dysfunction uteri was 46.1% ( $p < 0.005$ ) more, fetal distress was 73.9% ( $p < 0.005$ ) more than in

spontaneous delivery group. Vacuum extraction was used for the first delivery in 86.9% of cases, for the second delivery 10.9% of cases.

**Conclusion.** Operative vaginal delivery using vacuum extraction is associated with more adverse outcomes than spontaneous vaginal delivery. However, these complications are so infrequent that the advantages of this method of extraction argue in favor of wide use in obstetrics.

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## **VENTRICULAR RATE AFTER ELECTRICAL CARDIOVERSION AND RECURRENCE OF ATRIAL FIBRILLATION**

**Key words:** atrial fibrillation, sinus rhythm, electrical cardioversion

**Introduction:** Atrial fibrillation (AF) has a high morbidity and mortality rate. It is the most common cardiac arrhythmia in humans. Restoring sinus rhythm by electrical cardioversion (ECV) is a first-line treatment of paroxysmal and persistent AF in cases of AF with haemodynamic instability.

**Aim:** to determine the effect of ventricular rate after ECV on recurrence of AF in 30 days of follow-up.

**Materials and methods:** In this retrospective study data from 150 patients undergoing ECV were collected in Pauls Stradins Clinical University Hospital's Department of Arrhythmology. Questionnaires were administered and follow-up data were collected from 30 days after ECV.

Data were processed using SPSS 20.0 software,  $p < 0.05$  was considered statistically significant.

**Results:** A total of 150 ECVs were performed in patients with AF lasting less than 30 days (11.3%), between 30 and 90 days (33.3%), more than 90 days (11.3%) and more than 180 days (44%). The success rate of ECV was 96.7%. Mean ventricular rate before ECV was 85.83 bpm (SD=19) and mean ventricular rate after ECV was 61.51 bpm (SD=11.5). Ventricular rate after ECV was significantly lower ( $p=0.03$ ) in patients in whom AF did not recur in 30 days of follow-up (M=59 bpm, SD=8.54). Ventricular rate after ECV was significantly higher ( $p=0.03$ ) in patients in whom AF recurred in 30 days of follow-up (M=75 bpm, SD=22.72).

**Conclusions:** Statistically significant difference was found in ventricular rate after ECV between patients in whom AF recurred and in whom sinus rhythm was presented in 30 days of follow-up.

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## **VITALITY OF THE RECENTLY IMPLEMENTED METHOD IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL: EVALUATION OF MAGNETIC RESONANCE UROGRAPHY DATA**

**Introduction.** Hydronephrosis (HN) is one of the cause of end-stage renal disease, increasing risk of mortality from cardiovascular complications. Detection of HN and kidney abnormalities requires appropriate and reliable imaging method which is provided by functional magnetic resonance imaging, being non-ionizing, non-invasive method, allowing morphologic and functional assessment of kidneys and enables timely surgical treatment thus avoiding mortality.

**Aim.** The aim of the study was to assess inter-observer variability between two evaluators in newly implemented kidney function software CHOP-fMRU in Children's Clinical University Hospital, Riga, Latvia, and detect kidney morphological abnormalities.

**Materials and methods.** 29 paediatric patients with hydronephrosis who underwent MRU were included in this retrospective study. Patient age, gender, anteroposterior renal pelvis diameter (RPD), parenchymal thickness (PT), diameter of ureters (DU), grade of hydronephrosis were recorded. Measurements of the renal transit time (RTT), calyceal transit time (CTT), Patlak differential renal function (pDRF) were performed by a board certified radiologist and the 6<sup>th</sup> year medicine student using CHOP-fMRU software. Inter-observer variability was assessed using Interclass Coefficient Correlation (ICC) with CI of 95%,  $p$  value  $< 0.05$  was considered statistically significant.

**Results.** Among all the patients, grades of hydronephrosis were assessed as I, III and IV grades, being 3.4%, 51.7%, 44.8%, respectively. Bilateral HN detected in 17.2%, unilateral on the right and left side – 24.1%, 58.6%, respectively. Morphological diagnoses detected: UPJ obstruction (8), UVJ obstruction (1), duplex collecting system (4), kidney rotation anomalies (2), horseshoe kidney (4), cystic anomalies (2). The mean RPD was 2.19

cm; mean dilatated DU=1.54 cm; mean PH=0.42 cm. Interclass Correlation (IC) for CTT was 0.95 (CI = 0.88-0.96), RTT was 0.97 (CI = 0.92-0.98), pDRF was 0.67 (CI = 0.28-0.85),  $p < 0.001$  in all parameters.

**Conclusions.** MRU provides high quality morphological assessment in paediatric uro-radiology without ionizing radiation, helping in perioperative planning. Interobserver variability rates were similar; CHOP-fMRU measurements can be safely performed by evaluators with various experiences in radiology.

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## VITAMINS AND MICRO NUTRIENT SUPPLEMENTS DURING PREGNANCY

**Introduction** – A lot of studies evaluate the essential vitamins, microelements and macroelements effects on the pregnancy and its outcome. In some countries, e.g Canada, guidelines have been developed for pregnant women, which included recommendations about certain dietary supplements and vitamin use. According to guidelines in the United Kingdom the following is recommended to pregnant women: 1,5-2g calcium, 200-2000 IU vitamin D, 30-60 mg iron (in anemia case - 120 mg), 0.4 mg folic acid (5 mg when there are risk factors), 1.9-2 mg of vitamin B6, and 350mg of magnesium and 150 µg iodine per day.

**Aim** – To clarify the vitamins and nutritional supplements usage habits among pregnant women and assess how does it conforms with international recommendations.

**Material and methods**- the survey was carried out in Maternal and child care unit in *Rīgas dzemdību nams*. 100 randomly selected women in postpartum period were surveyed and their medical data were collected.

**Results** - 100% (N=100) of research participants were using vitamins or nutrition supplements during pregnancy. 66% (N=66) were using special complex vitamins for pregnant women. 69% (N=69) were using any of microelement separately (iron, calcium, magnesium, B6 and D vitamin, folic acid, iodine). Analyzing use of separate nutrition supplement, the most used is iron supplements - 38% (N=38), MgB6 - 28% (N=28), folic acid 25% (N=25). Assessing compound of complex vitamins elements and nutrition supplements, most pregnant women provided themselves with these elements: 96 % (N=96) iron, 82% (N=82) folic acid, 82% (N=82) MgB6, 65%(N=65) calcium and 65% (N=65) D vitamin.

**Conclusions** - The most used nutrition supplement is iron, which can be explained with the widespread distribution of anemia during pregnancy. There are required additional knowledge and understanding of certain vitamins, macro- and microelements role and use during the pregnancy for both antenatal care specialists and pregnant women.

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## WOMEN'S HEALTH ASSESSMENT IN THE MENOPAUSAL PERIOD

**Actuality of the study.** The women's natural aging processes start at the age of 40. This is a new period in women's life, that we call menopause. Menopause is a natural process of aging women from 40 to 65 years. In this stage of life hormonal changes influence on women's physical health, cardiovascular system and psychosomatic health. Various health problems with the pain symptoms are manifested in that age period, that usually restrict women's life activity.

**Material and methods.** Study group include 90 women in age from 40 to 65 years. Respondents are divided into three subgroups: 1<sup>st</sup> – from 40 to 44ys (N=30); 2<sup>nd</sup> from 45 to 54ys (N=30); 3<sup>rd</sup> from 55 to 65 ys (N=30). We provided a structured questionnaire on general health that includes questions about anthropometric characteristics and physiological parameters of respondents, which characterize women's physical health and cardiovascular system (body mass index (BMI), blood pressure).

**Results.** The BMI average value in the 1<sup>st</sup> subgroup was 26,  $22 \pm 3,61$ . The average value of BMI for respondents of the 2<sup>nd</sup> subgroup was 27,  $72 \pm 3, 84$ . The data of BMI for the respondents of the 3<sup>rd</sup> subgroup increased till 29,  $69 \pm 4, 42$ . Blood pressure in subgroup were: 1<sup>st</sup> - 125/84 and 128/89 mmHg; 2<sup>nd</sup> - 128/86 and 128/87 mmHg; 3<sup>rd</sup> - 137/89 and 136/88 mmHg.

According survey collecting data, 64% of respondents evaluated health assessment as "good", but 19% as "pretty bad". 34 % of respondents noted that the level of the health capacity during last five years has decreased. We have fixed that 40% respondents noted growing up the body mass value three to ten kilograms. Our study

revealed that about 83% of respondents gave a positive answer about the pain symptoms in the body (the headaches, back (lumbar), shoulders).

**Conclusions.** We have fixed that women's health capacity level decreased after age of 40. Pain symptoms were the first premorbid state of ambassadors. An increase in body mass also increases the risk to get high blood pressure. Women's health assessment of the age period from 40 to 65 years is essential for elaborating preventive measure program that allow maintain women's health capacity in the menopause age.

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## SENIOR AND PRE-SENIOR CAR DRIVING SKILLS AND HEALTH ASPECTS

**Key words:** *Geriatrics, car driving skills, health, quality of life.*

**Introduction.** Older drivers is just as important risk group as beginner drivers. Because of decrease in physical and mental functions, the chance of getting into car accident is more likely. Senior age is essential factor in statistical data compared with pre-seniors.

**Aim.** To find out, if senior (S) and pre-senior (PS) senior driving skills differ; are driving skills related to state of health?

**Materials and methods.** A cross-sectional study was performed with 86 seniors (age > 65yrs) and 50 pre-seniors (age 55-64yrs). Participation was voluntary, respondents were interviewed in senior group activities. A questionnaire was used to evaluate general information about drivers, quality of life (SF-36), and driving performance (AAA Foundation for Traffic Safety: Driver 65 Plus). Collected data were analysed with SPSS v.20.0 and MS Excel 2010.

**Results.** Respondents consisted of 61 women and 75 men. In S, 69% drive manual and 31% automatic transmission, in PS – 84% and 16%, respectively. 29% of S have good driving skills and 71% have doubtful skills and resemble with PS group. S use their car 4 times per week, PS – 5. Analysing independent sample T test, pre-seniors had better results in general health (S=62.2±2.2 vs. PS=57.8±1.8, p=0.013) and in role of limitations due to physical functioning (S=83.7±3.1 vs. PS=91.2±2.6, p=0.018). Driving performance did not differ in groups (p>0.05). Chi-Square test was used to compare age groups with driving assessment (p>0.05).

**Conclusion.** Although pre-seniors have better health, it is not a predictor of driving performance in senior population.

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## KVARTĀRVIDES PĒTĪJUMI

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## RESEARCHES OF QUATERNARY ENVIRONMENT

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## GEOLOGICAL AND GEOMORPHOLOGICAL NATURE MONUMENTS IN PROTECTED LANDSCAPE AREA “AUGŠDAUGAVA” – CURRENT STATUS AND RECOMMENDATIONS FOR THEIR GEOCONSERVATION

The protected landscape area (PLA) “Augšdaugava” is one of the biggest specially protected natural areas in the south-eastern part of Latvia. Many nature values, including unique geological and geomorphological objects of geoconservation significance, are located in the PLA. Although six sites in the PLA have been given the official status of nature monuments and are thus under state-level protection, however, recent studies and field surveys indicate that in several cases their officially defined borders actually do not include the objects which have to be protected. Moreover, these borders do not coincide with cadastre data or linear objects *in situ*, e.g. roads or forest

sections. It has consequences because the inaccurate delineation of the parcels of protected objects causes incorrect depiction of them in the documents and maps of territorial planning. Such situation does not ensure appropriate protection of objects, despite that formally everything complies with the regulations. Hence the aim of the research programme is to define more precisely borderlines of nature monuments in accordance with the real situation applying field and desk-based studies, as well as means of geomatics. The additional objective of the study is to prepare recommendations for geoconservation of the nature monuments. The obtained results are important both from scientific and applied standpoints. First of all, the performed studies allow obtaining additional relevant geological and geomorphological data on nature monuments, hence enhancing our knowledge about them. Secondly, precisely delineated borderlines of the nature monuments are prepared in the form of GIS shapefiles. Therefore the elaborated data can be integrated into the process of territorial planning, providing the appropriate management and conservation of these protected natural formations. Hence it contributes to a better geoconservation of nature values in the PLA.

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## **GEODIVERSITY AS INDICATOR OF ABIOTIC NATURE ELEMENTS OF NATURE RESERVE “PILSKALNES SIGULDIŅA”**

The concept of geodiversity, which according to Gray (2013) is the natural diversity of geological, geomorphological, soil and hydrological features, is successfully used in the last decade in many countries for purposes of the quantitative assessment of abiotic nature values. At the same time, it is also an additional tool which can be in principle used both in protected nature territories and outside them to identify areas with a high value of the abiotic nature elements. It, in turn, can serve for purposes of territorial planning and management, allowing to highlight potential sites of geotourism and to improve the conservation of geoheritage. However, the studies on geodiversity and its quantification have not yet been applied in Latvia. Hence the aim of the study presented in this paper was to apply the methodology described in the scientific literature for the assessment of geodiversity index (GI) in the GIS environment. The estimation of GI as a case study was performed in nature reserve “Pilskalnes Siguldiņa” located in the Augšzeme Upland, in the south-eastern part of Latvia. The calculations of GI were carried out, including such components as geographic distribution of Quaternary sediments, geological and geomorphological processes, landform units, hydrological features and terrain roughness. These continuous and discrete geospatial data were processed, and numerical methods were applied in ArcGIS. The spatial variability of the components of geodiversity was calculated using neighborhood analysis and a focal statistics tools. The output data of GI in a format of the regular grid were reclassified in three classes in order to identify areas with low, medium and high geodiversity. Finally, maps of GI geographic distribution as an indicator of the diversity of abiotic nature elements of nature reserve “Pilskalnes Siguldiņa” were developed.

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## **GLACIAL LANDFORMS AS POTENTIAL OBJECTS OF THE GEOCONSERVATION IN THE BURZAVA HUMMOCKY AREA, LATGALE UPLAND**

Although conservation of the geological and geomorphological heritage during the last decade becomes an important part of the preservation of abiotic nature values in many European countries, in Latvia the issues of geoconservation until now are not sufficiently integrated into the nature protection policy. As a result, many potential objects of geoconservation significance are not either identified nor protected despite their scientific or scenic importance. This problem particularly can be referred to glacial landforms which reflect the paleogeographic development of territory of Latvia towards the end of the last glaciation. In such a context these landforms are an essential source of geological and geomorphological information, and they should be protected, allowing these landforms to be preserved for further studies. Therefore, a study program was carried out with the aim of identifying of glacial landforms as potential objects of the geoconservation in the Burzava hummocky area, Latgale upland. In the first phase of studies topographic, geological and geomorphological maps were analysed to identify and locate potential objects of geoconservation significance. After that, the adapted and modified scoring procedure of Pralong (2005) was applied for assessing the scientific value of studied objects, focusing mainly on palaeogeographical interest and representativeness of glacial landforms. The obtained results indicate that at least 38 prominent landforms are located in the study area, representing typical features of glacial

relief like plateau-like hills, dome-shaped or cone-shaped hummocks, eskers, etc. In total these glacial landforms cover 5.2% of the Burzava hummocky area. In addition field survey and inventory of previously identified objects will be performed during ongoing spring and summer season of 2017. It will allow assessing scenic, aesthetic and landscape values of each glacial landform, hence to identify features with the highest-scoring values.

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## **FACTORS AFFECTING THE ENVIRONMENTAL QUALITY OF SURFACE WATERS IN HYDROGRAPHIC NETWORK ASSOCIATED WITH VALLEY-LIKE LANDFORMS OF THE NORTH-WESTERN PART OF THE ILŪKSTE HUMMOCKY AREA**

The assessment of factors affecting the environmental quality of surface waters, as well as mapping of sources of pollution is crucial to protect this vital resource and to provide appropriate management of it in terms of territorial planning and spatial development at regional and local level. For this reason surface waters in the hydrographic network associated with a system of Subate tunnel valleys was chosen as territory for detailed studies. To obtain the data series of tasks were realized and different methods were applied, from which geological and geomorphological field studies, mapping of point and diffuse sources of pollution and geospatial analysis in GIS environment were mainly used. Obtained results demonstrate that in the system of Subate tunnel valleys and adjacent areas surficial Quaternary sediments are presented mainly by glacial till. Hence low permeability of topmost geological strata prevents contamination of groundwater, but at the same time, it favours delivery of pollutants by surface runoff. Also, the dense network of ditches and subsurface drainage pipes play an important role in the intensifying of pollution transfer from catchments into receiving lakes and rivers. Hence melioration system has to be considered as a factor affecting the environmental quality of surface waters in elements of the hydrographic network too. The results of the study indicate that a large part of the point and diffuse sources of water pollution are remnants from the soviet period – former cattle and hog farms, grain-dryers, warehouses for plant protection chemicals and artificial fertilizers, etc. Therefore it is necessary to prepare GIS data and digital maps, which can be used by decision makers, planners and members of local authorities of Ilūkste district to reduce the pollution of surface waters.

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## **GEOMORPHOLOGICAL STUDY OF THE ESKER SYSTEM IN THE SOUTHERN PART OF THE MALTA DEPRESSION**

Eskers are elongated ridge-like landforms, which consists mainly of glaciofluvially deposited sand and gravel. These features are common in a post-glacial landscape in Latvia. However, the information about the geographic distribution, morphology and internal structure of these landforms, particularly those located in the Latgale Upland, currently is insufficient. Hence, in order to obtain data about the geomorphology of such landforms, field and desk-based studies of Ružina-Andrupene esker system were performed. Due to the lack of LiDAR data for this area, mainly the topographic maps were used for planform and crest-type mapping in ArcGIS environment. In addition, geomorphological characteristics were obtained during field studies. This esker system stretches along the Malta depression from the lake Ciskodu till the lake Solojs. It can be subdivided into two parts, i.e. north-western and south-eastern respectively. Both parts are separated by the valley of the river Malta. The NW part is almost straight with total length 10.9 km, while SE part is straight to a slightly sinuous ridge-like formation with total length 12.7 km. The NW part is a less complex formation in comparison to SE part, where typical steep-sided esker ridge segments alternate with groups of parallel distributed elongate hummocks. The elevation of the esker crest gradually increases from the NW to SE, reaching altitude 220 m asl. in the distal part of it. Westward from the lake Solojs, the esker broadens, transferring into the glaciofluvial delta with complex surface topography. Considering the geomorphology and geographic location of the esker system, we can assume that it was formed as a system of landforms of complex origin during several phases of deglaciation in south-eastern Latvia. Hence further studies of the esker system can provide detailed paleogeographic insight into the retreating of former ice sheet within above-mentioned territory at the end of the Late Weischelian glaciation.

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## **GRANULOMETRIC COMPOSITION OF GLACIOFLUVIAL SEDIMENTS MAKING UP TERRACES IN THE AUGŠDAUGAVA SPILLWAY VALLEY**

The results of multidisciplinary studies of glaciofluvial sediments of the sand and gravel fractions making up river terraces in the Augšdaugava spillway valley are presented in this paper. First of all, the internal structure of river terraces has been investigated at several outcrops in gravel quarries, allowing to collect representative samples of glaciofluvial sand sediments. The measurements of clast macrofabrics taken over the course of field campaigns followed the conventional field techniques in glacial geomorphology. In addition pebbles of the fractions with phi intervals  $-3$  to  $-4$ ,  $-4$  to  $-5$  and  $-5$  to  $-6$  have been collected and their shape according to the classification of Sneed and Folk (1958) have been estimated. Analysis of the grain size composition of glaciofluvial sediments has been carried out with a Malvern MASTERSIZER 2000 for determination of the indicators proposed by Folk and Ward (1957), i.e. the mean grain size ( $Mz$ ), the sorting ( $s$ ) and the skewness ( $Sk$ ). For purposes of visualization of the data TriPlot and GRADISTAT modules, as well as StereoNet 3.1 software were used. Finally, surface textural analysis and micromorphology of quartz grains have been performed by scanning electron microscopy. For this purpose, 250 to 500  $\mu\text{m}$  sand fraction was extracted by dry sieving and treated chemically prior to obtaining of sample micrographs. The obtained data on the granulometric composition of sediments making up terraces provides evidence of the deposition of the sand and gravel clasts by glacial meltwater. The analysis of the macrofabrics indicates relatively weak to medium strong bimodal azimuth, which is typical for glaciofluvial sedimentation environment. Considering the obtained results, it is the most likely that terraces in the Augšdaugava spillway valley are erosional fluvial landforms. However, to verify that, it is necessary to employ shallow geophysical techniques, i.e. GPR to investigate the sedimentary structure of the terraces.

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## **ASSESSMENT OF SUSCEPTIBILITY OF AEOLIAN SEDIMENTS DERIVED SOILS TO WIND EROSION IN THE DAUGAVPILS DISTRICT**

The current growing awareness of human-induced environmental changes has caused the increasing demand for data that are necessary for adequate management of various territories, particularly those affected by geological risk factors. Among these factors, the susceptibility of the soils to wind erosion has to be assessed. Soil wind erosion usually is not a great concern in regions of semi-humid temperate climate. However, in areas, where aeolian sediments derived soils are distributed, there is a risk of such negative process, which can be triggered by such anthropogenic forcing factor as deforestation. That also relates to Daugavpils district, where sand soils developed on inland dunes are widely distributed northward and westward from the Daugavpils. Recently this area is almost entirely stabilized by forest vegetation. However, the analysis of historical maps of this territory reveals the aeolian activity in the past. Hence soil degradation induced by wind erosion can renew again in case of inappropriate management or abrupt land-use changes in this area. Considering that, the objective of this study was to assess the vulnerability of aeolian sediments derived soils to wind erosion. Firstly, the geographic distribution of sand of aeolian origin was digitized in GIS from large-scale geological maps. Taking into account the well-known fact that the sand sediments susceptibility to wind erosion is negatively correlated to the presence of vegetation, the forest cover was extracted from land use data of LGIA. The vulnerability of soils to wind erosion was expressed according to Bagnold (1941) equation as critical wind velocity where particle movement begins. The data on the mean grain size of soils necessary for the calculation were obtained from studies previously conducted at DU. The results of the assessment indicate that medium sand bared soils are prone to erosion when the wind velocity  $>2.4 \text{ m s}^{-1}$ , while fine sand soils can be eroded even at fewer velocities.

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## **QUARTZ GRAIN SHAPE AND SURFACE MICROTTEXTURAL EXAMINATION OF SAND SEDIMENTS: CASE STUDY FOR DISCRIMINATION OF AEOLIAN SEDIMENTARY ENVIRONMENT IN THE SOUTHERN PART OF JERSIKA PLAIN**

The results presented in this paper were obtained from the laboratory and desk-based studies of the sand sediments from the southern part of Jersika plain, where inland dune field is located. Review of the published data reveals that examination of microtextures on a surface of quartz grains provides an insight into the deposition history of sediments of sand fraction. Hence the objective of the study was to clarify the possibility for discrimination of aeolian sands from other sediments considering signatures typical for wind-blown transportation. For this purpose sand samples obtained in previous researches conducted at DU were used. Seven sand samples collected on the dune crests have been chosen for the quartz grain shape and surface microtextural examination. Firstly, grains of 250-500 µm sand fraction were extracted by dry sieving. Considering detected coating of quartz grains by iron oxides, chemical pre-treatment of samples was performed with citrate-bicarbonate-dithionite method. After that, 25 clean quartz grains of similar size >200 µm were randomly selected under a binocular microscope for investigation by scanning electron microscopy. The micrographs of each quartz grain in the sample have been taken by SEM at magnification 400x. Finally, the shape of grains and the surface microtextures were examined from obtained micrographs. The studies reveal the presence of rounded grains in sand samples, which relate to saltating phases of aeolian activity. Also the observed microtextures typical for wind transportation point to an aeolian sedimentary environment in the study area. However, on the contrary to the expected, there are a relatively high proportion of angular and sub-angular grains with fracture-like microtextures. Hence aeolian sediments within the inland dune field had been derived from pre-existing glaciofluvial sediments, and during the aeolian activity, these sediments did not pass far from sources of provenance.

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## **DABAS AIZSARDZĪBA UN VIDES PĀRVALDĪBA**

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## **NATURE PROTECTION AND ENVIRONMENTAL MANAGEMENT**

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## **INVENTORY OF THE MOST INVASIVE ALIEN VASCULAR PLANT SPECIES OF LATVIA IN THE NATURE PARK "DAUGAVAS LOKI"**

Various types of economic activities or natural factors contribute to the spread of invasive plant species. Invasive plants infect large areas, produce reproductive offspring and compete with native plant species.

Nature Park "Daugavas loki" is protected natural area with unique biodiversity. Invasive plant species distribution in the Nature Park is determined both by existence and influence of natural (birds, animals, streams, wind) and anthropogenic (car roads, cemeteries, parks, greenery, gardens, etc.) factors.

Distribution of the most invasive vascular plant species was studied in Nature Park "Daugavas loki" in the summer and autumn of 2016. Nature Park "Daugavas loki" was inspected in previously randomly selected 100 squares (size of one square 500x500 m). Each square was surveyed by route method. 12 most invasive vascular plant species of Latvia was identified in the territory of Nature Park „Daugavas loki”. These invasive vascular plant species were found mainly along roadsides or in moderately moist meadows, as well as in the bushy and abandoned areas. Most common identified invasive vascular plant species in Nature Park "Daugavas loki" are - *Rumex confertus* Willd, *Lupinus polyphylla* Lindl, *Solidago canadensis* L. S.L. and *Impatiens parviflora* DC.

