

TALLINN HEALTH CARE COLLEGE



**Research and Innovation**

Tallinn 2013

“Research and Innovation”

Tallinn Health Care College International Week Conference

Tallinn, Kännu 67 and Kohtla-Järve, Kukruse, Lehe 12, Estonia

13–17 May 2013 and 7–11 October 2013

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Tallinn Health Care College International Week

13–17 May 2013 and 7–11 October 2013

# Research and Innovation

**Book of Abstracts**

Tallinn Health Care College

Tallinn 2013



# Welcome

Welcome to Tallinn Health Care College International week “Research and Innovation”!

It is our great pleasure to welcome our new and old friends in our college! It is vital to exchange ideas, discuss current issues in internationalization and quality assurance, increase the transparency of curricula, share and discuss research data and find together innovative solutions in the area of health care, welfare and medicine.

Sharing ideas is a unique process where everybody is a winner and nobody loses.

I hope that our International Week enhances and provides possibilities for new ideas and future cooperation.

I wish you a successful week at the Tallinn Health Care College!

Tiina Juhansoo,

Vice-Rector of Development and International Relations

## User guide

In the book of abstracts of the Tallinn Health Care College International Week “Research and Innovation” the theses are given in an alphabetical order based on the name of the first author. To facilitate finding the author of the abstract you can find the index of authors at the end of the book of abstracts.

For future contact with the authors you will find the e-mail address of the contact person at the end of the book of abstracts. The time of the presentation is also indicated at the end of the abstract – May or October.

You will find the following abbreviation in this book of abstracts:

O.P. – oral presentation

P.P. – poster presentation

You may find the detailed program of the international week and the list of poster presentations on the Tallinn Health Care College home page: [www.ttk.ee](http://www.ttk.ee) – Cooperation – Conferences.

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# THE DETERMINATION OF TENSILE STRENGTH AFTER OVERHEATING THE ORTHODONTIC WIRES

Ruslan Asu, student of dental technology; Tõnu Kauba MD, PhD;  
Marit Paljak, MA, Tallinn Health Care College, Estonia;  
Toomas Pihl, PhD, TTK University of Applied Sciences, Estonia

**The aim:** to measure tensile strength after overheating orthodontic wires produced by two different companies. Hypothesis: there are no important differences between the wires after overheating.

**Method:** the test bodies were prepared in the dental technology laboratory of the Tallinn Health Care College. The tensile strength of wires was measured in the mechanics research laboratory of the TTK University of Applied Sciences. Two companies, whose products are used at the Tallinn Health College, Dentaurum and Forestand, were chosen for the test and were named company "A" and company "B", respectively. 10 test bodies with the length of 100 mm and diameter of 0.7 mm were made and G.U.N.T. WP 300 device was used as the measuring device.

**Results:** the average length of 5 overheated wires for 5 seconds of company A by stretching was 12.35 mm and the average strength of applied force was 0.39 kN. The average length of 5 wires overheated for 5 seconds of company B by stretching was 9.97 mm and the average strength of applied force was 0.39 kN

**Conclusion:** overheated orthodontic wires of two different companies had different results during the application of the same amount of force. Therefore, the hypothesis was not confirmed.

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May: P.P.

# HAZARDOUS PLACES AT CHILDREN'S PLAYGROUNDS

Katrin Bach, Tiina Õun, students of the curriculum of child minding;  
Milvi Moks, MD, PhD; Ene Kotkas, Tallinn Health Care College, Estonia

**The aim:** accident prevention at children's playgrounds.

**Method:** mapping the hazardous places and situations at children's playgrounds.

**Results:** the playground is usually a complex of different objects, such as slides, swings, climbing walls, which may turn out hazardous if they are not in order or not set as required. In addition to that, children can also find things like border fences, garden gates, dustbins, paths, herbs etc. in their resting areas. To avoid accidents at a playground, the following inspection plan has been developed: visual inspection, reliability inspection and a regular basic inspection performed once a year.

**Conclusion:** playground safety depends on proper planning and choice of equipment. Nevertheless, in order to avoid accidents with children, constant inspection and regular control over the playgrounds is necessary. Education about occupational safety for babysitters is important.

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May: P.P.

# MEASURING THE EXPANSION OF IV CLASS GYPSUM IN WATERLOGGED (CLOSED) ENVIRONMENT

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Tõnu Kauba MD, PhD; Marit Paljak, MA, Tallinn Health Care College, Estonia;  
Toomas Pihl, PhD, TTK University of Applied Sciences, Estonia

**The aim:** to investigate whether class IV gypsum expands in waterlogged (closed) environment in two hours, when the ratio of powder and water is correct.

