

Scientific Summaries Of Invited Speakers And List Of Posters Of The Ist International Health Science Conference, Szeged

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I. Szegedi Nemzetközi Egészségtudományi Konferencia, 2025 május 29-31.

A Szegedi Tudományegyetem Egészségtudományi és Szociális Képzési Karának szervezésében 2025. május 29-31. között került megrendezésre az I. Szegedi Nemzetközi Egészségtudományi Konferencia.

Ahagyományteremtőszándékkal szervezett tudományos fóruma legfrissebb orvosi- és egészségtudományi kutatások, innovációk és aktuálítások bemutatására fókuszált a két plenáris és a hat tudományos szekció során. A plenáris előadások igen érdekes tudományterületeket öleltek fel; nagy hangsúlyt kapott a mesterséges intelligencia alkalmazása az alap kutatások és a betegellátás területén egyaránt, az emberi sejtek, szövetek biobankolási lehetőségei, valamint az úgynevezett transzlációs medicina szerepének elemzése a kutatási eredmények minél hatékonyabb, betegellátásban történő hasznosíthatóságával kapcsolatban. Az élelmiszeripar aktuális kérdései, a koraszülötteknél előforduló iatrogén ártalmak, az intrauterin magzati diagnosztika új módszerei, számos szemészeti vonatkozású újdonság, a probiotikumok alkalmazásának szükségessége, a sporttudományok, a fizioterápia aktuális kérdései mellett szó esett az öregétségügyről, a sürgősségi betegellátásban tevékenykedő szakdolgozók egészségi állapotáról, a fogyatékkal élő gyermekek egészségtudatosságáról, valamint a kultúra, a művészetek pszichés betegségekre gyakorolt gyógyító hatásáról is. Számos magyar egészségtudományi felsőoktatási intézményből, illetve hat országból, Nagy-Britanniából, Indonéziából, Portugáliából, Szerbiából, Törökországból és Németországból érkeztek a kongresszus előadói és vendégei, a fórum összesen 242 regisztrált résztvevővel zárult.

A Karunk által meghirdetett poszterprezentációs versenyen 75 igen színvonalas tudományos munkát mutattak be hazai és külföldi fiatal kutatók, hallgatók. A poszterek egészségtudományi, gyógyszer tudományi, fizioterápiás, sport- és táplálkozástudományi, valamint orvostudományi szekcióra különültek el. A poszterprezentációk lehetőséget biztosítottak a szakmai párbeszédre, új tudományos kapcsolatok kialakítására, valamint arra, hogy a fiatal kutatók és hallgatók bemutathassák munkájukat a tudományos közösség számára.

A konferencia megvalósítását jelentős mértékben elősegítette a Kulturális és Innovációs Minisztérium által támogatott, a Nemzeti Kutatási, Fejlesztési és Innovációs Hivatal által meghirdetett Mecenatúra pályázat, melyet Karunk elnyert.

MEC_SZ 148950 számú projekt a Kulturális és Innovációs Minisztérium Nemzeti Kutatási Fejlesztési és Innovációs Alapból nyújtott támogatásával, a MEC_24 pályázati program finanszírozásában valósult meg.



Absztracts Of Oral Presentations – May 29-31, 2025 Art Hotel, Szeged, Hungary

The role of electrochemotherapy in the treatment of locally advanced or recurrent eyelid-periocular basal cell carcinoma: new pathway in ophthalmic oncology

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The treatment of locally advanced or recurrent periocular basal cell carcinomas is a complex task. In spite of the expanding therapeutic options, the treatment of large or recurrent periocular skin malignancies remains a significant challenge, highlighting the importance of the emergence and integration of new therapeutic modalities into clinical practice. In the field of ophthalmology, electrochemotherapy has recently gained attention as potential therapeutic option. Our group has been routinely applying the procedure in patients with challenging periocular basal cell carcinomas since 2014. The procedure uses short-duration electrical pulses to transiently and reversibly permeabilize the cell membrane, allowing chemotherapeutic agents delivered in high concentrations to the interstitium to enter directly into the tumor cell. Compared to other methods, electrochemotherapy is an efficient and safe procedure, with noteworthy advantages being its repeatability and the high intratumoral chemotherapeutic concentration achieved with low systemic load. High rates of complete remissions, along with good long-term tumor-free outcomes can be achieved in the treated patients, demonstrating the efficacy of the procedure. The presentation will discuss the long term results of periocular-eyelid electrochemotherapy and the role of the treatment in the ophthalmic oncology practice.