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## **LATVIAN MOST DANGEROUS INVASIVE TREE SPECIES SPREAD NATURAL PARK "DAUGAVAS LOKI"**

Nature park "Daugavas loki" was officially established on February 8, 1990. The protected area was created in order to preserve - the Daugava upstream valley with all landscape values, protected plant and animal species, "Augšdaugava" cultural and historical monument and protect them from the HPP construction in the area. One of the most important contemporary issues from an ecological point of view, is the spread of invasive species outside their natural regions of origin. In 2016 during the period from July to October, a study was conducted, which were surveyed in natural parkland. "Invasive foreign species of plant monitoring programmes" has been developed a research method. Within one year we are surveyed 100 quadrants where one polygon size would be 500 x 500m. The study surveyed quadrants were selected by stratified random by a geographic information system (GPS) program by selecting "random selection" to ensure smooth placement quadrant nature park "Daugavas loki".

The most frequently reported Latvian dangerous invasive tree species are *Acer negundo* L., *Sambucus racemosa* L. un *Malus domestica* Borkh. These species are commonly found around the Nature Park. Much of invasive plant species concentrations were found near the river Daugava, near different infrastructures, abandoned houses in the vicinity and other ruderal habitats. Less studied invasive tree species were found in large forests. Scientific research programme was supported by Global Water Partnership in Central and Eastern Europe, Association "Daugavas Savienība" and Daugavpils University.

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## **ANALYSIS OF THE DISTRIBUTION OF HERACLEUM SOSNOWSKYI MANDEN IN THE TERRITORY OF VIŠĶI MUNICIPALITY**

*Heracleum sosnovskyi* Manden is a plant species dangerous for humans health, that has been classified as invasive not only in Latvia but in several other European countries as well. *H. sosnovskyi* is a perennial that can reach a height of up to 2-4 m, and leaf diameter of up to 1.5 m. It reproduces with seeds that develop from flowers. Flowers can be as large as 0.5 m in diameter. This species is able to spread very rapidly, after blooming, each umbel creates circa 20 000 elliptic seeds. Natural distribution range of the species is Caucasus Mountains, where it grows along mountain rivers and in grasslands and climate is continental (hot summers and cold winters). Right now *H. sosnovskyi* can be found in great majority of European countries. Hogweeds are most often found in habitats disturbed by human: roadsides, abandoned farming lands and gardens, pastures etc. Nevertheless they can also be found in natural habitats such as forests in early succession stage. This species is a generalist and is not limited by any specific biotic or abiotic conditions that may limit its range expansion. This study has been conducted in territory of Višķi municipality in Daugavpils region. Growths of *H. sosnovskyi* have been surveyed and mapped using GPS Trimble Juno SB. It was estimated that total area occupied by *H. sosnovskyi* in Višķi municipality was 47.5 ha, that corresponds to 0.46 % of total size of municipality. Extermination of hogweeds is a long term process and it is important, to keep on using the land after every extermination method applied, otherwise all effort will be in vain.

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## **URBAN BROWNFIELDS REGENERATION IN THE INNER-CITY OF DAUGAVPILS**

The process of inner-city change has gained more attention in urban research in Central and Eastern Europe (CEE). This is mainly because rapid economic restructuring and social change as an outcome of the post-socialist transition and deindustrialization. In Daugavpils, massive deindustrialization of the 1990s caused increased concentrations of brownfield localities within the city. Over the last decade, the regeneration of abandoned, derelict and often contaminated sites, has become essential to improve the quality of urban environment and to ensure sustainable development strategy of the city. Despite the growing number of research papers, there is still a substantial empirical gap concerning the transformation of brownfield sites in the inner-city neighbourhoods of the CEE.

This study focuses on urban brownfields regeneration in the inner-city neighbourhoods of Daugavpils within the context of post-socialist transition. In particular, the paper discusses the differences and common features in the physical upgrading of brownfield sites in the inner-city. The case study contributes to the understanding of complex circumstances and mechanisms of urban brownfields regeneration in the post-socialist inner city. The empirical material is based on field observations, expert opinions and existing documents.

The results presented in this paper are based on detailed survey of 10 sites in Daugavpils inner city area, that was included in list of abandoned properties made by Daugavpils city municipality. Majority of these sites was abandoned buildings previously used for commercial, industrial or living purpose and identified as brownfields during the inventory. Thought, high number of brownfield regeneration have been detected in a central part of the inner city. The findings also suggest that urban brownfield regeneration increases the attractiveness and liveability of a particular locality.

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## **THE INVESTIGATION OF ILLEGAL WASTE DUMPING SITES IN STROPU FOREST PARK**

Illegal dumping – the not permitted deposit of waste onto land in places where no permission exists to accept such waste.

Although the waste collection system is provided in Daugavpils city and Waste management regulations of Daugavpils city define that is not allowed to dump waste in unauthorized places, many illegal waste dumping sites still exists.

The most common waste is household waste. Household waste is often placed in forest areas causing environmental pollution and degradation of the landscape.

Waste is usually thrown in easily accessible places: on roadsides, near abandoned buildings or recreation areas, which are located in forests etc.

During the survey of Stropu forest park also confirmed the fact that household waste are illegally discarded (plastic and glass bottles, paper, cardboard, cans and other packaging materials), also car tires, garden waste, household appliances and even furniture. 24 waste disposal sites were found, with the total occupied area of approximately 570 m<sup>2</sup>.

Decomposition of biological waste may produce odorous, broken *glass cancause* fire, wild animals or people who go for walks in the forest may get injured.

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## **ASSESSMENT OF SOUTHERN LATGALE INTERMUNICIPAL WASTE MANAGEMENT ORGANIZATION'S WASTE MANAGEMENT SYSTEM DURING THE TIME PERIOD FROM 2008 TILL 2016.**

While landfilling waste, soil and air are polluted, odours appear. After landfill is full and closed, large amounts of money have to be invested to perform landfill's re-cultivation and monitoring which last 30 years.

Landfilled amount of solid domestic waste in the EU countries is decreasing. For example, in 2008- 108, 08 m.t. of domestic waste were landfilled, but in 2014 – 67, 11 m.t.

In Latvia 80% of created solid domestic waste is landfilled and by 2020 Latvia might not meet the requirements defined by the EU and Latvian legislation regarding the decrease of landfilled amount of waste.

There are 10 waste management regions (AAR) created in the country. One of them is Southern Latgale waste management region (AAR) with solid domestic waste landfill "Ciniši" in Daugavpils region, Demene parish,

where waste landfilling is performed by Southern Latgale intermunicipal waste management organization (AADSO).

The landfill was built in compliance with requirements of normative acts: leachate collection and treatment and landfill gas collection are performed at landfill, ground water monitoring network is installed.

By the end of 2015, waste separation almost was not carried out and all domestic waste transported to landfill was disposed in waste repository.

In the end of 2015 waste separation line was installed and solid domestic waste separation is performed. It is allowed to dispose of 46 020 t/per year of unsorted domestic waste at the landfill, perform separation of unsorted domestic waste till 50 00 t/ per year. Biodegradable waste composting (BNA) is allowed till 19 361 t/per year, bulky waste, paper, cardboard, plastic, PET bottle collection from residents till 950 t/per year.

It is planned to carry out construction of anaerobic fermentation tunnel at Southern Latgale intermunicipal waste management organization's (AADSO) landfill "Cinīši", which would allow to process biodegradable waste efficiently and perform landfill gas production, burning.

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## **RECOMMENDATIONS TO PROMOTE NATURE TOURISM SUSTAINABILITY IN KRĀSLAVA RURAL MUNICIPALITY**

In Latvia, natural tourism is relatively new tourism branch, and planning of it in many places is only in beginning. Responsible and well considered planning of nature tourism provides sustainability to the nature tourism branch itself and to nature tourism objects. Nature tourism is new tourism branch also in Krāslava rural municipality, in which is necessary planning and development till it reaches sustainability. To promote sustainable development of Krāslava rural municipality nature tourism, there has been visited 13 nature tourism objects of Krāslava rural municipality in 2016 year and evaluated their tourism infrastructure, visual attractiveness, overall condition and signs of degradations (such as soil erosion, flattened grass and vegetation, etc.). This survey of Krāslava rural municipality nature tourism objects and their evaluation is required for developing suggestions to promote Krāslava rural municipality sustainable development of nature tourism.

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## **THE EFFECT OF LONG DISTANCE TRANSFER ON SURVIVAL, WOOD YIELD AND STEM QUALITY OF SCOTS PINE POPULATIONS**

Environmental stresses attributable to the climatic change lead to a gradually stronger damage to forests. Scots pine is the most ecologically and economically important forest tree species in northerly Europe. A measure to improve forest adaptability is to gradually introduce southerly origins of Scots pine, that presumably are better adapted to warm climate. Based on such arguments, various initiatives of a commercial nature occasionally appear on forest seed and plant market offering southern material for afforestation. The common garden tests were provenances are grown on single site may provide a good estimate of the seed transfer effects. Objective of our study was to assess the wood yield, stem quality, survival of a set of distant populations of Scots pine grown in a common garden experiment in northern Lithuania. Age of the pine trees in the field test is 41 year, which is the oldest and so most reliable test of pine populations covering most of its eastern natural range. Ca. 100 trees was assessed from each of the 19 populations presenting northern, central, eastern, and far eastern parts of the species range in the Baltic states and Russia. The results showed that the southern populations were superior in the wood yield but possessed low survival, high proportion of spike knots, curvy trees and thick branches. On the contrary, the northern populations showed higher survival, possessed straight trees with fewer spike knots, less and slender branches but a lower tree diameter than the remaining populations. These stem properties are desirable for sawn timber of pine. The south-eastern continental populations possessed high proportion of trees with spike knots and the other properties like of the local origins, indicating low benefit from their transfer. The results indicate the transfer effect on growth rhythm. For transfer northwards, it leads to late growth cessation causing low winter frost hardiness (curvy stems with spike knots). For transfer southwards, early cessation, high degree of forest hardiness lead to slim trees with less branches and quality stems. We suggest using local seeds only, however, for breeding the old ideas of intra-specific hybridization could be revitalized to combine the drought tolerance and growth vigor of the southern origins with frost hardiness of the northern populations.

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## **THE PRODUCTIVITY OF THE PURE AND MIXED LARCH STANDS IN LITHUANIA AND THE WAYS TO INCREASE IT**

The aim of this work was to evaluate the productivity and sustainability of the larch stands. Similar research was performed in Lithuania more than 50 years ago.

Our research was performed in 2015-2016, during the vegetation period, in the pure and mixed stands of 30-60 years old. No research was performed in the younger stands, because in the stands of such age the interspecific interactions can still be not existing, and the older stands were not included in the research due to the fact that such species as spruce, lime, birch and black alder could already be cut out during the selective or shelterwood cuttings, so it would not be possible to evaluate their interactions with larch. During the research we evaluated 138 stands (207 ha) and established 503 sample plots, measured almost 22 thousands of trees. Totally the research is performed on the 8,9% of total area of the larch stands in Lithuania and 50,5% from the areas, potentially suitable for this research.

This research allowed us to identify the main factors, affecting the productivity and condition of the larch stands in different environmental conditions. During the research we identified the species composition in the larch stands, evaluated other dendrometric and phytocoenotic parameters of the stand. Also we identified the tree species which are the most economically effective for the mixture with larch in Lithuanian conditions. We determined the optimal larch stand densities for the different stand ages, because in Lithuania there are no thinning normatives for the larch stands. Also we determined that the volume increment of the larch stands increases up to the age of 50 years, and later starts to decrease due to the significant tree dieback, caused by the excessive stand density. In such stands there is up to 30% of unviable larch trees of 4 and 5 Kraft classes. The hybrid larch stands were the most productive of all studied larch stands.

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## **ASSESSMENT OF OLD GROWTH STANDS IN NATURE RESERVE “ĀBEĻI”**

In the word most of the forest areas are under the threat due to forestry activities. Many important forest functions and services are difficult to assess from an economic point of view, so that the forest cutting and the transformation of forest land to agricultural land seems more cost-effective. It is also one of the biggest economic challenges in relation to sustainable forest management and biodiversity conservation.

The biggest part (more than 2,000 hectares) of nature reserve "Ābeļi" area is covered by biologically valuable forests. Here is found wide diversity of plants and animal species which is provided by diversity of habitat. Many rare species of birds, bats, insects, mushrooms, lichen and moss choose as a living place trees with large diameter and rough bark. Also old growth stands have the greatest cumulative (total) tree mortality, which is another indicator of biodiversity. Nature protection plan for this nature reserve is developed more than 10 years ago, so in this case it is important to do re-forest exploration.

In order to assess the ecological and economic importance of old growth forest stands it was established 80 sampling plots. Field studies were carried out in winter and spring season of 2017. Stock and economic value of forest stands were calculated based on the results obtained during field studies. Tree degradation was classified based on visual appearance. During field studies was listed structural elements of key habitats and factors (natural and anthropogenic) that affect's forest stands negative.

The obtained results confirm that the overgrown forests have a high structural diversity, which ensures the continuity of ecosystems and biodiversity in it. Also were observed factors that negatively influences habitat such as waste, electric or electronic cables and roads.

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## THE INVENTORY OF NOBLE TREES IN NAGĻU RURAL MUNICIPALITY.

Noble (called also heritage) tree is a tree that has reached a certain girth, height and age, having great scientific, aesthetic, cultural and historical significance. Latvia is one of the richest countries in Europe, in case of number of heritage trees, particularly of oak. Tree has not only cultural, but also scenic value. Latvian landscape is unthinkable without trees alleys, large and old trees next to houses and in the fields. Requirements in which the noble, heritage tree parameters were set: The Regulation of the Cabinet of Ministers No 264. "General Regulations on Protection and Use of Specially Protected Nature Territories" annex 2.

The objective of the study was to survey, measure and evaluate the heritage trees in Nagļu rural municipality and to work out management recommendations for heritage trees. Ten noble trees and five potential noble trees were found during the study. The most common noble tree was oak (*Quercus robur*).

The most common identified damages were dead branches, trunk cleavage. The major factors influencing trees growth are bushes growing around, which it is desirable to cut out. It is recommended to install information signs near trees. Also include information about trees in the database "Ozols", in tourist information booklets or web pages to make it easier to access information about the trees.

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## IEKŠĒJIE ŪDEŅI, TO RESURSI UN VIDES KVALITĀTE

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## RESOURCES AND QUALITY OF INLAND WATER OBJECTS

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## CONSTRUCTED WETLANDS AS ENVIRONMENTALLY FRIENDLY DRAINAGE SYSTEM ELEMENT

Eutrophication is the state with high nutrient concentration, which can cause algae blooms and that is one of the most important problems of the Baltic Sea. In the Baltic Sea about 92% of phosphorus and about 95% of the nitrogen compounds are discharged from rivers catchments [1]. Nutrients drain into the Baltic Sea from agricultural lands and drainage systems, from dirty or insufficiently wastewater treatments, from contaminated industrial waste water, and even from the rain, because it contains dust and unburnt oil from the roads and parking areas.

High phosphorus and nitrogen level into the natural waters affect the human economic activity. For the problem of eutrophication is not a single solution, but rather a complexity of different activities. One of the easiest and relatively inexpensive ways to reduce nitrogen and phosphorus into the water solution of the agricultural lands are constructed wetlands establishment or restoration.

Constructed wetlands regulate water treatment, help to reduce flooding, perform water treatment and can increase the biodiversity. They are also important for climate change mitigation, because constructed wetlands attract a significant amount (up to 40%) of the world's terrestrial carbon stocks [2].

In Latvia, the constructed wetlands have not been distributed and there is a lack of knowledge on how to economically use the limited space for constructed wetlands to obtain the most effective result.

The main tasks of this study were to describe the processes in the constructed wetlands, the conditions of construction and analyse the opportunity of constructed wetlands to reduce nutrients and suspended particles inflow to open waters. Another task was to determine nutrient retention efficiency in Mežaciņi constructed wetland in Latvia by the descriptive methods of mathematical statistics and Wilcoxon T test method and to compare the size and the design of Bergaholm constructed wetland in Sweden. In the end, the evaluation of efficient design parameters for constructed wetlands in Latvia are made.

The research results showed that Mežacīruļi constructed wetland does not perform the valuable nutrient retention. To improve the nutrient retention efficiency, it would be necessary to develop it, for example, to increase the amount of vegetation, such as planting *Typha spp.* or to make a small constructed wetland's extension to a depth of 0.3m for *Carex spp.* to stabilize sediments.

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## **HYDROECOLOGICAL ASSESSMENT OF THE LAKE ŠUŅEZERS**

The lake Šuņezers is a public lake that is located in the NW part of the city of Daugavpils. It is believed that since 1990 the lake Šuņezers is weakly contaminated, with years lake's water quality has deteriorated. At the same time according to Daugavpils City Sustainable Development Strategy the lake Šuņezers is planned as a place of recreation, improvement works are carried out in the beach (swimming and recreational areas, in perspective is also planned the Blue Flag beach). The samples of zooplankton and water were obtained by plankton net (64 µm) and Ruttner water sampler respectively. The measurements of water physico-chemical parameters were performed simultaneously by multiprobe HACH DS5. Expeditions were realized in 2016 and 2017 in six sample collection places. Research results showed that already in late May 2016 was observed water "blooming". BOD<sub>5</sub> data showed that the lake was polluted with readily biodegradable substances. The lake Šuņezers water physico-chemical parameters indicative of the fact that the lake was exposed to eutrophication. After zooplankton qualitative and quantitative parameters the lake Šuņezers was evaluated as eutrophic. The lake Šuņezers possible pollution sources are sewage, gardens, private houses located on the coast of the lake, fishing and recreational pollution.

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## **BIOLOGICAL WATER QUALITY OF THE ĀRDAVA LAKE AND ITS TRIBUTARIES**

The Ārdava Lake is a unique water body in Latvia thanks to its high biological diversity. There are 18 rare and protected species recorded within the lake and its surroundings. One of them, *Najas tenuissima* (A.Braun) Magnus, is included in the EU Habitats Directive, which asks for an establishment of the nature protected area for its conservation *in situ*. Because of its unique characteristics, other rare and endangered plant and animal species could be discovered in the Ārdava lake as well after detailed studies of its tributaries.

The aim of this study – to assess biological water quality of streams and rivers that enter or flow through the Ārdava Lake by applying the Saprobity Index method and by using macrozoobenthic organisms as bioindicators. To fulfill the goal, standard methodology of the saprobity index based on sampling of macrozoobenthos zoocenosis in small streams was applied. Field studies, i.e. sampling of macrozoobenthic organisms in small tributaries as well as the outflow of the Ārdava Lake was conducted in May, 2016. Four composite samples were collected in total. In addition, several physical and chemical parameters of stream water quality were recorded at each sampling site by applying the HACHDS5 multiprobe. Counting and identification of the collected benthic organisms was conducted at the Hydroecology Laboratory of Daugavpils University.

The results of this study indicate that biological quality of small streams that enter the Ārdava Lake depends on an intensity of anthropogenic activities within their catchment basins.

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## **IMPACT OF TURBULENCE INTENSITY ON PHYTOPLANKTON AND ZOOPLANKTON ABUNDANCE IN RIVER: A LAGRANGIAN FIELD STUDY ON THE MIDDLE DAUGAVA DURING THE SPRING FLOODS**

Downstream variation of the flood flow turbulence intensity (the Reynold's number) and its possible impact on the abundance of phytoplankton and zooplankton organisms has been investigated during the 9<sup>th</sup> annual Lagrangian drift experiment on the Middle Daugava River conducted by the Department of Geography and Chemistry and Laboratory of Hydroecology of Daugavpils University on March 26, 2015.

The phytoplankton and zooplankton samples were collected on hourly interval by standard methods from a drifting research platform "Aventura" while it drifted passively along the main river channel. The drift and repeated water sampling continued for about 10 hours, and 22 samples of phytoplankton and zooplankton were collected en route. Their identification and enumeration followed standard procedures, and downstream variation in the abundance of 40 phytoplankton and 41 zooplankton taxa at 11 sampling sites was recorded. In addition, the Reynold's number, which measures the turbulence intensity in open river channels, was calculated for each sampling site based on the *in-situ* records of the average drift speed (stream velocity) and river channel depth, as well as water temperature. The Pearson's correlation method was used to detect possible impact of the average turbulence intensity on the abundance of each taxon per sample volume.

More or less significant negative correlations were stated for such phytoplankton taxa as *Synedra acus* (-0.83), *Oscillatoria* sp. (-0.54) and *Synedra ulna* (-0.47), as well as for the zooplankton taxa *Filinia longiseta* (-0.71), the development stage Nauplii (-0.68) and total abundance of the Cladocera organisms (-0.66). In contrast, equally significant positive correlations were stated for such zooplankton taxa as *Pleurotrocha* sp. (0.93), *Notholca labis* (0.64) and *Lecane* sp. (0.47).

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## **PONTO-CASPIAN GAMMARID PONTOGAMMARUS ROBUSTOIDES IN THE RESERVOIRS OF THE DAUGAVA RIVER, 2016**

*P.robustoides* is successful Ponto-Caspian gammarid invader in Europe waters especially in the lentic systems. Our investigations of *P.robustoides* were initiated in 2015. In 2016 the research was continued seasonally (May-September) in the Pļaviņas Reservoir and the one-time expeditions (July) were realized in the Ķegums and Rīga Reservoirs. The qualitative and quantitative samples of macroinvertebrates were obtained by hand net (25x25 cm, 500 µm). The measurements of water physico-chemical parameters were performed simultaneously by multiprobe HACH DS5. Total frequency and abundance of macroinvertebrates and *P.robustoides* was different among sampling sites. *P.robustoides* was most frequent in qualitative samples in the Ķeguma Reservoir. There was also evident that *P.robustoides* prefer lived among or on mussel *Dreissena polymorpha*. Seasonally the largest abundance of *P.robustoides* was observed in July and August. But significant correlations among *P.robustoides* abundance, size of specimens and water physico-chemical parameters (except chlorophyll and small juvenile specimens) were not found.

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## **SPECIES DIVERSITY AND COMMUNITY STRUCTURE OF ZOOPLANKTON AND PHYTOPLANKTON DURING THE 9TH**

## LAGRANGIAN DRIFT EXPEDITION ON THE MIDDLE DAUGAVA RIVER, 2015

The experimental drift research was done according to the so-called Lagrangian method during the short-term drainage phase of the annual spring floods on March 26, 2015. The drift was uninterrupted from 08.00 (Krauja village) till 18.10 o'clock (20 km downstream from Daugavpils) using the drifting scientific platform "Aventura". Research of zooplankton and phytoplankton communities were one of the parts in this complex research. The aim of this study was examined changes of plankton community structure and species diversity in moving flood water masses during their downstream transport. The samples of zooplankton and phytoplankton were collected every hour from a drifting research platform. In total, 22 samples of zooplankton and phytoplankton were collected from water surface by standard methods. The measurements of the water physico-chemical parameters and depth were performed simultaneously by multiprobe HACH DS5 and LOWRANCE LMS-522C respectively. In total, 40 phytoplankton and 41 zooplankton taxa were recorded. During the downstream transport, total abundance and number of taxa of the phytoplankton increased but the species diversity (Shannon-Wiener index) was very variable and gradually decreased. While, total abundance of the zooplankton, during the downstream transport, decreased at deeper sampling sites with higher stream velocity, and *vice versa*, but number of taxa and species diversity (Shannon-Wiener index) increased. The phytoplankton community was presented mostly by benthic diatoms and the small-sized Cryptophyta as well as the filamentous blue-green algae (*Oscillatoria* sp.) were recorded at all sampling sites. The zooplankton community was presented mostly by planktonic Rotifera at all sampling sites as well as the littoral (periphytic, benthic) Rotifera (*Lecane* sp., and others), Cladocera (*Alonella nana* and others), Copepoda (Harpacticoida, *Paracyclops fimbriatus*) taxa that occurred 5-90% among all sampling sites.

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## SPECIES DIVERSITY AND COMMUNITY STRUCTURE OF ZOOPLANKTON AND PHYTOPLANKTON DURING THE 9TH LAGRANGIAN DRIFT EXPEDITION ON THE MIDDLE DAUGAVA RIVER, 2015

The experimental drift research was done according to the so-called Lagrangian method during the short-term drainage phase of the annual spring floods on March 26, 2015. The drift was uninterrupted from 08.00 (Krauja village) till 18.10 o'clock (20 km downstream from Daugavpils) using the drifting scientific platform "Aventura". Research of zooplankton and phytoplankton communities were one of the parts in this complex research. The aim of this study was examined changes of plankton community structure and species diversity in moving flood water masses during their downstream transport. The samples of zooplankton and phytoplankton were collected every hour from a drifting research platform. In total, 22 samples of zooplankton and phytoplankton were collected from water surface by standard methods. The measurements of the water physico-chemical parameters and depth were performed simultaneously by multiprobe HACH DS5 and LOWRANCE LMS-522C respectively. In total, 40 phytoplankton and 41 zooplankton taxa were recorded. During the downstream transport, total abundance and number of taxa of the phytoplankton increased but the species diversity (Shannon-Wiener index) was very variable and gradually decreased. While, total abundance of the zooplankton, during the downstream transport, decreased at deeper sampling sites with higher stream velocity, and *vice versa*, but number of taxa and species diversity (Shannon-Wiener index) increased. The phytoplankton community was presented mostly by benthic diatoms and the small-sized Cryptophyta as well as the filamentous blue-green algae (*Oscillatoria* sp.) were recorded at all sampling sites. The zooplankton community was presented mostly by planktonic Rotifera at all sampling sites as well as the littoral (periphytic, benthic) Rotifera (*Lecane* sp., and others), Cladocera (*Alonella nana* and others), Copepoda (Harpacticoida, *Paracyclops fimbriatus*) taxa that occurred 5-90% among all sampling sites.