**Method:** the gypsum product tested in this study is Quadro-rock (Picodent). Gypsum was mechanically mixed under vacuum for 40 seconds. After mixing, the mixes were immediately poured into 5 specimen forms with a diameter of 10.5 cm and a height of 1 cm. The expansion values were recorded after 2 hours with a feeler gauge.

**Results:** the expansion of class IV gypsum in waterlogged (closed) environment was more than 0.1%.

**Conclusion:** after 2 hours in waterlogged environment, gypsum had expanded more than in a conventional environment.

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May: O.P.

# TEMPORARY FIXED DENTURE PRODUCTION TECHNIQUES BENCHMARKING

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Arūnas Kanapeckas, professional Bachelor of Dental Technology,  
Utena University of Applied Sciences, Lithuania

**The aim:** to analyse and compare the production techniques of temporary fixed dentures.

**Method:** producing three temporary crowns using different polymetric methods and materials.

**Results:** temporary fixed crowns made using hot polymerization (named "A") of the plastic "Sinma-M" materials meet the necessary quality, safety and functionality requirements but they are not aesthetic enough. Temporary fixed crowns made using cold polymerization (named "B") of the plastics "ENAMEL plus" are more aesthetic and functional but not as strong as those made using hot polymerization. It contains much more free monomers. Temporary fixed crowns made from light solidifiable composite materials (named "C") "GC Gradia" have all the best features of such crowns but due to their expensiveness are used quite rarely.

**Conclusion:** method A should be used for molar teeth because strength is important for these dental areas, but the aesthetic requirements are less important. Method B enables to produce more aesthetic crowns therefore being suitable for front teeth. Method C gives the best results, but they are expensive.

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May: P.P.

# ERASMUS STUDENTS' FEEDBACK ON ERASMUS EXCHANGE

Tiina Juhansoo, MD, PhD; Eve Epner, MA Tallinn Health Care College, Estonia

**The aim:** to improve the organization, academic quality and transparency of LLP/Erasmus student mobility in Tallinn Health Care College.

**Method:** 42 feedback reports from LLP/Erasmus exchange students from academic years 2006/2007–2010/2011 were analysed.

**Results:** the feedback from LLP/Erasmus student exchange showed that the general satisfaction with the organization and preparation of the exchange was continually high (>4.5 from 5). The main source of information about the possibilities of Erasmus mobility was the home college. The level of satisfaction with the academic quality and transparency of the Erasmus mobility has remained continuously high (from 4.8 to 5) during the entire abovementioned period. The satisfaction with the Erasmus grant has decreased from 4.5 to 3.2.

**Conclusion:** to increase the students' satisfaction with LLP/Erasmus grant and facilitate their mobility, Tallinn Health Care College has introduced a special internationalization scholarship.

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May: P.P.

October: P.P.

# THE IMPACT OF PROBLEM BASED LEARNING ON INTERNATIONALIZATION

Ruta Jurgelioniene, Med; Ramute Kavoliuniene,  
Utena University of Applied Sciences, Lithuania

**The aim:** to analyse the impact of Problem Based Learning (PBL) on increasing internationalization.

**Method:** analysis of the institutional review, the review of study programs based on PBL and reports of International Relations Department at the Utena University of Applied Sciences (Utena UAS).

**Results:** increasing the number of mobile students in the European Higher Education Area is one of the main political aims of the Bologna Process. Internationalization is one of the most important priorities at the Utena UAS as well. PBL is a student-centred learning system based on innovative teaching methods that stress independent, team or distance learning. There are 19 study programs at the Utena UAS operating as PBL.

**Conclusion:** PBL is a good method for dividing different tasks between partners from different countries. It provides the students and lectures with an experience of working in a multicultural, -lingual and -professional team.

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May: O.P., P.P.



# THE INFLUENCE OF UNDERBOILING ON PHYSICAL QUALITIES – TENSILE STRENGTH OF HEAT CURE ACRYLIC

Renate Kaasik, student of dental technology; Tõnu Kauba, MD, PhD;  
Marit Paljak, MA, Tallinn Health Care College, Estonia;  
Toomas Pihl, PhD, TTK University of Applied Sciences, Estonia

**The aim:** to explain the influence of boiling on the tensile strength of heat cure acrylic when the period of boiling is reduced to 25 min instead of 35 min.