Iatrogenic skin disorders and related factors in newborn infants

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During the past few decades, the rapid improvement of neonatal intensive care has resulted in dramatic decreases in neonatal mortality and impressive improvement in the survival of very premature infants, but the incidence of iatrogenic events has increased simultaneously. A significant proportion of the iatrogenic injuries that occur in NICUs result from skin injuries. The aim of our present study was to assess factors of possible relevance as concerns the development of skin disorders resulting from the immaturity of the skin and various iatrogenic complications in neonates requiring intensive care. A prospective cohort study was conducted in the NICU at the Department of Pediatrics at the University of Szeged during a two-years survey period. All consecutive full- and preterm infants hospitalized in the NICU were included in the study and underwent whole-body skin examinations. Dermatologic disorders with the gestational age, sex, birth weight, area of involvement, etiology of the disorder, causative factors, diagnosis at admission and comorbidities were recorded, together with the nature of the management (dressings, ointments, medication and surgical interventions).

During the 2-year study period, a total of 460 neonates of Caucasian origin were admitted to the NICU, 87 of them exhibited some kind of iatrogenic skin disorder. The mean gestational age of the newborn infants with any of the iatrogenic skin injuries was significantly lower than that of the infants without any skin trauma. The length of NICU stay was significantly longer in newborns with iatrogenic skin injuries. The following factors, interventions and conditions proved to be associated significantly with the development of iatrogenic skin injuries: use of the INSURE technique, mechanical ventilation, insertion of an umbilical arterial catheter, circulatory/cardiac support, pulmonary hemorrhage, intracranial hemorrhage, patent ductus arteriosus, bronchopulmonary dysplasia and positive microbiology culture results. Iatrogenic dermatologic disorders are frequent in neonates requiring intensive care, may result in important physiological consequences and may lead to prolonged hospitalization. Prevention, early detection, and optimal treatment of these disorders with modern, standardized skin care management strategies can result in significant improvements in barrier function of the skin, increasing the overall efficacy of neonatal intensive care.

Hidden Risks in Our Food: Challenges for the Food Industry in the 21st Century and the Link to Chronic Diseases, with a Special Focus on Cancer

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Introduction: Tartrazine, a widely used synthetic food dye, has been scrutinized for potential health risks. While its allergenic and behavioral effects are well studied, its genotoxic potential remains inconclusive. Investigating these effects is crucial for food safety and public health. **Objective:** This study aimed to evaluate the potential genotoxic effects of orally administered tartrazine using an animal model and genetic, epigenetic markers. **Material and Method:** An in vivo animal model was used to assess the

The application of artificial intelligence in ophthalmology

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Artificial intelligence (AI) is one of the most significant information technology advances of our time, developing at an almost unimaginable pace. The first mention of AI technology in ophthalmology dates back to 1975, and it has become increasingly dominant in recent years.

Its increasing use in ophthalmology is due to the fact that in our daily practice, most diagnoses and the determination of certain factors (e.g., intraocular lens diopter) are based on pattern recognition, often using photographic images taken by imaging devices and often using data sets.

This presentation will discuss the role of AI in the largest clinical registry (IRIS registry), diabetic retinopathy, age-related macular degeneration, glaucoma, intraocular lens power calculation and others, summarizing the relevant literature. From the summary analysis it will be seen that application of AI in most areas of ophthalmology is moving from theoretical applications to practical, everyday use. It can be clearly seen that the role of AI will continue to grow within ophthalmology, and that it will increasingly assist the ophthalmologist in diagnosis, progression analysis and the performance of high-volume, repetitive tasks.

