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## Students Self-Assessment for Learning in Practice - Ethics and Professional Attitudes

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### Abstract

**Background.** Studying outside the academic environment, in the work environment, is an essential part of the teaching-learning process in undergraduate curricula of health care professionals. The supervising process during the practical training, its efficiency and quality, also the learning environment have been the focus of researchers for years. However, according to today's socio-constructivist learning philosophy, we should be more interested in how learners themselves perceive and assess their own learning during practical training, not just how they are taught and supervised.

**Aim.** The aim of the study was to explore health care students' learning during their practical training in the work environment from the student perspective.

**Methods.** Quantitative data were collected using a questionnaire developed by the research group on the basis of the questionnaire compiled by Saarikoski et al (2005, 2008) and Mikkonen et al (2017) aimed to evaluate the clinical practical training environment. Characteristics of learning were formulated as statements to be self-evaluated by students using a 4-point Likert scale. The sample was formed from the students of the midwifery, nursing, radiography and physiotherapy curricula (N=343). Data were collected from June 2018 to February 2019.

**Results.** Data obtained from 124 students who responded to the questionnaire let us assume that students evaluate their self-directed learning quite high. To some extent, lower points were given to learning ethics and professional attitudes. At the same time, students followed the rules and organizational behavior of the work environment, even if it was different from the knowledge and understanding students had learned in theory. The supervisor role model, personal characteristics, behavior, and attitudes were important aspects that students followed in practice.

**Conclusions.** The principles of professional ethics and attitudes seem to be self-evident to students and so need not be specifically learned and developed. This is an important signal for supervisors to pay special attention to shaping ethics and professional attitudes.

**Keywords:** practical training, learning, work environment, health care student



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## Stress among Nurses Working in Different Health Care Settings in Lithuania

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### Abstract

**Background.** In recent decades we have experienced challenging situations such as aging populations, the rapid evolution of new technologies, and higher degrees of higher patient expectation. Those changes and increased demands in health care may result highly stressed work environment and increased nursing job demands. Nursing is considered as one of the most stressful and demanding professions. Occupational stress in nursing is of global concern and nursing researchers have investigated occupational stressors in various nursing specialty areas.

**Aim** of this study is to describe experienced stress among nurses working in different health care settings in Lithuania.

**Methods.** A descriptive cross-sectional study using an Expanded Nursing Stress Scale (ENSS) for data collection was undertaken. 187 nurses from 18 public primary health care centers, 94 nurses from two hospitals working in surgery wards and 69 nurses from children hospital of one Lithuanian county participated. A total of 325 nurses completed the questionnaire.

**Results.** The most frequently reported stressful situations of primary health care nurses were those related to death and dying (mean 2.32), conflicts with physicians (mean 2.12) and patients and their families' demands (mean 2.08). Among nurses working in surgery wards the most stressful situations were dealing with death and dying (mean 2.22), workload (mean 2.21), and problems with supervisors (mean 2.18). Nurses from children hospital most frequently reported stressors were those related to death and dying (mean 2.21), workload (mean 2.14), patients and their families demands (mean 2.12).

**Conclusions.** To reduce stress among nurses we need to increased knowledge of stress, stress management and control. Recognizing and understanding the job-related stressors of nursing may help nurse managers to implement strategies to reduce nurse's stress and at the same time to improve patients' outcomes.

**Keywords:** Lithuania, primary health care, surgery wards, children hospital, nurses, stress



**Prof. Johanna Possinger**, is a professor for gender studies at the Protestant University of Applied Sciences in Ludwigsburg since 2016. After her Master's thesis in International Business and Sociological Studies at the University of Passau in 2005, she wrote her doctoral thesis about involved fatherhood at the Humboldt University in Berlin. From 2012 until 2016 she was head of the research group "family policy" at the German Youth Institute in Munich. In her research, she focuses on questions of gender inequality, work-family-conflicts and family policies.

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## Fathers Between Breadwinning and Childcare in Germany

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### Abstract

**Background.** In Germany, more and more fathers want to extend their traditional role as breadwinner and become actively involved in the care of their children. This change is reflected in the increasing number of fathers who take parental leave (38 %). Nevertheless, the division of paid labour and unpaid care work remains traditional, since most mothers only work part-time.

**Aim.** The gap between the engaged ideal of fatherhood on one hand and the traditional practice on the other raises several questions: Why do men take paternal leave? How engaged are fathers during the leave? What are the main obstacles to engaged fatherhood?

**Methods.** The presented results derive from two different qualitative studies that were conducted with fathers in Berlin and Bavaria. In Bavaria, fathers of different backgrounds were interviewed. In Berlin, all interviewees worked at the same company: the presumably family-friendly *Hetektro* energy enterprise.

**Results.** Fathers in Germany oscillate between modern attitudes towards engaged fatherhood and traditional gender practices. The parental leave is very popular among German fathers, but most of them do not equally share the care and domestic work with the mothers during that time. This is especially the case, when the mother is still co-present during the father's parental leave. Also, the presumably family-friendly company "Hetektro" plays a crucial role in keeping fathers from spending time with their families.

**Conclusions.** A culture of "face-time" and "total availability" at the workplace is one of the major obstacles to engaged fatherhood in Germany. Even though companies like *Hetektro* offer a range of family-friendly instruments, most fathers do not make use of them fearing to jeopardize their career prospects. Despite the "daddy months", male employees are still expected to focus on paid work rather than childcare.

**Keywords:** fathers, Germany, care work, work-family-conflict



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## Design and Experimental Applications Biomedical-Mechatronic Hand for Disable People

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### Abstract

**Background.** The use of robotic hands and manipulators in healthcare represents an exciting opportunity to help a large number of people. Robots can be used to enable people with cognitive, sensory, and motor impairments, help people who are ill or injured, support caregivers, and aid the clinical workforce. It also outlines several key technological, logistical, and design challenges faced in healthcare robot adoption, and suggests possible avenues for overcoming them.

**Aim.** There have been many recent exciting examples of robotics technology, such as autonomous vehicles, package delivery drones, and robots that work side-by-side with skilled human workers in factories. One of the most exciting areas where robotics has a tremendous potential to make an impact in our daily lives is in healthcare.

