



UNIVERSITY OF PÉCS
Medical School



**I. Medical and Dental Student
Skills Development Competition
SkillsRace: Abstract Book**

Pécs, 2023

SkillRace

Editors

I. Medical and Dental Student Skills Development Competition. SkillsRace: Abstract Book

27–28 October 2023

University of Pécs Medical School



PÉCSI TUDOMÁNYEGYETEM
UNIVERSITY OF PÉCS



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Medical School

Pécs, 2023

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Dear participants, Dear guests,

We welcome you to Pécs, to the Scientific Section of the I. SkillRace Competition.

For the first time, we are organizing this competition in close cooperation with the Medical Skill Development and Innovation Centre of the University of Pécs, the University of Debrecen, the University of Szeged and the Semmelweis University, in order to present the scientific section of the competition. We are honoured to host around 150 colleagues from four universities across the country.

An important initiator for the development of skill laboratories at national level has been the fact that in the training of physicians and dentists in Hungary, the methodological issues of teaching methodology and teaching technology have been the subject of scientific achievements that can be measured at international level. We believe that such events can play a key role in deepening cooperation in this area and can be an important tool in the process of joining forces to enable future generations of doctors to develop the highest level of manual skills. One of the main objectives of our meeting is to bring together the professionals - teachers, students, researchers - who work in these facilities on a daily basis and to help build and strengthen collaborations at national level. The openness,

the search for innovation and the educational and research values of each university are all factors that give impetus to this sector, which is moving towards multidisciplinary and requires serious, coordinated teamwork. The sharing of creativity and learning from each other and from more experienced researchers and mentors is essential for the development of our students and the development of their professional competences. We believe that not only the faculty and students of the university, but also the entire innovative and enthusiastic health simulation professional community will benefit from the presentations and professional discussions at the event.

We hope that everyone will find some interesting new information, useful lessons or fruitful contacts to take home and continue their professional activities in the service of science and education.

We wish you a pleasant stay in Pécs!

Sincerely,

The Founders

Szilard Rendeki, University of Pécs, Hungary

Peter Maroti, University of Pécs, Hungary

Programme

10.27. | Friday



09:00–09:50

ARRIVAL, REGISTRATION

NORTH ENTRANCE OF THE NEW BUILDING

09:50–10:00

OPENING CEREMONY

ÁOK SIOT 0032 (NEW BUILDING)

10:30–13:30

SKILLRACE PART 1

OKIK – MEETING POINTS

13:30–14:30

LUNCH BREAK

OKIK MAIN POINT

14:30–17:30

SKILLRACE PART 2

OKIK – MEETING POINTS

19:00

BANQUET

RESEARCH INSTITUTE FOR WINE
AND VITICULTURE – MEETING POINT

Programme

10.28. | Saturday

09:30–12:00

SCIENTIFIC SESSION

PRESENTATIONS, ROUND TABLE

ÁOK SIOT 0033 (NEW BUILDING)

09:30–12:00

OPERATIONAL MEDICINE WORKSHOP

OKIK – MEETING POINTS

12:00–13:00

LUNCH BREAK

ÁOK SIOT 0033 (NEW BUILDING)

12:00–13:00

SCIENTIFIC SESSION

POSTERS

ÁOK SIOT 0033 (NEW BUILDING)

13:00

ANNOUNCEMENT OF RESULTS, CLOSING CEREMONY

ÁOK SIOT 0032 (NEW BUILDING)

Scientific section

Programme

- 9:30–9:40 Opening speech by Dr. Zalan Szanto
9:40–9:50 **dr. Gergely Csaba:** OSCE at the University of Pécs, Medical School: First experiences with a pilot project
9:50–10:00 **dr. Anna Dezsi:** Experience of the 2022 educational reform of Odontotechnology and Prosthodontics Preclinical Course at Semmelweis University
10:00–10:10 **Matyas Bene:** Validation of a novel low-fidelity virtual reality simulator and artificial intelligence assessment approach for peg transfer laparoscopic training
10:10–10:20 **Adam Varga:** Debrecen Medical Students' Surgery Club: an extracurricular manual skill development activity and a contest of basic microsurgical performance
10:20–10:30 **Valentin Molnar:** Examination of wear and discoloration parameters in the invisible orthodontic aligner system
10:30–10:40 **dr. Viktor Bacher:** Comparative study of a 3D printed video laryngoscope used in simulation based medical education
10:40–10:50 **dr. David Jelencsics and dr. Zsafia Vincze:** Monitoring dental students' practical skills development using digital technology
10:50–11:00 **Adam Matrai:** The beneficial role of sport training programs in improving skill performance on simulators in medical education
11:00–11:10 **Ferenc Molnar:** Validation of 3D printed MAYO Tubes and Stethoscope in Simulated Medical Environment – Tools Fabricated with Additive Manufacturing for Emergency Care
11:10–11:20 BREAK
11:20–12:00 Burning questions - roundtable
12:00–13:00 during the lunch break the following posters will be presented:

Kata Varady-Szabo: Improving Prognostic Tools for Pancreatic Cancer Surgery: A CRP, PCT, NLR, and PLR Study
Adrienn Jakobovics: The Development of Medical Simulation Education at The University of Pécs Medical School.
Eszter Szabo: Dental Implications of Tobacco Smoke Exposure
Eszter Edes: Effect of a practice-oriented elective course on medical students' communication skills and attitudes towards doctor-patient relationship: A Prospective pilot Study

Scientific Committee

prof. dr. Csaba Hegedus
prof. dr. Norbert Nemeth
prof. dr. Tamas F. Molnar
prof. dr. Marta Radnai
prof. dr. Krisztina Marton
dr. Daniel Erces
dr. Akos Nagy
Tamas Nagy

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Abstracts of the lecture session in list of timeline

OSCE at the University of Pécs, Medical School: First experiences with a pilot project

Dr. Gergely Jozsef Csaba¹, Dr. Judit Sebok², Dr. Aniko Kohalmi³,
Dr. Judit Fekete³, Dr. Katalin Lepenye³, Peter Szucs⁴, Dr. Laszlo Czopf⁵

*University of Pécs, Medical School, Department of Behavioural Sciences,
Divison of Medical Ecuation Development and Communication*

The objective structured clinical examination (OSCE) is considered the gold standard performance assessment method in undergraduate health profession education. The competencies are examined by a team of examiners on various simulated stations. A formative OSCE was organized for 5th and 6th-year Hungarian medical students during the 2022/23 academic year at the University of Pécs, Medical School. The circuit consisted of 8 procedure stations with simulated patients (SP). Our focus was on internal medicine and neurology, the tasks varied from taking history through assessing acute patients to leading a consultation about therapy. The students had 10 minutes to perform each task, which was followed by 5-minute feedback from examiners, communication experts and SPs. A checklist and a global rating scale were used to evaluate student performance. Two rounds of the same circuit were organized for the 15 participating students. The mean scores of the students varied from 60.7% to 84.4% the mean scores of the different stations were between 62,9%-84,1%. After the examination, the different stakeholders were provided with a questionnaire to obtain their views and comments about the OSCE. 12 students, 8 examiners and 8 SPs completed the questionnaire. The different attributes (e.g., validity, quality, structure, organization) were positively rated by every group. Concerns were raised regarding the time between stations and the evaluation sheet. Overall, our pilot project was welcomed, the stakeholders agreed that every medical student should be assessed with an OSCE during their studies.

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Experience of the 2022 educational reform of Odontotechnology and Prosthodontics Preclinical Course at Semmelweis University

Dr. Anna Dezsi, Dr. Csilla Erdei, Dr. Barbara Kispelyi, Dr. Krisztina Marton

Semmelweis University, Faculty of Dentistry, Department of Dental Pre-clinical Practice

Background: According to current studies, members of generation Z find more difficult to cope with stress of university studies compared to their predecessors, therefore, this generation requests more intensive communication and attention during their studies.

Aims and objectives: Based on student feedback, principal aim of the authors was to carry out a reform in the teaching method of Odontotechnology practical course through performing a more personal educational profile. It encompassed a replacement of large-group teaching method with student-oriented small-group training, supplemented by materials available on an open source online learning platform (Moodle Pty Ltd, Australia).