Keywords: artificial intelligence, biometry, diagnostic imaging

New perspectives in fetal and placental magnetic resonance imaging

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Fetal and placental magnetic resonance imaging (MRI) is a safe and non-invasive diagnostic method during pregnancy, usually performed in the second and third trimester as a complementary examination following ultrasonography. Besides supporting the decision making about termination before 24 weeks of gestation in cases of diagnostic uncertainty, fetal MRI has been found to have a high clinical utility in cases of major isolated or multiple structural abnormalities involving the fetal brain, spine, neck, thorax or abdomen. Evaluating twin pregnancy with MRI is also a promising and interesting field, where the prenatal examination may be indicated even in the absence of ultrasound abnormalities. In clinical practice, the aim of placental MRI is usually limited to the evaluation of sonographically suspected adhesion disorders, although there are important technical novelties for the non-invasive assessment of placental perfusion with MRI, which may help to identify placental insufficiency, preeclampsia or fetal growth restriction by providing quantitative biomarkers on placental microstructure and perfusion. This paper aims to highlight the most common clinical applications of fetal and placental MRI as well as the latest innovations in this field. We summarize our more than ten years of experience and introduce our preliminary research findings related to placental perfusion.

Keywords: fetal imaging, magnetic resonance imaging, perfusion, placenta, pregnancy

Research results and experiences in the field of health behaviour of children and young people with disabilities at the Faculty of Health Sciences of the University of Debrecen

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One of the main research directions of the Department of Health Methodology and Prevention is the study of health behaviour, health promotion opportunities and lifestyle of disadvantaged and disabled population and their families. The aim of our research is to explore the health behaviour, lifestyle, social environment and background factors influencing the health behaviour of children, young people with disabilities and their parents, and to identify possible spatial inequalities. Our study combined quantitative (questionnaire) and qualitative (focus group interview) methods. We conducted pilot intervention programmes and impact evaluations. Our preliminary results show that the nutritional habits of young people with disabilities are poor and that the proportion of young people participating in regular sporting activities is low, which is clearly linked to their financial situation. During the pilot intervention programme, we found that they had a deep knowledge of healthy eating combined with poor habits, poor oral hygiene knowledge, inappropriate behaviours in their social relationships, attachment problems, misidentification of relationships and emotions. The findings of our research group provide data on the health behaviour of children with disabilities and their families, on some of the underlying factors influencing it, and may provide a basis for the development of targeted intervention programmes.

Keywords: disadvantage, disability, health behaviour

Body Image and Eating Disorders in Adolescents

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Introduction: Eating disorders (ED) are a significant health concern among adolescents, impacting both physical and mental well-being. **Objectives:** To examine the prevalence of ED among high school students and explore the factors contributing to it, as well as the discrepancy between objective and subjective body image. **Methods:** The assessment was conducted in a high school using an online questionnaire during IT class. ED was assessed using the SCOFF questionnaire, well-being via the WHO-5, mental health with the Kutcher Adolescent Depression Scale, and life satisfaction with the Cantril Ladder. Weight and height were measured to calculate BMI z-scores. Data were analyzed using SPSS 28.0. **Results:** Among the 422 students surveyed (50.2% male), 19.3% reported eating related problems, with females showing a significantly higher prevalence than males ($\chi^2 = 6.626$; $p = 0.010$). A significant discrepancy was observed between actual BMI z-scores and perceived nutritional status categories ($\chi^2 = 94.040$; $p < 0.001$). Logistic regression identified six significant predictors of ED: female gender ($B = 0.875$; $p = 0.004$), higher BMI

z-score ($B = 0.516$; $p = 0.002$), negative body image ($B = 0.143$; $p = 0.015$), lower well-being ($B = -0.023$; $p = 0.004$), depressive symptoms ($B = 0.181$; $p < 0.001$), and lack of regular physical activity ($B = -0.777$; $p = 0.022$). **Conclusions:** ED is strongly associated with psychological and physical health factors. The discrepancy between actual and perceived body weight highlights the importance of self-perception in ED development, underscoring the need for interventions targeting body image, well-being, and lifestyle.

Keywords: Adolescents, Body Image, Depression, Eating Disorders, Mental Health

Probiotics during antibiotic treatment: Help or hype for gut microbiome?