**Methods.** Robot is a machine that collects the information about the environment using some sensors and makes a decision automatically. People prefer it to use in different field, such as industry, some dangerous jobs including radioactive effects. In this point, robots are considered as a server. Although this can improve the possibilities of manipulation, it has its drawbacks. Both re- grasping and gaiting consume extra time. For re-grasping it is needed that the object can rest in a stable way on some supporting plate. For many objects (e.g. spherical objects) there is no stable configuration.

**Conclusion.** The robotic hand has good advantages for disable people who has without real hand. The system has superior performance with mechatronic system components such as force sensors, servo motors, controller and 3D printing hand materials. A basic platform for the coming generation of more aiding devices should help the visually impaired to be safer. It is effective and afford. It leads to good results in holding an object with necessary forces supplied by motors.

**Keywords:** Biomedical-Mechatronic Hand, Disable People, healthcare





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## Nursing Student's Perceptions of their Supervision During Clinical Internship in Hospital Settings

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### Abstract

**Background.** Practical training takes half of the study time in nursing. Clinical internship experiences may influence positively on nursing students attitudes towards the clinical setting.

**Aim.** To explore students' opinions of the learning environment during clinical internship in hospital settings.

**Methods.** The research was conducted from May to June 2018. Sampling was taken by 283 students. The students have recently completed their internship at Northwest regional hospitals. A quantitative descriptive correlational design was used. The statements were offered on a 5-step Likert scale. Data analysis was carried out using SPSS -25. Non-parametric K independent sample (Kruskal – Wallis) was used to analyze.  $\chi^2$  criterion was applied. The Spearman correlation analysis was used to test the interrelationship between interval measures  $p < 0,05$  was considered as significant.

**Results.** The majority (69,3 %) of the surveyed students stated that it was very important for them that their supervisor would be a nurse. The supervisor – mentor is the one, who supervises, supports, and assesses a student nurse during clinical training. The results of this research revealed that almost half (N=133, 47,0 %) of those surveyed were supervised and assessed by supervisor – registered nurse. Similar number (N=135, 47,7 %) of students specified that their internship placement was supervised

by ward manager. Statistically significant difference between the attitude of the students, supervised by ward manager, and of the students, supervised by registered nurse, was found ( $p < 0,05$ ).

Students, who were subject to *individual supervision model*, where the supervisor – registered nurse was taking care of each student individually, were more positive in assessing the learning environment in the unit than the students, who were subject to *group supervision* or other model during their clinical placement. All statements, describing learning environment in the unit, were more positively assessed by the students, who were subject to *individual supervision model*, where the supervisor took care of each student individually. These students felt positive atmosphere in the unit, felt comfortable before their shift in the unit.

**Conclusions.** Those students, who were supervised by nurse mentor, were more satisfied than those, who were supervised by nurse administrator.

The most satisfied students were subject to individual supervision model during their clinical practise.

**Keywords:** clinical internship, clinical learning environment, student nurse, CLES.



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## Challenges in Education of Dental Hygienists and Dental Assistants: Results of Round Table Discussion with Employers

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### Abstract

**Background.** Graduates of dental hygiene and dental assisting study programmes should meet the dynamically changing requirements of the employers.

**Aim** – to analyse the attitude of employers towards the compliance of the competences of graduates of Dental assisting and Dental hygiene study programs to the needs with a labour market needs.

**Methods.** Empirical data were collected during the round table discussion with employers. The study included 11 experts in the field of dentistry. Qualitative (content) analysis of empirical data was performed.

**Results.** After analysing the data of qualitative research, the following categories have been distinguished: The basics of professional competence acquired at a higher education institution are developed and improved by working (19 statements); Social competence is concentrated in the segment of professional communication with clients and colleagues (19 statements); Prospects for

improving general competences (6 statements); The importance of graduates' motivation for the development of their competences - priority value (6 statements); The competence of emotional intelligence is focused on flexibility and adaptation to the doctor (6 statements); Communication and other competences are attributed to continuing competence in life and work without focusing on a specific educational institution (5 statements); Polarity of dental hygiene and dental assisting professions and perspectives for balancing competences (5 statements); Development of new, progressive educational areas and strengthening of relevant competences (4 statements); Need of a discussion of the compliance of graduates' competences with a labour market (7 statements).

**Conclusions.** The discussion of the participants of the study focuses on the following main subcategories: “Priority for Professional Communication Competence” (9 statements), “Need for Practical Skills and Practice Opportunities” (6 statements), “The Purpose of Improvement Motivation - the Need for a Permanent Learning Society” (4 statements), “Work importance and development of excellence in the team” (4 statements).

The formation of all other subcategories was determined by lower concentration of respondents' claims (2–3 statements).

**Keywords:** competences of graduates, Dental assisting study programme, Dental hygiene study programme, labour market needs, focus group study, content analysis, qualitative research.



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# Benefits of International Collaboration in Healthy Nutrition Habits Development Among Young People in Europe

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## Abstract

**Background.** Nutritional habits of adolescents and students are becoming very similar across Europe, during the last decades. Fast food, such as sweetened carbonated drinks, energy drinks and sweets, is replacing traditional cuisine; however, it leads to rapid development of chronic non-communicable diseases.

**Aim.** To analyse the benefits of international collaboration in healthy nutrition habits development among adolescents in Lithuania