**Method:** eight identical heat cure acrylic test bodies were prepared at the dental technology laboratory of the Tallinn Health Care College. The dimensions of the test bodies were: length 55 mm, width in the middle 5 mm, length of upper and bottom part 10 mm. Measuring was carried out in the laboratory of the TTK University of Applied Sciences with a universal testing device G.U.N.T. WP 300 Universal Material Tester, at 20 kN. It started pulling the test piece with force up to the moment of its breaking. Measurements were performed in five occasions. The horizontal axis R (N/mm<sup>2</sup>) shows the tensile strength of the material. The vertical axis EPS (%) shows the extension of the material (delays) as a percentage of up to rupture.

**Results:** when boiling for 25 min, the average tensile strength of the test bodies was 4.8 N/mm<sup>2</sup> and they extended an average of 0.7%.

**Conclusion:** no significant differences occurred in tensile strength when the boiling of heat cure acrylic was reduced to 25 min instead of 35 min.

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May: O.P.

# TESTING THE PROPERTIES OF DENTAL TECHNOLOGY MATERIALS: A SHORT REPORT

Tõnu Kauba, MD, PhD, Tallinn Health Care College, Estonia

**The aim:** to analyse the main results of papers published in dental technology studies in the frames of a long-lasting project between the Tallinn Health Care College and the TTK University of Applied Sciences.

**Method:** all published papers written in the frames of cooperation between the aforementioned partners on the topic of materials used in dental technology were analysed.

**Results:** during 2007–2013, 36 studies were carried out in the Chair of Dental Technology of the Tallinn Health Care College, which included: 9 studies on the mechanical properties of orthodontic wires, 7 on heat cure acrylic, 4 on cold cure acrylic, and 9 on gypsum. Others were combined studies of materials. Preparing the test bodies was performed at the Tallinn Health Care College and measurements of characteristics were carried out in the TTK University of Applied Sciences under the guidance of Toomas Pihl, PhD. The main results were published in 2012 as a report “Hambatehnika eriala rakendusuringute raport 2006–2011” by the author. The majority (27) of the publications are available in the book of theses of Tallinn Health Care College for future students to use in their studies.

**Conclusion:** the overview points out the importance of using routine material investigation for learning purposes.

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May: P.P.

# ARC DENTURE WITH A “PIN SNAP E” LOCK ACCORDING TO THE KENNEDY’S CLASSIFICATION OF SECOND-CLASS MANUFACTURING

Aurelija Kaulinytė, student of Dental Technology study program;  
Ramūnas Mameniškis, professional Bachelor of Dental Technology,  
Utena University of Applied Sciences, Lithuania

**The aim:** to analyse arc dentures with a “Pin Snap E” lock according to the Kennedy’s classification of second-class manufacturing.

**Method:** producing the arc and prosthetic teeth with “Pin Snap E” latch technology.

**Results:** arc dentures successfully replace partial plastic dentures and dental bridges. Dental prostheses not only ameliorate aesthetic defects and restore the masticatory function, but also preserve the remaining healthy teeth.

**Conclusion:** according to the Kennedy’s classification locking clasps are suitable in case of lack of space in the mouth. A locking system is also suitable for patients with periodontal problems and/or poor financial situation.

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May: P.P.

# THE INFLUENCE OF WIRE REINFORCEMENT ON PHYSICAL QUALITIES: TENSILE STRENGTH OF HEAT CURE ACRYLIC

Sander Kelk, students of dental technology; Tõnu Kauba, MD, PhD;  
Marit Paljak, MA, Tallinn Health Care College, Estonia;  
Toomas Pihl, PhD, TTK University of Applied Sciences, Estonia

**The aim:** to measure the tensile strength of heat cure acrylic when reinforced with 0.7 mm diameter round wire and compare the results with earlier studies. Hypothesis: test body with reinforced wire withstands greater tensile strength than an ordinary test body.

**Method:** six bone-shaped acrylic test bodies combined with wire were prepared at the dental technology study laboratory of the Tallinn Health Care College. The dimensions of the test bodies were: length 50 mm, width 20 mm from the ends and 5 mm in the middle, height 5 mm. Measuring was carried out in the laboratory of the TTK University of Applied Sciences with a universal testing device G.U.N.T. WP 300 Universal Material Tester.

**Results:** the tensile strength of the test bodies was 29.9 N/mm<sup>2</sup> and they extended an average of 0.56%.

**Conclusion:** acrylic test bodies reinforced with round wire did not show greater tensile strength. Therefore, the hypothesis was not confirmed.

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May: O.P., P.P.