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Background: Probiotics are often used to prevent antibiotic-induced low-diversity dysbiosis, however their effect is not yet sufficiently summarized in this regard. We aimed to investigate the effects of concurrent probiotic supplementation on gut microbiome composition during antibiotic therapy. **Methods:** We performed a systematic review and meta-analysis of randomized controlled trials reporting the differences in gut microbiome diversity between patients on antibiotic therapy with and without concomitant probiotic supplementation. The systematic search was performed in three databases (MEDLINE (via PubMed), Embase, and Cochrane Central Register of Controlled Trials (CENTRAL)) without filters on 15 October 2021. A random-effects model was used to estimate pooled mean differences (MD) with 95% confidence intervals (CI). This review was registered on PROSPERO (CRD42021282983). **Results:** Of 11,769 identified articles, 15 were eligible in the systematic review and 5 in the meta-analyses. Quantitative data synthesis for Shannon (MD = 0.23, 95% CI: [(-)0.06–0.51]), Chao1 (MD = 11.59 [(-)18.42–41.60]) and observed OTUs (operational taxonomic unit) (MD = 17.15 [(-)9.43–43.73]) diversity indices revealed no significant difference between probiotic supplemented and control groups. Lacking data prevented meta-analyzing other diversity indices; however, most of the included studies reported no difference in the other reported α - and β -diversity indices between the groups. **Conclusions:** Our results showed that probiotic supplementation during antibiotic therapy was not found to be influential on gut microbiome diversity indices. Defining appropriate microbiome diversity indices, their standard ranges, and their clinical relevance would be crucial.

Reducing diabetes related blindness in the UK and around the world

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One of the most common micro-vascular complications of diabetes mellitus is diabetic eye disease. Visual loss secondary to diabetic eye disease has devastating personal and societal consequences as it frequently affects those in the working age-group. One of the most effective ways of reducing diabetes

related blindness is establishing diabetic eye screening programme. Diabetic retinopathy screening is commonly run by the public health agencies. The prerequisites for establishing a full programme are vast, and during the talk we will discuss these using examples from several countries. The United Kingdom is one of the few countries where full population coverage has been established, leading to reduction in diabetes related blindness. Despite over 20 years of organised screening, marginalised groups still lack equity of access, highlighting the need for long term commitment from all involved in screening. In countries where diabetic eye screening is just being established, lack of diabetes registers regularly is the first issue to overcome. The ever-changing technological advances in imaging and image-analysis might mean that newly established programme will leapfrog those in existence by starting with better quality cameras with artificial intelligence (AI) included. This will help the new cadre of healthcare professionals to take good quality images and reduce the need of the number of human graders to be trained. AI can also assist in filling clinics and provide quality assurance/control. Screen without being able to provide treatment is unethical, but the options vary between or even within countries; treatment pathways must be set up accordingly.

Keywords: Diabetic eye disease; Diabetic eye screening; reduction of blindness

From the bench to bench side and back: translational ophthalmology for patient benefit

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Calcification is required for the formation and maintenance of skeletal and dental tissues in health. However, dysregulation of the mineralisation process can lead to ectopic calcium phosphate mineral deposition. In our work, we explored how ectopic calcification contributes to age-related macular degeneration (AMD) and Alzheimer's disease (AD). We used post-mortem eyes and brains from patients diagnosed with AMD or AD, as well as from healthy controls. We employed a variety of techniques, such as flat mounting whole eyes onto glass slides and embedding eye and brain tissues in paraffin for sectioning. To visualize calcification, we used OsteoSense680EX, a fluorescent dye specific for the calcium phosphate, hydroxyapatite (HAP). We also utilized advanced analytical tools like energy dispersive x-ray spectroscopy (EDX) and time of flight secondary ion mass spectrometry (TOF-SIMS) to confirm the elemental composition of the structures stained with OsteoSense680EX. We also carried out multimodal imaging of patients to correlate in vivo and in vitro results. We found that both AMD and AD are associated with increased deposition of minerals either in the sub-RPE space or in the brain. In AMD, large, calcified nodules heralded the rapid progression to end-stage disease. In AD ectopic calcification of neurons colocalised with phosphorylated tau. Ectopic calcification could be a promising target for interventions in AMD and AD. Alterations in the levels of calcium and phosphate, either through dietary changes or supplementation, as well as targeted interventions involving proteins and lipids associated with mineralisation, could become further druggable candidates.