Materials and methods: In the first semester of 2022, small-group practical training was introduced. The former ratio of 12-15 students per teacher was replaced by 6, with more intensive cooperation during the practices. The visual teaching materials were uploaded to the online platform and made available for students during the whole semester. Students' satisfaction has been evaluated by a QR-code generated anonym questionnaire, where these changes were quantified and confirmed by their responses and feedbacks. Data acquired from the second semester of 2021/22 and the first semester of 2022/23 were compared. Results of the completed questionnaires were assessed and the average was compared to those of other subjects at the Faculty of Dentistry. For the statistical analysis, paired Student's t-test was used.

Results: Evaluating the results of the questionnaire revealed positive changes in the perceived quality of practical education, improved student-instructor communication, and increased the confidence of students in participating in the course. Discussion: The introduction of small-group practice and the pre-assigned visual and written materials improved the students' attitudes towards the subject and increased their comfort in the course. Conclusion: In the education of Generation Z, increased attention and higher interactivity is beneficial, and small-group, personalised teaching is preferable in terms of learning content.

Validation of a novel low-fidelity virtual reality simulator and artificial intelligence assessment approach for peg transfer laparoscopic training

Peter Zoltan Bogar¹, Mark Virag^{1,2}, Matyas Bene¹, Peter Hardi^{3,4}, Andras Matuz⁵, Adam Tibor Schlegl^{3,6}, Luca Toth^{1,7}, Molnar Ferenc³, Balint Nagy³, Szilard Rendeki³, Krisztina Berner-Juhos⁸, Andrea Ferencz⁸, Krisztina Fischer⁹, Peter Maroti^{1,3,*}

University of Pécs 3D Printing & Visualisation Centre

Objective: Simulators are widely used in medical education however, objective and automatic assessment is not feasible in case of low-fidelity simulators. In surgical training, objective assessment can be developed on existing devices using artificial intelligence (AI), or physical simulators can be replaced with virtual reality (VR) solutions that incorporate automatic evaluation methods. The aim of this study was to investigate the effectiveness of a custom-made VR simulator and AI-based evaluator of the laparoscopic peg transfer exercise.

Design: A single blinded randomized controlled study was carried out to compare the VR simulator with the traditional box trainer. The students had to perform the peg transfer exercise from the Fundamentals of Laparoscopic Surgery program. In total, 240 videos have been analyzed. The experts and the AI-based software used the same criterias for evaluation. The algorithm was developed to detect pitfalls and measure exercise duration.

Setting: The study was carried out at the Medical Skills Education and Innovation Centre of the University of Pécs.

Participants: Sixty medical students were involved from an obligatory surgical course at the University of Pécs.

Results: There was no significant difference between the improvement of the VR and control group. The novel AI-based algorithm had a 95% agreement, compared to the manual assessment. The average difference between the exercise durations measured by the two assessment methods was 2.61 seconds. The duration of the assessment using AI was 59.47 seconds faster than the manual assessment which can be further improved by using parallel threads.

Conclusion: The VR simulator was similarly effective compared to the training box simulator. The AI-based evaluation gave similar results compared to manual assessment and it can significantly reduce the time needed for the evaluation of peg transfer skills. AI and VR could improve the effectiveness of basic laparoscopic training.

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Debrecen Medical Students' Surgery Club: an extracurricular manual skill development activity and a contest of basic microsurgical performance

Adam Varga, Noel Johny Nellamkuzhi, Laszla Adam Fazekas, Adam Attila Matri, Tamas Lesznyak, Erzsebet Vanyolos, Norbert Nemeth

University of Debrecen, Faculty of Medicine, Department of Operative Techniques and Surgical Research

INTRODUCTION: Assessment of surgical abilities has become more significant in medical education in recent years. Along with other advanced-level courses, it focuses on training in fundamental surgical, laparoscopic, and microsurgical procedures. The majority of medical students take these courses. However, students are requesting more practice and complicated feedback on their skill performance regularly.

METHODS: The Debrecen Medical Students' Surgery Club (DMSSC) has been established by our department and by the students' society. The entrance criteria included the completion of the "Basic Surgical Techniques" main course, the "Surgical Operative Techniques" and the "Basics of Microsurgery" elective courses. The program included interactive lectures, discussions given by clinicians, advanced practices, and a skill competition on basic surgical and microsurgical skills. The microsurgical education programs have been established by Professor István Furka (1935-2021) in our department, and we followed those principles. The DMSSC program consisted of two sessions: suturing practices on biopreparates in the operating theatre and preparing microsurgical end-to-end anastomoses and biomodels. The last practice was the contest itself. We measured time durations and analyzed the work by quality scoring systems, video recordings/photos, patency, and tensile strength of the anastomoses.