# SAFETY OF CHILDREN IN STREETS

Tiina Klavan; Dina Komlev; Hele Väizanen; Merylin Kiviselg,  
students of the curriculum of child minding;  
Milvi Moks, MD, PhD; Ene Kotkas, Tallinn Health Care College, Estonia

**The aim:** prevention of accidents with children in streets.

**Method:** risk analysis for prevention of accidents with children in streets.

**Results:** the most dangerous places for children are crossroads with big traffic, pedestrian crossings, narrow streets without any pavements, light traffic roads, where one side is provided for pedestrians and the other side for cyclists. In winter, additional risks have to be taken into account: roads and streets become slippery, car breaking distance becomes longer. There is a possible danger of the snow or icicles falling down from the roofs. Children are not visible from behind of the high snowdrifts. The snowdrifts near the bus stations can turn dangerous for children. Due to the snowdrifts, pavements for pedestrians become very narrow and sometimes impassable.

**Conclusion:** to prevent accidents with children in streets, education is crucial. Right attitudes should be formed from an early age and safety education must be a continuous process. Children have to be visible by wearing reflectors, a reflecting waistcoat, colourful clothes, and a helmet when cycling.

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May: P.P.

# **PREGNANT WOMENS' OPINIONS AND EXPERIENCES ABOUT SMOKING DURING PREGNANCY**

Tenel Koppel, RM, Pärnu Hospital, Estonia; Urve Kaasik-Aaslav, MD, MA;  
Mare Vanatoa, MD, Tallinn Health Care College, Estonia

**The aim:** to describe pregnant womens' opinions and experiences concerning smoking during pregnancy.

**Method:** 12 pregnant smokers were interviewed in Pärnu Hospital, and the results were compared with the studies carried out in 2010–2012 in three different Estonian hospitals.

**Results:** the 12 interviewees were between the age of 17 and 34, most of them under 30, housewives and daily smokers. The majority of the women were aware of the harmful effects of smoking on their and their child's health. Most of the interviewees had tried to stop smoking in some period of their lives, but found the biggest obstacle in the use of tobacco of the surrounding people. Most participants of the studies wished to quit smoking but considered the counselling by a midwife or a doctor inadequate or they did not receive any help at all.

**Conclusion:** womens' opinion of smoking was relatively similar in all studies: most participants wished to quit smoking but did not get enough counselling.

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May: O.P.

# NURSES' KNOWLEDGE ABOUT INFLUENZA PREVENTION

Daiva Kriukelytė, PhD; Danguolė Ševcovienė, MA in Nursing;  
Edita Butkevičiūtė, student of General Practice Nursing study program,  
Utena University of Applied Sciences, Lithuania

**The aim:** to assess nurses' knowledge about flu prevention.

**Method:** 30 nurses from the Surgery and Therapeutic units of S. Kudirka Hospital in Alytus County, Lithuania were interviewed.

**Results:** it was found that 60% of nurses from both units had good knowledge about seasonal flu. 93.3% of nurses were aware of the flu vaccine and 63.3% were aware of the potential complications of influenza. In both departments the following protection against influenza was used: medical face masks, ventilation, hands disinfection. 63.3% of the nurses from both units had a negative view towards the flu vaccine. However, 43.3% of the nurses believed that flu vaccine was important for protecting themselves from influenza complications. The majority of the nurses believed that people avoided flu vaccine due to the fear of side effects and did not believe in the effectiveness of the vaccine.

**Conclusion:** the majority of nurses were aware of the flu vaccine and also the potential complications of influenza. Nevertheless, the minority of the nurses believed that the flu vaccine was important for protecting themselves.

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May: P.P.

# MEASURING THE TENSILE STRENGTH OF SOLDER JOINTS OF ORTHODONTIC WIRE USING DIFFERENT SOLDERS

Sigrid Käärdi, student of dental technology; Tõnu Kauba, MD, PhD;  
Marit Paljak, MA, Tallinn Health Care College, Estonia;  
Toomas Pihl, PhD, TTK University of Applied Sciences, Estonia

**The aim:** to measure the tensile strength of solder joints of orthodontic wire using different solders.

**Method:** test bodies were made at the dental technology laboratory of the Tallinn Health Care College. Measuring was performed in the mechanics research laboratory of the TTK University of Applied Sciences. Test bodies were made of 0.7 mm orthodontic wire and were roughened by milling. 5 were made using the orthodontic wire and silver solder of the same manufacturer and 5 were made in a way that the orthodontic wire and the silver solder were produced by different manufacturers. In the measuring process G.U.N.T. WP 300 device was used.

**Results:** the average length of the same manufacturer's test bodies by stretching was 9.23 mm and the average strength of applied force was 0.36 kN. The average length of different manufacturer's test bodies by stretching was 6.47 mm and the average strength of applied force was 0.33 kN.

**Conclusion:** using a solder of a different manufacturer does not significantly affect the tensile strength of an orthodontic wire interface.

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May: P.P.