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## **EXPERIMENTAL FIELD STUDIES OF THE LAUCESA RIVER STREAM VELOCITY BY APPLYING TWO DIFFERENT INSTRUMENTAL METHODS**

The aim of this study – to determine which of the two applied stream velocity measurement methods is the most accurate on an example of the Laucesa River at Daugavpils. The study has been carried out by performing stream velocity measurements in the Laucesa River inlet at Daugavpils City and by applying the current velocity meter *Swoofer 2000* and the ultrasonic stream speed gauge *Flow Tracker SonTek SmartQC*. Both of these methods were used simultaneously.

The obtained stream velocity values vary in time, because velocity of the stream in the river channel is affected by turbulence variation, so the application of different stream velocity measurement methods resulted in two differed data sets. With the data records obtained during this study it was possible to make a comparison of the two techniques. Therefore it was possible to find out which one of the two methods used for the stream velocity measurements *in situ* is more accurate.

The stream velocity data records obtained by the ultrasonic speed gauge *Flow Tracker SonTek SmartQC* were more accurate because they had higher representativeness (less variable data around the mean value).

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# BIOLOĢIJA

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# BIOLOGY

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## **‘PREDATOR-NAIVE’ SALMONID FINGERLINGS (*SALMO TRUTTA X SALVELINUS FONTINALIS*) HAVE INNATE ANTI-PREDATOR BEHAVIOUR TOWARDS EVOLUTIONARY NEW INVASIVE PREDATOR *PERCCOTTUS GLENII***

The research on behavioural responses of salmonid fingerlings (*Salmo trutta x Salvelinus fontinalis*) to the new invasive in Latvia and Europe predator fish Amur sleeper *Perccottus glenii* was conducted as a part of the ESF Project “Creation of a new scientific group for modernization of aquaculture technology” # 2013/ 0067/ 1DP/ 1.1.1.2.0/ 13/ APIA/ VIAA/ 060. The main aim of the present study was to investigate the antipredator behavior of tiger trout as a model objects of salmonid, exposed to a potential new predator *P. glenii*.

The antipredator behaviour of tiger trout fingerlings was video-investigated in a comparison before and after releasing of one big *P. glenii* in their basin. According its size (250 mm in length), the model specimen of the *P. glenii* was potential predator for investigated tiger trout fingerlings.

In the result of the research we found that tiger trout fingerlings have innate antipredator behaviour used counter new invasive predator *P. glenii*. During the conducted experiment it was discovered that while the absence of predator, tiger trout distinctly shows individual models of behaviour. Appearance of predator causes more unified behavioural reaction for all group, expressed in cessation of movement and standing motionless.

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## **AMP GENES ARE AFFECTED BY FOOD DIVERSITY IN THE LARVAE OF GREATER WAX MOTH**

Immunity is the ability of the organism to protect itself against invasions of foreign bodies such as bacteria, viruses, parasitoids, parasites and toxic substances. Although the immune system keeps the body healthy and free from infections, each organism allocates resources to a variety of life history functions—such as reproduction and development—in order to improve its lifetime fitness. The resources available to satisfy competing functions of an individual are limited. Susceptibility to disease is therefore higher under circumstances in which investment in immunity is insufficient. Predator-prey interactions are an important evolutionary force that affects immunity of the prey. Parasitoids and mites pierce the cuticle of their prey which responds by activating the immune system against predatory attacks. Since immune function is expensive in terms of energy expenditure, nutritional quantity and quality of food are of particular importance in life history trade-offs.

In this study we tested whether expressions of some antimicrobial peptides (AMP) of the larvae of the greater wax moth *Galleria mellonella* change as a consequence of an insertion of a nylon monofilament, which acts like a synthetic parasite. The treatment was done for larvae grown on diverse food and simple food. All larvae received diverse food *ad libitum* from hatching till day 14 posthatch. The larvae were subsequently assigned into

the following four groups: (1) the 'diverse diet/immune treatment' group, (2) the 'diverse diet/control' group, (3) the 'simple diet/immune treatment group and (4) the 'simple diet/control' group.

Food diversity did not affect the expression of *18-Weeler*, *Galiomycin*, *Gloverin*, while the expression of *6-tox*, *Cecropin-D*, *Gallerimycin* significantly increased from the 'simple food/ control' group to the 'diverse food/ control' group. The results suggest that the diversity of food affects the expression of AMP genes of *G. mellonella* larvae. This suggests that the diversity of food should always be controlled in studies on bacterial and fungal infections.

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## **ASSESSMENT OF POLYMORPHISM IN TEN LOCI IN LATVIAN EURASIAN PERCH POPULATIONS FROM TWO LAKES**

Nowadays microsatellite markers are widely used to investigate the population genetics: genetic variation, population differentiation and are useful for variety of applications in ecology and evolutionary biology. Microsatellite markers are used due of their codominance in nature, Mendelian inherited and high polymorphism. Microsatellite polymorphism is essential and widely used tool for further study of structure and genetic differentiation of populations [1].

Eurasian perch (*Perca fluviatilis* Linnaeus, 1758) is one of the common fish species in Latvia. Their natural range covers European and Asian inner and coastal waters. Perch is commercially important fish species, formation of genetic structure of perch population depends on a large extent of anthropogenic factors [2].

This study described the allele frequencies of Eurasian perch from Latvia using 10 microsatellite loci such as Pfla-L1, Pfla-L2, Pfla-L4, Pfla-L5, Pfla-L6, Pfla-L9, Pfla-L10, Svi-L6, Svi-L7 and Svi-L10.

DNA were extracted from muscle tissues of fish (Lake Babite n=35, Lake Kala n=37) using the DNeasy Blood and Tissue kit (Qiagen, Germany). Polymerase chain reactions were performed for ten microsatellite loci using Taq PCR Master Mix Kit (Qiagen, Germany). Fragment analyses were carried out using the AB 3130 xl Genetic Analyzer (Applied Biosystems, USA). Significant deviation from Hardy-Weinberg expectation was noted. In some loci a heterozygosity excess was detected but in some deficit of it. It could be as a result of inbreeding, migration, natural selection, null alleles or some other factor that can change frequency of alleles in population. Several private alleles (Kala n= 15, Babites n=10) were detected. Genetic distance was high (Nei = 0.5649) and divergence between both populations was noted.

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## **CO-OCCURRENCE OF FREE LIVING PROTOZOA AND LEGIONELLA PNEUMOPHILA IN DRINKING WATER SUPPLY SYSTEMS**

*Legionella pneumophila* is known as the causative agent of Legionnaires' disease, while free-living protozoa (FLP) are considered as "evolutionary crib" which contributed to *Legionella* spp. becoming intracellular pathogens. Interaction of FLP and pathogenic bacteria and their ability to participate in biofilm formation is an important issue in drinking water hygiene and safety assurance. FLP serves as additional protection for pathogenic bacteria against high temperatures, disinfectants and as a vector and reservoir for bacteria population. Bacteria-protozoa interaction can enhance the antibiotic resistance and virulence of many pathogenic microorganisms significantly rises after they are released from host cell.

The aim of this study was to investigate the co-occurrence of FLP and *Legionella pneumophila* in drinking water supply systems.

Drinking water samples were tested for presence of *L. pneumophila* in accordance with standard method and for presence of free-living protozoa, isolating and cultivating in Page's Amoeba Saline Solution with different concentrations of Peptone Yeast extract Glucose. FLP was found in 70% of water samples, while *Legionella*

*pneumophila* were detected in 43% of water samples. We observed that FLP were detected in all *Legionella* positive samples, and there were no *Legionella* positive samples without presence of FLP. Therefore there is correlation between these two organisms in water supply system. Implementing water treatment and disinfection strategies for inactivating protozoa should also improve control opportunities for pathogenic microorganisms. Unfortunately, many of disinfection methods are still under research and there is lack of information about all interaction models between pathogenic microorganisms and FLP.

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## **DETECTION OF PHOTOSYNTHESIS EFFICIENCY BY CHLOROPHYLL FLUORESCENCE, RAMAN SPECTROSCOPY AND PHOTOSYNTHETIC PIGMENT COMPOSITION IN SALT-TREATED ELODEA CANADENSIS (MICHX.1803) LEAVES**

Stressful environments such as salinity, unfavourable temperatures considerably retard the process of photosynthesis in most plants by altering the ultrastructure of the organelles and concentration of various pigments and metabolites involved in this process. The effects of salinity stress on photosynthetic pigments, the maximum quantum efficiency of PSII (Fv/Fm) and chlorophyll Raman intensity were investigated in *Elodea canadensis* (Michx. 1803) leaves. The plants were treated with the solutions of 0mM, 10mM, 25mM, 50 mM and 100mM NaCl.

Chlorophyll a (Chl a) and chlorophyll b (Chl b) contents in salt-stressed plants of *Elodea canadensis* were significantly dropped down when exposed to salt stress. The pigment degradation was positively correlated with the increase of salt concentration. The decrease in chlorophyll content also associated with a decrease in chloroplast amount. The chloroplast amount in leaves of 100 mM NaCl-stressed *Elodea canadensis* is drastically damaged compared to control. The changes of Fv/Fm ratio of variable fluorescence (Fv) to maximal fluorescence (Fm) is the general indicator of maximum quantum efficiency and the optimum level within the range: 0.75-0.8. The intensity of chlorophyll fluorescence decreased with the increase of salt concentration compared to the control (0mM NaCl) and caused a significant decrease in the Fm, but a decrease in the Fv/Fm can attribute to an inhibition of electron flow at the oxidizing site of PSII in 100mM salt treatment. The *Elodea canadensis* leaves micro-mapping was performed on whole leaf surface area for the detection and visualization of chlorophyll intensity and distribution after the exposure of various levels of salinity. The spectra of pigments were obtained using Renishaw inVia Reflex spectrometer at Raman shift range: 1650 cm<sup>-1</sup>-300 cm<sup>-1</sup>, excitation by Ar-ion laser  $\lambda = 514.0$  nm and the chlorophyll signal intensity of all spectra were in the range: ~500-20000 a.u.

Study of the spectral dependence of photosynthesis can be considered as an excellent method to obtain information on the effectiveness of the process of photosynthesis in plants under the influence of adverse environmental factors such as salt stress and the use of Raman spectroscopy provides a more comprehensive view of the distribution of pigments, to visualize them and to add relevant information.

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## **DEVELOPMENT OF METHODS FOR CULTIVATION AND MOLECULAR IDENTIFICATION OF ACANTHAMOEBA**

*Acanthamoeba* is a free-living protozoan genus found in a wide variety of natural habitats, including water, soil and air. *Acanthamoeba* can be opportunistically pathogenic, being identified as the causative agent of *Acanthamoeba keratitis*. In addition, *Acanthamoeba* genus serves as a reservoir for various pathogenic bacteria in aquatic environments. For example, the *Acanthamoeba* genus renders the possibility for the intracellular multiplication of *Legionella* sp., which is known as causative agent of legionellosis. Therefore detection and identification of *Acanthamoeba* in the environment is highly important.

The first step in the identification of *Acanthamoeba* was cultivation using non-nutrient agar with *E.coli* culture, Page's Amoeba Saline Solution and Peptone Yeast extract Glucose media in different volume ratios. The growth of amoebae was controlled using a light microscope. After cultivation of amoebae, FlexiGene DNA Kit protocol was applied for genomic DNA purification. Data about use of FlexiGene DNA Kit for DNA purification from amoebae culture are not available, but it is known that this protocol provides an opportunity for isolation of amoebas' nuclei and mitochondria, with following purification of amoebas' DNA, avoiding the risks of gaining bacterial genome.

For the further detection and identification of *Acanthamoeba* genotype 18S rDNA primers were used, which are highly specific for the *Acanthamoeba* genus. Real-time PCR was used for further screening of samples for the presence of acanthamoebae. Screening was carried out in accordance with the protocol described in article Kao et al., 2013 and primers Acant F 900, R 1100 and probe P 1000 were used.

Protocol mentioned in Schroeder et al., 2001 was applied, and primers JDP 1 and JDP 2 were used for the sequencing of positive samples. Big Dye Terminator 3.0 kit was used for the sequence analysis. Results showed that frequently observed amoebae in hot drinking water belongs to *Acanthamoeba* spp. T4 genotype.

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## **EVALUATION OF NUCLEAR DNA MARKERS (RAPD AND MICROSATELLITES) VARIABILITY IN STUDY OF GENETIC STRUCTURE OF CLONAL ORGANISMS DAPHNIA CUCULLATA SARS, 1862 IN LATVIAN LAKES**

Cladocera genera (e.g. *Daphnia*) is usually used as a model organism for the ecological genetic researches (Colbourne & Hebert, 1996; Harris et al., 2012; Larson & Weider, 1995; Lampert, 2006; Lubbock, 1857).

*Daphnia cucullata* (Sars, 1862) is widespread water flea in Latvian Lakes, therefore it is very important to develop a markers for genetical study of *Daphnia cucullata* population.

The RAPD and microsatellite markers have not been often used in similar studies of species genetic structure of *Daphnia cucullata* Sars, 1862, therefore the markers, applied for this research, have been adapted from other closely related *Daphnia cucullata* species such as *Daphnia galeata*, *Daphnia rosea*, *Daphnia hyalina* or *Bosmina* spp. (Brede et al., 2006; Hellsten & Sundberg 2000). For a rapid amplification of DNA thirty random decanucleotide primers (RAPD) from A, B, C and F sets (Carl Roth, Germany) were tested. Seven primers from the set A (OPA-02; OPA-03; OPA-05; OPA-09; OPA-10; OPA-12; OPA-13), three primers from the set B (OPB-03; OPB-07; OPB-08), two primers from the set C (OPC-11; OPC-20) and one primer from the set F (OPF-10) were used for the genetic study of the population of *Daphnia cucullata* in Latvian Lakes. The size of the scored polymorphic DNA fragments ranged from 500 bp to 3000 bp. The number of polymorphic DNA bands of *Daphnia cucullata* in the four investigated lakes is different and ranged from 26.5 % to 50 %.

In turn, nine primers for microsatellite loci of nuclear DNA were used, but six microsatellite primers with good representativity (SwiD1; Dgm105; Dgm101; DaB17/17; Dgm109; Dp519) were selected for the analysis. The size of the scored polymorphic DNA fragments ranged from 100 bp to 266 bp. Observed heterozygosity ( $H_{obs}$ ) ranged from 0.00 to 0.17 and expected heterozygosity ( $H_{exp}$ ) ranged from 0.12 to 0.44. The number of polymorphic DNA bands of *Daphnia cucullata* in the four investigated lakes after microsatellite analysis is also different and ranged from 33 % to 100 %.

Therefore these decanucleotide primers (RAPD) and primers for microsatellite loci of nuclear DNA can be used for population genetic study of *Daphnia cucullata*.

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## **EVALUATION OF SOME OXIDATIVE DYNAMICAL CHANGES IN TRITICUM AESTIVUM L. EXPOSED TO COMBINED EFFECT OF CYTOCHROME PATHWAY INHIBITOR AND HIGH TEMPERATURE**

Heat stress is one of the most limiting factors of plant growth and productivity that causes a variety of physiological, biochemical and metabolic dysfunctions in plants. Various unfavorable environmental stressful

factors lead to the formation of reactive oxygen species (ROS) which at low concentrations activate defense responses, whereas a higher level of ROS is responsible for oxidative damages of cells. An alternative pathway (AP) with alternative cyanide-insensitive oxidase as terminal oxidase is an important mechanism in the regulation of cell homeostasis at the metabolic fluctuations in plants. To get insight into the possible role of the AP in the decreasing of the excessive generation of ROS under the influence of heat stress was used an inhibitor of respiration which causes a redistribution of electron flows. The objective of this study was aimed at assessing the influence of antimycin A (AA), an inhibitor of the cytochrome pathway on the dynamics of  $O_2^{\cdot-}$  production and cellular membrane permeability in the functionally different organs of *Triticum aestivum* L. subjected to the long-term heat stress (42°C, 24 h). The obtained results demonstrate that the development of etiolated wheat seedlings is accompanied by the cyclic formation of  $O_2^{\cdot-}$  and its production decreased in the developing and senescent organs of wheat seedlings under exposure to AA and heat stress. It was shown that the cellular membrane permeability decreased in the developing (from 13% to 39% depends on stage of development) and senescent organs (from 16% to 33% depends on stage of development) after exposure to heat stress and AA. Thus, the results reveal that the involvement of non-phosphorylating AP maintains the redox balance in the mitochondrial electron transport chain and prevents excessive production of ROS.

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## FLUORESCENCE IN SITU HYBRIDISATION FOR VARIOUS SPECIES: NECESSITY OF SYNTHESISED NEW FLUOROPHORES

Fluorescence *in situ* hybridisation or FISH allows visualization of the location of particular gene to investigate the chromosomal abnormalities. The probe size, type and mixture of probe sequences, fluorescent dyes and mixture of different labelled probes determine which FISH technique should be used [1].

FISH method is performing by DNA or RNA probes. The probes are labelled with fluorophores that conjugate with specific peptides, proteins, antibodies and tracers, therefore, the hybridisation between the probe and the target has essential role [2]. Common issue is the high background fluorescence, low FISH signal intensity and probe brightness that depends on the organism being hybridized. Accordingly, each protocol requires stabilization of hybridization conditions such as pH, salt and formamide concentration, optimisation of hybridisation temperature [3].

Therefore the comparison of different new fluorophores and hybridisation techniques allows development of the most effective FISH protocols for different samples. In diagnostics and studies it is essential to accelerate the entire hybridization process and to develop the easy to use protocols, what will provide reliable and high-quality data, reduce duration of analysis and make studies more cost-effectiveness.

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## MODIFICATIONS OF EXPRESSION OF PSMA3 GENE BY 1,4-DIHYDROPYRIDINE DERIVATIVES IN KIDNEYS OF DIABETIC RATS

*Diabetes mellitus* (DM) cause numerous health and social problems throughout the world. One of the most common and dangerous of vascular complications is nephropathy. Ubiquitin–proteasome system might be involved in pathogenesis of the DM and its complications. 1,4-dihydropyridine derivatives (1,4-DHPs) are known for their antidiabetic properties and could hold a potential as prospective drugs. Our object in the present study was to test expression of proteasomal protein P<sub>sm</sub>3 mRNA level in diabetic rats treated with 1,4-DHPs.

Streptozotocin (STZ) (50 mg/kg) injection was used to induce DM in *Wistar* rats. Nine days after DM approval treatment with metcarbatone, etcarbatone, glutapyrone, J-9-125, and AV-153-Na (0.05 mg/kg or 0.5 mg/kg) was done for three days. mRNA expression level of *P<sub>sm</sub>3* gene in kidneys of the rats was measured with qPCR. *RNA polymerase II* gene was used as a reference gene.

Animals with DM had significantly higher *P<sub>sm</sub>3* expression level compared to control groups ( $p < 0.05$ ). All compounds increased *P<sub>sm</sub>3* expression in control groups ( $p < 0.05$ ). In model animals, *P<sub>sm</sub>3* gene expression was statistically significantly increased by AV-153-Na, as well as metcarbatone and glutapyrone at dose 0.5 mg/kg and etcarbatone at both doses. However, J-9-125 did not affect significantly the expression of the gene in diabetic animals. To sum up, 1,4-DHPs increased *P<sub>sm</sub>3* gene expression in diabetic rats.

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## MONITORING BACTERIAL COMMUNITIES ASSOCIATED TO DIFFERENT LIFE STAGES OF FOREST PEST GYPSY MOTH (LYMANTRIA DISPAR)

Gypsy moth (*Lymantria dispar*) outbreaks can cause significant damage to the forestries across Europe. In order to control this pest, there is need for new insecticidal bacterial strains for the development of more effective biopesticides.

Insects are colonized by various microorganisms and insect-associated microbiota can play an essential role in the growth, development, health and environmental adaption of insects. Most studies of the lepidopteron microbiota so far focused on microorganisms associated to the gut community. There is only little knowledge on the role the different bacteria may have during different stages of the insect life cycle. A knowledge on the composition of the microflora and the role it might play in insect development can be used for the development of new pest management strategies.

The present study aimed to analyze the microbiota associated with different life stages, of *L. dispar* by using full-length 16S rRNA gene sequencing to gain insight into bacterial community changes during the life cycle of *L. dispar* and, ultimately, into interactions between the host and its microbiota

Our results showed that the diversity and community composition substantially changes during different *Lymantria dispar* life stages. The microbial community in the egg masses was more diverse compared to larvae, pupae and adults. The midgut of individual larvae is relatively simple and dominated by *Enterococcus* sp. We observed differences between individual larva and structural changes of diversity in bacterial communities through larval development.

This project was conducted within the frame of the SCIEX program with ETH Zurich as partner.

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## MORPHOLOGICAL DIVERSITY OF FREE LIVING AMOEBAS

Amoeba within the genera of *Acanthamoeba*, *Balamuthia*, *Naegleria*, *Sappinia* and other have ability to free-living existence, called free-living amoebas (FLAs). Number of cysts' nucleus varies from one to four; various membranes. Some species have several contractile vacoules, other have only one; various body shapes: triangular, locomatory, rounded. These and other features differ FLAs from each other. Traditionally, amoebas

are classified by morphological variances of cysts and trophozoites stages [1]. One of the most described genera is *Acanthamoeba* by Pussard and Pons (1977), and Page (1988). Originally, their taxonomy was based on cysts' morphological differences. [2]. Knowledge of species morphology is still required to identify new and known, pathogenic and non-pathogenic species using either microscopical or genetical methods. It is important to determine the main characters that are stable within species and features that are variable. Morphological differences are useful in biological applications, such as taxonomy, phylogenetic and evolution. In literature is lack of unique morphological criteria for FLA species and standard taxonomic sources are outdated, therefore, the graphical material to identify the trophozoites and cysts is required. The FLA drawings were developed during the project.

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## **OROFACIAL CLEFTS EFFECTS ON INFANT FEEDING**

**Key words:** *Orofacial clefts, feeding, parent knowledge.*

**Introduction.** Cleft lip and/or palate are the most common form of craniofacial defects. Each year in Latvia, about 30-40 babies are born with an orofacial clefts (OFCs). Children with OFCs often require multiple surgeries, procedures, due to potential feeding problems, speech and language development. The feeding process is complicated due to nasal regurgitation of food, excessive air intake that results in frequent burping and choking.

**Aim.** The purpose of this study was to identify and analyze the prevalence of feeding problems faced by parents of children with OFCs.

**Materials and methods.** Total of 93 parents were surveyed in Riga Cleft Lip and Palate Centre. The questionnaire consisted of 29 questions asking parents about child's feeding problems, complications and concomitant diseases. Parents were also asked about the accessibility of information. Data was statistically analysed with Microsoft Excel, IBM SPSS 22.0.

**Results.** In total, 93 questionnaires were included in this study. Fifty-nine percent of the parents reported that the presents of cleft influenced the choice of type of infant feeding. The expressed breast milk using a bottle was the most common choice of first infants feeding (46 %), nasogastric feeding (11 %), and breastfeeding (21 %). After the first feeding 53% of the parents have changed the way of feeding their child.

When fed 58% babies experienced nasal regurgitation of food, 46% food leakage around the mouth, 41% excessive air intake, 40% choking, 24% fatigue and 20% coughing.

Only 45% of parents have received sufficient information in hospital about the child care and feeding.

**Conclusion.** Study results showed that children with OFCs are at high risk of developing feeding difficulties. Bottles with extracted milk, nasogastric feeding and breastfeeding are the most common choice.

Our survey revealed that many parents were unsatisfied with the initial information received at the hospital.

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## **SEMI-NATURAL WINTERING OF NORTHERN EMYS ORBICULARIS IN UNHEATED GLASS-HOUSE ZOOCULTURE IN LATVIA**

Autochthonous *Emys orbicularis* are kept in herpetoculture in Latvian Rare Amphibian and Reptile Centre (Daugavpils, Latvia) with the aim of their further releasing in the wild since 1984. In 2014-2015 we preliminary researched possibility of wintering of the *E.orbicularis* in unheated glass-house aquaculture.

A group of 20 adults and 8 semi-adults *E.orbicularis* from the most northern border of its range in Europe was used for the research. The experiment was conducted in the south-east of Latvia, 55°50'5.35"N; 26°29'6.64"E. The unheated plastic glass-house had an area of 104 m<sup>2</sup> and transparent polycarbonate roof and walls. The average depth of the basin was 0.7 m; maximum – 1.2 m. Temperature measurements were taken since 2014.12.26 in the afternoon (14:00 – 15:00). We registered first sun-basking of males, adult and sub-adult females after wintering.