Keywords: calcification, mineralization, age-related macular degeneration, Alzheimer's disease, retina,

brain

Eye as a Window to the Brain

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The diagnosis and management of complex neurodegenerative disorders, such as Alzheimer's disease (AD) or multiple sclerosis (MS), remains a significant challenge. Despite advancements in medical science, we are yet to discover a cure, and current treatments only manage the symptoms. Existing diagnostic tools lack sensitivity, especially in detecting subtle changes, which hampers our understanding of the disease and complicates the diagnosis, treatment process and drug discovery. The retina, an integral part of the central nervous system (CNS), originates from the same embryological tissue could potentially serve as a non-invasive, cost-effective surrogate for studying the CNS and monitoring disease progression. Our mission is to harness the recent advancements in retinal imaging technology for non-invasive studies of neurodegenerative processes. The ultimate goal is to integrate retinal imaging, functional testing, brain imaging, and fluid biomarker data to provide a comprehensive understanding of neurodegenerative conditions like AD or MS. This approach could pave the way for innovative diagnostic and therapeutic strategies, offer insights into disease processes, and facilitate the development of precision medicine. This mission, if successful, could revolutionize the way we understand, diagnose, and treat neurodegenerative disorders.

Keywords: Alzheimer's disease; multiple sclerosis; retinal imaging

Co-Designing Digital Education with and for Patients, Professionals, and the Public

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The transformative potential of co-design in developing digital educational resources is explored in this presentation. Drawing on research conducted at Queen's University Belfast, the impact of involving service users, individuals with lived experiences, and professionals in the co-design process is examined across diverse healthcare contexts. Key examples include the development of an interprofessional delirium education resource, co-created with healthcare students, which enhanced confidence, understanding, and collaboration in delirium management. Additionally, the co-design of an e-resource aimed at reducing restrictive practices in nursing homes resulted in decreased restraint use and improved care quality. The role of gamification in public health education is also highlighted through the development of a serious game designed to raise public awareness of pancreatic cancer, which improved symptom recognition and encouraged early medical intervention. These projects demonstrate the adaptability of digital education in addressing healthcare challenges while aligning with a "One Health" approach that integrates human,

societal, and professional needs. By engaging stakeholders throughout the design process, co designed educational tools are shown to be both effective and inclusive, contributing to improved health outcomes and interdisciplinary collaboration.

Keywords: Co-Design, Digital Education, Healthcare Innovation, Interprofessional, Gamification.

Curriculum innovation using coproduction and codesign

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Coproduction of learning resources in nursing and midwifery education supports students' knowledge, self-efficacy and confidence. Using the socioecological model, this presentation reports on how coproduction and co-design is embedded into the culture of the School of nursing and midwifery at Queen's University Belfast. At programme level, we engaged service users/ carers/ students/academics and practice partners interacting around the same table supporting shared decision making. These workshops embedded the ethos of coproduction at School level. Once coproduction principles were in place, we moved to the use of co-design. Co-design workshops tend to be smaller as codesign is a time bound activity producing an output through shared leadership and partnership working. This presentation reports on the impact that codesigned learning resources have had on student experience with a working framework for coproduction and codesign in health professions education.

Keywords: serious games, health professions education, codesign, coproduction, curriculum

Intimezology and Materials: Where sexuality and materials science meet, or the price of pleasure

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This research is the result of a very interesting initiative where materials science and sexual psychology meet. The first part of the research was to examine the life cycle of condoms and, beyond that, to map the chemical-safety aspects of sex toys. The presentation will discuss the results of artificial aging of condoms and provide some practical advice on responsible use and storage. In the case of sex toys, it will mainly briefly summarize the effects of chemical risks. Since these tools are widely used in the porn industry, the authors believed it would be valuable to collaborate with enthusiasts working in this field. For adult film industry professionals, the real risk does not come from the work environment but from everyday partners. While we are required to undergo full toxicology screening every two weeks, the average person is tested—at best—once every five years. As a result, in public use, condoms offer a simpler solution, providing immediate protection instead of regular testing. In contrast, within our strictly monitored environment, we operate in a controlled and secure space where tested individuals enjoy a form of “immunity.” From a materials science perspective, condom use and sexual devices carry not only physical but also chemical

and health risks. This is where the Intimezology approach comes into play, as intimacy is not merely a physical act but also an energetic imprint that influences an individual's psychological and spiritual state

Keywords: Intimezology, sexual safety, health screening, sexual toys, conscious sexuality.