# THE COMPRESSION STRENGTH OF COLD CURE ACRYLIC SAMPLES MANUFACTURED DIFFERENTLY FROM MANUFACTURER'S RECOMMENDATION

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Marit Paljak, MA, Tallinn Health Care College, Estonia;  
Toomas Pihl, PhD, TTK University of Applied Sciences, Estonia

**The aim:** to measure the compression strength of cold cure acrylic samples manufactured differently from manufacturer's recommendation. Hypothesis: cold cure acrylic that is manufactured differently from manufacturer's recommendations will have the same strength qualities as manufactured according to recommendations.

**Method:** cold cure acrylic samples (shape: cylinder, width: 16 mm, height: 19 mm) were manufactured at the dental technology laboratory of the Tallinn Health Care College. For manufacturing the samples, acrylic was mixed in relation 10 g of acrylic powder / 7 ml monomer liquid. Polymerization process took place in a pressure pot in hot steam, under pressure of 2 bars for 10 minutes. Compression strength tests were held at techno material laboratory in the TTK University of Applied Sciences using Universal Material Tester G.U.N.T. WP 300.

**Results:** the results showed different compression strength of two samples.

**Conclusion:** cold cure acrylic samples that were manufactured differently from manufacturer's recommendations showed weaker strength qualities compared to the samples manufactured by recommendations. The hypothesis was not confirmed.

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May: O.P., P.P.

# THE INFLUENCE OF LOW TEMPERATURE ON CLASS IV GYPSUM EXPANSION

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Marit Paljak, MA, Tallinna Health Care College, Estonia;  
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**The aim:** to measure the expansion changes in a temperature that is too low on class IV gypsum with tap water in standard ratio. Hypothesis: the expansion of gypsum is under 0.10%.

**Method:** five gypsum test bodies with a diameter of 10.5 cm and a height of 1 cm were prepared in the dental technology laboratory of the Tallinn Health Care College. Test bodies were kept in a refrigerator on a temperature of 2 °C for 26 hours. The expansion of test bodies was also measured at the Tallinn Health Care College.

**Results:** tests did not show any significant expansion of the gypsum test bodies.

**Conclusion:** the test confirmed the author's hypothesis: the expansion of gypsum in a temperature that is too low is under 0.10%.

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May: O.P.

# MEASURING THE EXPANSION OF ALGINATE IN LOW TEMPERATURE

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**The aim:** to measure the expansion of alginate when placed to the refrigerator for 30 minutes on a temperature of 1.5 °C. Hypothesis: expansion of alginate does not occur.

**Method:** 5 round alginate test bodies were made with a diameter of 95–96 mm in the dental technology laboratory of the Tallinn Health Care College. These round test bodies were filled with alginate and placed into the refrigerator “Lec” for 30 minutes at a temperature of 1.5 °C. After 30 minutes the alginate test bodies were taken out of the refrigerator “Lec” and the diameter of the alginate test bodies was measured again to see if any alginate expansion had occurred. The size of test bodies was measured at the Tallinn Health Care College.

**Results:** there was no expansion of alginate after 30 minutes at a temperature of 1.5 °C.

**Conclusion:** the test confirmed the hypothesis: all five alginate test bodies maintained their tentative form.

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May: O.P.

# CULTURAL-ANTHROPOLOGICAL APPROACH: PREGNANCY AND CHILDBIRTH CUSTOMS IN DIFFERENT CULTURES

Marika Merits, Tallinn Health Care College, Estonia

**The aim:** to describe pregnancy and childbirth customs in six different cultures: the Amish, Inuits, Turkish-Anatolian village culture, Kosovo Albanians, the Japanese and the Chinese.

**Method:** the presentation provides an overview of literature, which describes the aforementioned cultures through the theory of Richard D. Lewis, which discerns three different cultural types: linear-active, multi-active and reactive types of culture.

**Results:** according to the theory of Richard D. Lewis midwives who are interculturally competent are able to better capture and understand different pregnancy and childbirth customs and use or consider these customs in midwifery.

**Conclusion:** knowledge on different cultures challenges myths surrounding pregnancy and childbirth. Awareness of cultural issues helps to consider the potential impact of religion, faith, culture and experiences upon pregnancy and birth. The current topic certainly widens midwives' education and worldview.

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May: O.P.

# THE CAUSES AND PREVENTION OF MUSCULOSKELETAL DISORDERS AMONG HEALTH CARE WORKERS

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Maxim Chernov, nurse in the occupational diseases and health center  
of the North-Estonian Regional Hospital, Estonia;  
Pilvi Raudsepp, dental nurse at the Kaarli Dental Clinic, Estonia

**The aim:** to describe the main risk factors and prevention of work-related musculoskeletal disorders among health care workers.