RESULTS: Time parameters and quality indicators significantly improved in both scenarios ($p < 0.001$ vs. first practice). The quality of preparation and the atraumatic work increased significantly compared to the second practice during the competition ($p = 0.011$ vs. second practice). Also, the tensile strength during the competition increased significantly, indicating an improvement in the quality of anastomoses ($p < 0.001$ vs. second practice).

CONCLUSION: Interestingly, the operating room and microsurgical performance were not always synchronic in the individuals. The numerous factors we investigated, and the instructors' direct comments offered cogent input on the participants' skill performance while also highlighting particular skill abilities in which the students could be talented and motivated.

Examination of wear and discoloration parameters in the invisible orthodontic aligner system

Valentin Molnar, Dr. Zsuzsanna Gurdan,
Dr. Zoltan Ujfalusi

*University of Pécs, Clinical Center, Department of Dentistry,
Oral and Maxillofacial Surgery*

During orthodontic treatments, the use of clear aligners is becoming increasingly popular, which patients wear for an average of 22 hours a day. The heat-activated materials used to produce aesthetic removable orthodontic appliances are subject to continuous intraoral environmental effects during wear. The aim of our research was to detect the shape and structural changes of these materials due to extrinsic factors.

Materials and methods: We analyzed 70 clear aligners (35 worn and 35 unworn), including 30 for the upper jaw and 40 for the lower jaw, using a 3D scanner and metrology software, as well as a scanning electron microscope. The aligners were made from Erkodur-al 0.8 mm Copolyester composition material, using deep drawing technology, as utilized by the Smilezor company.

Results: Comparisons based on the scans revealed significant deviations and material deformations in the worn aligners compared to the references. The most notable changes were detected in the molar and frontal regions, with the most prominent alteration found on the second mandibular aligner's second molar surface, with a 2.75 mm deviation. Electron microscopy images showed a higher incidence of structural changes in the worn aligners, in the form of cracks, scratches, and deposits.

Conclusion: Based on the results of macroscopic and microscopic examinations, we can conclude that the thermoplastic materials used in clear aligner therapy, despite the measured shape and structural changes, exhibit good mechanical stability for orthodontic treatments.

Comparative study of a 3D printed video laryngoscope used in simulation based medical education

Dr. Viktor Bacher, Marton Nemeth, Szilard Rendeki, Balazs Tornai,
Martin Rozanovic, Andrea Pankaczi, Janos Olah, Jozsef Farkas,
Melania Chikhi, Adam Schlegl, Peter Maroti, Balint Nagy

University of Pécs, Medical School, Medical Skills Education and Innovation Centre

Endotracheal intubation (ETI) is one of the main pillars of critical care as an advanced airway management technique. The gold standard device is still the direct laryngoscope (DL), but video laryngoscopes (VL) are now widely available and have several advantages, such as a steep learning curve, less cervical spine movement, better visualization and higher success rates. Therefore, the VL technique has been included in almost all international guidelines on airway management. During the course of COVID-19, supply chain disruption has brought 3D printed medical devices to the forefront, and 3D printed VLs have emerged. The effective training of novice healthcare professionals has been a challenge for hospitals and medical universities. However, only few studies have investigated the usability and effectiveness of these devices in these contexts.

In our research, we compared a unique 3D printed VL with guide channel (3DVL) manufactured by our research team, with a commercially available 3D printed VL without guide channel, a Macintosh DL and two widely used VLs. Our study was conducted under standardized conditions in a simulation environment with volunteers in simulated normal and difficult airway scenarios. We assessed intubation success rate as the primary endpoint, and intubation times, quality of visualization, complication rates and user satisfaction as secondary endpoints.

The 3DVL performed better than the DL in both scenarios in most endpoints. Compared to the other 3D device, the difference was even more significant in favor of our 3DVL. Compared with the two commercially available VLs, the 3DVL showed comparable, better or from a clinical aspect non-inferior performance. These results were also reflected in user satisfaction.

Our study in a simulation environment suggests that the 3D technique may have the potential to produce an airway management device (VL) with an equally good or better performance, than currently commercially available ones, which can also be effectively used in medical training.