**Methods.** Scientific literature analysis.

**Results.** Regular consumption of vegetables and fruits was increasing slightly during the period from 2002 to 2014 in European countries, but still it's not sufficient. Soft drinks and sugary products become more and more popular among adolescents. One of five adolescents use soft drinks on the daily basis, as well as various sweets (HBSC, 2014). Adolescents no longer appreciate food as a very important part of nation's culture, they keep forgetting their ancestors' nutrition traditions and customs. Lesser part of adolescents is participating in family dinners daily (63% of 11-year-old, 56% 13-year-old and 45% of 15-year-old adolescents). It leads to earlier onset of chronic non-communicable diseases (Martin et al., 2015; Sena et al., 2017; GBD 2015 Eastern Mediterranean Region Adolescent Health Collaborators, 2015), worsened quality of life and the development of additional diseases and statuses (overweight, obesity, metabolic syndrome, diabetes, etc.). The most importantly, consequences of inappropriate nutrition can be felt in a very young age. Decreasing physical activity leads to overweight and obesity, decreased self-esteem and reason deep psychological problems (McMahon et al., 2017; McLaughlin et al., 2015). There are scientific evidence showing family's influence on young person's health behaviour. If the family members prefer active way of living, daily physical activities, fresh home-made food, young people will easily undertake the same health behaviour model (Elfhag et al., 2010; Lederer et al., 2015). On the opposite case, if family's values are not health-oriented, adolescents are challenged to stay healthy physically and psychologically. The proportion of adolescents not satisfied with their body image, is increasing along with increasing body mass (the same tendency for boys and girls) (Bagdonas & Padarauskaitė, 2012). HBSC study performed in 2013 and 2014, showed that only 8% of 15 year-old girls are overweight or obese (17 % of peer boys), but at the same time even 45% of them think they are too fat (16% of peer boys). 11 years is the age children in Lithuania engage in weight loss behaviour (16% of girls and boys). Inadequate perception of a body image is a major risk factor for eating disorders (bulimia and anorexia) (Castellini et al., 2013; Esposito et al., 2018) and for depression or anxiety (Eunsoo et al., 2016; Lancu et al., 2015). Returning to the origins of the problem, the key factor is the poor food literacy of teenagers and young persons (Vaitkevičiūtė et al., 2015). After analyzing the situation, we can observe that various educational programs with various approaches (different content, using traditional teaching methods or mobile applications) are implemented in various European countries to improve young people literacy in the field of nutrition (Minosii et al., 2015; Benitez-Guijarro et al., 2018; Roura et al., 2016; Franco et al., 2016; Hebden et al., 2013). In a neighboring country (Poland), extensive educational intervention was implemented and effectiveness of this intervention was



scientifically proven (Hamulka et al., 2018). It has been found that the behavior of teenagers related to nutrition was changing as a result of this program (Wadolowska et al., 2019). There is a lack of a similar initiatives (including the testing of intervention efficiency) in Lithuania that would be implemented throughout the country. The project idea, developed by several partners, focuses on the development and enhancement of healthy eating habits among adolescents, it will include all key target groups that are directly responsible for adolescent nutrition. During the implementation of the project, it is planned to prepare a set of tasks (for food and health topics' integration in a basic school subjects: mathematics, biology, geography, physical education etc.) based on the findings of scientific research, national (non-governmental organization) and foreign experts (foreign partner universities), which have successfully implemented similar projects in other countries. It is also planned to present the prepared set of tasks and to train selected teachers (from selected schools in all Lithuania) in a seminar. Evaluation of the effectiveness of the project results is a necessary and essential part of the project, which provides preconditions for the continuity of the project. Teachers' literacy in the field of food and nutrition will be evaluated before and after the training (seminar). The pupils' sample literacy in the food and nutrition field will be evaluated before the products are created and one month after the start of the project. It is expected that the food and nutrition literacy of teachers and pupils will significantly increase after implementation of the products created during the project. Project activities will be published at all conferences and professional days celebrations at the Faculty of Health Sciences at Klaipeda State University of Applied Sciences (Annual International Conference, World Food Day Commemoration, World Oral Health Day Commemoration, World Health Day, Annual National Student Conference, etc.). The products created during the project will have a lasting value and can be used in the daily educational process in all Lithuanian schools. In collaboration with partners at Instituto Politecnico de Coimbra, the additional study is being performed, aiming to evaluate food knowledge of the students in Lithuania and Portugal. It will help to find the areas in which food and nutrition literacy is insufficient. The workshops and seminars will be organized, covering the topics in which food and nutrition knowledge is insufficient.

**Conclusion.** Targeted international cooperation, continuous exchange of best practices will help to overcome the challenges of healthy eating for young people.

**Keywords:** adolescence, nutrition, programme planning, international collaboration, project effectiveness.

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## Development of Social Skills and Life Skills' to Leavers of Residential Care in Latvia

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### Abstract

**Background.** The paper is aimed to discuss problems related to the development of social and practical life skills to social orphans - adolescents who live outside biological family (in residential settings or in foster care) although they have alive biological parents. Adolescents miss family socialization experience. They need training on social and practical life skills before leaving the institutional care system.

**Aim** was to research the need for training on practical life skills to adolescents before leaving foster care or children's home. The problem lays at the intersection of the fields of sociology, social psychology and pedagogy, child protection and social policy, justice and welfare policy on social orphans in children's homes, custody and foster care, the inclusion and integration policy after reaching of age.

**Methods.** interviews with social workers, assessment of training programs.

**Results:** Interview analyses prove that many care leavers are characterized as self-sustained, ignorant and lacking social and practical life skills. Therefore there is a high need of effective training programs to train practical life skills to adolescents who live outside biological families. Care leavers who have lived in traditional residential settings have poorer skills than those care leavers who had lived in "youth centers", where youth have practical experience of using practical life skills in everyday life. Training programs in "traditional residential settings" are less effective.

**Conclusions.** Integrated approach is needed to develop conditions for full physical, intellectual, spiritual, moral and social development of children in children homes, including programs to develop practical life skills and social skills to care leavers. Training programs for adolescents residing in traditional residential care settings need to be improved.

**Keywords:** social orphan, care leaver, training program, social skills, practical skills.



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## Design and Control of Walking Stick for Blind People

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### Abstract

**Background.** Nowadays, due to increasing of car population, traffic jams and accidents are going to increase year by year. There are many people losing their eyes because of these accidents. On the other hand, it is necessary to overcome their problems during walking and passing pedestrian cross on streets and car ways.

**Aim.** However, there are many obstacles and problems such as bar of traffic lights, pedestrian paving stones for blind people. For these reason, it is very important to design and control intelligent walking sticks for blind people.

**Methods.** The study hypothesizes a smart walking stick that alerts visually-impaired people over obstacles, and fire, water in front could help them in walking with less accident. It outlines a better navigational tool for the visually impaired. It consists of a simple walking stick equipped with sensors to give information about the environment. The user can choose the location from the set of destinations stored in the memory and will lead in the correct direction of the stick. In this system, ultrasonic sensor, humidity sensor, GPS receiver, vibrator, PIC controller and battery are used. The overall aim of the device is to provide a convenient and safe method for the blind to overcome their difficulties in daily life.

**Results.** The hardware capabilities of PIC devices range from 8-pin DIP chips up to 100-pin SMD chips, with discrete I/O pins, ADC and DAC modules, and communications ports such as UART, I2C, CAN, and even USB. Low-power and high-speed variations exist for many types.