**Method:** analysis of the complex impact of the physiological and psychosocial risk factors.

**Results:** the main risk factors of the musculoskeletal disorders among health care workers include: physical loads and uncomfortable postures while helping patients. The biggest risk group is considered to be care workers and nurses due to their tasks, which are directly connected with patients, and include certain risk factors such as physical strength required for lifting patients. The most typical conditions associated with physical risk factors are low back, neck and upper extremity disorders. At the same time, the problems caused by physical overload can also be contributed by psychosocial environmental risk factors, such as work load, high requirements for work, human relationships etc.

**Conclusion:** health promotion, risk assessment of the work environment, and control over workers' health have to be taken into account as a cornerstone of preventing these problems.

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May: P.P.

# OCCUPATIONAL EXPOSURE IN THE TECHNOLOGY LABORATORY OF THE CHAIR OF PHARMACY OF THE TALLINN HEALTH CARE COLLEGE

Milvi Moks, MD, PhD; Lilian Ruuben, MA; Ene Kotkas; Mirjam Pedaja,  
Stella Kuusemets, Ave Vaan, Tiina Sarap, Marianne Vunk, Eliina Mišina,  
students from the Chair of Pharmacy, Tallinn Health Care College, Estonia

**The aim:** to evaluate the working conditions of the technology laboratory of the Chair of Pharmacy of the Tallinn Health Care College.

**Method:** evaluation and analysis of data described in the ergonomic survey.

**Results:** students had been instructed in safety at work and health care before starting working in the laboratory. The design of the laboratory, useful functional equipment and electrical safety were positively highlighted by the students. The main risk factors in the aforementioned laboratory include: work in sitting position, short-term burdensome movements and work positions while making medicines, inconvenient work position when looking at the blackboard. Accidents might occur due to the uneven floor level. A lack of possibility to wash hands and eyes in the laboratory was found.

**Conclusion:** hand and eye washing possibilities should be introduced in the laboratory.

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October: P.P.

# TENSILE STRENGTH OF SOLDER JOINTS OF ORTHODONTIC WIRES PRODUCED BY DIFFERENT PRODUCERS

Merike Paas, student of dental technology; Tõnu Kauba, MD, PhD;  
Marit Paljak, MA, Tallinn Health Care College, Estonia;  
Toomas Pihl, PhD, TTK University of Applied Sciences, Estonia

**The aim:** to measure the tensile strength of solder joints of orthodontic wires produced by different producers.

**Method:** orthodontic wire test bodies were made in the dental technology laboratory of the Tallinn Health Care College using silver solder, flux and different producers' orthodontic wires. The 10 test bodies (5 of them were made using the first producer's orthodontic wire, named "A" and the second set was made from the second producer's orthodontic wire, named "B") with a length of 100 mm and a diameter of 0.7 mm were made. The length of the solder joint of the test bodies was 7 mm. The measuring was performed at the research laboratory of the TTK University of Applied Sciences. G.U.N.T. WP 300 device was used in the measuring process.

**Results:** the average length of producer A orthodontic wire test bodies by stretching was 0.68 mm and of producer B 0.6 mm. The average strength of applied force on orthodontic wire A was 0.58 kN and on producer B orthodontic wire 0.62 kN.

**Conclusion:** the orthodontic wire test bodies of different producers broke near the solder joint, but the solder joint remained intact.

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May: O.P., P.P.

# MANUFACTURING FIXED DENTAL PROSTHESES ON ZIRCONIUM OXIDE BASE

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Jaunius Mickus, professional Bachelor of Dental Technology,  
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**The aim:** to analyse the manufacturing of fixed dentures on zirconium oxide base.

**Method:** making non-metal prosthesis on zirconium oxide base using Cercon® CAD/CAM system.

**Results:** non-metal ceramic prostheses on zirconium base have excellent aesthetics and high strength. Therefore, these prostheses are suitable for all patients. Zirconium oxide is a unique material for manufacturing dental prostheses: it meets the highest standards of non-metal restorations. Its strength is equivalent to metal and its colour variety enables to choose the suitable natural colour of teeth. Virtual modelling applying the CAD/CAM technology saves time and facilitates working with zirconium oxide. Using Cercon® Ceram love ceramic mass enables to make prostheses which look like natural teeth and have excellent chewing function.

**Conclusion:** CAD/CAM technology is innovative, time saving and gives functional and aesthetic results.

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May: P.P.