Measured temperature of shore was  $\geq +0.4^{\circ}\text{C}$ , temperature of water was  $\geq +1.3^{\circ}\text{C}$  for all the time of the experiment. After the wintering the first sun-basking male was observed in 2015.03.05. Eight days later we observed the first sun-basking semi-adult female, on the next day – first sun-basking adult female.

In a result of the research we found that adult males, semi-adults females and adult females begin spring sun-basking consequently in the experiment. Adult females for its first spring sun-basking need for higher temperature of shore than males. Glass-house herpetoculture technologies *E.orbicularis* can be efficiently used for breeding of northern *E.orbicularis*, allowing prolongation of active season and lowering the dangers of wintering for turtles.

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## **SOMACLONAL VARIABILITY IN RESISTANCE GENES OF FLAXSEED (*LINUM USITATISSIMUM* L.) INDUCED BY GOLD AND SILVER NANOPARTICLES**

Somaclonal variability is common in plant tissue culture induced by *in vitro* conditions and lead to high phenotypic and genetic variability due to modifications in genome of differentiation of vegetative cells [1]. It has become the common practice to use of nanoparticles (NPs) in *in vitro* plant cultures. Gold and silver NPs indicate several beneficial properties, and were employed in numerous applications in plants [2]. Flaxseed (*Linum usitatissimum* L.) was selected as model plant to investigate the somaclonal variation induced by nanoparticles. The estimation was done in two resistance genes such as pectin methylesterase (*Pme3*) and powdery mildew resistance gene (*Mlo*). *Pme3* and *Mlo* proteins plays essential role in different mechanisms of plant resistance to the powdery mildew. Plants having mutations in *Mlo* protein show broad spectrum resistance to the powdery mildew [3,4]. There is any research of *Mlo* gene in flaxseed cultures. Present study describes the genetic variations in resistance genes of flax donor plant, callus cultures and regenerants, and morphological changes in callus of control and experimental groups. For this purpose were synthesised Au and Ag NPs, the control and experimental groups of calluses and regenerants were obtained, the specific primers were designed and *Pme3* and *Mlo* gene certain regions were sequenced. Results reveal sporadic changes in two resistance gene region sequences of *L. usitatisimum* cultures, which were grown on nutrition medium supplemented by gold and silver nanoparticles under *in vitro* conditions.

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## **THE ASSESSMENT OF THE IMPLEMENTATION OF BOMBINA BOMBINA ACTION PLAN IN LATVIA FOR TEN YEARS: 2006-2016**

The Fire-bellied toad *Bombina bombina* (Linnaeus, 1761) inhabits only the Southern part of Latvia and is very rare and preserved species. *B.bombina* Action Plan in Latvia (BAP in the next text) was developed in 2006 and approved in 2007. The BAP described threats for *B.bombina* in Latvia (invasive fish *Percocottus glenii*, native

fishes, degradation of biotopes etc.) and suggested measures for conservation (protection of territories, optimization of habitats, aquaculture, releasing in wild, education etc.).

In this study, we provided the assessment only for those BAP sub-actions, for which it was possible to determine the exact quantitative results: the amount of dug out ponds, the area of the cut off bushes, the number of juvenile *B.bombina* which have been grown-up in the aquaculture and released into the nature, the amount of scientific publications etc. Some similar Sub-actions were combined. In the study implementation of BAP Sub-actions was estimated in points. The difference between Sub-actions' implementation before and after BAP was calculated. Implementation of most Actions is notable increased after BAP and has statistically significant difference in comparison with before BAP implementation. There is not a statistically significant relationship between Sub-actions' implementation before and after BAP. The revision of the Action Plan for *B.bombina* must take into consideration the results of implementation of the existed Plan.

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## THE DIVERSITY OF PARASITES IN RODENTS AND SHREWS IN LATVIA

Rodents phenomenal success worldwide can be explained in terms of their generally small size and conservative body plan, their highly adaptable reproductive strategies, and their great dietary flexibility. Small mammals, especially rodents, are important as reservoirs and disseminators of various parasites. Rodents are definitive or intermediate hosts for adult or larval stages of parasites species, respectively. Rodents are among the most abundant of wild animal hosts of zoonoses, which can arise from wild/domestic animals or from food of animal origin.

Tapeworm of *Hymenolepis* can be transmitted to humans. This cestodes *Hymenolepis diminuta* an *H. nana* we found in our study with rodents.

200 individuals of small rodents and shrews from the Latvia were examined for the presence of parasites. These includes following rodents species: *Apodemus agrarius*, *Apodemus flavicollis*, *Myodes glareolus*, *Micromys minutus*, *Rattus rattus*, *Mus musculus*, *Microtus arvalis*, *Sicista betulina* and shrews: *Sorex araneus*, *S. minutus* and *Neomys fodiens*. Identification of mammal species was based on external characters and dental characters if needed.

A total of 9 helmint species were identified from three taxonomic groups: Cestoda - *Hymenolepis diminuta*, *H. nana* and *Hydatigera taeniaeformis*; Trematoda - *Rubenstratum experatum* and *Plagiorchis muris*; and Nematoda - *Syphacia* sp., *Heligmosmoides polygrys*, *H. laevis*, *Mastophorus muris*.

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## THE GENETIC STRUCTURE OF LAKE LEJAS VENDACE POPULATION (COREGONUS ALBULA (L.)) AS AN ADDITIONAL DATA OF VENDACE GENETIC MONITORING IN LATVIA

Vendace is a widespread species in the waters of the Holarctic and together with whitefish and salmonid, belongs to economically valuable fish species. However it is known that nowadays in the fishery the number of vendace individuals is small and the catch is insignificant and unstable. Hence in 2000 European vendace was put on the list of specially protected species with restricted use.

Genetic monitoring makes it possible to determine changes in gene pools of populations in the process of long-term observation evaluate and predict the dynamics of a gene pool in time and space. The methods of molecular genetics offer monitoring of genetic variability in target stocks. The use of the results of genetic studies has an important role in the improvement of programmes of fisheries.

Since 2007 our laboratory has started the vendace population monitoring in seven Latvian lakes (Stirnu, Drīdzis, Sventes, Alūksnes, Nirzas, Rāznas, Ežezers). In this study the data about vendace population genetic structure in Lake Lejas was obtained. There is an additional data to vendace genetic monitoring in Latvia.

5 microsatellite loci (BWF1, Cisco90, Cisco106, Cisco157, Cisco200) designed for *Coregonus clupeaformis*, *Coregonus nasus*, *Coregonus artedi*, *Coregonus hoyi* were used for this study.

The allelic diversity and the heterozygosity level in polymorphic loci were estimated and compared with previously studied vendace populations.

The data of analysis of the genetic structure of vendace individuals in Lake Lejas are starting point for a long-term monitoring of the vendace population in this lake. Thus at present eight vendace populations are included in the genetic monitoring in Latvian lakes.

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## **FUNCTIONAL AGROBIODIVERSITY TECHNIQUES TO SUPPORT BENEFICIAL ORGANISMS IN ORGANIC APPLE ORCHARDS OF LATVIA**

The level of internal regulation of functions in agroecosystems is largely dependent on the level of plant and animal biodiversity. Biodiversity provides a variety of ecological services including recycling of nutrients, regulation of microclimate and local hydrological processes, suppression of undesirable organisms and detoxification of noxious chemicals. The higher is diversity of organisms in the ecosystem the higher is stability of the respective ecosystem.

Functional agrobiodiversity (FAB) refers to those elements of biodiversity on the scale of agricultural fields or landscapes, which provide ecosystem services that support sustainable agricultural production. Distribution of arthropods in fields depend of habitat variability, microclimatic conditions, prey density and proximity to particular landscape features.

It is essential to promote agrobiodiversity and to support farmers in combining high-yield and sustainable and environmentally friendly farming. So far there was no information which agrobiodiversity supporting techniques have been used by farmers in Latvia. In the frames of the CORE Organic Plus project EcoOrchard “Innovative design and management to boost functional biodiversity of organic orchards” data on information about FAB techniques used in organic apple orchards of Latvia were obtained. The most wide spread techniques used by biological apple growers are hedgerows, shelters for animals, water bodies within or next to the orchard, vertebrates, caulescent plants next to the orchards, as well as reduction of effects of environmental degradation.

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# FINANŠU UN SAIMNIECISKĀS DARBĪBAS ANALĪZES JAUTĀJUMI

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## ISSUES OF FINANCES AND COMMERCIAL ACTIVITY

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### **THE ETHICS OF SUSTAINABILITY: FIRST COME FIRST SERVED.**

Ethical context is understood in the term sustainability, as sustainability means taking into account not just the effectiveness, but also moral values and goals. Sustainability cannot be achieved without attention to its ethical dimensions. The ethical aspects of sustainability often remain implicit as most analyses focus on the economic, social, environmental, and technical issues. It is one of the main tasks of this research. The research contributes to this goal by describing the ethical context of sustainability. Consequently, the main tasks of the research are: to define a reason for developing the ethics of sustainability and to describe the ethical context of sustainability. The key results: a survey on the responsibility to the next generations. The following primary research methods are used: the monographic method, statistical, analysis, scientific induction and deduction.

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### **ANALYSIS OF THE PROBLEMS OF YOUTH UNEMPLOYMENT IN LATGALE REGION FROM 2007 UNTIL 2015**

Youth, in a way, is a source and potential for any country, which must be activated and organized in the conditions of dynamic society.

Youth is the future of every country; what the country will be like tomorrow and the future wellbeing of our country depends on its youth. Lack of employment leads young people to complete degradation: problems in personal development and formation of personality appear, marriages end in divorce, birth rate decreases, crime rate increases, etc. Therefore, solving the problems of youth unemployment and providing occupation will help improve the social and economic situation in regions.

The highest unemployment rate is observed in remote regions of the country. In Latvia for many years the highest rate of unemployment has been observed in Latgale region. There are various reasons for the high unemployment rate.

After finishing educational institutions, young specialists find themselves in the system of fierce competition with people who already have work experience, where the graduate must be able to prove that they have relevant knowledge, skills, abilities and competence. The lack of demand for young people on the job market is also related to the fact that a significant part of unemployed youth seeks to find a position that corresponds to their training and is highly paid but fails to find such a position, i.e. the reason is that the demand does not meet the supply of workforce.

Therefore the topicality is comprised of the study of the job market peculiarities in the territory of Latvia (Latgale region), i.e. from the perspective of demand and supply and its results.

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### **ASSESSMENT OF TAX BURDEN ON DIFFERENT TYPE OF ALCOHOL**

It is needed to conduct the research providing the effect and impact of excise duty in all product groups. In assessing the possible changes should be considered the various aspects, including product impact on human health.

The aim of the study is to assess the excise duty on alcoholic beverages on different type of alcohol. To achieve the objective of the study the following tasks were carried out: studied experience of other countries; compared the excise tax and price on different types and strength of beverages (beer, wine, strong alcohol) in the light of their potential impact on health and assessed the excise tax changes on consumption of goods and state budget revenues.

The study used an international expert's literature analysis, qualitative analysis of the tax system and quantitative statistical methods of data analysis.

Excise tax for strong alcohol is approximately more times higher than tax for wine or beer if compared by alcohol impact on human health (alcohol doses). In addition, the price structure is also not comparable for beer and strong alcohol, because in the price of beer taxes are less than strong alcohol. Tax policy should be designed adequate and appropriate tax burden should be adjusted.

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## **HUMAN CAPITAL DEVELOPMENT FEATURES IN RURAL AREA: VIDZEME REGION EXAMPLE/ CASE ANALYSIS**

**Key words:** *human capital, smart people, rural areas, development features, smart development*

One of main condition of sustainable state economics development is smart rural area development and most important to provide it, is human capital development. The aim of research is to find out the most important human capital development features in rural area in context of smart forming of inhabitants, which would serve as base for working out the guidelines to provide sustainable development of Latvia country space and region. For deeper research in Vidzeme region the districts Kocēni and Mazsalaca was chosen and they shows a different speed and level of economics development. For analysis of human capital development processes author used monographic method, statistics data analysis, method of hierarchic analysis, data from questionnaires and interviews with focus groups and inhabitants in research areas. This research paper contains novelty in context of human capital theoretical theory - concept SMART PEOPLE (INHABITANTS) is defined, find out its substance and divided main characteristic indicators. This research paper contains analysis of human capital development situation in research areas and in Vidzeme region overall; clarified the main development features and tendencies in context of smart economics development. In process of analysis rural areas human capital development problems are displayed and solutions are proposed. Theoretical and practical results of this research will be used to work out the guidelines for Latvia country space smart development and for working out proposals for municipalities to make a policy in field of human capital development.

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## **BUSINESS COMPARATIVE FINANCIAL ANALYSIS**

Stable success of a company is dependent on a clear and effective corporate business planning, regular sampling and analysis of the information on market situation and personal prospects and opportunities that enable company to develop strategies and financially economic activity tactics.

The ratio analysis of liquidity, solvency, turnover and profitability is necessary for company's financial position organization evaluation, with which the company establishes economic relations. The analysis of economic activities financial stability plays an important role, since with its help decisions may be taken at the micro level. With the help of ratio analysis of liquidity, solvency, turnover and profitability it is possible to develop the company's strategy and development tactics, plans and management decisions are based on it and control is made, in order to fulfill it production efficiency increasing reserves are revealed, company, certain sub-units and staff performance are evaluated. All this confirms the actuality of the author's chosen master thesis topic.

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## БИЗНЕС - СРЕДА И ЭКОНОМИЧЕСКИЙ РОСТ: СИТУАЦИЯ В СТРАНАХ ЕС

Главная цель данной статьи - проанализировать влияние, которое оказывает бизнес-среда той или иной страны на такие базовые макроэкономические показатели как темпы роста ВВП и уровень занятости. В основе работы лежит макроэкономический анализ обширной статистической информации, в первую очередь данных Евростата, а также данных национальной статистики ряда стран. По мнению автора можно выделить три типа бизнес-среды, характерные для стран ЕС: стабильную, промежуточную и динамичную. Критериями такого деления могут быть такие показатели бизнес-демографии как рождаемость предприятий, смертность предприятий и степень выживаемости. Проведенные автором исследования свидетельствуют, что каждый тип среды имеет свои плюсы и минусы. По мнению автора, существует устойчивая взаимосвязь между показателями рождаемости и смертности предприятий и показателями экономического роста. Статистика свидетельствует, что при благоприятных экономических условиях страны с динамичной бизнес средой имеют больше внутренних резервов для роста, поэтому в период экономического подъема эти страны развиваются значительно более высокими темпами, чем «стабильные экономики». Одновременно, экономика этих стран имеет намного меньший запас прочности и в период кризиса падение ВВП в них также будет максимальным. В тоже время, хотя создание новых предприятий часто рассматривается как один из ключевых факторов, определяющих создание новых рабочих мест и сокращение безработицы, проведенный автором анализ свидетельствует, что не существует сколь-либо серьезной зависимости между показателем рождаемости предприятий и уровнем безработицы. Несмотря на относительно небольшое число вновь создаваемых предприятий в странах со стабильной бизнес-средой, уровень безработицы часто бывает ниже, чем в динамичной среде. Кроме того, в период экономических кризисов рост безработицы в "стабильных" экономиках обычно существенно ниже, чем в странах с динамичной бизнес средой. Проведённые автором исследования позволяют более точно оценить те плюсы и минусы, которые имеет конкретная страна имеет для ведения бизнеса.

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## STUDENTS ABOUT THE MARKETING OF THE PERSONAL QUALITIES OF SOCIALLY PROMINENT SPORTS FIGURES

**Key words:** *sports, physical education, marketing, image, student.* The personal qualities and professional skills of prestigious persons in the sports sphere are of decisive importance for the attitude towards a particular service or product. Through the way of thinking and expression of the students in the Sport Pedagogy Master's Programme at the St. Cyril and St. Methodius University of Veliko Tarnovo, Bulgaria, and in the light of the modern times, this research has the **aim** to answer certain questions about the relation "supply - demand", on the grounds of the **hypothesis** that the consumers in the sports sphere need and pay special attention to the marketing messages.

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## INFORMATION TECHNOLOGY SECTOR IN THE EUROPEAN UNION: THE INDIRECT ECONOMIC IMPACT

Information technology (IT) sector is one of the most dynamic and innovative sectors with the highest growth potential, due to the constant automation of global manufacturing processes and growing popularity of e-commerce and e-services. The development of technologies is rapidly changing modern economic processes at the micro and macro levels, automating and upgrading all areas of national economies. Besides the direct benefits in forms of the sector contribution to gross domestic product, employment, investments and other

economy indicators, the emergence and subsequent development of IT has a significant impact on the progress of all sectors of the economy. Development and use of IT is followed by significant costs reduction for the implementation of new technologies. The positive effect is achieved through synergy and multiplier effect of the use of IT in all spheres of economy and in everyday life. The overall information technology influence on the modern economy may be expressed in two different ways: directly and indirectly. In the first case the positive effect on the economy is connected with the sector developments itself. The indirect way is more complicated and more difficult to measure. This is the effect, which is formed from the use of information technology sector products and services in other sectors of economy. The indirect and direct spheres of influences are both important engines of modern progress in economic and social spheres of regional development. To analyze the overall effect on economy, it was decided to carry out two studies about each effect separately. Now, when the research about the direct effect has already been carried out and published, it is time to pay attention to the second effect - the indirect effect of IT sector on economy. Thereby the main purpose of the article is to analyze the indirect effects of information technology on economy in a context of the sector development in the European Union.

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## **PREFERENCES IN EDUCATION AND STRUCTURAL CHANGES IN REGIONAL ECONOMY**

**Key words:** *education, students' choice, structural changes, regional economy.*

Education is significant factor for regional performance in realizing structural changes in economy. Nowadays, regions emphasize certain fields of education for ensuring availability of professionals in sectors of economic activity that are recognized as desirable for structural changes. Reaching the brighter effect from education on structural changes in regional economy requires understanding of stimuli that encourage students to realize themselves in sectors that at this moment are presented in lesser degree in regional economy, but further are set as desirable for the structural changes rather than in the sectors of the existing regional specialization. The research aims to analyze theoretical explanations of stimuli that affect students' choice.

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## **THE IMPACT OF HEALTH CAPITAL TO SOCIAL AND ECONOMIC INDICATORS OF THE REGION**

**Key words:** *health capital, economic efficiency of health, investment in health, health-behaviour.* The World Health Organization's (WHO) experts emphasize bilateral relationship between health and economic development during more than ten years. As mentioned in the European health policy "Health-2020", - health improves productivity, increases the efficiency of the workforce, reduces the costs of treatment of diseases and social benefits, as well as reduces the tax revenue loss. Good health can speed up the economic recovery and economic development. The economic aspects of health are increasingly researched and discussed by scientists all over the world, as evidenced by the positive dynamics of number of scientific articles on this topic in international databases Scopus, PubMed and others. In this paper, authors examine the impact of population health on socio-economic indicators such as education level, education efficiency, labour market, including income level. Attention is focused on the impact on the regional economy of investment in health capital, resident's health-behaviour, including actively propagandized a healthy lifestyle.

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# CIVILTIESĪBAS

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## CIVIL LAW

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### FIKTĪVA KREDITORA JĒDZIENS

**Atslēgas vārdi:** *fiktīvs, kreditors, parādnieks, kreditoru prasījums*

Fiktīva kreditora jēdziens visbiežāk tiek minēts saistībā ar maksātnespējas procesiem. Arī Maksātnespējas politikas attīstības pamatnostādnes 2016.-2020.gadam būtiski uzmanību pievērš tieši fiktīvo kreditoru izslēgšanai no maksātnespējas procesiem. Tomēr nevienā normatīvajā aktā nav noteikts fiktīva kreditora jēdziens, līdz ar to fiktīva kreditora statusu kreditoram var piešķirt tikai vadoties no pazīmju kopuma, kas var liecināt, ka kreditora prasījums ir fiktīvs un radies ar mērķi iegūt pret parādnieku tiesības, nolūkā aizskart citu kreditoru intereses. Fiktīvs kreditors ir sastopams ne tikai maksātnespējas procesos, bet arī citās civiltiesiskajās attiecībās, kuru ietvaros kreditors uz apšaubāma prasījuma pamata var iegūt tiesības, kuras tam nepienākas. Būtībā fiktīvu kreditoru esamība apdraud ne tikai tiesisku komercdarbības vidi, bet arī nepamatoti aizskar parādnieka tiesības. Referāta ietvaros tiek analizēts fiktīva kreditora jēdziens un tā raksturojošās pazīmes. Bez tam referātā tiek aplūkoti jautājumi, kas saistīti ar kreditoru un parādnieku tiesību aizskārumu gadījumos, kad civiltiesisko attiecību ietvaros tiek pieteikti fiktīvi kreditoru prasījumi. Kā arī tiek analizēti jautājumi, kas saistās ar kreditoru prasījumu kontroli, nolūkā izslēgt fiktīvu kreditoru no civiltiesiskajām attiecībām.

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### ZINĀJA VAI VAJADZĒJA ZINĀT PAR IESAISTI NODOKĻU IZKRĀPŠANĀ IR FAKTU VĒRTĒJUMS

Kopš iestāšanās Eiropas Savienībā, Latvijā nodokļu piemērošanu lielā mērā ietekmē Eiropas Savienība. Prakse liecina, ka pievienotās vērtības nodokļa piemērošanā, gan nodokļu administrācijā, gan Administratīvajās tiesās plaši tiek izmantotas Eiropas Savienības Tiesas atziņas, kuru interpretācija un pierādījumu pietiekamība bieži vien ir atšķirīga ar sākotnējo tiesību normu piemērotāju, tādējādi radot dažādus skaidrojumus, kuru rezultātā negodprātīgs nodokļu maksātājs var izstrādāt jaunas krāpšanas shēmas, radot būtiskus zaudējumus valsts budžetam.

Augstākās tiesas Administratīvo lietu departaments pievienotās vērtības nodokļa lietās ir norādījis, ka ir būtiska nodokļu maksātāja attieksme pret darījumu un darījuma atbilstība vispārpieņemtajai komercpraksi. Savukārt tiesas sēdēs novērojams, ka nodokļu maksātājs izvērza tikai vispārīgus apgalvojumus, ka tiešais darījuma partneris bija reģistrēts pievienotās vērtības nodokļa maksātāju reģistrā, ka nodokļu maksātājs ir darījis visu, ko no tā prasa likums, ka darījums ir veikts ar juridisku personu un pēc darījumu attaisnojuma dokumentiem ir iespējams izsekot darījumam, bet tajā pašā laikā netiek atspēkots Valsts ieņēmumu dienesta auditā un lēmumā norādītais, piemēram, ka tiešais darījuma partneris neko nezina par uzņēmuma darbību, var liecināt, ka attaisnojuma dokumenti ir noformēti formāli, lai nodokļu maksātājs no valsts budžeta varētu iegūt fiskālās priekšrocības.

Ņemot vērā minēto, autors analizēja judikatūru attiecībā uz zināja vai vajadzēja zināt par iesaisti nodokļu izkrāpšanā. Šis pētījums identificē un analizē teorētiskos ietvarus pievienotās vērtības nodokļa krāpšanas lietās.

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## **TERMINATION OF EASEMENTS DUE TO THE FULFILMENT OR EXPIRATION OF A RESOLUTORY CONDITION, PRE-EMPTION OR PRESCRIPTION**

The daily lives of private individuals or professional activities of legal entities would be unthinkable without easements.

It is laid down in Article 1130 of the Civil Law that: A servitude is such right in respect of the property of another as restricts ownership rights regarding it, with respect to utilisation, for the benefit of a certain person or a certain parcel of land. Based on this article, easements restrict ownership, thereby causing certain difficulties for the owners of encumbered (or servient) immovable properties. This legal position, however, is not perpetual, and Article 1237 of the Civil Law provides for several types of the grounds for the termination of easements, namely: 1) the renunciation of the easement; 2) by a single person accumulating both rights and duties; 3) the destruction of the servient or dominant property; 4) the fulfilment or expiration of a resolutive condition; 5) pre-emption; 6) prescription.

This article deals with three of the aforementioned grounds for terminating easements (the fulfilment or expiration of a resolutive condition; pre-emption; prescription), providing an in-depth assessment of their essence and content, specific termination conditions and related problems.

*Keywords:* termination of easements, dominant real estate, servient real estate

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## **THE CONCEPT AND DEVELOPMENT OF SPORTS LAW**

According to the opinion of well-recognized British sports law scientists- sport is a truly global phenomenon. As a social activity, whether it is in terms of participation as a recreational pastime, competitive playing at amateurs level, the elite and mainly professional level or in terms of spectating, sport assumes immense cultural significance.

As in every significant cultural process, in sport there also exist rules. As it is stated by Grayson: “the rule of law in sport is as essential for civilization as the rule of law in society generally. Without it generally anarchy reigns. Without it in sport, chaos exists.”

The author of the article shall analyze the notion of sports law and consider its development and relevance.

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## **SOCIAL GUARANTEES TO CAREGIVERS DURING THE PERIOD OF PRE-ADOPTION CARE**

During the period of pre-adoption care, caregivers are prevented from receiving any social guarantees, since adopters, to whose care children are given, are not granted maternity, paternity benefits, child birth benefits, parental benefits, furthermore, it should be noted that if a baby under the age of 1 year is given to care before adoption, no family state benefits are paid, since this benefit is payable from the age of 1 year. At the same time, as laid down in the first part of Section 153 of the Labor Law, an employer, if a child is given to care before adoption, may grant to an employee leave without retention of work remuneration. Sick benefit is also not payable to care for the child, since before adoption caregivers are not considered to be parents or guardians.