**Conclusion.** The Smart Stick acts as a basic platform for the coming generation of more aiding devices to help the visually impaired to be safer. It is effective and afford. It leads to good results in detecting the obstacles lying ahead.

**Keywords:** smart stick, blind people, design and control



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## **Genogram as social work method: identifying traumatized childhood experiences of families with complex needs**

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### **Abstract**

**Background.** The issue of families with complex needs in Lithuania occupies a very important place. These families suffer from long-term issues that have been manifested themselves throughout entire family history. In Lithuania social work with families with complex needs is developing. In order to ensure quality and efficient social services for families, the system of child protection orders and procedures are improved, non-governmental organizations, additional positions of social workers are established.

**Aim** of the presentation is to disclose the possibilities to implement genogram for family social work in order to disclose the complex experience of families with complex needs. The main question of the research: what kind of childhood experience determines becoming a family of complex needs and how those families reconstruct their life experiences?

**Methods** in order to reveal life experiences reflected by families with complex needs qualitative research method was implemented. Semi-structured interview with 5 families identified by child protection system as raising children 4-6 children and receiving services of social work. Collected data was analyzed implementing was analyzed through the method of narrative analysis, forming conceptual categories. Qualitative research was carried out using genogram method, which allowed to understand the family system, event chronology, strengths and weaknesses of a family and behavioral patterns passed from generation to another.

**Results.** The data obtained during the study revealed, that although the home should be the safest place for children, however, the study participants had encountered domestic violence during childhood. The research revealed, that research participants have been raised in residential care home for children or dysfunctional families. Reflecting their childhood experiences they told about parent's alcoholism abusive environment at home. They also highlighted lack of parental love, attention and neglect.

**Conclusions.** Families who are unable to perform their functions properly, to meet the needs of the child, fail to form a moral model that responds to society's expectations of the family. Research participants have reflected that they fail to fulfill the steps they would improve their life. Designing future inspirations, they have revealed the prevailing culture of poverty, because they imagine immediate future, and their main desire is to have more money, what would help to solve problems of immediate future.

**Keywords:** genogram, social work, childhood experiences, family, complex needs



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## Prevalence of Professional Nurses Burnout in Clinical Settings

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### Abstract

**Background.** Scientific evidence suggests that health care professionals are exposed to higher risk of professional burnout due to high level of physical and psychological stress.

**Aim:** to determine the expression of the components of professional burnout syndrome among nurses.

**Methods.** Quantitative research was carried out by using Ch. Maslach and S. E. Jackson's (1981; 2016) "Maslach Burnout Inventory" (MBI). The variables that make up the scale of professional burnout were transformed into three subscales: emotional exhaustion, depersonalization and personal accomplishment. The following methods were used to process the research data: One-Way ANOVA (F), Kruskal-Wallis ( $\chi^2$ ) test, Chi-squared ( $\chi^2$ ) test, Pearson (r) and Spearman (r) correlation coefficients. Statistical significance when  $p < 0,05$ . Sample – 337 respondents.

**Results.** The results of the research revealed that 30,3 percent of the nurses, participating in the research, experienced high level of emotional exhaustion. High level reduction of personal accomplishment was identified for 28,2 percent of the nurses. The manifestation of the component of depersonalization at high level was identified only for 4,8 percent of the nurses. There were statistically significant relationships between the age of nurses and emotional exhaustion ( $r = -0,22$   $p < 0,001$ ) and manifestation of depersonalization ( $r = -0,14$   $p = 0,013$ ) – younger nurses were more often emotionally exhausted, more often experienced higher level of depersonalization than older nurses. Statistically significant correlation, found between the working experience and the components of the burnout syndrome, revealed that higher emotional exhaustion ( $r = -0,15$   $p = 0,005$ ), higher manifestation of depersonalization ( $r = -0,12$   $p = 0,022$ ) and reduction of personal accomplishment ( $r = -0,16$   $p = 0,004$ ) was more often observed among the nurses with less working experience than among the nurses with more experience. There were significantly more nurses with high level of depersonalization among those, working only the night shift, than among those, who work day and night or only the day shift ( $p = 0,025$ ); furthermore, more pronounced reduction of personal accomplishment was more often observed among those, working only the night shift ( $p = 0,015$ ).

**Conclusions.** One third of the nurses, who participated in the research, experienced high level of emotional exhaustion and reduction of personal accomplishment (productivity). Emotional exhaustion was statistically significantly more common for younger nurses than older ones. Higher emotional exhaustion and reduction of personal accomplishment was more pronounced among the nurses with less working experience than among the nurses with more experience.

**Keywords:** professional burnout, burnout syndrome, nurse.



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## Philosophy of tax optimization in the context of EU Community law regulations

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### Abstract

**Background.** The very concept of tax optimization gained importance in times of economic crises, when tax-law solutions were sought, giving an immediate opportunity to reduce costs and the risk of bankruptcy.

The subject of tax optimization based on tax law, criminal law and fiscal law is, therefore, a fascinating subject, both in theoretical and practical terms. Awareness of the existence of solutions that currently exist in the application of methods to minimize public law burdens in the economic turnover and potential threats and opportunities associated with the implementation of tax optimization mechanisms have decided to undertake research work on the title issue.

**Aims.** To show that tax optimization plays a significant role in running a business and is a tax planning instrument. The presentation aims at analyzing the interpretation doubts of tax optimization concepts and issues of unclear legal regulations that form the basis for actions taken by tax authorities in the scope of tax proceedings.

**Methods.** Empirical analysis involving the use of the case study method, methods of deduction and induction

**Results.** The use of tax optimization methods, although in itself consistent with the law, raises many doubts and controversies on the part of tax authorities, which largely negligently analyze the facts and challenge the solutions applied by taxpayers, considering them to be incompatible with law, aimed at avoiding or evading taxes.

**Conclusions.** Despite the phenomenon of tax optimization in the course of business, there is no full agreement as to its legal definition. The complexity of interpretational dilemmas arises from the understanding of the institution of tax optimization. The legal foundations of this institution and its functions are worth considering.