# MEASURING THE COMPRESSIVE STRENGTH OF HEAT CURE ACRYLICS AFTER KEEPING IT IN A TOO COLD ENVIRONMENT

Mari-Liisa Reigo, student of dental technology; Tõnu Kauba, MD, PhD;  
Marit Paljak, MA, Tallinn Health Care College, Estonia;  
Toomas Pihl, PhD, TTK University of Applied Sciences, Estonia

**The aim:** to determine the compressive strength of heat cure acrylic after keeping it in an environment that is too cold. Hypothesis: the compressive strength of heat cure acrylic decreases after storing it in an environment that is too cold.

**Method:** in the dental laboratory of the Tallinn Health Care College six cylindrical test bodies were prepared with the height of 20 mm and with a diameter of 15 mm. The test bodies were kept at a temperature of +1.5 °C in a refrigerator "Lec" for 2.5 hours, after which they were transported in a cool box Evercool EC-986A-12V for 55 minutes, where the temperature raised up to +7 °C, to the laboratory of the TTK University of Applied Sciences for compressive strength measuring with the machine G.U.N.T. WP 300. The applied force was 20–24 kN.

**Results:** none of the test bodies broke, but small cracks appeared.

**Conclusion:** storing heat cure acrylic in a +1.5 °C - +7 °C environment did not show any significant signs in decreasing the resistance of compressive strength. Thus, the hypothesis was partially confirmed.

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May: O.P.

# MEASURING THE COMPRESSION STRENGTH OF COLD CURE ACRYLIC TEST BODIES MADE IN BOILING WATER

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**The aim:** to determine the compression strength of cold cure acrylic prepared by using pressure and keeping in boiling water.

**Method:** the polymerization process of cold cure acrylic was conducted by using pressure while keeping the test bodies in boiling water. Six test bodies were prepared by ignoring the manufacturer's recommendations. The height of the cylinder shaped test bodies was 20 mm and diameter 15 mm. The preparation process took place in the dental technology laboratory of the Tallinn Health Care College. The compression strength measurements were conducted in the laboratory of the TTK University of Applied Sciences, using the universal testing machine G.U.N.T. WP 300. Maximum pressure exerted on a test body was 21.3 kN.

**Results:** four cold cure acrylic test bodies were observed at a minimal deformation of 19.5 kN pressure, no fractures were observed. One test body was observed at a minimal deformation of 21.3 kN pressure, no fractures were observed. One test body was observed at a minimal deformation of 12.5 kN pressure, one fracture was found.

**Conclusion:** cold cure acrylic test bodies made by using pressure and keeping in boiling water did not change their mechanical qualities by becoming weaker.

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May: O.P., P.P.

# PHYSICIAN STUDIES: ONLINE VERSUS POSTAL QUESTIONNAIRES

Alar Sepp, MD, MA, Tallinn Health Care College, Estonia

**The aim:** to find out the differences between surveys using paper and online questionnaires.

**Method:** analysis of the response rate using paper or online questionnaires from the years 1995, 2000, 2005, 2011.

**Results:** the analysis showed that the response rate depends on the data collection method. The online-based survey gave a lower response rate than the postal survey, because the respondents easily quitted in the middle of filling in the online survey. However, the online questionnaire enabled to receive information from respondents quicker than using a paper questionnaire. Forming databases using an online survey was much less time consuming, therefore saving time and human resources.

**Conclusion:** knowing the advantages and disadvantages of different data collection methods enables the researcher to plan the research process better.

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May: O.P.

# MULTICULTURAL LEARNING ENVIRONMENT IN TALLINN HEALTH CARE COLLEGE

Õilme Siimer, MA; Ene Kotkas, Tallinn Health Care College, Estonia

**The aim:** to give an overview of how non-Estonians integrate into Estonian learning environment in Tallinn Health Care College and what contributes to this process.

**Method:** 25 non-Estonian students and 14 lecturers of Tallinn Health Care College were interviewed. Structured and unstructured interviews were analysed.

**Results:** student tutors and intensive classes of Estonian have helped non-Estonian students to start studying in Estonian and to integrate them better into the academic environment of the Tallinn Health Care College and the Estonian society. The integration process is also influenced by the motivation and attitude of the non-Estonian students.

**Conclusion:** the analysis of the interviews showed that the adequate language support, help from tutors and motivation of the non-Estonian students were important factors influencing the integration of non-Estonian students into the learning process and academic life of the Tallinn Health Care College.

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May: P.P.

# THE ROLE OF TUTORSHIP IN THE DEVELOPMENT OF TALLINN HEALTH CARE COLLEGE

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student of health promotion,  
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**The aim:** to support the academic, social and cultural integration of the first year and exchange students with the help of tutors who are active students.