Monitoring dental students' practical skills development using digital technology

Dr. David Jelencsics, Dr. Zsofia Vincze

Semmelweis University, Faculty of Dentistry, Department of Dental Pre-clinical Practice

Introduction: Student demand is driving the increasing use of digital technology in education. The possibilities of modern technology can be used not only to improve theoretical knowledge but also to improve manual skills. Our aim is to make the broadest use of digital technology in the practical teaching of preclinical dental education.

Material and method: Our research involved first-year dental students (n=14). They performed two tooth preparations on artificial teeth for metal-ceramic solo full-coverage crowns (KaVo INTRACompact 2068 LHC 1:1, Meisinger Micro-Diamond RA 868 012), based on a reference example prepared tooth presented by the instructor. A digital impression of the reference prepared tooth and the two tooth preparations made by each student was made using an intraoral scanner (Medit I600). After the first preparation scan, the students had the opportunity to view the scanned tooth on the computer monitor and discuss any mistakes with the instructors. The second preparation and scan took place after the discussion. Finally, the scanned data from the students were compared with the scanned data from the reference tooth using a surface fitting program (Geomagic Control X, 3D Systems).

Results: At the first preparation, the average deviation of the teeth prepared by the students was -0.032. At the second preparation, this value changed to -0.022, which means that the students removed more tooth material than necessary at both preparations, but the deviation from the reference tooth was on average 0.01 mm less at the second preparation.

Conclusion: Students' practical skills improved thanks to the training and better visual control provided by digital technology.

The beneficial role of sport training programs in improving skill performance on simulators in medical education

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INTRODUCTION: Manual skills, fine movements have great importance in many fields of medicine for the successful and safe interventions. Numerous educational training programs are known for skill development, many of them are part of medical education. In relation to sports sciences, several sport types are based on fine motor skills. In our work, we aimed to verify the hypothesis that an appropriately chosen sport training program can help medical students to develop manual dexterity, that can be objectively tested on high-fidelity simulators.

METHODS: Twenty-six volunteer medical students were listed in two groups. The sports group includes seven sessions of 2-hour of table tennis practice. Control group did not have sport program. Objective data of the exercises on specific modules on arthroscopy (VirtaMed ArthroS™ - Triangulation Skills, Catch the stars modules) and vascular catheterization (Mentice - Navigation Training module) high-fidelity simulators at the beginning and end of the 7-week study period were recorded. A specific questionnaire and an additional manual skill assessment test were also performed.

RESULTS: Significant differences were found for a number of parameters in favor of the sport group, especially for time and quality parameters recorded by the high-fidelity simulator modules. On arthroscopy simulator we found that total score and safety score improved, procedure time significantly decreased, movement parameters improved compared to baseline and versus control group. On vascular catheterization simulator the total time improved, total amount of contrast significantly decreased compared to baseline and control group. The time parameters were significantly decreased in the sport group.

CONCLUSIONS: An intensive and easily feasible table tennis training program was effective in improving medical students' manual skills and their performance on simulators. We continue the studies to further investigate various training programs and sports.

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Validation of 3D printed MAYO Tubes and Stethoscope in Simulated Medical Environment – Tools Fabricated with Additive Manufacturing for Emergency Care

Ferenc Molnar, Matyas Rendeki, Szilard Rendeki, Balint Nagy, Viktor Bacher, Peter Bogar, Adam Schlegl, Arnold Koltai, Peter Maroti, Gergely Marovics

University of Pécs, Medical School, Medical Skills Education and Innovation Centre

Introduction: 3D printing is one of the fields of today's countless opportunities. Emergency medicine and disaster medicine are facing a shortage of resources. We set out to assess the effectiveness and efficiency with which these medical devices can be used in emergency and disaster care. We also wanted to see how we could integrate these tools into patient care.

Material and Methods: 26 participants tested our medical devices in our study. They were asked to provide their medical devices to a wide range of people with different levels of medical experience, from medical students to specialists and paramedics. 1 participant was excluded because he had relevant experience in emergency care at the time of inclusion. Tasks had to be performed under standardised conditions and according to uniform assessment criteria. The instruments were also compared in terms of user experience. Results were considered significant at $p < 0.05$.