Therefore, during the period of pre-adoption care, which can last for nearly nine months, the caregiver's income is reduced, for which reason it would be reasonable to provide to caregivers more support from the State during the pre-adoption period for the quality of caregiver's life not to worsen during the period of pre-adoption care and for the desire to become an adopter not to disappear.

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## **NON-MEDICAL PRACTITIONER'S LEGAL LIABILITY IN HEALING RELATIONS**

There is an ambivalent approach to healing in the legal system of Latvia. On the one hand, some new developments, despite being rather disputable, are identifiable in the regulatory framework for healing. On the other hand, the state currently disassociates itself from direct recognition of healing relations and their regulation in the legal system. It is necessary to legally protect the patient in healing relations, without leaving it only to non-medical practitioners' NGOs, where objectively justified preconditions for a necessity of national regulatory framework for healing have been established nowadays.

Two main kinds of possible unlawful conduct in healing relations are clearly identified. First, a non-medical practitioner can commit an unlawful act by carrying out healing on a patient (for instance, cause harm to patients' health). Second, a non-medical practitioner can commit an unlawful act by abusing the position of a non-medical practitioner, which facilitates the commission of a wrongful act (for instance, swindle). Therefore, there is a necessity to legally prosecute a non-medical practitioner, who has committed an unlawful act that is directly or indirectly related to healing relations.

It has to be determined, whether there is a regulatory framework in Latvia, which directly provides for non-medical practitioners' criminal liability, administrative responsibility and civil liability for unlawful acts in healing relations.

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## **INTERPRETATION AND APPLICATION OF ARTICLE 570 OF THE CIVIL PROCEDURE LAW**

Nowadays, under the influence of economical crisis, considerably increased the number of debtors, who cannot fulfill their liabilities. Every debt has its own executive thing. The bailiff leads the Executive Affairs and shall initiate debt recovery. Turning to the recovery of the real estate of the debtor shall be permitted if, in applying the other enforcement products returned within a reasonable time, the claims could not be met. This article author analysis Article 570 of the Civil Procedure Law, as well as interpretation and application related problems. One of the issues is the application of coercive measures. The second issue which is the deadline to pay the debt and the reasonable period of time.

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## **HISTORICAL DEVELOPMENT AND EVOLUTION OF THE PURPOSE OF THE INSOLVENCY PROCESS**

The development of the purposes of the insolvency process are rooted in the relatively late history of the insolvency sphere of the independent Republic of Latvia and at the same time in such a rapidly changing legal framework (already third Insolvency law is in force). At the same time changeable purposes of the insolvency process and legal regulation caused the different interpretation and understanding concerning the sense and application of the insolvency sphere for the entrepreneurs, state sector and for the society at all. Also it is referable to the real and actual aims of it.

For example, in comparison with the so-called "middle" Insolvency law (at 01.01.2008. replaced the law "On the Insolvency of Undertakings and Companies") defined purpose: to promote renewal of the solvency of the subject of the insolvency and to protect the interests of the aggregate of the creditors in the case of the limited solvency or insolvency of the debtor, and purpose of the actual Insolvency law: to promote the honouring of the obligations of a debtor in financial difficulties and, where possible, the renewal of solvency, applying the principles and lawful solutions specified in the Law, it is possible to establish, how changed the vision of the lawmaker and parties, involved into the insolvency process, concerning the purpose of the legal act and the whole insolvency process sphere at all.

In the process of the application of the regulations of the insolvency law, parties, involved in the process, such as individuals and institutions, as well as administrators of insolvency proceedings, courts and creditors, as well as the third parties (including state), quite often have incorrect comprehension concerning the real purposes of the insolvency process.

Among the identified purposes, the next prevail: fulfilment of the obligations of a debtor; to bring the assets back to the market as fast, as possible; creating favorable environment for the investments; improvement of the business environment; protection of the interests of creditors.

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## **POLICY DOCUMENTS ON PATIENTS RIGHTS IN LATVIA**

The aim of the paper is to provide some insight into an policy planning documents on patient's rights in Latvia. The number of applications in healthcare cases before the court is growing. It shows that patients are not satisfied with the policy regarding health care system and patients' rights protection related issue. The policy inform patients about their rights and responsibilities. It provides guidance to patients in providing health care services to patients. Patients shall be informed of these rights as well as their responsibilities as well as using policy documents.

The results of the paper shows that Latvian policy documents on patients rights have to be improved. The paper has described some new ideas of policy documents on patients' rights in Latvia.

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## **NATIONAL AND INTERNATIONAL ASPECTS OF THE RULE OF LAW INTERTEMPORAL APPLICABILITY**

**Keywords:** *Intertemporal applicability, rule of law power over time, acquired rights*

Upon coming into effect of a rule of law has a forward, immediate effect or retroactive effect (*ex post facto*) indicating the effect of the rule of law over time. It has a crucial impact in the interpretation and practical application of the rule of law. Therefore it is important to study not only the law doctrine of Latvia and case law in the rule of law applicability process, but also to compare it with the international practice in the area of the law intertemporal applicability, taking into consideration the law doctrines of different countries and the case law of the European Court of Human Rights.

In the law system of Latvia, the rule of law intertemporal applicability is demonstrated within the framework of the private and public law. A rule of law takes an immediate effect in the public law, whereas in the private law it has a forward effect, without affecting the already acquired rights, taking into consideration that a legislator may identify exceptions from the general principle. In this respect, the intertemporal application of the rules of law in the social law area should be underlined, in cases on issuing a favourable administrative act. One of such exceptions refers to making the benefits defined in the social law. In the social law area, the change of the legal situation (amending or exclusion of a rule of law) does not affect the rights that the individual was enjoying at the moment when he/she was applying at a body for getting this benefit.

In the international aspect, different law sources accentuate the backward effect of a rule of law, especially in the area of the criminal law (public law).

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## **APVIENOTĀS KARALISTES DALĪBA POLICIJAS SADARBĪBĀ PĒC IZSTĀŠANAS NO EIROPAS SAVIENĪBAS**

Apvienotā Karalistē eiroseptiskas idejas, imigrācijas plūsmas palielināšanas ietekmē, realizējas izstāšanās procesā no Eiropas Savienības. Taču kopējo politiku loks ir pietiekoši plašs, lai atsevišķas jomas turpinātu

uzsākto sadarbību. Šīs publikācijas mērķis meklēt atbildes uz jautājumiem, kā attīstīsies Eiropas Savienības dalībvalstu policijas dienestu sadarbība ar Apvienotās Karalistes attiecīgajiem dienestiem. Šis jautājums ārkārtīgi svarīgs, ņemot vērā jaunus juridiskus instrumentus, kuri orientēti uz vēl ciešāko un vienkāršāko sadarbības formu ieviešanu dzīvē.

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## **PRINCIPLE OF FREE COMPETITION IN PUBLIC PROCUREMENT**

**Keywords:** *public procurement, free competition*

Free competition is the freedom to produce, and the freedom to trade what one has produced.

In research «Principle of free competition in public procurement» is examined the importance of principle of free competition. The work purpose – to analyse the information about theory and practice in sphere of public purchases. The study is based on the laws and regulations of the Latvia range, including the Public Procurement Law, Decisions of the Complaints Examination Commission of the Procurement Monitoring Bureau (Republic of Latvia).

The study helps to identify the Latvian Republic procurement system development level, as well as outlines possible solutions for the challenges. The results of the research can be used by procurement practitioners.

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## **APVIENOTĀS KARALISTES DALĪBA POLICIJAS SADARBĪBĀ PĒC IZSTĀŠANAS NO EIROPAS SAVIENĪBAS**

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**Vita Upeniece**

## **LEGAL FRAMEWORK OF THE USE OF ARMED FORCE IN INTERNATIONAL LAW**

The use of armed force between the states is regulated by the international customary law and treaty law. When we speak about control of the use of force by the international customary law it is worth to mention the Hague Convention (III) on the Opening of Hostilities, of 1907, which stipulates, that hostilities should not commence without previous warning and General Treaty for Renunciation of War as an instrument of National Policy (Kellogg –Briand pact) in which the Contracting Parties condemned recourse to a war for the solution of international controversies, agreed that the settlement or solution of all disputes or conflicts would never be sought except by pacific means and didn't refuse from the use of force for self-defense. Nowadays the Charter of the United Nations remains the primary source of the rules for evaluating the legality of the use of armed forces by the states. According to the Article 1 of the UN Charter the first purpose of the United Nations is to maintain international peace and security, and to that end the Member states agreed to:

Determine the prohibition on the threat or use of armed force in their relations (Article 2 of the Charter of the United Nations);

Create an effective collective security system (Chapter VII of the Charter of the United Nations).

The UN Charter provides two exceptions from the prohibition expressed in Article 2 (4): 1) According to the Article 39 of the Charter of the United Nations, the Security Council may authorize collective security operations when they conclude that there is a situation of threat to the peace, breach of the peace, or act of aggression.

However over the years there were situations when the five permanent members of Security Council veto each other's decisions on the base of certain political involvements.

2) The second exception is embodied in Article 51 of the Charter of the United Nations and provides the Member states the right of self-defense against an armed attack.

The aim of the research is to analyze the problematic aspects of application in practice of these two above mentioned exceptions from general prohibition of the use of force.

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## **ACTIVITIES OF THE STATE BORDER GUARD AFTER SUBMISSION OF THE APPLICATION FOR GRANTING REFUGEES OR ALTERNATIVE STATUS**

Growing refugee crisis situation has exacerbated the situation in the European Union in recent years. Single asylum policy obliges Latvia to be engaged in this issue. Our country in recent years has made considerable efforts to the implementation of the latest European Union directives and to meet their requirements to those asylum seekers who apply for asylum in Latvia or pursuant to an action plan for persons in need of international protection, transfer and reception of Latvian, are moved to Latvia from other Member States.

A number of institutions in Latvia are involved in asylum procedure. One of the first contact institutions for persons in need of international protection is the State Border Guard. The officials of State Border Guard conduct the preliminary operations for international protection of applicants, as an application for refugee status or alternative status must be submitted to the State Border Guard units. Sequence of actions and procedures are firmly established by the Latvian Asylum Law. When handling asylum seekers, border guards must also comply with all the rules of international law, especially those concerning human rights.

Asylum statutory activities of State Border Guard operations are carried out immediately after the application for refugee status or alternative status submission or receipt of asylum seekers from other Member States. It is the task of State Border Guard to identify and examine applicants for international protection. State Border Guard's activities are important because the information resulting from an asylum seeker may affect the decision on the granting of asylum or denying to grant the refugee status.

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## **THE TOPICAL ASPECTS OF THE PUBLIC PARTICIPATION IN THE CONSTRUCTION PUBLIC PROCESS**

In the report, the contact points of the legal regulation of the public participation in the construction public process and in the territory planning process are considered.

The different aims and tasks of the public participation in the territory planning and construction processes have been analysed. Taking into account the context of the historical development of the mentioned legal institution, the conclusions have been drawn about the necessity and significance of the public participation.

The possibilities of the improvement of the legal regulation of the public participation in the construction public processes have been offered, by amending the construction law.

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# KRIMINĀLTIESĪBAS UN POLICIJAS TIESĪBAS

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## CRIMINAL LAW AND POLICE LAW

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### CONCEPT DEVELOPMENT OF POLICE COOPERATION WITH THE SOCIETY

How can a democratic country, while governing itself, provide freedoms for the citizens and at the same time allow the police to enforce the laws of that country? The answer depends on what role such a country would like to see the police perform. Hopefully the police will be able to uphold law and order while respecting the rights of individuals at the same time. How much power the police should have is a decision that should be made only by the specific community or society involved. It is at this level that community power is displayed through the social, political and economical activities of a group of people that have common goals. When we govern ourselves, we should also agree to police ourselves appropriately.

Community policing is the concept that has been used and tried in many parts of the world to accomplish the above. To determine the possible effectiveness of community policing it is necessary that we examine the literature. One could ask the question: "Is community policing more rhetoric than reality?" Some of the misconceptions come from the criticism that community policing is just a public relations gimmick. Excellent police-community relations are just a by-product of community policing. The main focus is community involvement in combating crime and disorder. Community policing as an excellent opportunity for the government and the police to attend to the needs of their "customers" in society. The fact that customer satisfaction has become such an important part of business and industrial settings may be partly the reason for this movement in government and police services.

We all hope for the achievement of the lofty goals of community policing, it cannot work in reality. Others have supported the concept of community policing and argued that it works very well in reality and has practical applications in our crime ridden communities. This is a very important debate, because we cannot afford to waste money on something if it does not work effectively. Only if community policing benefits the police, community, citizens and government should we allocate the manpower and money to implement and sustain it. Before considering the arguments for and against community policing, we need to define and explain its concepts. This discussion is limited.

***Valters Brigmanis***

### THE EVALUATE PROBLEMS OF MORAL HARM IN CRIMINAL PROCEEDINGS – THE ISSUES A OF COMMON METHODOLOGY.

There are different Latvian court decisions in similar criminal cases in relation with performed moral harm. With meaning – amounts of money of performed moral harm sometimes are very different. Therefore, it is logical that Latvian Republic Supreme Court says that the Latvian courts in respect of non-material injury determinations in criminal proceedings are making baseless decisions.

Such problems can be solved with common methodology of the determination of moral harm amounts.

Is it possible to make such common methodology - in theory and in practice, taking into account the experience of other countries - ?

This and related issues will be analyzed in author`s article.

*Toms Čevērs*

## **THE MOMENT OF THE COMPLETENESS OF THE SMUGGLING: CRIMINAL ASPECTS**

In the daily routine of criminal law authorities or on the contrary looking for adequate legal solution in complicated cases basic concepts of the criminal law are often forgotten because at the beginning they seem obvious with an inalterable meaning. Notwithstanding a correct appreciation of them is crucial in every category of cases in every specific occasion in order to adopt a fair settlement of criminal legal relations.

One of those basic concepts of the criminal law mentioned before is the moment of the completeness of a criminal offence. Taking into account that uncompleted criminal offence does not have all the constituent elements of a criminal offence set out in the Criminal Law and according to that the harm caused by it is minor the determined punishment must be lesser as well.

Studying materials of juridical practice, it shall be concluded that in the cases of smuggling courts generally do not analyze the moment indicating when goods actually have been moved over the customs frontier (in the case of formal composition of the criminal offence) and how does it effect the avoided taxes harm caused (in the case of material composition of the criminal offence). It seems that courts do not scrutinize the complex European Union customs matters regulation. Courts do not take into account significant differences that occur defining the moment from which the public interest harm is caused depending on the place where unlawful movement of goods has happened (so called "green border" or customs control point) and the form of the movement of goods avoiding customs control (through customs control point applying customs procedure or without it).

Criminal aspects of the smuggling are especially important to discuss in the context of the Latgale region taking into account that the Latgale region shapes the European Union external customs frontier. It shall be noted that the customs frontier status (European Union instead of the Republic of Latvia) is still not specified in the disposition of the Paragraph one Section 190 of the Criminal Law.

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## **DECISIONS IN THE FORM OF RESOLUTION IN ADMINISTRATIVE VIOLATION MATTERS**

Latvian Administrative Violations Code was adopted in 1984, and since then many changes were made in this law. One of the purposes of changes was to modernize and improve record-keeping in administrative violation matters and to bring record-keeping in administrative violation matters closer to standards of crime investigation. As a result Latvian Administrative Violations Code was added with new violations, legal proceedings, institutes of the rights and so on. But not all attempts on improvement were successful. Having added the law with some new institutes of the rights, the legislator forgot to develop rules of their application. As a result there are gaps in the Latvian Administrative Violations Code. One of the gaps is decisions in the form of resolution. Legislator only provided using of such kind of decisions, but did not establish the form and registration of resolution. Author will describe using of decisions in the form of resolution in administrative violation matters.

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## **CLASSIFICATION OF MEDIATION'S METHODS**

The alternative methods of dispute resolution are new field of study in Latvia. In most cases such methods and its real procedure are outside any legal regulation. One of this alternative dispute resolution methods is called mediation and 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 realize the

concept of mediation, it is necessary clearly understand, what it is and how you can use the advantages of this process in real life.

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## **DEFINITION OF DOMESTIC VIOLENCE: CONTENT AND INTERPRETATION**

Domestic violence continues to be a global problem that kills, tortures, and maims – physically, psychologically, sexually and economically. This problem is present in every country, cutting across boundaries of culture, class, education, income, ethnicity and age. Domestic Violence occurs in all kinds of intimate relationships, including married couples, people who are dating, couples who live together, people with children in common, same-sex partners, people who were formerly in a relationship with the person abusing them, and teen dating relationships. It is enshrined in the Civil Procedure Law, but there is no specific definition of domestic violence. Although men are sometimes victims, the vast majority are women and children. Domestic violence goes by many names, for example, wife abuse, woman battery, intimate violence, battering, partner abuse. Following sections of the Criminal Law are related to violence in general, not to domestic violence. There are no definitions of domestic/family violence in Latvian legislation. This article is devoted to the definition of the concept of "domestic violence" content and interpretation, in order to understand the nature of this problem.

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## **CRIMINAL OFFENSES DECRIMINALIZATION CHARACTERISTICS AND RELATED PROBLEMS**

The article is devoted to the Latvian Criminal Law of the Republic of the decriminalization of criminal offenses and the possibility of the need for consideration of the economic and social situation in the country, processes and events in the community, as well as political and social aspects.

The article is initial Latvian Criminal Law of the Republic of the offense for evaluation, with the aim of identifying the offending legal penal qualification need.

Written tasks are: to examine and analyze crime decriminalization historical aspects of Latvian Republic Criminal Law; has been recognized for many years unsuccessfully discussed pilfering decriminalization perspectives of its problems, causes, and to assess the many law enforcement agencies, the judiciary and the political views expressed, which is the basis of the above decriminalization failing to bring.

Assessment of policy, various law enforcement agencies and representatives of certain views expressed by legal writers, it can be concluded that there is no unified and reasoned argument on the inadmissibility of petty theft decriminalization or its necessity, having regard to the interests of the individual offender and society as a whole. This is due to the fact that the issue was not fully evaluated in assessing the experience of countries which have been pilfering decriminalization, as well as the application of criminal penalty to be assessed effectiveness, proportionality and its harmful consequences of offender's interests with the injury. In particular, it must be taken into account in respect of persons who have committed small amount of theft for the first time.

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## **ASPECTS OF THE DEVELOPMENT OF ENVIRONMENTAL CRIMINAL – LEGAL PROTECTION IN THE REPUBLIC OF LATVIA, 1990-2017**

Latvia since beginning of the 1990s when the Soviet Union came to an end has undergone rapid system of law changes. This paper shall review of the development of environmental criminal – legal protection in the Republic of Latvia 1990-2017

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## **CYBERCRIMES AND CYBERBULLYING PROBLEMS IN LATVIA AS A PART OF EU COUNTRIES**

While using different new technologies, we are facing not only conveniences and bonuses but also problems and crimes. Every day we use world wide web pages, we leave there our track, our identity data, credit card's data, photos, and another important detail about ourselves and lives. The problem is that we do not understand size of problem. We do not educate ourselves and not even kids about threats in the internet and do not make our lives safe by continuing using unsafe web pages and provide with our data different pages.

From the time, Latvia is a part of the EU we have different possibilities and strategies to protect ourselves and our data in the internet environment. European Commission provide us with different recommendations and actions regarding to cybercrimes. The main idea and aim of those recommendations is to make people feel safe about them and their children and relatives while using internet.

In that paper author put forward the problem of cyberbullying. The problem that becomes global and now is taking place at international level, region level and country level. In the paper author discusses cyberbullying definitions and legal recommendations and directions from the EU, compare it to real life statistics and analyses situation in Latvia as a part of EU countries.

Main methods are scientific literature analysis, legal literature and policy analysis, analysis of findings. It is necessary to combine all information and provide a complete view of the problem.

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## **EXPERIENCE OF DIFFERENT COUNTRIES IN COMBATING UNLAWFUL USE OF ELECTRICITY AND COMPARISON WITH LATVIA**

***Keywords:*** *unlawful use of electricity, legal framework, case-law*

In the modern world it is hard to imagine any field that would not depend to some extent on electric energy resources; however, the use of electricity is not always legal and general information shows that criminal offences in electricity networks are widespread in the world. Instability in the electricity market is a serious threat to energy supply safety in every country and it influences economical, social and political welfare.

In order to determine solutions to prevent the above mentioned cases, it is useful to study the experience of legal systems and case-law close to Latvia in relation to the above mentioned criminal offences, as well as to examine the existing problems and particularities of the situation.

Taking into account foreign experience in developing legislative acts on prevention of criminal offences related to unlawful use of electricity and their application in practice, this research provides an insight into national legislation and case-law in this field in several countries – the Russian Federation, the Federal Republic of Germany, the Republic of Poland, and the Republic of Lithuania.

Analysing the results of the research and the real situation, conclusions on the peculiarities of electricity thefts, foreign practice and possible solutions to improve the situation in Latvia can be drawn.

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## **ANIMAL CRUELTY - ACT OF CRIME OR UNETHICAL BEHAVIOR**

The research subject is chosen to draw society attention to this actual problem that often appears on social networks and has intricate assessment. Attitude to animals depends on to whatgroup of interests belong person.

Does anyone really believe that Latvia is between countries, that animal cruelty is regular unethical behavior? Despite the fact that the civil law make animal into a kind of property (means), it doesn't mean, that man can do

anything with it. Animal is not inanimate object, it could feel, see or hear. As well as human being, animals feel fear, pain and nervousness.

People need to understand, that the next step after the animal cruelty is the human being cruelty. Evil comes from evil. Hatred generates hatred. Cruelty generates cruelty. Attitude to animals point out the level of society development, culture and education.

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## **CRIMINAL OFFENCE INVESTIGATION FEATURES IN LATVIA AND ABROAD, WHICH ARE COMMITTED AGAINST MINORS**

Minors' rights in criminal proceedings is connected not only with specific guarantees, which are intended for them, who have the right for a fair hearing. The law specifically protects the rights of minors, who are victims of a criminal offense. Considering child's special mental-physiological condition and a criminal offense caused psychological stress, law provides a series of procedural guarantees, which protect not only the child's development, but also their legitimate interests. This specific condition requires not only compliance of the procedural restrictions, but it needs a special investigation tactics.

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## **ASPECTS OF PROVING IN THE ADMINISTRATIVE PROCESS**

The author of the paper dealt with the historical origin of alcoholic beverages; clarified the concept of legal and illegal alcohol, factors and causes of its consumption. The author studied also the legal and practical aspects of getting evidences/ proofs in the field of combatting against trading of illegal alcoholic beverages.

As the result of the research, the author recognizes as essential that the normative legislation of the Republic of Latvia takes the greatest emphasis on the tax range, instead of protecting society from the alcohol of poor quality.

There is a large demand for cheap and available illegal alcoholic beverages in the country.

Small fines (compared with profit gained) imposed on illegal alcohol producers, traders and holders of retail premises, passivity of local authorities make a bad influence on distribution of illegal alcohol.

The State Police has not worked out any instructions, any methodological guidance relating the way, how the inspections are carried out and how evidences at the trading spaces are collected.

Other negative factors are an unproductive inter-institutional cooperation, passivity of the population in cooperation with the Police and incomplete legislation.

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## **CRIME RELAPSE AND ITS PREVENTION**

A crime relapse originates by intentionally committed criminal offence by a person after its conviction for earlier intentionally committed crime, if the criminal record has not been removed or eliminated by law. Three types of crime relapse can be distinguished in Latvian legislation, i.e. criminal (legal relapse), criminological (factual crime relapse) and penitentiary crime relapse. The aim of the penalty is not only to punish the person that has committed the crime, but also to resocialize it, in order to alter the personal attitude toward the committed crime and ensure that the convicted person, after serving the sentence, does not commit repeated criminal offence. Therefore, it is significant to prevent the crime relapse, as the crime relapse rate serves as one of the effectiveness indicators of criminal offence. The criminal offence has a high price, as both the state and society suffer from it emotionally, decreased feeling of safety and financially. Eventually, 1% of crime relapse of criminal offence in Latvia costs 2 mil Euros.