Mental Health on the MOVE project: Where theory meets practice

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Schizophrenia is considered the most debilitating psychiatric disorder affecting 1% of the world population. It is characterized by a range of positive, negative, cognitive and psychomotor symptoms and classified as a severe mental disorder. Persons with schizophrenia experience reduced life expectancy and quality of life due to several mental and physical issues. Worldwide, physical activity is recommended as an adjunctive treatment in persons with schizophrenia. This presentation aims i) to describe the Mental Health on the Move project, a community-based project design to promote physical activity for persons with schizophrenia; and ii) to share the main lines of research and scientific evidences achieved over the past 15 years of intervention and research in the context of this project. Research methodologies and specific strategies for a successful intervention are explored highlighting the important role of physical activity in the promotion of physical and mental health of persons with schizophrenia. Overall, researchers and practitioners in the field of Rehabilitation and Mental Health are challenged to implement good practices related with long-term physical activity programs for persons with schizophrenia.

AI-based long-term health risk evaluation for driving behaviour change strategies in children and youth – SmartCHANGE

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The SmartCHANGE project aims to combat the rising prevalence of non communicable diseases (NCDs) by focusing on early prevention among children and adolescents. Recognizing that over 70% of global deaths are attributed to NCDs, often linked to unhealthy lifestyles, SmartCHANGE seeks to intervene during formative years to instill healthier habits. Leveraging artificial intelligence, the project develops advanced risk prediction models to assess individual susceptibilities to cardiovascular and metabolic conditions. By collaborating with family units and health professionals across four countries, SmartCHANGE compiles diverse datasets encompassing physical activity, nutrition, and other lifestyle factors. This data informs the creation of personalized risk assessments and tailored intervention

strategies. Key deliverables include a user-friendly web application for health professionals, facilitating the evaluation and management of health risks related to lifestyle factors, and a mobile health app empowering individuals to adopt healthier behaviors. These tools aim to foster a culture of prevention and wellness within communities. By integrating AI-driven insights with proactive health management, SmartCHANGE aspires to reduce the long-term risk of NCDs, promoting a healthier future for the next generation. HORIZON-HLTH-2022-STAYHLTH-01-two-stage – Grant Agreement: 101080965 <https://smart-change.eu>

Keywords: Children, risk prediction, artificial intelligence, behaviour change, chronic NCD

Orthoses in the Management of Hand Dysfunction

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The term orthosis refers to a device designed to support, correct, or compensate for temporary or permanent functional impairments affecting any part of the body. The term originates from the Greek word *orthōsis*, meaning “to straighten.” A review of the literature on orthotic applications identifies several primary objectives, including functional enhancement, deformity correction, protection of healing structures, maintenance of normal joint range of motion, joint stabilization, movement restriction, muscle balance optimization, inflammation control, facilitation of early mobilization, support of fracture healing, pain reduction, muscle force redistribution, joint offloading, strengthening of weakened musculature, spasticity management, scar management, and preservation of denervated muscles. The hand is among the most biomechanically and functionally complex regions of the human body. Consequently, the management of deformities and functional deficits resulting from hand pathologies necessitates a comprehensive, multidisciplinary approach. Due to the constant exposure of the hands to mechanical stress in daily activities, prolonged recovery periods—particularly in cases of peripheral nerve injury—may lead to diminished patient adherence to rehabilitation protocols. Thus, orthotic interventions play a critical role in maintaining hand function in such conditions. An optimally designed orthosis should effectively correct deformities, restore function, conform to the biomechanical arches and dual oblique characteristics of the hand, facilitate daily functional use, minimize excessive pressure on vascular and neurological structures, be cost-effective, and maintain an aesthetically acceptable appearance.

Keywords: Orthosis, Hand, Dysfunction, Rehabilitation, Injury Management.

Return to sport and return to continuum parameters after Anterior Cruciate Ligament injury

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Anterior cruciate ligament (ACL) injuries are among the most common sports-related traumas today.