**Keywords:** tax optimization, fiscal law, tax fraud





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## **Benefits of using Facebook among adults with physical and sensory disabilities**

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**Background.** Internet communication provides a unique possibility to transmit information and create networks between various groups of geographically unrelated people. Therefore, Facebook as growing social networking site may become a space where disabled people could, at least to some extent, compensate for their limited social involvement in real life. Hence, the use of Facebook as communication tool also allows people to maintain offline social capital, thus expanding the social network and building this capital in the form of bonding and bridging relations in the virtual world.

**Aim.** The research aim is to evaluate the benefits of Facebook use for expanding everyday communication and online social capital building among Lithuanian adults with physical and sensory disabilities.

**Methods.** A representative quantitative survey was conducted, sample consisted of 300 respondents: Lithuanian adults with disabilities aged 18 years and older, divided into sections of 53 people with blindness or visual impairment, 62 people with deafness or a hearing impairment and 185 people with physical disabilities.

**Results.** The research data shows that people with physical disabilities are those who benefit most from Facebook. Perhaps because of their limited mobility, they perceive Facebook mostly as a bridging capital resource. Bridging capital brings them various practical benefits thanks to established connections, contacts, participation according to their interests by avoiding the obstacles posed by the physical environment as well as geographical distances. It also explains the research results, which show that physically disabled social networkers value Facebook more as a tool helping them be more socially active than Facebook users with sensory disabilities.

**Conclusion.** The research shows that participation on Facebook is increasingly important for the disabled because of this aspect related to the realisation of values, sense of community and human rights.. The results of this research contribute to the positive IT and disability discourse by arguing that Facebook creates added value for the disabled which was measured by perceived online social capital.

**Keywords:** Facebook; online social capital; persons with disabilities.



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## Design and Experimental Design of Smart Gloves for Speech Impaired People

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### Abstract

**Background.** All over the World, deaf and dumb people face struggle in expressing their feelings to other people. There are various challenges experienced by speech and hearing-impaired people at public places in expressing themselves to normal people. The solution to this problem is determined in this paper, by the usage of the Indian sign language symbols which are generic to all deaf and dumb people in India.

**Aim.** The main aim of the proposed project is to develop a cost effective system which can give voice to voiceless person with the help of Smart Gloves. It means that using smart gloves communication will not be barrier between two different communities. With the help of these gloves disabled person can also get chance to grow in their respective carrier. Using such devices by disabled person also makes nation grow.

**Methods.** Signed letters are determined using flex sensor on each finger. The flex sensors change their resistance based on the amount of bend in the sensor. As a variable printed resistor, the flex sensor achieves great form-factor on a thin flexible substrate. When sensor placed in gloves is bent, it produces a resistance output correlated to the bend radius - the smaller the radius, the higher the resistance value. They require a 5-volt input and output between 0 and 5V.

**Conclusion.** Sign language is a method used for communication by disabled person. Here we are converting sign language into text and speech so that communication is not limited between them only, utilizing data gloves communication barrier between two different communities is eliminated. Using data gloves disabled person can also grow in their carrier and makes nation grow as percentage of disabled person are millions in count. Making their future better, making nation better.

**Keywords:** verbally challenged peoples, smart glove, biomedical system, speechless person.



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## Oral Health Promotion Methods' Effectiveness

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### Abstract

**Background.** Dental caries, periodontal diseases, tooth loss and oral cancers have significant burden of disease effects, quality of life and cost implications (Buest et al., 2016; Kassebaum et al., 2015). Epidemiological indicators of oral health in Lithuania are indicative of a very poor oral health status of the population. Children's oral health in Lithuania is one of the worst in the EU. The prevalence of tooth decay in children aged 6 years is up to 82 percent (National Oral Health Programme, 2016). Disease prevention is cheaper than treating the existing disease, so prevention programmes targeted at children of young age are cost effective (Masters et al., 2017). Parents and caregivers also have the primary responsibility for the daily care, prevention and good oral hygiene habits of children (Kino et al., 2015).

**Aim.** To find evidence based approach to promote oral health of primary school children in Klaipėda district.

**Methods.** Scientific literature and statistical data analysis.

**Results.** A systematic review, conducted by Nakre P. (2013) showed that oral health education is effective in improving the knowledge and oral health related practices of the target population when significant others are involved, thus involvement of significant others like teachers and parents especially in oral health education of school children would bring about a higher quantum of change in improving the oral health in children. Including an oral prophylaxis component in oral health



education programs would bring about a higher quantum of improvement in the gingival health. Since oral health promotion programs have shown to be more effective than just oral health education. There is indication in this review that the most successful oral health programs are labour intensive, have involved significant others and have received funding and additional support (Nakre et al., 2013). The educational programme with tooth brushing trainings, which are regularly repeated with the common efforts and contributions of dentists, teachers, and parents, presented significant improvements in the oral health behaviours (Ceyhad et al., 2018). It has been proven that the attitudes of small children to oral health are influenced by parents, and they develop children's oral hygiene and eating habits. Emphasis is placed on the important role of the mother in developing good oral hygiene skills for children, but often the mother's knowledge of children's oral health is superficial (Gerikienė & Kareivė, 2016). The most effective learning method is learning by teaching (90%) and learning by practice (70%). Less efficient - information by visual means (20%) and lecture (5%) (Javtokas et. al., 2014).

**Conclusion.** Oral health promotion programs should not only provide with knowledge, but also improve tooth brushing skills in order to be effective.

**Keywords:** *oral health promotion, tooth brushing skills, primary school children, prevention effectiveness.*

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## Women's Cosmetics Usage Habits: Important Factors Associated with Side Effects

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### Abstract

**Background.** Nowadays, most of women use personal care and decorative cosmetics daily. The effects of cosmetic products, including the occurrence or absence of side effects, depend on their use habits.

**The aim** of the survey was to investigate cosmetics use habits and related side effects among females.

**Methods.** A quantitative survey was performed, an original questionnaire based on scientific resources was used. Data collection method – a written survey was applied. Survey sample – 336 Lithuanian women. Data analysis was performed using the social research statistics program SPSS 25.0. Percentage frequencies were calculated for ordinal variables - averages and standard deviations. The Pearson's Chi Square test and the non-parametric Kruskal Wallis and Mann Whitney tests were used to detect statistically significant differences. The materiality level selected was  $p < 0.05$ .