***Valdis Voins***

## THE SPREAD OF RADICAL ISLAM IN THE EUROPEAN UNION AND LATVIA

Nearly 20 million Muslims currently reside in the European Union<sup>1</sup>, and adherents to Islamic religion now constitute the majority of immigrants and the second largest religious group of European society. The largest Muslim communities are found in France, Germany and the United Kingdom, and their rate of growth continues to accelerate. In spite of long enough history of Islam in Europe, European states just now became very sensitive to their Muslim communities. Islam in Europe and the issue of Muslim integration now has gained increasing importance on the European agenda. The two different and independent, at first sight, social phenomena, namely immigration and terrorism, with dissimilar causes and radically different objectives,<sup>4</sup> became directly interconnected in Europe. Since the migration flow to the continent, mainly from the Muslim countries, being on the increase, during the last decades, and since the terrorist attacks being launched on European soil by the Muslim immigrants, the integration of Muslim communities has become extremely actual and urgent in the context of EU counterterrorism policy. For Europe the integration of Muslim communities and struggle against radical Islam is much more immediate, because it is the issue of both domestic and foreign policy. Until recent times Europe's Muslims had little direct impact on EU's foreign policy. But since the EU has actively engaged in global politics, especially, in the War on Terror, the Islamic factor began to play a growing role. Such events, which found a support by many European states, as in the past the Persian Gulf War, or the war in Iraq may create tensions in European-Muslim relations. That's why every European policymaker's decisions must now be deliberately influenced by European Muslim interests. The issue is not only the Islamic terrorism and security of the European countries, but more fundamental is the issue of integration of Muslim communities within European secular societies, accepting and respecting Western system of values. It seems to be a hard task, because, both societal and state attitudes towards Muslims and Islam are more negative rather positive. The most significant concern in the Western perceptions of Islam is a threat and fear of Islam. Many Europeans perceive Islam as menace to European culture and civilization, and to the West as a whole. The Muslims in Europe often are considered to be an alien minority with social and cultural values and belief system diametrically opposed to the West. The prejudices about Islam among ordinary European citizens occurred not on the empty ground. The historical evolution of European society and the formation of its Judaeo-Christian European identity are based on its opposition to Islam and struggle against the threat of Islamic expansion. The terrorist attacks in the name of Islam even more create an atmosphere of suspicion toward Muslims, causing xenophobia and islamophobia.

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### PEDAGOĢIJA

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### PEDAGOGY

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## THE FORMATIVE ASSESSMENT OF STUDENTS' LEARNING ACHIEVEMENT IN PHYSICS

**Key words:** *formative assessment, methodological techniques of assessment, basic school, physics teachers' literacy assessment.*

Assessment plays a significant role in education. According to Black's and Wiliam's (1998) publications the term "formative assessment" in scientific publications are widely used in different contexts: data-based decision-making, diagnostic testing, assessment of learning, assessment for learning to provide feedback to "close the gap" between students' current performance and the goal. For more insight into the formative assessment Latvia's physics teachers the authors gained about 7-10 years ago. Therefore, there is an interest what are the physics teachers' understanding, attitude and competence on the use of varied assessment forms and methods of students' achievements in physics? How does the systematic formative assessment in physics learning process promotes students' motivation, conscious learning, and personal accountability for effectiveness? The study was

conducted in 2016 year involving 70 physics teachers. It was concluded, that a big part of the research respondents only partly understand the essence of formative assessment and implement different formative assessments strategies in teaching physics in the basic school.

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## **USE OF EXPLANATORY LEARNING MATERIALS FOR THE ACQUISITION OF ICT SKILLS IN THE WORK WITH ELDERLY PEOPLE**

**Keywords:** *elderly people, lifelong learning programmes, ICT tools, characteristics of age group.*

Lifelong learning programmes are being offered to people of all ages in Latvia, however, in European universities gerontology education programmes are separate study courses providing educational opportunities for elderly people in programmes which are specially adapted for this age group. Often elderly people are not ready to learn together with people of different age as their abilities, skills and competences are different.

Nowadays the acquisition of information and communication technologies (ICT) has become a necessity and an integral part of each person's everyday life, including elderly people. ICT promotes dialogue of generations and helps elderly people to fit in the environment of modern technologies. Educational software, general office applications, text and spreadsheet editors, multimedia software, digital educational games, communication software and other digital resources, for example, encyclopaedias and dictionaries, are suggested to be used for the ICT courses in gerontology education. Explanatory learning materials are provided to elderly people as a help to acquire computer skills in gerontology education, for example, special description of standard toolbar with visualisation. Aim of this paper is to establish the importance of explanatory materials in acquisition of ICT skills for elderly people.

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## **ЭВОЛЮЦИЯ ВЗГЛЯДОВ НА РАЗВИТИЕ ЧЕЛОВЕКА В РАБОТАХ ФИЛОСОФОВ-БОГОСЛОВОВ ВИЗАНТИИ**

**Ключевые слова:** *Древняя Греция, Византия, человек, развитие человека, душа* Древнегреческие философы создавали теории идеального человека. Совершенствование человека в этих теориях было связано с понятием души. В византии (исключая начальный период существования империи) философия развивалась в рамках богословия. Тем не менее, проюлема души оставалась центральной темой в работах мыслителей. Анализируя тексты того времени, можно сказать, что в них человек наделялся все большей субъектностью. Но эта субъектность была жестко детерминирована.

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## **PRE-SERVICE TEACHERS' AUTHENTIC LEADERSHIP: A COMPARATIVE STUDY OF LATVIA AND LITHUANIA**

The rapidly changing modern world imposes new challenges on the system of education, the school, teachers and society. As Darling-Hammond and Lieberman (2012) noted, the quality of teaching is a critical element for the 21st century learning. Researchers (Aitken, 2008; Bond, 2011; Niemi, 2012; Bond, Sterrett, 2014) emphasise that changes emerging in all spheres of life primarily rest on the school and the teacher, and require from the latter a set of new and broader competences. A well-marked orientation of the researchers towards emphasising leadership, as a separate ability, in the structure of competences (Miller, Cable, 2011) is clearly diverted to the models of leader's competency (Jokinen, 2005; Bolden, Gosling, 2006; Sydänmaanlakka, 2013).

Placing emphasis on the significance of teachers' leadership (Martinez, 2004; Leithwood, Jantzi, 2006; Kelley, 2011) as a prerequisite for students' higher achievements (Leithwood, Day, Sammons, Harris, Hopkins, 2006;

Marzano, Waters, McNulty, 2005, 2011; Leithwood, Jantzi, 2008), there emerges an enhanced necessity to look into development of initial teachers' leadership skills (Murphy, 2007; Aitken, 2008; Bond, Sterrett, 2014) in higher education institutions.

Recently researchers focus on a new leadership concept – authentic leadership. Walumbwa and colleagues (2008) defined authentic leadership as “a pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development”. The latent construct is comprised of 4 factors: self-awareness, relational transparency, balanced processing, and internalized moral perspective. So, teacher with the authentic leadership is a leader who aspires to understand him/herself and students and behave in accordance with his/her core values in order to steer the school, and, most importantly, students, towards their goals (Avolio & Mhatre, 2011; Gardner, et al., 2011).

The *purpose* of this study was to identify initial teachers' authentic leadership in Latvia and Lithuania. Seeking our research aim we surveyed Bachelor students in a university level at Latvia and Lithuania using the Authentic Leadership Questionnaire (ALQ) which is formed and tested by Walumbwa, and colleagues (2008). The dataset contains data of in total 183 respondents from Latvia (82) and Lithuania (101). Data were analysed by the use of statistical analysis package SPSS for windows.

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## **INTERDISCIPLINARY APPROACH IN PHYSICS AND MATHEMATICS EDUCATION**

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 the 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 paper focuses 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 and learning physics and mathematics, 2) what is the regulatory framework for such school subjects as physics and mathematics in a secondary school is to implement the interdisciplinary approach; 3) what physics teachers' experience is and what are the possibilities for promoting students' meaningful study while implementing the interdisciplinary approach. In the empirical research the opinion of sixty secondary school students and fourty three physics teachers have been studied.

It has been discovered that most of the questioned physics teachers communicate with maths teachers on a regular basis, they also search for new approaches of the acquisition or reinforcement of certain points of teaching and learning content. However, most 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.

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## **LATVIAN LEGISLATION FOR ENVIRONMENTAL MATTERS: OBJECTIVES AND IMPLEMENTATION**

***Key words:*** *sustainability, legislation, sustainable management of natural resources*

The main goal of any civilized country in the long term is to maintain its viability and ensuring its development and prosperity. This requires certain conditions. One of the main conditions are the natural resources and the

health of citizens, which, in the end, the use of the state resources for the added value. To achieve and maintain these conditions the state has a legal framework. This article examines its structure and implementation in life. The purpose of this article is to show aspects and concept of the legal framework of Latvia and to analyze the results, to show the connection of legislation and sustainable development of the state.

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## IZGLĪTĪBA ILGTSPĒJĪGAI ATTĪSTĪBAI

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## EDUCATION FOR SUSTAINABLE DEVELOPMENT

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### DZIMUMA IDENTITĀTES ATTĪSTĪŠANAS ATŠĶIRĪBAS BĒRNIEM NO PILNAM UN NEPILNAM ĢIMENĒM

*Atslēgvārdi: dzimuma identitāte; attīstīšana; ģimene; pirmsskolas vecuma bērni*

Ģimene kā sociāla institūcija ir dinamisks sociāls kopums, kas atspoguļo būtiskas sabiedrības attīstības izmaiņas. 21. gadsimta sākumā ģimeni ietekmē gan ekonomiskie faktori (inflācija, bezdarbs, pieaugoša sieviešu nodarbinātība), gan sociālie faktori (savstarpējo attiecību kvalitāte, vecāku aizņemtība, atteikšanās pret audzināšanu, ģimenes struktūras izmaiņas). Katra ģimene izveido individuālu audzināšanas paradigmu, kuras pamatā ir kopējas vērtības. Ģimenes dzīvesveids, vecāku attiecības ar bērnu, savstarpējas attiecības, uzvedība ietekmē bērna atteiksmes, uzvedību, zināšanas, prasmes, arī veselību. Bērna saskarsme ar tuviem pieaugušajiem un vienaudžiem ir ne tikai pilnvērtīgas psihiskās attīstības faktors, bet arī pamats attiecību veidošanai ar citiem cilvēkiem, pašam ar sevi, ar priekšmetisko pasauli, t.i., to attiecību pamats, kuras veido personības sistēmveidojošo komponentu (Puškarevs, 2001; Medne, 2010). Vairākos pētījumos un diskusijās tiek uzsvērts, ka Latvijā un visa pasaulē kļuva ļoti aktuāls jautājums par dzimuma identitātes formēšanas problēmām. Vairāki pētnieki atzīst, ka galvenais faktors kas ietekme uz dzimuma identitātes apzinātību bērniem ir ģimenes strukturālai sastāvs un modelis. Problēmu veido vecāku uzdevums dzimuma identitātes jautājumā – censties savus bērnus audzināt tā, lai viņu uzvedība atbilstu sabiedrībā pieņemtajiem standartiem, jo normām atbilstoša uzvedība sekmē cilvēka iekļaušanos sabiedrībā, ļauj viņam justies adekvātam, laimīgam un drošākām.

Tādēļ, pētījuma mērķis ir teorētiski pamatot pirmsskolas vecuma bērnu dzimuma identitātes veidošanas modeļa satura aspektus ģimenē un pedagoģiskajā procesā. Rakstā tiek izmantoti dati no vecāku un pirmsskolas izglītības skolotāju aptaujas, kas veikta dažādos Latvijas reģionos, lai noteiktu dzimuma identitātes būtību un novērtētu tās piedāvātās iespējas teorētiskā modeļa satura veidošanā.

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### INTERACTIVE LEARNING MATERIALS FOR MATHEMATICAL CONCEPTS DEVELOPMENT IN PRESCHOOL FOR THE CHILDREN OF AGE 5 TO 6

A teacher is responsible for the organization of play activities which should be creative and full of surprises. Interactive whiteboards' bright colors and interactivity attracts attention of modern children, contributing to their vigorous activity, desire to learn, participate and cooperate. This is an efficient complement to the traditional learning methods. While working with the interactive educational technologies, teacher becomes an excellent assistant to the pupils enticing and encouraging them. The study aim: to explore the available Internet resources to form an idea of the possibilities to use them in the learning process. Within the framework of the study the Internet resources were analyzed, taking into account the availability of Latvian language as well as the educational impact. It can be concluded that there are not many interactive materials in Latvian language, and they are rather expensive. It is possible to find and choose materials for each topic in both English and Russian languages. But not all interactive materials are educational and pedagogic. Therefore, future studies should focus

on how to create interactive tutorials and learning materials for mathematical concepts development in preschool for the children of age 5 to 6. The materials, which would be available in Latvian language and which would have not only educational, but also pedagogic functions.

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## **MEDIJU KOMPETENCES PILNVEIDE ANĢĻU VALODAS APGUVĒ VIDUSSKOLĀ**

**Atslēgas vārdi:** kompetences balstīts izglītības saturs, mediju pratība, kritiska domāšana, komunikatīvā kompetence, sociālie tīkli, angļu valoda vidusskolā.

Lai veicinātu valsts ekonomikas un sabiedrības izaugsmi, īpaši nozīmīga kļūst izglītības pārvērtēšana. 21.gadsimtā aktuāls jautājums ir izglītības satura pielāgošana mūsdienu ekonomikas un sabiedrības vajadzībām. Ņemot vērā mūsdienu situāciju visās dzīves jomās: sociālajā, ekonomiskajā un tehnoloģiskajā, Eiropas Komisijas aicinājums ir uzlabot izglītības sistēmu tā, lai Eiropas jaunieši iegūtu tādas prasmes, kuras būtu nepieciešamas starptautiski konkurētspējīgā un uz zināšanām balstītajā sabiedrībā. Eiropas izglītības sistēmā atzinību ir guvusi uz kompetencēm balstīta pieeja.

Par vienu no 21. gadsimta vērtību ir kļuvusi informācija. Informācija ietekmē cilvēka izvēli, uzskatus, rīcību. Dažādos veidos pieejamā informācija nosaka katra cilvēka brīvību un tiesības. Līdz ar tehnoloģiju attīstīšanos paplašinās arī informācijas plūsma, kura ietekmē cilvēka dzīvi. Paplašinās masu informāciju līdzekļu skaits, līdz ar tehnoloģiju attīstīšanos paplašinās arī mediju daudzveidība. Mūsdienās ir izveidojusies situācija, kad vecāko paaudžu cilvēkiem mediju un tehnoloģiju līdzekļi ir jāapgūst, taču jaunā paaudze ir piedzimis šo mediju un tehnoloģiju pasaulē un uztver to kā saprotamu, ikdienišķu lietu. Jaunatne nevar iedomāties ikdienu bez tehnoloģiju izmantošanas, lietojot tās, viņi meklē piekļūšanu informācijas apjomam un dažādībai. Tāpēc ir aktuālas izmaiņas mūsdienīgā izglītībā kā demokrātijas kultūras modelī un viena no piedāvātajām kompetencēm ir mediju zināšanas un kritiskā sapratne. Kompetence iekļauj sevī zināšanas un izpratni par masu mediju informācijas izvēli, interpretēšanu un rediģēšanu pirms tā parādās publiskajā telpā. Mediju pratība savukārt saistās ar komunikatīvo kompetenci, jo rakstu un mutvārdu komunikācija ir mediju valodas līdzeklis.

Angļu valodas attīstīšanai un prasmju iegūšanai ir daudz iespēju interneta izmantošanā. Te ir gan autentiski teksti lasīšanas prasmju attīstīšanai, blogu un komentāru veidošana rakstītprasmju attīstīšanai, lietojot autentiskus materiālus, uzlabojas arī valodas lietojuma prasmes un zināšanas. Galvenais izglītojamā valodas apgūšanas mērķis ir komunikācija ar cilvēkiem visā pasaulē, dažādu kopīgu projektu veidošana, kopīgu pētījumu veikšana vai globālo problēmsituāciju risināšana. Šo mērķu sasniegšanai ir svarīgi attīstīt komunikatīvo kompetenci, kā komunikācijas svarīgāko daļu. Domājot globāli un jaunās paaudzes izglītības prasībām atbilstoši, mediju pratība un komunikatīvās kompetences attīstība angļu valodā ir svarīgākie mūsdienu izglītības aspekti. Darba mērķis ir izpētīt izglītojamo mediju pratības un komunikatīvās kompetences attīstības iespējas svešvalodu stundās vidējā izglītības posmā. Pētījuma izmantotas metodes ir izglītojamo aptauja, angļu valodas skolotāju aptauja un intervija.

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## **MONOLOĢISKĀS RUNAS PRASMJU ATTĪSTĪBA 4-5 GADUS VECIEM BĒRNIEM PIRMSSKOLAS PEDAGOĢISKAJĀ PROCESĀ**

**Atslēgvārdi:** runas prasmju attīstība, 4-5 gadus vecu bērnu monoloģiskās runas prasmju attīstība, pedagoģiskais process Pirmsskolas vecuma bērnu runas attīstībai tiek veltīta liela nozīme un tas ir viens no skolotāja galvenajiem uzdevumiem, lai sagatavotu bērnus skolai. Pedagoģiskajā un psiholoģiskajā literatūrā tika apskatīti tādi runas veidi kā dialogiskā un monoloģiskā runa, kas veidojas un attīstās pirmsskolas pedagoģiskajā procesā. Vairāki pētnieki un pedagogi (Boša, 1999; Golubina, 2007; Kaņepēja, 2012 un citi) norāda uz to, ka monoloģiskā runa tiek akcentēta kā centrālais jautājums, sagatavojot bērnu skolai. Pedagoģijā un psiholoģijā veiktie pētījumi norāda uz to, ka bērna runas attīstību nedrīkst atstāt pašplūsmā un pirmsskolas izglītības iestādēm runas attīstīšanu ir jāizvirza kā vienu no galvenajiem uzdevumiem.

R. Kaņepēja (2012) apgalvo, ka pirmsskolas izglītības iestādē ir sastopami bērni, kuri neprot veidot monoloģisko runu. Nespēj pastāstīt par to, ko redzējis un dzirdējis, kā arī nevar paskaidrot un virzīt domu atbilstoši sarunas tematam. Pirmsskolas vecuma bērniem svarīgi ir mācīt paust savu domu, izteiksmīgi runāt, veidot stāstījumu

atbilstoši gramatiskajām normām un pastāstīt par to, ko redzējis, piedzīvojis, lasījis un klausījies. Tādējādi monoloģiskā runa ir saistīts stāstījums, kas ir saturiski, loģiski, secīgi veidota runa, kurā izpaužas bērna runas un intelektuālās attīstības kopsakarības (Golubina, 2007).

Pedagoģiskā darba saturs monoloģiskās runas attīstība 4-5 gadus veciem bērniem realizējas ikdienas rotaļnodarbībās, kā arī pastaigas laikā un brīvajos brīžos. Tādēļ, lai attīstītu monoloģiskās runas prasmes pirmsskolas pedagoģiskajā procesā, bērniem ir janodrošina attīstoša vide un jāizmanto tādi mācību līdzekļi un mācību literatūra, kas ļaus bērniem daudzveidīgi darboties.

No tā izriet, ka monoloģiskā runa ir būtisks uzdevums, ko jāveic pirmsskolas izglītības iestādē, lai bērns spētu sarunāties, veidot stāstījumu, izteiksmīgi runāt un, aizejot uz skolu, atbilstu prasībām, kas ir norādītas izglītības normatīvajos dokumentos. Tātad var atzīst, ka monoloģiskās runas prasmju attīstība ir mūsdienu izglītībā aktuāla tēma.

Raksta tēmas izvēle balstās uz pirmsskolas izglītības programmā (VISC, 2012) norādīto monoloģiskās runas nozīmīgumu un kā centrālā jautājuma izvirzīšanu bērna sagatavošanai skolas gaitām. Tādēļ, pētījuma mērķis ir izpētīt monoloģiskās runas prasmju attīstības iespējas 4-5 gadus veciem bērniem pirmsskolas pedagoģiskajā procesā, izmantojot didaktisko materiālu. Raksta autore demonstrē izstrādāto didaktisko materiālu 4-5 gadus vecu bērnu monoloģiskās runas prasmju attīstībai. Didaktiskais materiāls ietver dažāda veida rotaļvingrinājumus, uzdevumus, aktivitātes un spēles. Veikta pētījuma rezultāti atspoguļo kā piedāvātais didaktiskais materiāls veicinā monoloģiskās runas prasmju attīstību 4-5 gadus veciem bērniem pirmsskolas pedagoģiskajā procesā.

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## **READING PATTERNS OF PRIMARY SCHOOL PUPILS IN LATVIA: A QUANTITATIVE INQUIRY**

***Key words:*** *primary school pupils, reading patterns, attitude toward reading, interest in reading; a quantitative inquiry*

Reading is an essential component of the teaching process, as well as a self-development tool that facilitates lifelong learning. The guidelines on education development for the years 2014-2020 state that gaining mastery over the reading skill is conceived of as one of the major tasks for Latvian schools. Meanwhile, the data reported by Progress in International Reading Literacy Study (PIRLS) in 2015 revealed that Latvian 15-year old pupils had achieved in reading lower than average. This finding was primarily ascribed to low reading motivation as a consequence of the rapid technology development. Despite the fact that the motivation to read is largely formed during primary school age, in Latvia there has been a dearth of comparative studies on amount and reasons children of various primary school ages do reading, as well as on how the children's perceptions towards their reading change over the time. Thus, the present quantitative study seeks to address this gap by investigating (1) the reading patterns of primary school children (Grade 1-6), (2) factors affecting the formation of these patterns and (3) their dynamic changes according to the pupil's age. The data of this research were obtained from a written survey, in which 175 primary school pupils (Grade 1-6) from various rural and urban schools in Latgale region completed the survey. The quantitative data suggest that reading patterns of primary school children are significantly shaped and affected not only by the behaviours of their family members and peers, but also by their teachers' practices that can either sustain or hamper these children's development of reading competencies. The study also shows that primary school aged children have very uneven reading interests that are affected by external motivation factors. These results provide a basis for a qualitative research which can be aimed at exploring good practice examples of reading-promoting teaching environment formation for primary school pupils of older age.

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## **RECOGNITION OF PREVIOUS EDUCATION AND PROFESSIONAL EXPERIENCE RESULTS IN UNIVERSITY**

In today's persistently changing socio-economic situation when new technologies are more and more introduced, people have to renew constantly their knowledge and skills to improve their competence. Since 2012 Latvia has established a normative base, a framework for the way in which higher education institutions are organized, based on previous education and professional experience of learning outcomes achieved recognition.

Thereby, the importance of the previously gained knowledge and skills assessment has become actualized in the society, which has become a priority issue in Latvian and European educational policy context, in European Union strategic documents as well as in strategic guidelines of the EU education development.

The significance of knowledge and skills assessment gained from the previous education now is being called as one of the major educational reform strategic issues in order to make lifelong education a reality of daily life in Europe.

It means that all the achievements of knowledge and skills that are gained in the field of recognition have to be evaluated directly and transparently, regardless of their origin.

Informal and everyday education assessment and recognition has become an important aspect of lifelong learning education policy in order to convincingly prove how lifelong learning inevitably becomes a process which is run by those people, who participate in learning and self-education process.

The article analyses the theoretical and legislative context of the previous education and the study results recognition of the professional experience as well as experience which is gathered and gained in the process in order to ensure the Latvian higher education institutions, including

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## **STORIES FROM THE NOVICE TEACHERS IN LATVIA: UNDERSTANDING NOVICE TEACHERS' PERCEPTION OF THEIR FIRST YEARS OF TEACHING AND THEIR PREPAREDNESS TO TEACH**

The purpose of the study was to investigate the challenges and successes that novice teachers in Latvian schools most usually experience during their first years of teaching, as well as to examine novice teachers' perceptions of their preparedness to teach in comprehensive school classrooms after completing initial teacher education programs. The author of the research focuses particularly on the following questions:

- 1) What challenges and successes had the novice teachers faced during their first year of teaching?
- 2) To what extent did they feel prepared to teach after completing their Initial teacher preparation program?
- 3) What kind of additional on-the-job training, instruction and support and in what areas would they need to receive during their initial years of teaching?

The data for the survey was collected through face-to-face semi-structured interviews. The participants of the study include a total of 21 novice teachers (5 male, 16 female) with up to three years of teaching experience.

The finding revealed that Latvian comprehensive schools generally do not provide standard mentoring or induction programs for novice teachers. Generally the novice teachers do not receive any support, assistance, and additional training entering the profession after they complete their teacher education; some schools, however, arrange occasional meetings with mentors to support new teachers throughout their initial year of teaching.

The findings also suggest that the novice teachers have different perceptions of their initial years of teaching. According to the participants' responses, generally the novice teachers face most challenges in the following areas of teachers' practice: classroom management, selecting materials, lesson planning, addressing students' individual learning needs, dealing with "difficult" students, and coping with stress and anxiety. Moreover, some teachers noted that they often felt professionally isolated and even neglected.

Nevertheless, the finding show that most of the participants felt moderately prepared to teach in real classroom after completing their teacher preparation program. The novice teachers continue to learn from and professionally develop as they gain professional experience.

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## **STUDENTS CREATIVITY DEVELOPMENT LEVEL IN PRIMARY SCHOOL: CASE STUDY**

***Keywords:*** *creativity, primary school students, competence approach based educational content*

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In the Latvian National development plan for the period from 2014 to 2020 it is mentioned – that the development and competitiveness of the future citizen will be mostly dictated by its level of creativity, ability to think critically, ability to evaluate the risks and to find solutions for them. In its reorientation to competence approach based educational content which was started in 2016, the National Center of Education also focuses on the readiness for each individual's life activities in our contemporary environment and the development of creativity that includes competence of the cultural education and the expression of creativity, critical thinking and creativity in problem-solving, own initiative and the ability to engage and to participate (Catlaks, 2016).