Results: there was no significant difference in time to insertion ($p = 0.798$) for MAYO-tube and no significant difference in the duration of fondendoscope testing ($p = 0.676$), nor in the correct position ($p = 0.238$) and accuracy of diagnosis ($p = 0.163$), but we found significant difference in user experience ($p < 0.001$).

Conclusion: Based on our results, it can be stated that 3D printed devices can perform their tasks under simulated conditions regardless of what the user evaluation shows. 3D printed medical devices may be suitable in disaster situations and remote medical situations. However, for everyday use, we still need to prefer clinically adapted devices, because of the cost-effectiveness. Our tools can also be useful in medical training to broaden the repertoire of tools used by doctors.

A top-down view of various medical instruments including a stethoscope, surgical scissors, a syringe, a scalpel, and a pen, all resting on a teal surface. The instruments are rendered in a semi-transparent, light blue color, creating a subtle watermark effect. The background is a solid, darker teal color. In the top-left and bottom-right corners, there are decorative patterns of small white and light blue squares.

Abstracts of the poster session

Improving Prognostic Tools for Pancreatic Cancer Surgery: A CRP, PCT, NLR, and PLR Study

Kata Szabo-Varady, Csaba Loibl, Martin Rozanovic

University of Pécs, Clinical Center, Department of Anaesthesiology and Intensive Care

Introduction: Pancreatic cancer is one of the leading causes of cancer-related deaths in developed countries and is one of the most severe malignancies worldwide. According to the GLOBOCAN 2018 estimates, it causes more than 430,000 deaths annually, with an estimated 5-year survival rate of less than 5%. Currently, surgical removal offers the only significant chance of a cure or at least an increased chance of survival. Complications following surgery continue to show high morbidity, up to 40%.

Methods: Our study was conducted on postoperative patients who underwent pancreatoduodenectomy and were admitted to the Central Intensive Care Unit at the University of Pécs. Samples were collected from the enrolled patients throughout their stay in the Intensive Care Unit. The kinetics of parameters were monitored for five days. During these days, we compared the patients' C-reactive protein (CRP), procalcitonin (PCT), neutrophil-lymphocyte ratio (NLR), and platelet-lymphocyte ratio (PLR) levels. We analysed the changes in these markers' levels in patients who developed sepsis and those who remained complication-free.

Results: 37 patients were examined, including 16 males and 21 females. Their average age was 66 (range: 58-70) years. Among the studied patients, 26 remained complication-free, while 11 developed sepsis. Surgical complications occurred in 3 cases, and delayed gastric emptying occurred in 4 cases. The Mann-Whitney U test compared the complicated and uncomplicated groups, showing significant differences in PCT, NLR, and PLR. Throughout the postoperative period, both in the complicated and uncomplicated patient groups, the CRP levels exceeded the laboratory-defined reference value (5 mg/L), but no significant difference was observed.

Conclusion: NLR and PLR, calculated from routine complete blood count results, can predict the development of postoperative complications. CRP did not prove to be effective in differentiating between complicated and uncomplicated patient groups during the postoperative period.

The development of medical simulation education at the University of Pécs Medical School

Adrienn Jakabovics

University of Pécs, Medical School, Medical Skills Education and Innovation Centre

Simulation education revolutionizes medical training, replicating real-life scenarios using artificial devices. The University of Pécs' Medical Skills Development and Innovation Centre offers realistic learning through simulation-based training.

Review of the operation, protocols, and equipment of the Medical Skills Development and Innovation Centre. Additionally, we would like to emphasize the potential and impact of simulation education on medical training. Presenting the utilization of the center over the past year.

Our institute boasts state-of-the-art facilities, a skilled team of 30 professionals, and around 120 simulators. We use advanced 3D simulation technology, innovative tools, and advanced IT/audiovisual systems, including Virtual ENT, Mentice, METI, Neuro VR, and cadaver surgeries. We offer diverse courses for undergraduates and postgraduates, including electives in anesthesiology, surgery, critical care, first aid, and nursing. Additionally, we support inclusivity and community outreach through a rural life-saving program.

In 2022, we delivered a total of 1,426 teaching hours, with 18,035 participants in simulation-based training. This included 342 hours in Hungarian for 4,324 students, 679 hours in English for 8,588 students, and 405 hours in German for 5,123 students. We provided 786 hours of undergraduate training and 186 elective hours. Postgraduate training covered 72 hours. Additionally, we offered 324 hours of training in various programs, including police training, National Tax and Customs Administration (NAV), Rural Life-Saving Program, Skill Resident Training, xBLS clinics, Emergency Society, and Surgical Society.