**Results.** The study shows that the choice criteria of cosmetic products differ among separate women age groups ( $p < 0.05$ ). The older women are more concerned about the composition of the products, their naturalness and the manufacturer, while the price is less important. Most commonly used are personal hygiene products including deodorants and perfumes. The older women use less cosmetic products ( $p < 0.05$ ) than younger ones. The majority of women have experienced side effects related to the use of cosmetics (about 80%). Occurrence of side effects does not depend on the number of products used. Women who experience side effects more often ( $p < 0.05$ ) use expired cosmetic products and are less likely to use cosmetic testers.

**Conclusions.** The study revealed factors related to the side effects of cosmetic products on women. The consumers themselves have to take responsibility for their own safety. It should be noted that cosmetics when used moderately and for their intended purpose and in accordance with the instructions for use and storage should not cause a hazard to human health.

**Keywords:** Women, Cosmetics, Usage Habits, Side Effects.



**Prof. Gamze AKBULUT** ( Prof. PhD.) is Professor at Gazi University, Faculty of Health Sciences, Department of Nutrition and Dietetics. Her scientific interests focus on the clinical nutrition (diet therapy in obesity, metabolic syndrome, oncology, nutrition in stoma/ gvhd, chronic renal failure, enteral-parenteral nutrition, etc.). She published more than 100 articles, 6 handbooks, 14 books on Clinical Nutrition and Dietetics and she presented numerous papers, reports etc. in national and international congress and meetings.



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**Dr. Jurgita Andruskienė** is an Associated Professor at Klaipeda State University of Applied Sciences, and head of the department of Oral Care and Nutrition. Her scientific interests focus on the research risk factors of chronic non-communicable diseases, particularly hypercholesterolemia, obesity and arterial hypertension. She participated in several national and international research projects aiming to control health risk factors, such as stress at work, disturbed sleep and/or psychoemotional problems. During the period of last five years she published 16 international scientific articles and 3 textbooks for the students of higher education institutions.

## Evaluation of Health-Related Quality of life of Adult Celiac Patients

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### Abstract

**Aim.** The present study aimed to evaluate the health-related quality of life of adult celiac patients who lived in Lithuania.

**Methods.** The design of the study was descriptive and cross-sectional. The celiac specific quality of life questionnaire (CD-QOL) provided data on the overall quality of life of the participants. The questionnaire was designed as an online form and sent by e-mail to the patients. The total score is based on a 100-point scale and individuals are ranked as Poor <40, Medium 40 – 50, and Good > 50.

**Results.** The study was completed with a total of 77 patients (7 males and 77 females) who older than 18 years and diagnosed with celiac disease by a physician. The mean age of the patients was  $34.4 \pm 11.5$  years and the diagnoses age was  $30.5 \pm 13.1$  years. The average body mass index (BMI) value of participants was  $22.2 \pm 5.3$  kg/m<sup>2</sup>. The health-related quality life score of patients was  $43.9 \pm 5.3$  and classified as "medium".

**Conclusions.** Health related quality of life of patients may be influenced by many factors such as cost of the gluten free foods, limited food choices, social isolation. For this purpose, it is needed a multidisciplinary (with the food manufacturers, health ministry, health professionals, celiac support groups etc.) approach to develop of the quality life of patients.

**Keywords:** Lithuania, quality of life, celiac, adult.



**Dr. Viktoras Liorančas** is an Associate Professor at Klaipeda State University of Applied Sciences, department of Food Technology. His scientific interests focus on the research of raw materials of animal origin, particularly the way food handled throughout the supply chain and influence of different factors on quality and safety properties of the production. During the period of last five years he published 7 scientific articles and achieved rewards in creating innovative food products in international exhibitions.

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## Challenges and Opportunities in the Use of By-Products from Processing of Atlantic Cod

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### Abstract

**Background.** The Lithuanian fish processing industry has been focused on increasing the value of each kilogram caught ever since the quota system was implemented over three decades ago. The industry has accepted that total catches are more or less fixed and the only way to increase value is therefore to utilize as much of each fish as possible into as valuable products as possible.

Utilizing by-raw materials from Atlantic Cod processing is consequently very important for the industry as a whole, as it is one of the main species processed in Lithuania and great economic, nutritional and environmental values can be obtained. By-products may constitute as much as 70% of fish and shellfish after industrial processing and much focus has been on converting these into commercial products. By-products can range from being of relatively low value, such as fish meal and fish oil processed from silage, which are primarily used as a feed for farmed animals; to extremely high value products included in pharmaceuticals, cosmetics and functional foods.

**Aim.** The aim of this paper is to evaluate properties of Atlantic Cod main by-products and to consider the most realistic options in the use.

**Methods.** Fish by-products samples were collected from one of the biggest white fish processing company's in Lithuania and nutritional-chemical values were determined and compared with cod fillet composition. Moisture content was determined according LST 1614:2000; Ash content – according SDP 5.4.4. Ch 223:2015. Lipid content was determined according LST 1776:2002; saturated fat – according LST EN ISO 12966-1:2015. Protein content was calculated as percent nitrogen times 6.25 according SDP 5.4.4. Ch 229:2017 Carbohydrates were deducted and NaCl was determined according LST 1775:2002.

**Results.** By-products can range from being of relatively low value, such as fish meal and fish oil, which are primarily used as a feed for farmed animals; to extremely high value products included in pharmaceuticals, cosmetics and functional foods. The major components of fish processing waste from Atlantic cod filleting operations are heads, viscera, frames and skins. The amount of connective tissue protein in an animal tissue is an important parameter affecting processing properties and nutritional value. Skin had the highest connective tissue content and total protein at approximately 23 % and frames had 7 %. These protein values are high compared to cod fillet which had approximately 16 % of total protein.

**Conclusions.** Fish by-products are a good source of many major and essential elements. Increasing the value of each kilogram of fish caught will result in increased yield and improved utilization of all raw materials.

**Keywords:** Atlantic Cod, Atlantic Cod by-product

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**Vijolė Bradauskienė** is a Ph.D. student at Kaunas University of Technology, a lecturer at Klaipėda State University of Applied Sciences and Head of Food technology department. Her scientific research areas: implementation of innovative technologies in the food industry in and catering business; manufacturing of health-friendly and functional products; measurement of the product nutritional value and marking; Feasibilities on Further Use of Waste from Food Production. During the period of last five years she published 4 international scientific articles and 1 textbook for the students of higher education institutions.