Since the educational content is new, and is only planned to be introduced gradually starting from 2018, an important question is raised about the students' creativity and readiness to find effective solutions, who were studying by the old educational content. That's why a pilot study was initiated to measure student level of creativity in the primary school. The pilot study was carried out in the primary schools which ranked in the top ten list of the Latvian schools working with talented students in 2016. For the study thirty primary school students were chosen nonrandomly from three different age groups – ten from the second grade, ten from the fifth grade, ten from the eighth grade. During the study participants were asked to go through Torrance creativity test, which consisted from two parts 'Figural forms' and 'Complete figures'. The results basically showed that the students' creativity level is under average. That means the existing – traditional educational paradigm for the education and schooling doesn't prepare students for a successful life in our rapidly changing society and that the implementation of the competence approach based educational content will become a serious challenge for the Latvian teachers.

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## **SUSTAINABLE FUTURE OF ELEMENTARY TEACHERS' TEACHING (LEARNING) STRATEGIES**

**Keywords:** *practice, teacher, sustainability, teaching (learning) strategies.*

Sustainable education is unthinkable without an efficient organization of work in the learning process, the students' knowledge and skills acquisition through cooperation. Lecturers' task is to prepare teachers who carried out action research class, analyze the successes and mistakes. To improve the study process for the lecturers this is important to analyze the details of work carried out in the pedagogical practice. **The aim of the research** is to conduct a study on teachers - trainees' sustainable teaching (learning) strategies in their teaching practice. The study analyzed Daugavpils University elementary teacher program's 3rd year 2016/2017 students' (n = 15) lessons and their documentation in order to find out their strengths and weaknesses of the learning process in the organization and management. Lessons learned from the study will help to improve courses.

**Bartłomiej Skowroński**

## **THE SENSE OF QUALITY OF LIFE AND RELIGIOUS STRATEGIES OF COPING WITH STRESS FOR THE PRISON INMATES**

The aim of the presented research was to analyze differences in religious strategies of coping with stress in a group of prison inmates characterized by different levels of the sense of quality of life – general, psychophysical, psychosocial, personal, and metaphysical. The participants were 390 males, aged 19 to 68, serving sentences in prisons in Poland. The measures used were the Sense of Quality of Life Questionnaire by M. Straś-Romanowska and K. I. Pargament's RCOPE Questionnaire. As expected, individuals with a high sense of quality of life – both general and pertaining to specific dimensions – more often chose positive religious strategies, whereas participants with a low sense of quality of life more often chose negative strategies. The exception was the metaphysical aspect of the quality of life: individuals with a high intensity of this dimension more often chose some of the positive as well as negative religious strategies.

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## THE USE OF INFORMATION TECHNOLOGY BY THE 21ST CENTURY STUDENTS DURING THEIR PEDAGOGICAL FIELDWORK

**Keywords:** *21st century students, learning environment, information technology, website*

21st century student is special since he/she is able to use information technologies in a growing and developing era of visual culture. The teacher's task is to build a learning environment where appropriate and responsible use of information and communication technology is to retrieve, assess, manage and exchange information, communicate and collaborate in a virtual environment. The creation of new knowledge and solutions is particularly important. However, research shows that many teachers are not prepared to make good use of IT, and in such a way to create a learning environment that is interesting for the today's students. The study was conducted with **the aim:** to evaluate some of the Internet resources available and their application in the teaching process. The study evaluated the resources available in the Internet (n=9) and describes the use of opportunities for accumulating, analyzing and presenting information.

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## CHALLENGES AND FUTURE PERSPECTIVES OF INTEGRATION OF SUSTAINABILITY IN THE CURRICULUM OF THE VOCATIONAL SCHOOL

**Key words:** *ESD, curriculum in the professional school, ESD competencies.*

In line with the strategically important documents for Latvia such as Sustainable Development Strategy of Latvia until 2030 (Latvija 2030), Latvian National Development Plan 2014-2020, and international documents such as the European Strategy on ESD, the authors of the article define the need to redesign the curriculum of the vocational school towards the aim of the sustainable development. This also requires developments in the strategy of the vocational school designed in line with the local and global strategies by promoting ESD and competencies for ESD. The further developmental agenda of a vocational school as a center of excellency of the region should be built in line with the Sustainability strategy until 2030 of Latvia and need to focus on competency based teaching. The changes need to be implemented on a strategical level as well by introducing sustainable pedagogies and approaches. New teaching methods and approaches need to address the need for a holistic perspective in implementing sustainability in a vocational school. The strategy of a vocation school should focus on a smart development – focused on the change of thinking and behavior, which can be achieved by investments in education, development of infrastructure, development of a system thinking, creative industries, as well as by developing entrepreneurial thinking. The study focuses on the examination of a current curriculum of a professional school in terms of sustainability and ESD competencies as well as deals with exploring the best practice of integrating sustainability in to the current curriculum changes initiated by the Erasmus+ project „Methods for ESD – competencies and curricula” (MetESD), Nr.2015-1-DE-02-KA202-002346.

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## CONTEMPLATION TECHNIQUES FOR INDIVIDUAL CREATIVE VISION DEVELOPMENT

**Keywords:** *contemplation, personal development, creativity development*

The research idea directed toward phenomenon of contemplation. From this complex phenomenon, will be highlighted its ability to develop student's individuality. The study aim is determined how through contemplation, it's techniques student's individually can be developed in a way that promote development of individual's creativity.

Contemplation phenomenon for its use in education this is possible to find a range of an individual personal perception deepening techniques. In education, these techniques influence individual development, which can contribute to a development of creativity. The article offers an insight into the specific techniques of contemplation and this study a vision of contemplation techniques is formulated in general. A view is created regarding various sources of literature and study used experience.

Experience of art teaching have contributed author of the article to focus on students, artists, teachers need of self-understanding and their perceptual experience by explaining, which is important for the perception of reality. Looked for a clarification of these experiences dividing expressions of contemplation phenomena and their impact on perception deepening. Contemplation phenomena influence and its use for flourishing the perception is connected with the creativity idea and is formulated as an interdependence of both complex phenomenon and opportunities to use this relation in education of art subjects.

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## **THE OPPORTUNITIES OF EXTRACURRICULAR MUSICAL CLASSES FOR SUSTAINABLE DEVELOPMENT IN EDUCATION**

**Key words:** *Emotional intelligence, ESD, human values, youth choir, social responsibility.*

Sustainability is determined by attitude. It is based on a system of values that can be developed by improving emotional intelligence. The precondition for the development of sustainability is a change in personal, corporate and global way of thinking. Therefore, the dominant role should be given to the kind of education, where the axiological aspect together with the emotional intelligence development constitutes the basis for sustainable thinking. Sustainable Development Education as a part of developmental/global education that is meant for obtaining knowledge about the interdependence of social, economic and environmental spheres, however, it may prove to be insufficient in the absence of a corresponding human resource for the implementation of real ideas. Sustainability and social responsibility are related concepts that include responsible behavior in relation to any personal manifestation. The paper discusses the possibilities of youths' emotional intelligence and the perfection of value system in high school extracurricular musical activities, focusing on evaluating such properties and capabilities as: social responsibility, empathy, cooperation skills, self-actualization, positivism, etc. The author has carried out this research in the youth choir and presents the obtained results.

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## **MENEDŽMENTS** ≈ **MANAGEMENT**

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## **THE SERVICE QUALITY EVALUATION METHODS**

**Key words:** *service quality, customer's satisfaction, management of quality*

The introduction of the service and customer-oriented operating principles in the public administration institutions is a part of the new public management philosophy. At first the term was introduced in the UK in 90s by the scientists to describe usage of the private sector management models in public sector.

The study aims to describe the service quality evaluation methods that could be used to assess the quality of customer service in public institutions. The study used monographic method and analysis and synthesis method.

SERVQUAL (Parasuraman, Zeithaml, Berry, 1988).The questionnaire measured the difference between the customer's expectations and perceptions. The customers evaluate the apparent condition of the office and staff, staff empathy, tangibles, responsiveness, assurance, reliability.

SERVPERF (Cronin, Taylor, 1992).The questionnaire focus on customers perceptions.

ECSI- European Customer Satisfaction Index. The ECSI represents another variation on the questionnaire model. The customer expectations, perceived quality, customer satisfaction, and customer loyalty constructs are modelled the same as SERVQUAL.

Quality management system development by Latvian public administration can make a contribution to the improvement of the society 's quality of life.

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## **ASSESSING THE INTERRELATION BETWEEN ORGANIZATIONAL LEARNING CULTURE AND ORGANIZATIONAL CITIZENSHIP BEHAVIOR IN THE PUBLIC SECTOR**

**Keywords:** *organizational learning culture, organizational citizenship behavior, measurement development, multi-dimensional instrument*

Since the 80's of last century, there have been many studies that investigate one of the unique aspects of individual activity at work- "Organizational Citizenship Behavior" (OCB). OCB is defined as the employee behavior which is beyond his formal job description and contributes to the benefit of the organization without expectation for any reward. B.K. Organ (1988) emphasized that OCB is an important factor in assisting the organization with reaching its goals.

Survival of the organizations nowadays depends on their ability to learn how to properly and quickly increase their efficiency and performance and adapt to the changing environment. Creating an organizational learning culture (OLC) has achieved an increase in the survivability of organizations.

This paper examines OCB and OLC questionnaires, tests their reliability and validation and adapts them to the public sector. The purpose of this research is to analyze the interrelationship between OCB and OLC.

This study analyses 160 questionnaires filled by municipality employees of one of the northern cities in Israel.

**Research aim:** development and validation of a multi-dimensional instrument to measure the organizational learning culture (OLC) and organizational citizenship behavior (OCB) of public sector employees and the interrelation between them.

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## **DISPARITIES OF GENDER EQUALITY IN LATVIA: LEGISLATIVE BASES AND REALITY**

**Key words:** *gender, discrimination, human rights, equality.*

Gender equality is a complex phenomenon for Latvia and for other European countries.

Despite of a formal gender equality, the principle of equality is not respected in all spheres of life. Gender inequality is reflected in policies, organizational structures, processes, culture and climate.

Prejudices and organizational obstacles and segregation keeps women out of the executive positions. Traditional views of masculinity and femininity reinforces inequality among sexes. The aim of the article is to explore a current legislation about a gender equality by identifying the range of issues in the field of gender equality and disparities that exist in the legislation and practice. Reinforcing equal gender representation in managerial positions can have a positive impact on companies' innovativeness and efficiency.

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## **EMPLOYEE SELF-DEVELOPMENT MANAGEMENT IN ORGANISATION X**

**Key words:** *Motivation, Self-development, Mentoring, Careers growth, Management, Organisation*

The aim of the given study is to research employee's self-development in the organization X. The substantiation of the research is based on multiple leading employee organisations self-development researchers works, such as Rueywei Gong, Shih-Ying Chen (2014), Melanie Seemann, Thomas Seemann (2015), Aleksandar Erceg, Antea Šuljug (2016), in which the motivation of the employees, the ratings of careers development results were inquired, as well as multiple motivation theories and the meaning of mentoring a coaching in the self-development process were analysed, etc. In this research the outlook on how mentoring, which includes coaching, the educational sponsorship, personal self-development, personal skill development creates employee's careers development, which is satisfaction with work, recognition, wage, inside communication and the achievements of employees.

The base of this particular research is enterprise SIA X, its employees, overall 150, among whom there are 70 client service and sales orientated specialists, 30 of them are managers and 50 of them are office employees of enterprise SIA X. The papers' study is based on testing of professional self-development (Spulle Ārvaldis Arvīds), as well as on a survey regarding development opportunity application at the workplace, which has been created specially by the author.

In the conclusion part of the research it can be established, that the organisations employees can improve their skills through mentoring, which has been provided by enterprises. As the study shows, mentoring is very effective way to contribute employee's personality development in the organisation, as well as high work quality and positive emotional mood at the workplace which significantly increases employees sense of responsibility and fulfilment of professional duties. The balance between given tasks, skills, workload and competence – creates supreme performance.

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## KVALITĀTES IETEKME UZ UZŅĒMUMU KONKURĒTSPĒJU

*Atslēgvārdi: kvalitātes attīstība, konkurence, konkurētspēja .*

Ar kvalitāti saistīto jautājumu risināšana pēdējo gadu laikā ir diezgan mainījusies. Tam pamatā konkurences saasināšanās pasaules tirgū ,kā arī pateicoties sabiedrības informētībai par kvalitāti. Patērētājs kļuvis izvēlīgāks un prasīgāks. Kvalitātes attīstības sākumā uzsvars bija tikai uz preču raksturotāju salīdzināšanu , bet mūsdienās definīcija ietver to izpratnes dažādus elementus.

Tēma ir aktuāla ,jo kvalitāte ir būtisks faktors, kurš var piešķirt jauniem produktiem jaunas attīstības iespējas, lai iekarotu jaunus tirgus, un saglabātu esošās pozīcijas. Pērkot , konkrētas preces vai pakalpojumus-pircējiem katram ir savs priekšstats par to ,cik ilgu laiku precei ir jākalpo un kā tai ir jāizskatās..Kvalitātes jēdziena attīstības rezultātā ir izveidoti dažādi standarti, kuri nosaka preču kvalitāti. Pētījuma mērķis ,pamatojoties uz dažādu autoru sniegtajām teorētiskām atziņām ,izpētīt kvalitāti kā vienu no uzņēmuma konkurētspējas elementiem ,kura būtiski var ietekmēt veiksmīgu uzņēmuma darbības nodrošināšanu, apkopot secinājumus un sniegt priekšlikumus. Izmantotās metodes literatūras referatīvā analīze ,aprakstošā.

Mūsdienu apstākļos ir nepietiekoši analizēt tikai sasniegto kvalitātes jomā ,būtiski ir analizēt nozares konkurences situāciju, jo uzņēmumiem ,kuri orientēti uz patērētājiem, jāanalizē un jāievēro arī tirgus konkurence. Tas ir ,ka katram uzņēmumam par konkurentiem ir jāuzskata ne tikai tie uzņēmumi ,kuri noteiktajā nozarē/apakšnozarē ražo attiecīgas kategorijas produktus, bet visi uzņēmumi, kuri apmierina kādas patērētāju vajadzības.

Konkurētspējīgu priekšrocību pamatā ir uzņēmuma atšķirīgās prasmes , jo bez tās uzņēmums nav labāks par saviem konkurentiem vai potenciālajiem aizstājējpreču ražotājiem un var zaudēt konkurences cīņā un otrādi ,pateicoties savai atšķirīgai prasmei uzņēmums var izveidot konkurētspējīgu priekšrocību ,kas palīdzēs tam pārspēt savus konkurentus. Ja konkurenti spēj imitēt jeb atdarināt uzņēmuma prasmi kādā no tās funkcionālajām darbībām, tad tā kļūst vienkārši par minimālo prasību attiecīgajā nozarē.

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## PERSONAL AND ORGANIZATIONAL VALUES IN CREATING A TEAM

**Keywords:** *personal values, organizational values, value-driven organization, creation of team.*

The conclusions of various scientists on the meaning of values in a team building process, achieving objectives and the role of values in creation of value-driven organization are analyzed in this article. Value-driven organizations are able to withstand competitive pressure and to adapt to changes better. In creation of value-driven team it is important that values of team members and values of the team are harmonized. Reviewing organizational values is one of the steps to go to the full range of levels of consciousness or creation of value-driven organization.

The research of organizational values in this study is based on R. Barrett's (Barrett 2006) "Seven Levels of Consciousness" model, which gives an opportunity to use values as an assessment tool of the organization. The greater is conformity between organizational values and personal values of employees, the stronger is the organization, and the opposite - the lower is conformity of values, the weaker is the organization.

In this study there was the survey carried out in order to explore personal and organizational values of employees in public administration organizations. Within the research 427 employees of public administration organizations were surveyed.

In the result of research, the correlations, conformities and differences of personal and organizational values are analyzed, and on the basis of this analysis level of employees' support in achieving goals of organization and support to planned changes in organization was evaluated. By analyzing detected differences and inconsistencies the authors give an estimation of the necessary organizational or structural changes and other needed actions for creating a team. In this article authors give an analysis on how important are the goals of organization and achieving them to respondents, as well as provide comparison between employees' personal values and organizational values in public administration organization reflecting attitude to work and to creation of team in workplace.

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## **QUALITY AS A COMPANY'S COMPETITIVENESS AN ESSENTIAL ELEMENT**

***Keywords:*** *evolution, competition, competitiveness, quality the model of quality.*

The importance of quality the last 20-30 years is quite changed. Today it has a special place. That can be explained by incurred fierce competition in the global market, as well as through public awareness of the quality and widely available information about that. Today, the consumer has remained picky and demanding. At the beginning the focus was only on products. The quality of products meant conformity consumer requirements. Today already this definition starting to include the various elements of awareness.

The competitiveness of enterprises mainly originates from quality competitiveness. Quality is an important aspect that promotes competitiveness.

Actuality of the topic determined to the fact that quality - one of the important factors that can give capabilities of the a new product development, to conquer new markets, and saved its position as a well-recognized and trusted products and brands. Anyone purchasing a product or service has a own idea, how long it should serve and how it need to look.

Purpose of the study, based on theoretical knowledge, to explore the quality as one of the competitiveness's elements who may affect the success of the enterprise, to draw conclusions and make proposals. The used methods are analysis of literature, descriptive.

Was resolved the following tasks: 1) to analyze the quality meaning and the evolution of quality; 2) to develop the model of quality concept; 3) to identify the basic elements of the company's competitive advantage the realization in the market; 4) to give the model by companies a competitive advantage in building and implementation in the market; 5) to summarize conclusions and recommendations.

In today's it is not enough just to analyze the progress made in quality field. Very important to analyze the competitive situation in the industry. Companies, who focused to consumers need to analyze and comply competition at the market. Every company as competitors must be considered not only the companies who produces the specified products of sector / sub-sector, but all companies who satisfy any consumer's needs. Exactly the company's different skills are a competitive advantage. Without different skills the company can lose competitive advantage and the contrary due to their different skills the company can create a competitive advantage. It will help to beat its competitors.

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## **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.

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## **THE CUSTOMER LOYALTY IN THE INTERNET DIMENSION: MAIN PROBLEMS**

**Keywords:** *Customer loyalty, internet trade market, relationship marketing, loyalty problems*

Everyday we are facing technology development that makes a need to integrate and develop already known approaches. With the usage increase of the Internet in everyday life, it has become important for enterprises to adapt to that market - a virtual and interactive. One of the problems faced by many companies is a complete transfer of its activities in the Internet environment, without taking into account its characteristics and specifics. Companies now more likely are thinking about long-term relationships with their customers and trying to increase their loyalty. The author believes that the key point here is the differentiation of the concept of loyalty in the Internet and in the real world. To do this, turn your attention to the phenomenon such as the relationship marketing, which can form and influence loyalty.

The main purpose of the paper is to identify the main problems that is connected to the customer loyalty in the Internet environment.

The main objectives of the paper to identify the main differences of the concept of loyalty in the offline and online environments, to carry out a comparative analysis of them and to find out the main problems of the customer loyalty in the Internet.

As a result of this study there will be a list of the main problems of customer loyalty in the Internet, knowing that the company will be able to prevent and correct them, that can be use in their working practice. The results can be used theoretically as well as practically.

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## **THE WORLD'S MOST POWERFUL PEOPLE'S BIOGRAPHIES ANALYSIS FOR MODERN LEADERS' IDENTITY CONSTRUCTION**

**Key words:** *leaders, leaders' identity, self-perfection, self-development, self-realization, biography analysis* The modern society's development study reveals the necessity of the wider use of biography analysis methodology in anthropological and sociological researches. The method of biography analysis operates with data on a man's objective events and personal experiences. In the common world's context a man is considered as a part of his/her lifetime, and his/her life "culmination" and "finish" depend on its "start" and "distance" running quality. In the article the factors which influenced the world's most powerful people's biographies have been analyzed taking into consideration life's main features such as tendencies and risks of society's development, economy, globalization, politics, a material life model and a social and cultural environment. A man's biography reconstruction has been created in the process of anthropological research. A retrospective point of view shows that the basic platform for the leader's self-development is a desire for self-perfection, an opportunity of the choice of environment with successful people and the creation of strong contacts with them, a possibility to change his/her thinking approach and to create innovative work products on the basis of it.

Analyzing the life experience of many leaders the authors of the article have declared that, despite the leaders' individual self-development strategy, attitude, behavior and motivation specific character, it is possible to verify essential common features which make leaders special and unique. In the process of research the generalization of the world's most powerful people's life experiences is outlined as the tool of challenge for a modern leader's identity construction.

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## PSIHOLOĢIJAS AKTUĀLĀS PROBLĒMAS

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## CURRENT ISSUES OF PSYCHOLOGY

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DRAFT

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## **ALTRUISM AND EMPATHY IN PERSONS EMPLOYED IN DIFFERENT PROFESSIONAL ORIENTATION**

There can be supposed that some personal traits can make preconditions in choosing the professional orientation, so altruism and empathy expressiveness also could, despite the fact that their expressiveness can change depending from age, what also was observed in this study. The aim of the research is to study the connection between altruism and empathy expressiveness particularities in persons, who work in different professional orientation. The study selection consisted of working-age men and women (N = 50). In the study were used the following methods: The Self-Report Altruism scale, SRA (Rushton, Chrisjohn & Fekken, 1981), Balanced Emotional Empathy Scale, BEES (Mehrabian, 1997). In this first part of the research was found, that there are significant differences in altruism and empathy expressiveness depending from sex and also was found that there are significant altruism expressiveness differences depending from the profession. This study allows to draw parallels with other empathy and altruism researches, and also is observed the link between phenomena's and their relationship with the studied professional orientations.

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## **ANALYSIS OF EMPLOYEE WELL-BEING IN ORGANIZATION**

Any employee or manager is also a part of society. To maintain a healthy environment in the work place and also in free time, every individual requires psychological balance and physical stability. Scientists who focus on organizational and business psychology study in depth personal well-being of individuals in daily life and also in the work environment.

Various scientific quotes are analyzed in the given article about psychological well-being, striving for perfection, self-development which displays the realization of human potential, as well as optimism, positive attitude towards work, understanding, health maintenance, ability to build and support relationships and the ability to quickly adapt and act in a crisis. (Ryff, 1989), (Brown, 2010), (Peale, 2003), (Reņģe, 2007), (Shah, 2012), (Svence, 2009).

To find out what and which conditions create a positive response in individuals in daily life and contribute most in organizations, given study is done in several countries and private organizations. In Vidzemes region questionnaires were done on representatives from various professional backgrounds. In depth study on employee well being was evaluated based on K. Ryff well-being scale. (The Ryff Scales of Psychological Well-Being, 1989).

Key words: Employee well-being, government and private organizations, psychological well-being.

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## **CRITICAL THINKING DIMENSIONS RELATIONSHIP TO ATTITUDES – THEORETICAL ASPECTS**

Nowadays, the ongoing theme is people's ability to think critically. Research shows that the critical thinking dispositions, which include such constructs as analyticity, self-confidence, inquisitiveness, maturity, open-mindedness, systematicity, and truthseeking, are closely related to empathy, emotional intelligence, interpersonal relationships and other aspects. All these aspects are of particular importance for those professionals who work with people, for example, psychologists, police officers, social workers, etc. Therefore, in a view of the above, this theoretical overview analyzes the critical thinking disposition relationship with different attitude theories.

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## DEVELOPMENT OF ADOLESCENTS' BENEVOLENCE IN RELATION TO THEIR PROFESSIONAL ORIENTATION PROBLEM

Benevolence has always been the basis of harmonious human relations. People have always valued such humane qualities as mercy, unselfishness, the ability to sympathize and assist to another person. The development of benevolence at childhood encourages the formation and evolvement of such personal traits as gratitude, trust and respect towards people around, and a tolerant way of thinking. A lot of adolescents lack the skill of benevolence. These types of adolescents frequently choose professions connected with technology or signs. These occupations make their incompetence even worse, which could result in their social immaturity, inability to create a family or make friends. **Aims:** The study of relations between the degree of adolescents' benevolence and their professional orientation. The elaboration of the programme for the development of benevolence at adolescence

### **Summary of research:**

There has been identified the relation between professional preferences and the level of benevolence Adolescents who tend to prefer technical or sign types of occupations frequently have a low level of self-esteem After implementing the programme for the development of benevolence, a lot of teenagers increased their level of benevolence.

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## DIFFERENCE BETWEEN EPISTEMOLOGICAL ATTITUDEs IN STUDENTS FROM ERASMUS UNIVERSITY ROTTERDAM (NETHERLMDS) AND IN STUDENTS FROM DIFFERENT HIGHER EDUCATION INSTITUTIONS OF DAUGAVPILS CITY TOWARDS THE SOURCES OF KNOWLEDGE: FORMAL AND SUBSTANTIVE SIGNIFICANCE

**Key words:** *cognition, knowledge, sources of knowledge, epistemology, attitude*

Aim of the present research is to identify epistemological attitude towards sources of knowledge among students from Netherlands and to verify the hypothesis that there exist differences among epistemological attitudes in students from Latvia towards different sources of knowledge: scientific literature and articles, a lecturer in a higher education institution as a source of knowledge, popular science magazines and newspapers, popular science television, internet resources.

Epistemological attitude is a construct of a student's orientation reflecting formal and substantial evaluation of a source of knowledge. The present theoretical construct allows studying psychological and epistemological mechanisms which determine imprinting the source image as significant one.