Depending on the severity of the tear, it can be treated either surgically or conservatively. Regardless of the treatment approach, returning to sports and ensuring continued participation are crucial for preventing re-injury. The decision to return to sports is made based on overall well-being, including factors such as muscle strength, quadriceps-to-hamstring strength ratio, timing of the injury, graft ligamentization, range of motion (ROM), and specific functional tests. This decision is taken collectively by the entire rehabilitation team. In recent years, maintaining sports participation has become just as important as returning to sports, as it plays a significant role in regaining pre-injury athletic performance. Physiotherapists have key responsibilities in this process. Ensuring continued participation involves preventing re-injury, protecting the graft, sustaining athletic success, overcoming the fear of re-injury, and facilitating neuromuscular reorganization, among other critical parameters.

Preventive physiotherapy in cancer

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According to the World Health Organization, 30–50% of all cancer cases could be prevented by implementing current evidence-based practices in cancer prevention and avoiding behavioral and dietary risk factors. The beneficial effects of physical activity on cancer risk can be attributed to several mechanisms related to tumor development at various anatomic sites. First, physical activity reduces levels of reactive oxygen species, enhances immune function, reduces body fat and inflammation, and increases insulin sensitivity. Second, moderate physical activity induces gene expression of antioxidant enzymes such as superoxide dismutase, glutathione peroxidase and catalase, which are known for their protective effects against oxidative DNA damage and carcinogenesis. Third, physical activity affects the metabolic profile of estrogens, which leads to decreased hormonal activity and increased anti-proliferative properties in cancer cells. Evidence-based recommendations for cancer prevention suggest being at least moderately physically active throughout life. Regular physical activity is associated with a lower risk of the most common malignancies, including lung, breast, hepatobiliary tract, endometrial, colon, oropharyngeal, kidney, and bladder cancers. Physical activity clearly reduces the risk of colon, breast, and endometrial cancer. Furthermore, recent epidemiological studies suggest a protective effect for most cancer sites. Although there is irrefutable evidence that physical activity plays an important role in the prevention of many cancers, the type, intensity, duration, and frequency of physical activity that has the optimal effect on cancer prevention remain unclear. Further studies, including controlled clinical randomized trials are needed to address this issue.

Keywords: cancer, prevention, physiotherapy, physical activity, exercise

Advances in Physiotherapy for Patients with Idiopathic Scoliosis

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Introduction: Idiopathic scoliosis is a complex spinal deformity that affects posture, mobility, and quality of life. Conservative physiotherapy approaches, particularly three dimensional (3D) treatment methods, play a crucial role in managing the condition. Among these, the Schroth and Lyon concepts have been widely studied for their effectiveness. **Objective:** This presentation aims to evaluate the effectiveness of different 3D physiotherapy approaches in idiopathic scoliosis, including Schroth therapy, Lyon method, core stabilization exercises, and proprioceptive neuromuscular facilitation (PNF) techniques. Additionally, factors influencing quality of life in scoliosis patients will be discussed. **Materials and Methods:** The findings are based on multiple studies comparing various physiotherapy methods for scoliosis management. These studies include a comparison of Schroth and Lyon concepts, the impact of Schroth and core exercises, and the effectiveness of Schroth versus PNF exercises. Quality of life assessments were also conducted to identify key influencing factors. **Results:** The analysis highlights the strengths and limitations of each approach. Schroth therapy has demonstrated significant improvements in spinal alignment, respiratory function, and patient-reported outcomes. The Lyon method emphasizes postural control and bracing effectiveness. Core stabilization exercises contribute to spinal stability, while PNF techniques enhance neuromuscular coordination. Factors such as pain, self-image, and physical function play a critical role in determining quality of life. **Conclusion:** Understanding the comparative effectiveness of different 3D physiotherapy methods is essential for optimizing treatment. Individualized physiotherapy approaches can enhance patient outcomes and improve long-term quality of life. Future research should focus on integrating these methods for a more comprehensive treatment strategy.