**Vitalija Freitakaitė** is a lecturer at Klaipėda State University of Applied Sciences. Her scientific interests focus on the research biologically active substances in germinating seeds, how their nutritional and biological value increases and the chemical composition improves during sprouting, analyses the impact of sprouted seed conservation methods. She participated in several national research projects aiming to functional food: how to add variety to the diet.



**Dr. Lina Vaičiulytė-Funk** – Doctor of Technical Sciences, senior researcher at Microbiological research laboratory in Food Institute of Kaunas University of Technology and a lecturer at Kaunas University of Applied Sciences. Her scientific research areas: research of food product microbiological processes, food quality, safety management and control systems, technologies for quality and healthy food. During the period of last five years she published 5 international scientific articles indexed in the Web of Science with Impact Factor and 2 textbooks for the students of higher education institutions.

## Impact of Nutrition on Telomere Length and Genome Stability

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### Abstract

**Background.** Healthy aging has become a major goal of public health. Attrition of telomeres, chromatin structures that help maintain genome stability, leads to cell death or senescence. Telomeres progressively shorten with cellular replication and are therefore assumed to correlate with biological and chronological age. Telomere length is considered a biomarker of aging. Accelerated telomere shortening is associated with the onset of several age-associated health problems. Thus, telomere length is a reliable hallmark of biological aging and the risk of developing age-related chronic diseases through common oxidation and inflammation mechanisms. Many factors can modify telomere length, among them are physical activities, socioeconomic status measured by education level, nutrition and smoking habits,

**Aim.** To analyze what kind of nutrients, have a positive impact on telomere length and genome stability and what foods are their best sources.

**Methods.** Analysis and systematization of scientific literature; Modelling the nutritional composition of products based on the food composition database and the special Excel program.

**Results.** Consumption of antioxidant-rich, plant-derived foods helps maintain telomere length. In contrast, total and saturated fat intake and consumption of refined flour cereals, meat and meat products, and sugar-sweetened beverages relate to shorter telomeres. Data on alcohol and dairy products is controversial. There is evidence that adherence to the Mediterranean diet is associated with longer telomeres. According to scientific researches folate and nicotinic acid deficiencies together with increased oxidative stress may accelerate telomere dysfunction.

**Conclusions.** The results of research illustrate the strong impact of a wide variety of micronutrients and their interactions on genome health depending on the level of intake. The most important for genome stability are dietary antioxidants vitamin C, vitamin E, antioxidant polyphenols, Folate and vitamins B<sub>2</sub>, B<sub>6</sub> and B<sub>12</sub>, Niacin and minerals Zinc, Iron, Magnesium, Manganese, Calcium, Selenium. The best sources of these nutrients in our diet are almonds, wheat bran, broccoli, cabbage.

**Keywords:** telomere length, genome stability, nutrigenetics





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**Jolanta Baronaitė** – a lecturer at Klaipėda State University of Applied Sciences. She teaches subjects: Information Technologies, E-commerce, Business Management Systems. She participated in research “Creating of a Special Computing Programme for Calculating the Energy Value and Nutrient Content of Product and Estimating of the Accuracy of the Calculation Method” with Food Technology Department lecturers. She has given a presentation “Determining of the Nutritional Composition of Product Using a Special Excel Program” in the practical workshop. During the period of last five years she published 1 scientific article in the journal abstracted in Index Copernicus Journal Master List.



**Elena Moščenkova** – a lecturer at Klaipėda State University of Applied Sciences. Her research trends: Business and Professional English for Specific Purposes - Vocabulary Acquisition in ESP - Perspectives, Strategies and Resources; English for Science and Technology (EST). She is the co-author of 3 scientific articles that have been published in international publications in the last five years, and the co-author of the Glossary of Terms for Landscape Designers (Lithuanian- English) published in 2018.

## Evaluation of Yield, Retention Factors of Macronutrients and Energy Value During Thermal Preparation of the Meals and Assessment of the Calculation Method

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### Abstract

**Background.** This study compares the energy value, nutrient retention factors and the yield of products processed by various heat treatment methods. The results of laboratory tests are compared with the results derived by calculations using product databases. In the EU, calculation methods are legally valid to determine the nutrient values of foods for nutrition labelling (Regulation (EU) No 1169/2011). Euro FIR (European Food Information Resource) has introduced a Recipe Calculation Guideline based on the Euro FIR harmonized procedure for recipe calculation. Euro FIR provides retention factor for proteins (0.75-1), fats (0.45-1), carbohydrates (0.9-1) and other materials, that are different for different products and thermal treatments. However, there are no clear rules on how to apply the nutrient retention factors.

**Aims.** To evaluate yield of meals, retention factors of macronutrients and energy value during different thermal preparations; to assess the calculation method; to identify the most sustainable way of thermal preparation.

**Methods.** The nutritional composition of selected meat dish - chicken, beef, turkey, pork cutlets, was determined before and after thermal treatment through chemical analyses and by calculation method. Total lipids of the samples were determined by the Soxhlet method after acid hydrolysis.

Determination of protein content by Kjeldahl method (LST EN ISO 20483).

Moisture content was measured by humidity measuring device Kern MLS 50-3HA 160N;

Carbohydrates were calculated “by difference” through the equation: % carbohydrates=100-% water-% total lipids-% proteins-% -% minerals.

Minerals content – by ash content after incineration – % LST ISO 936:2000.

The nutritional composition of meals was determined by the computing with the special Excel program by using databases of Lithuania and other European countries.

**Results.** Product yields were 67,71 to 77,42% depending on the recipes and thermal preparation. The highest protein retention factor was found in baked products and the highest retention factor of fat – in boiled products. The highest energy value was obtained from the dishes baked in the oven. Analytically determined values of macronutrients and energy in different meat dishes were in satisfactory agreement with those computed, despite the fact that different cooking methods are involved.

**Conclusions.** During thermal treatment there is a noticeable change in the yield of products with a slight decrease in proteins and carbohydrates, but the greatest impact on the reduction in the energy value of meals has the loss of fat. Since the fat content of the tested meals was low - the maximum energy difference between the raw product and the fat treated product is 14%, not higher than the permitted calculation non-compliance. If we want to calculate accurately the nutritional value of the dish, it is necessary to assess the nutrient retention factor. The most sustainable ways of cooking is preparation at low temperatures in a vacuum environment (using the sous vide method), boiling, steaming, stewing and baking in the oven. In this study, no significant differences were found between the analytical and calculated values when applied retention factors of nutrients.