Students from different faculties of (Netherlands) (n=100; M=21,52 years, SD=3,75 years) participated in the present study held in 2016 in addition to students from different higher education institutions of Daugavpils city (Latvia) (n=102; M=23,08 years, SD=5,87 years) who participated in the study in 2014.

A result of the present research showed that epistemological attitude towards different sources of knowledge in students from Netherlands depends on a type of a source; the dependence was identified among Latvian students. Students showed that for high cognitive value it is significant to have emotionally prognostic value for all sources of knowledge, in its turn the low prognostic meaning was reflected as separated component of significance. Dutch students highlighted a difference in formal use of the scientific literature, articles, a lecturer's knowledge and internet.

Epistemological significance of content students has been found in the scientific literature, articles and a lecture's knowledge. Erasmus students showed higher meaning of criticism as substantive quality at the same time. Television, magazines and newspapers of popular science type and internet sources do not display the image of a source as a reliable one. Erasmus students see higher prognostic potential in the knowledge of these sources but in their turn Daugavpils students - functionally academic use. The highest personal and adaptive characteristics have been found towards internet source. All sources were reflected as significant, but this significance is not equivalent in content.

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# EMOTIONAL INTELLIGENCE, SUBJECTIVE LOCUS OF CONTROL AND PSYCHOLOGICAL WELL-BEING AMONG ADOLESCENT

**Keywords:** *Emotional intelligence, subjectives locus of control, psychological well-being, adolescents.*

Adolescence is considered to be a period when the emotional difficulties and behavioral problems risk increases. Adolescent emotional and behavioral manifestations are considered to be very important future personality functioning forecasters. Emotionally intelligent children are healthier and happier, better cope with stress, they have a better performance in school and higher adaptive capacity. They can control their life and its events, clearly understand their decisions and feelings, as well as the motivation to improve their psychological well-being.

A relatively small number of researchers in their studies have tried to find a connection between emotional intelligence, locus of control and psychological well-being (P. Salovey, J. D. Mayer, D. Goleman, R. Bar-On, K. Ryff, J. Rotter, E. Hamarta, Z. Ozysil, M. Deniz, M. Lazzari, Z. Zohren, S. O. Salami etc.). There is no researches, where relationships between this variables has been studied in Latvian population. Within the framework of this research there was made and approbate special program for developing these factors for adolescents.

The aim of the research is to find out whether with special prepared developing program it is possible to enhance emotional intelligence indicators, promote subjective locus of control orientation from external to internal and promote psychological well-being indicators.

The sample of research comprised 20 participants - adolescents from X gymnasium aged 13-14 years.

Using Bar-On Emotional Quotient Inventory (EQ-i), The K. Ryff Scales of Psychological Well-Being and The Rotter's Locus of controll scale, was made a research to find out whether with special prepared developing program it is possible to promote the development of mentioned factors, worked out recommendations for adolescents, school psychologists, teachers and parents.

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## LAIMES IZJŪTAS VEICINOŠIE UN MAZINOŠIE SOCIĀLPSIHOLOĢISKIE FAKTORI

Senajos laikos cilvēki domāja un sprieda, kas dara viņu dzīvi laimīgāku un kas labāku. Laime ir bijusi par interesantu priekšmetu jau ļoti ilgu gadus, sākot no sengrieķu filosofiem un līdz pat mūsdienām. Šodien šis fenomens tiek uzskatīts par vienu no galvenajiem cilvēka emocionālajiem stāvokļiem, jo esot šajā stāvoklī var izjust gan prieku, gan patīku, ir lielāks personības augums un stimuli uz jaunām darbībām (Levcenko, 2014).

Šajā kontekstā psiholoģijā ir attīstījies jauns virziens Pozitīvā psiholoģija (Argail, 1987; Seligman, 2006; Diner, 2008; Svence, 2009 u. c.), kura pēta laimes izjūtu un labklājības ietekmi uz cilvēka dzīvi. Laime ir garīgs emocionāls stāvoklis. Laime var izpaustie no pašiem mazākajiem sīkumiem līdz pat lieliem pozitīviem pārdzīvojumiem. Kā norāda vairāki pētnieki (Diener, 2005; Qari, 2014) sociālpsiholoģiskie faktori ir sekojoši: ģimene, laulība, draudzība, ticība, veselība u. c.

Pētījuma tēmas aktualitāti pamato daudzi pētījumi, kurus veic pētnieki, lai izprastu šo fenomenu. Zinātniskie pētījumi sākā postmodernisma laikā 60-70 gados. Gandrīz pusgadsimtu laime ir pieņemts fenomens, kas subjektīvi akceptē labklājību (Popova, 2013).

Tādēļ pētījuma mērķis ir detalizētāk izpētīt Latvijas iedzīvotāju laimes izjūtas veicinošos un mazinošos sociālpsiholoģiskos faktoros.

Pētījumā pamatojoties uz izanalizēto zinātnisko literatūru, metodoloģiju, kā arī balstoties uz empīriskā pētījuma rezultātiem, tiek konstatēti un noteikti laimes izjūtas veicinošie un mazinošie sociālpsiholoģiskie faktori un laimes izjūta.

Pētījumā tika izmantota Ārgaila "Oksfordas laimes aptauja" (Oxford Happiness Questionnaire, Hill, Argyle, 2002), kura tika adaptēta Latvijā 2011. gadā (Kalvāns, 2013). kā arī tika adaptēta Stoļina, Romanovas, Butenko laulības labklājības anketa. Pētījumā piedalījās n=60 respondentu, no dažādām Latvijas pilsētām.

Pēc veiktajiem rezultātiem uz laimes izjūtu dzīvē ietekmē tikai laulības svarīgums. Atslēgvārdi: laimes izjūta, sociālpsiholoģiskie faktori.

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# LATVIJAS VĪRIEŠU UN SIEVIEŠU DZIMTES ĪPATNĪBAS PIEAUGUŠO VECUMPOSMĀ

**Atslēgvārdi:** *dzimums, identitāte, dzimte, pieaugušo vecumposms, Latvijas sieviešu un vīriešu dzimtes īpatnības*

Mūsdienu sociālā zinātne izšķir dzimuma un dzimtes jēdzienus. Tradicionāli pirmais no tiem tika lietots, lai apzīmētu cilvēku anatomiski-fizioloģiskās īpatnības, uz kuru pamata cilvēciskās būtnes tiek raksturotas kā vīrieši vai sievietes. Ar cilvēka dzimumu un tā psiholoģiskajām atšķirībām saistītie jautājumi pēdējā laikā ir kļuvuši par vienu no sabiedrībā visbiežāk diskutētajām tēmām. Pasaulē atzītā sieviešu un vīriešu sociālo īpatnību daudzveidība un cilvēku bioloģisko īpašību principiālā līdzība ļauj atzīt, ka bioloģiskais dzimums nevar būt par izskaidrojumu dažādās sabiedrībās eksistējošo vīriešu un sieviešu sociālo lomu atšķirībām. Tādā veidā, līdzās bioloģiskajām atšķirībām starp cilvēkiem eksistē arī dalījums to sociālajās lomās un darbības sfērās, atšķirības uzvedībā un emocionālajos raksturojumos (Bem, 1993; Fagan&Hebson, 2006; Batlere, 2012 un citi). Tādējādi radās dzimtes (gendera) jēdziens, kas aptver sociālo un kultūras normu kopumu, ko sabiedrība piedēvē par izpildāmu cilvēkiem atkarībā no viņu bioloģiskā dzimuma.

Dzimtes attiecību psiholoģija ir salīdzinoši jauna un maz pētīta dzimtes psiholoģijas joma. Pētījuma tēmas aktualitāti pamato tas, ka pasaulē joprojām tiek pētīta dažādās sabiedrības eksistējošā sieviešu un vīriešu sociālo lomu dažādība. Daži dzimtes atšķirību un līdzību aspekti tāpat ir tikuši pētīti arī Latvijā menedžmenta psiholoģijas, ģimenes psiholoģijas, tiesību un juridiskajā jomā. Bez tam daudzi vīriešu un sieviešu dzimtes sociālo modeļu problēmjautājumi ir aplūkoti tiesību aktos. Tomēr jāuzsver, ka līdz šim nav pietiekami pētīta dzimtes īpatnību problemātika noteiktā personības attīstības posmā, it sevišķi attiecībā uz dzimtes līdzībām un atšķirībām pieaugušo vecumposmā.

Tādēļ pētījuma mērķis ir izpētīt Latvijas vīriešu un sieviešu dzimtes īpatnības pieaugušo vecumposmā. Dotajā pētījumā konstatētas un diferencētas Latvijas sieviešu un vīriešu dzimtes īpatnības pieaugušo vecumposmā. Pētījumā adaptēta Sandras Bemmas aptauja (BSRI), kas ļauj izmērīt, kā pieaugušais sevi vērtē no dzimtes pozīcijas. Pētījumā piedalījās 130 sievietes un vīrieši (N=130) no dažādiem Latvijas reģioniem vecumā no 20 līdz 64 gadiem. Datu apstrāde notika, izmantojot SPSS datu apstrādes programmu.

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## MUTUAL RELATIONSHIP FORMATION IN A FOSTER FAMILY

Large foster families often face psychological difficulties such as the friendly relations in the family, family psychological climate improvement, children's peg formation, attention to each child individually etc. These problems provoke foster parents' burnout syndrome, adverse situations in families, as well as the child's psychological difficulties of adaptation period. For such topical issues foster parents are willing to discuss various organizations, associations and custody court sittings, in psychologist consultations.

Taking in a foster child, a variety of problems (hitherto unknown) become topical, including theft, competition, fights for parental attention, jealousy, lies, intrigue ... Family psychological atmosphere may become unfavorable, not only for children but also their parents. Then a question arises, doesn't the number of family members equate to one of the child care organizations? Is foster family status and mission losing its relevance?

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## People Social Prejudice about immigrants and refugees from different age groups.

Social prejudice in nowadays is one of the most popular research object in the Social Psychology. There are many researches, where scientists searched common things and difference in numerous vectors. The aim of this research is to study people social prejudice about immigrants and refugees from different age groups. In the study was used modified Survey for Use in Evaluating Dialogue Programs (Dr. Walter, G. Stephan, (1999)). In the research were pushed the following research questions:

What kind of Social prejudice about immigrants and refugees have people from different age groups?

Is there a difference in Social prejudice about immigrants and refugees for people from different age groups?

Are there common Social prejudice regarding immigrants and refugees for people from different age groups?

This research allows to add new things in this field of study and observed new phenomena's.

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## **REPRESENTATIONS OF LOVE AMONG MEN AND WOMEN IN THE AGE OF 20 AND 40**

Love is one of the crucial human development factors which facilitates building emotional relationships with people, so examining psychological characteristics of experiencing and perceiving love as well as the role it plays in people's life is of utmost importance in the modern society. Therefore, the present work examines the phenomenon of love and its social representation among both men and women of different age groups. More precisely, the purpose of this research was to identify the peculiarities of representations of love among men and women in the age of 20 and 40. The theoretical part of this research has reviewed and analyzed various psychological theories and definitions of love and social representations, with consideration of differences between the opposite genders and age groups. The practical part of this research was devoted to developing a questionnaire and conducting a survey, and ultimately processing the obtained results. In the process, the method of free associations, the method of semantic differential and the method of mathematical statistics were used. The research population included both men and women in the age of 20-25 and 40-45 (N=100), all residing in Daugavpils. Ultimately, this research allows us to conclude that there are indeed some differences in representations of love in the perceptions of men and women in different age groups; the analysis has revealed some statistically significant differences not only among different genders, but also among different age groups.

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## **THE DEVELOPMENT OF PUPILS' ATTENTION IN THE FIRST FORM**

The basis for this research is the development of the first form pupils' attention. The first form pupil perfectly understands technologies nowadays, they orient in the virtual world very well, but when a child is in the educational process, and then he faces different challenges. It is possible that pupils have difficulties in the cognitive sphere, problems with the concentration of attention, with switching of attention, with the quality of attention.

The theme "Development of pupils' attention in the first form" is an actual issue in modern society. The theme has become currently important when parents started to worry about the problems their children face, beginning the educational process. When children start attending preparatory classes, the difficulties are not so noticeable, yet, and the view on pupils' abilities is different. Parents and teachers believe that, after have been adapted to the educational process, the pupils will get used to the diversity of information and will be flexible in adjusting to the quantity of knowledge, they will get. However, the situations can be different. In the beginning of the school year the first form pupils are usually energetic and motivated.

Unfortunately, the problem with the concentration of attention is sharpening and is becoming more and more important. In this research the author would like to share both theoretical material, based on the scientific theories, and practical materials, too. The author has prepared the program of development, which could be used in order to upgrade the concentration of attention that further could help pupils to improve their attention.

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## **THE IMPACT OF INDIVIDUAL FEATURES OF HIGH SCHOOL STUDENTS ON THE LEVEL OF SELF-REGULATION**

One of the most perspective directions to investigate in psychology is research on self-regulation, because psychology of self-regulation develops scientific basis for applied psychology. The question of self-regulation is undoubtedly fundamental for analyzing achievements, social adaptation and professional activity of person. Self-regulation is understood as a systemic process of conscious voluntary activity that assures goal setting and these

goals

achievement.

There were 98 participants (42 men and 56 women), ranging in age from 16 to 19 years in the research. All were students of Daugavpils Russian Secondary School – Lyceum (Daugavpils Krievu vidusskola-licejs); forms 10, 11, 12. To measure student's self-regulation, the Morosanova's questionnaire was used. It contains 46 statements and works as unified scale "Common level of self-regulation", which characterizes maturity of human's individual system of voluntary activity self-regulation. Also an experimental questionnaire was used to study high school students' personal values, attitude towards success, social adaptation, relationships and how these factors cooperate with students' self-regulation style. It contains 32 questions and statements.

After analyzing Morosanova's questionnaire we have discovered that almost all students have similar level of self-regulation, by using the factor and cluster methods of analysis we have distinguished three differentiating models of the self-regulation style. Therefore a subsequent analysis was conducted in terms of the chosen three models to study peculiarities of relation between the self-regulation style and personal characteristics.

The results of self-regulation study were practically applied to increase the effectiveness of professional and learning activity of high school students. This research shows how the level of self-regulation depends on individuality of high school students, actualizing specific peculiarities of relation between both questionnaires.

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## **THE ROLE OF PSYCHOTHERAPY POSSIBILITIES IN BEHAVIORAL DISORDERS**

Psychotherapy of possibilities is derived from the scientific and research as well as practical analysis of various psychotherapeutical trends e.g. analytical, cognitive, cognitive-behavioral or transactional analysis (Bartoszewski, 2012, 2015, 2016). The model of psychotherapy of possibilities is located in the eclectic trend as it derives from various schools and their theoretical and practical achievements. Its basic assumption is claiming that personality disorders and behaviour disorders come from the tension between unsatisfied needs (Lery, 1940, Fromm-Rihman, 1949, Berne 1960, Harris, 1979, Radochoński, Sokoluk, 1982, Satir, 1985, Sęk, 1991) in the period of initial socialisation and so called negative parental attitudes i.e. avoidance, rejection, excessive requirements, excessive protectiveness (Minuchin, 1985). It leads to the desintegration of personality called *perturbatio personalitatis*, which is manifested by lack of coherent relations at the level of:

- a. consciousness,
- b. emotional intelligence,
- c. som.

Hese elements are significant in the behavior of children and adolescents. psychotherapy possibility of building a coherence to the above-mentioned levels. This results in a change in behavior of children and adolescents.

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## **CONSTRUCTING IDENTITY: LINKING AND DIFFERENTIATION**

Identity is multi-dimensional; it is a state, that cannot be reduced to a one particular point of beginning, but you can "catch" the beginnings and elements of it, although they cannot be reduced to a single source. The construction of identity can take place on two levels – differentiating or linking certain ideas.

No body can exist without an identity. In cases where the community itself is not fully aware of its own characteristics, the anxiety of all the unknown gets more hyphenated. Therefore, in these instances identity can only be constructed by means of identifying all that is not cohesive with the ideals that are ascribed to the particular community.

When opposing ideas are being constructed simultaneously the image of the Other is being made and the threat that it represents to an identity determined. Although the relationship between the Self and the Other doesn't have to be violently expressed, however the logics of identity demand differentiation between the two, therefore the differences between both objects become a form of Otherness which means that in the process of constructing an identity other different forms of Otherness are being constructed (not just the national Self and the radical and threatening Other).

However, the process of constructing and differentiating identity is not that “black and white” as it might seem at first glance. The qualities that are being ascribed to the Other are actually the same that the Self possesses, and are being manifested in the discursive economy of identity and differentiation of the Other. The biggest dilemma arises when the borders between the inside and the outside merge – what has been deemed the Other, suddenly becomes a part of the inside, simultaneously remaining separate, even physically, and in discourse, and identifying the threat of the outside Other as a part of the inner Self. In this way, the discourse of danger is being created as to how the identity of the Other is a threat to the identity of the Self, consuming it from inside of the discourse.

However not always identities are being constructed in opposition against a radical or threatening Other. The stages of Otherness that can be ascribed to the process of identity construction vary from complete differentiation between the Self and the Other to a construction where the differences are not as radical and the Other is being seen through a lens of opposition based on geography or politics.

The purpose of this paper is to give a comprehensive outlook on the process of identity construction in a country, and the different ways in which certain ideas can be expressed, merged and differentiated in the states discourse of identity.

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## **ORGANIZATION OF INTERVENTION FOR DEVELOPING THE PECULIARITIES OF ADOLESCENTS’ SELF-IMAGE**

Self-image comprises the view of oneself and the comparison of oneself to other people: ability to live successfully, control oneself, believe in yourself, understand and accept other people, to successfully and sensibly overcome life difficulties. The age of the adolescent is especially important here because it is the time for formation of new personal qualities related to the stabilization of positive structures of self-image.

Therefore we need to study the peculiarities of the manifestation of self-image at the age of adolescence and design an intervention programme for formation of a positive self-image. During the experiment, the Twenty Statements Test (TST; Kuhn & McPartland) was used to determine the peculiarities of the self-image of the adolescents. Based on the results obtained, the intervention programme “Positive Self-image” was designed for the improvement of adolescents’ self-image.

Working with the intervention programme, we found a rise in self-esteem, an improvement of communication skills and a decrease in anxiety, and a development of the ability to adequately evaluate oneself and others.

The peculiarities of the adolescent’s self-image are reflected in the parameter of the Reflexive self, which testifies to the stabilization of the individual behaviour style and emotional attitude to oneself. After the intervention programme, negative attitudes to oneself and other people have decreased. We can conclude that the peculiarities of the adolescent’s self-image have improved positively.

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## **SOCIETAL VIEWS ON THE WORK OF EDUCATIONAL PSYCHOLOGISTS**

The effectiveness of the work of an educational psychologist largely depends on the understanding of the profession. The profession of an educational psychologist is directed at helping other people understand themselves, solve communication difficulties, and eliminate behavioural problems. An educational psychologist needs to cooperate not only with pupils but also with parents, teachers and school administration.

Therefore we need to study the differences in the views of pupils, parents, teachers and school administration on the professional role of a psychologist, reveal positive and negative views on the profession of a psychologist

and design measures for improvement of the professional image of a psychologist. Data was collected using content analysis.

All respondents believe that an educational psychologist is necessary at an educational institution. It was found that the views on the professional work of a psychologist differ depending on social experience of the respondents. Children and parents perceive the profession of an educational psychologist more from the emotional sensory position. School administration evaluates the professionalism of an educational psychologist on the basis of results achieved; whereas teachers base their evaluation on the ability to communicate and solve conflicts in the system of relationships “Teacher – Pupil – Parents”. Based on the results of the empirical study, the programme “Practical Model of Communication” was designed for improving the professional image of an educational psychologist.

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## **ЭТНОСЫ ЦЕНТРАЛЬНОЙ И ВОСТОЧНОЙ ЕВРОПЫ С ТОЧКИ ЗРЕНИЯ ГЕНОГЕОГРАФИИ**

Практически любой этнос можно представить, как исторически сложившуюся, стабильную и относительно обособленную совокупность людей, которая существует в рамках конкретного исторического времени и, как правило, в рамках определенного территориального пространства. В результате этого складывается генофонд этноса. Как показывают многочисленные исследования, такой генофонд является относительно стабильным, несмотря на все миграционные процессы. Конечно, границы этноса не являются чем-то абсолютно непроходимым, однако движение генных потоков сквозь эти границы будет намного менее интенсивно, чем движение внутри этноса. Так, например, около 40% латышей и литовцев являются прямыми потомками одного мужчины, жившего примерно 5500 лет назад. Среди соседних народов (русские, белорусы, поляки) доля таких людей будет еще выше (47- 55%). Можно сказать, что большинство этносов Центральной и Восточной Европы происходит всего от 3-4 таких «отцов – прародителей», живших (по историческим меркам) относительно недавно, причем часто такой «прародитель» может быть общим у нескольких соседних этносов.

На основе изучения так называемых «генетических маркеров (то есть генов, которые, с незначительными мутациями, передаются из поколения в поколение) можно достаточно точно отследить как происхождение того или иного этноса, так и миграционные потоки. Безусловно, такие исследования будут иметь смысл, если данные геногеографических исследований будут дополняться и подтверждаться данными других наук, в первую очередь археологией и лингвистикой. Серьезные исследования такого рода начались относительно недавно, но уже доказали свою эффективность.

К сожалению, бурное развитие геногеографии сопровождается достаточно большим количеством спекуляций в средствах массовой информации и широко используется как нечистоплотными (или просто малограмотными) журналистами, так и некоторыми политиками. В результате данные серьезных научных исследований полностью извращаются. В лучшем случае цель таких манипуляций – погоня за дешевой сенсацией, в худшем – попытка части политиков посеять вражду, принизить соседние этносы и возвысить «себя любимого».

## **Layout of Manuscripts for the collection “Proceedings of the 59<sup>th</sup> international scientific conference of Daugavpils University”**

“Proceedings of the 59<sup>th</sup> international scientific conference of Daugavpils University” publishes original papers, based on the presentations at the international conference, held in Daugavpils, 6–7 April, 2017. 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 **April 30, 2017**.

**!** 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.

DRAFT

*Sample*

## IMPROVEMENT OF QUALITATIVE RURAL LIVING ENVIRONMENT IN LATVIA IN LEADER PROGRAM FRAMES

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**Abstract**

**Improvement of qualitative rural living environment in Latvia in LEADER program frames**

**Key Words:**

Abstract text.....

**Kopsavilkums**

**Kvalitatīvas lauku dzīves vides uzlabošana Latvijā LEADER programmas ietvaros**

**Atslēgvārdi:**

Kopsavilkuma teksts .....

**Body**

**text.....**

**References**

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# SATURS / CONTENTS

<b>DARBA GRUPA / WORKGROUP</b>	<b>Lpp. / Pp.</b>
VĒSTURE UN KULTŪRAS VĒSTURE / HISTORY AND HISTORY OF CULTURE .....	5
FILOLOĢIJA: PĒTĪJUMI, AKTUALITĀTES UN DISKURSS / PHILOLOGY: RESEARCHES, TOPICALITIES AND DISCOURSE .....	8
LITERATŪRZINĀTNE / LITERARY STUDIES .....	11
MĀKSLA LATVIJĀ: TRADICIONĀLAIS UN LAIKMETĪGAIS / ART IN LATVIA: TRADITIONAL AND MODERN .....	14
MŪZIKAS ZINĀTNE: PĒTĪJUMI UN PIEREDZE / SCIENCE OF MUSIC: RESEARCHES AND EXPERIENCE.....	19
MATEMĀTIKA / MATHEMATICS .....	20
ĶĪMIJA UN BIOANALĪTIKA / CHEMISTRY AND BIOANALYTICS .....	21
FIZIKA / PHYSICS.....	23
VESELĪBAS ZINĀTNES / HEALTH SCIENCES .....	26
KVARTĀRVIDES PĒTĪJUMI / RESEARCHES OF QUATERNARY ENVIRONMENT .....	96
DABAS AIZSARDZĪBA UN VIDES PĀRVALDĪBA / NATURE PROTECTION AND ENVIRONMENTAL MANAGEMENT.....	100
IEKŠĒJIE ŪDEŅI, TO RESURSI UN VIDES KVALITĀTE / RESOURCES AND QUALITY OF INLAND WATER OBJECTS.....	105
BIOLOĢIJA / BIOLOGY .....	110
FINANŠU UN SAIMNIECISKĀS DARBĪBAS ANALĪZES JAUTĀJUMI / ISSUES OF FINANCES AND COMMERCIAL ACTIVITY.....	120
CIVILTIESĪBAS / CIVIL LAW .....	124
KRIMINĀLTIESĪBAS UN POLICIJAS TIESĪBAS / CRIMINAL LAW AND POLICE LAW.....	130
PEDAGOĢIJA / PEDAGOGY .....	135
IZGLĪTĪBA ILGTSPĒJĪGAI ATTĪSTĪBAI / EDUCATION FOR SUSTAINABLE DEVELOPMENT .....	138
MENEDŽMENTS / MANAGEMENT .....	144
AKTUĀLAS PSIHOLOĢIJAS PROBLĒMAS / CURRENT ISSUES OF PSYCHOLOGY .....	149
Layout of Manuscripts for the collection "Proceedings of the 58 <sup>th</sup> international scientific conference of Daugavpils University" .....	158

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