Simulation education is now integral to medical training, benefiting both students and instructors. It enhances safety, develops sensorimotor skills, improves spatial perception, and fosters better communication. It allows for case reviews and standardized care protocol demonstrations, promoting modular education. This technology enriches learning and bridges the gap between theory and practice. Our center showcases the significant impact of simulation technology on medical and healthcare education.

Dental Implications of Tobacco Smoke Exposure

Eszter Szabo

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The harmful effects of tobacco smoke on the human body have been well-known for a long time, and it is also responsible for causing changes in the oral flora. This phenomenon can influence the duration and success of orthodontic treatments, as the use of various tobacco products continues to rise. In our study, we specifically investigated the impact of the harmful substances in tobacco smoke on the elasticity of rubber bands used in orthodontics, simulating the oral environment.

Methods: Simulating oral conditions, we conducted the analysis of 200 rubber bands (n=5) at 37°C. Over a 6-week examination period, we examined elastomers from four different manufacturers (American Orthodontics (AO) short/long; G&H (GH) short/long; Dentaureum without connectors/with connectors; OC Orthodontics (OC) short/long). Among the extrinsic factors, we studied the effects of smoking (20 minutes per day), toothpaste treatments (Sensodyne, Parodontax) (3 minutes per day), and mouthwash (Curasept with fluoride and fluoride-free) (30 seconds) on force degradation.

Results: The changes in tensile strength of the rubber bands were measured weekly in cN SI units using a Zwick/Roell Z5.0 biaxial material testing machine. Data analysis was performed using Origin and Janovi programs: For treatments, the greatest degradation occurred in OH short-type bands. The most substantial force degradation was observed with fluoride-free Curasept mouthwash treatment, reducing from 363.4 cN to 174.8 cN, resulting in an 188.6 cN difference. The smallest change in this type was observed with Parodontax treatment, which showed a 144.65 cN force degradation, changing from 332.25 cN to 187.6 cN.

AO long-type bands exhibited the least decrease in force. With Parodontax toothpaste treatment, there was an 81.8 cN reduction, from 197.0 cN to 115.2 cN. In this type, the most substantial force degradation occurred with fluoride mouthwash treatment, resulting in a 99 cN decrease. For short-type bands as well, the least reduction was observed with Parodontax treatment. However, in this case, the highest degradation was seen with fluoride-free Curasept treatment, resulting in a 104.4 cN decrease.

Conclusions: Significant force degradation was evident in all types of rubber bands during the 6-week cycle. The harmful effects of tobacco smoke on these orthodontic devices can be demonstrated by the degradation of the rubber bands.

Effect of a practice-oriented elective course on medical students' communication skills and attitudes towards doctor-patient relationship: A Prospective pilot study

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Introduction: The attitudes of practitioners towards their patients and the quality of communication between them significantly influence patients' satisfaction and compliance. Moreover, it positively impacts the well-being of doctors, acts as a preventive measure against burnout, and reduces their daily stress levels. Therefore, it is crucial to provide medical students communication training with adequate quality and quantity, and for this, in addition to the currently mandatory subjects, elective courses are also a good opportunity. In our research, we examined the effects of such a course, in which students can practice learned communication models and techniques with simulated patients in realistic situations, while also receiving structured feedback on their performance.

Method: In our prospective pilot study, we assessed Hungarian and English program students' communication attitudes and self-confidence in communication skills participating in the elective course titled "Medical Communication in practice I.", using a questionnaire-based method. We administered the questionnaire at the beginning of the course and immediately after its completion. To assess the students' attitudes, we used the "Patient-Practitioner Orientation Scale" (PPOS) questionnaire, and their self-confidence in doctor-patient communication was measured based on the learning outcomes defined by the course instructors.

Results: Among the 14 students who completed both the pre-course and post-course questionnaires, we found a significant increase in their self-confidence in communication skills, as well as a significant improvement in their scores on the "caring" sub-scale of the PPOS questionnaire.

Conclusion: According to the results of the pilot study, the examined course might be influential in shaping attitudes and developing communication skills, which raises the possibility of its broader application, potentially even within the framework of obligatory subject.

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