**Method:** the tutors of the Tallinn Health Care College focus on first year and exchange students providing them with information about their rights and obligations, help them to adjust to college life, develop their study and practice routines, adapt to new environment and solve problems. 29 tutor students have been trained since 2010 in the framework of an elective program.

**Results:** the feedback for tutorship is widely positive and shown to be especially effective when it comes to exchange students. During their studies in Tallinn Health Care College, all of the exchange students as well as many first year students have received assistance from their tutors.

**Conclusion:** tutorship has a big role in the development of the Tallinn Health Care College by assisting those who are in need of assistance and guidance. Therefore, the program must be kept alive and in constant development.

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May: P.P.

October: P.P.

# RAPID EXPANSION SCREW APPLIANCE FIXED ON MICROIMPLANTS

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Kristina Vaitkevičienė, MA in Odontology,  
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**The aim:** to study the production characteristics of rapid expansion screw appliance fixed on microimplants.

**Method:** comparable analysis and manufacturing the prosthesis.

**Results:** orthodontic anomalies affect not only the appearance of a person, but can also cause major problems, which affect everyday life. When producing a rapid expansion screw appliance on microimplants, it is important to accurately screw the construction bend with the minimum number of bending, as each correction weakens the metal. The special orthodontic solder is liquid, thus it is easy to make the solid construction of appliance by soldering.

**Conclusion:** not all screws' modifications are suitable for rapid expansion screw fixed on microimplants. At the moment the producers offer standard size abatements, but abatements should be available in several sizes.

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May: P.P.

# THE ATTITUDE OF STUDENTS FROM UTENA UNIVERSITY OF APPLIED SCIENCES TOWARDS HEALTHY AGEING

Zita Zajančkauskienė, MEd, Utena University of Applied Sciences, Lithuania

**The aim:** to research students' opinions concerning how to guarantee healthy ageing.

**Method:** data concerning health self-education were collected using questionnaires. The responses were analysed in January–February 2012.

**Results:** students have sufficient information about healthy ageing. The respondents would like to live a more physically active and healthy lifestyle. However, the data showed that the students experienced a lack of motivation, possibilities and time in order to guarantee themselves a more healthy ageing in the future.

**Conclusion:** the students have the necessary knowledge concerning how to achieve healthy ageing but they often fail to find motivation, possibilities and time to put this knowledge into practice.

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May: P.P.

# ASSESSMENT OF NURSES' PROFESSIONAL COMPETENCE

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Ruta Jurgelioniene, MA in Education, Utena University of Applied Sciences, Lithuania

**The aim:** to compare the opinions of nurses from the PI Utena St. Clares Hospice, Lithuania (named "group A") and Hedmark Moen Sykehjem Hospital, Norway (named "group B") concerning their most and less important activities and skills, as well as to evaluate their professional competence.

**Method:** 20 nurses from group A and 18 nurses from group B were interviewed.

**Results:** the respondents from group A considered psycho-emotional activities to be the most important activities and the appointed cognitive activities to be less important, while nurses from group B gave the highest priority to reflective activities and less importance to social activities. Empathy and sensibility to the person were brought out as the most developed generic skills. Other developed skills, such as creativity, quick orientation and analytical thinking, were mentioned. More than half of the respondents considered the level of their competence very high, one-fifth of the respondents thought that their level was high, and only 10% of the respondents thought that their level of competence was low.

**Conclusion:** psycho-emotional and reflective activities are the most important activities of nurses. The majority of nurses evaluate themselves to be highly competent professionals.

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May: P.P.



# MEASURING THE TENSILE STRENGTH OF THE HEAT CURE ACRYLICS AFTER STORING IT IN A TOO COLD ENVIRONMENT

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**The aim:** to determine the tensile strength of heat cure acrylic after keeping it in an environment that is too cold. Hypothesis: the tensile strength of heat cure acrylic decreases after keeping it in a too cold environment.

**Method:** five bone-shaped test bodies were manufactured of heat cure acrylic in the dental laboratory of the Tallinn Health Care College. The dimensions of the test bodies were: length 50 mm, middle length 40 mm, middle width 5 mm, length of the upper and bottom part 20 mm. The test bodies were kept in a refrigerator "Lec" at 1.5 °C for 2.5 hours, after which they were transported in a cool box Evercool EC-986A-12V during 40 minutes to the TTK University of Applied Sciences, where the tensile strength was measured. By that time the temperature in the cool box had raised up to 7 °C. Measuring was carried out with G.U.N.T. WP 300 Universal Material Tester, at 20 kN.

**Results:** all test bodies broke after using tensile strength 20 kN.

**Conclusion:** keeping heat cure acrylic in an environment that is too cold will decrease the tensile strength.

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May: O.P.

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