**Keywords:** Product Yield, Macronutrients, Retention Factor





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**Neringa Tarvydienė** is a professional in local public health management. She is head of Klaipėda District Municipality Public Health Bureau - the institution responsible for implementing public health policy at the municipal level, for more than 12 years. Her input to local public health was positively assessed at the national level. She created and was head of Lithuanian Municipal Public Health Bureau Association, she now is a member of the National Health Board near Parliament. She also is a lecturer at Klaipėda University, researches and writes about public health situation at the local level and public health intervention implementations.

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**Gitana Rederienė** is a dental hygienist, working in Vilnius University Zalgirio Clinic. She received her Bachelor Degree in Public Health in Kaunas Medical University and Master Degree of Public Health Management in the same institution. Her scientific interests focus on the prevention of dental caries and gum diseases.

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## **Improving Oral Hygiene Status of Pre-School Children by Developing New Evidence-Based Educational Intervention: Methodological Approach**

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## **Abstract**

**Background.** The success of oral health promotion is usually based on the new products' introduction to the daily oral health routine of children and adult persons. It can be very helpful in developing new evidence-based educational interventions.

**Aim** was to test the effectiveness of the plaque control among pre-school children using newly introduced product Piksters Plaque Glo Fluorescing Toothpaste with Special blue light highlighting plaque.

**Methods.** There are 1660 (73,6%) pre-school children in Klaipeda District, 394 (17,5%) in Skuodas District and 200 (8,9%) in Rietavas Municipality. The calculated sample size was 313, 195 and 132, respectively. There was every third school in the region selected and invited to participate in the study. At the baseline Oral Hygiene Index (OHI) was assessed for every child participating in the study and Oral Health Literacy level (OHL-AQ, *Oral Health Literacy Adults Questionnaire* (Sistani et al., 2013)) was established for the one of parents. There were two research groups formed: the intervention group had 5 educational sessions using Piksters Plaque Glo Fluorescing Toothpaste, the control group had their usual oral health routine without education. The repetitive testing using OHI index and OHL-AQ questionnaire was performed during the period of 3 months after educational sessions. The effectiveness of the newly introduced product Piksters Plaque Glo Fluorescing Toothpaste with Special blue light highlighting plaque will be described by the oral hygiene and oral health literacy differences in case and control groups on repetitive testing.

**Results.** The hypotheses will be tested whether new product could be effectively used for oral health promotion purposes.

**Conclusions.** Detailed evidence-based recommendations about oral health promotion activities, their character and intensity, will be prepared, as a helpful tool for effective oral health promotion in community.



**Dr. Janko Zmitek** is a professor of chemistry at and a dean of VIST – Higher School of Applied Sciences in Ljubljana, Slovenia, where he is heading also the Institute of Cosmetics, dealing with investigations of effects of cosmetic products, devices and procedures, as well as food supplements on skin condition. He is (co)author of 31 scientific articles, more than 70 published lectures at scientific conferences, 21 patent families, 2 monographs, 3 higher school programs, and almost 200 industrial projects focused into development of pharmaceutical products and technologies, food additives and supplements, and cosmetic products, devices and procedures. He is also a winner of many awards for innovations, including the National Puh Award for Innovations for the new water-soluble form of coenzyme Q10, its production and use.

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# The Efficiency of Topical *Argireline* for Reduction of Mimic Wrinkles: Methodological Approach

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## Abstract

**Background.** Antiaging cosmetic treatments and products, that can slow down skin aging and reduce visible signs of it, including expression of wrinkles, are being very popular. For prevention of wrinkles formation and their reduction combinations of Matrixyl™ (palmitoyl pentapeptide-4) that stimulates collagenesys and Argireline™ (acetyl hexapeptide-8) that inhibits SNARE complex in the presynaptic axon terminal, and thus inhibits muscle contraction and relaxes facial muscles, are often used, assuming that the latter have crucial impact on mimic wrinkles formation and reduction. But there is neither evidence on its real efficiency on muscle contractions, nor on its ability to penetrate to the action site in case of topical application, as there has been no appropriate simple methodology for measuring that; consequently the role of topically applied argireline in case of eventual improvement or prevention of mimic wrinkles have been unclear.

**Aim.** Efficiency determination of topically applied Argireline™ solution on activity reduction of mimic muscles by using a novel device for quantitative measurements of the facial muscles contractions (mimic-meter), invented at VIST<sup>1</sup>.

**Methods.** Argireline™ solution (10% w/w, Lipotec, Spain) was used by 8 females (20-40 years, with regular home skin care, not using any advanced active anti-aging products) for topical application 8 weeks twice a day on a cleaned skin in lateral periorbital, glabellar and frontal region, respectively; moisturizing cream was applied after application of the solution. Before 1<sup>st</sup> application of the product, after 2, 4, 6 and 8 weeks of the product applications, respectively, muscles activities (forced contractions and relaxations) were measured by mimic-meter (1,2) to determine the effects of Argireline™ solution, standardized photographs were taken for expert assessments of wrinkles using Merz wrinkle classification scale, and facial skin moisture and elasticity were measured with “Callegari soft plus” device.

**Results.** Mimic-meter (1,2) has proven to be a valuable and useful novel device for quantitative measurements of the facial muscles contractions for determination of the efficiency of compounds that inhibits muscle contractions, such as butulinum toxin (e. g. Botox™) and botox-like compounds, such as Argireline™, and products containing it. Results of the study, obtained by measurements with mimic-meter, show that topically applied Argireline™ can have impact on muscle activity, and it thus can penetrate through the skin to the site of action. These conclusions are supported by other measurements and expert evaluations based on photographs.

**Conclusions.** The methodology using mimic-meter was developed for quantitative determination of efficiency of topically applied Argireline™ on muscle activity reduction, and the results show it can have direct impact on muscle activity, and consequently on mimic wrinkles formation and reduction.

**Keywords:** Argireline, facial skin, moisture, wrinkles, quantitative skin measurements, muscle contractions and relaxation

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