Keyword: Adolescent Idiopathic Scoliosis, Three-Dimensional (3D) Physiotherapy, Schroth Therapy, Lyon Concept, Quality of Life

Pediatric Pulmonary Rehabilitation

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Pulmonary rehabilitation (PR) is essential for managing chronic lung diseases in children, enhancing respiratory function, and improving quality of life. Conditions such as asthma, bronchiectasis, cystic fibrosis, primary ciliary dyskinesia, and right middle lobe syndrome may benefit significantly from structured rehabilitation strategies. Asthma, the most common chronic respiratory disease in children, is characterized by airway inflammation, hyperresponsiveness, and reversible airflow limitation. PR plays a crucial role in symptom management by improving ventilatory capacity and reducing exacerbations. Bronchiectasis, resulting from persistent airway inflammation and infection, leads to structural lung damage and mucus accumulation. Airway clearance techniques, combined with tailored exercise programs, enhance mucociliary clearance and pulmonary mechanics. Cystic fibrosis, a progressive rare genetic disorder, leads to thick mucus production in various organs and systems in the body, chronic bacterial colonization, and declining lung function. PR strategies, including chest physiotherapy and aerobic training, are integral to disease management. Similarly, primary ciliary dyskinesia, a rare ciliopathic disorder, requires individualized rehabilitation protocols to mitigate airway obstruction and recurrent

infections. PR is also essential in addressing post-infectious complications such as atelectasis and aspiration pneumonia, promoting alveolar recruitment and improved oxygenation. Effective PR programs involve a multidisciplinary approach, incorporating physiotherapists, pulmonologists, and other healthcare professionals. Early intervention and consistent rehabilitation efforts significantly improve long-term respiratory outcomes, reduce complications, and enhance daily functioning. Integrating PR into pediatric respiratory care supports better lung health and overall well-being in children with chronic respiratory conditions.

Keywords: children, lung disease, rehabilitation, physiotherapy

The impact of early cognitive exercise intervention on enhancing cognitive function in stroke patients during the acute phase

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Background and purpose: Post-stroke cognitive impairment (PSCI) affects all types of stroke patients and can hinder physical activity, increase the risk of recurrent strokes, limit the ability to perform daily tasks, and lower quality of life. Consequently, providing a safe and effective nursing intervention is crucial. This study seeks to evaluate the effectiveness of early cognitive training in improving cognitive function in stroke patients. **Methods:** This research used a quasi-experimental design, 45 patients were divided into two groups, and sequential sampling was employed. The experimental group (n = 22) received two weeks of early cognitive training six times per week, whereas the control group (n = 23) received regular hospital care. The Indonesian version of the Montreal Cognitive Assessment was used to evaluate cognitive function (MoCA-Ina). **Results:** Statistical test outcomes The MoCA-Ina score changed considerably between the intervention and control groups (p = 0.000 and p = 0.003, respectively). Several tests determined that the score was p = 0.017; the score after the intervention was substantially different between the two groups. It means cognitive function improves after exercise in the acute phase. **Conclusion:** Early cognitive exercise must be considered in providing care for acute phase stroke patients to maximize the stroke patient's recovery process.

Keywords: Stroke, early cognitive exercise, acute phase

Modulation of Cell Proliferation, Collagen Deposition, and Biomarker Expression in Hyperglycemic Fibroblasts by *Gynura procumbens*: Implications for Diabetic Wound Healing

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Introduction: Diabetes mellitus impairs wound healing due to hyperglycemia-induced fibroblast dysfunction, affecting proliferation, collagen deposition, and migration. *Gynura procumbens*, a medicinal plant with antioxidant and anti-inflammatory properties, has potential therapeutic benefits, but its effects on fibroblast function remain unclear. **Objective:** This study aims to evaluate the effects of *Gynura procumbens* extract on fibroblast proliferation, collagen deposition, migration, and the expression of key biomarkers (p53 and SOD1) in a hyperglycemic environment, providing insights into its potential therapeutic application in diabetic wound healing. **Material and Method:** Human prepuce fibroblasts were cultured under hyperglycemic conditions and treated with *Gynura procumbens* extract (7.812–1000 µg/mL). Proliferation was assessed using MTT assay, collagen deposition with Picro-Sirius Red staining, and migration via scratch assay. p53 and SOD1 levels were measured by ELISA. Data were analyzed using ANOVA and Tukey's HSD. **Results:** Fibroblast proliferation showed a significant, dose-dependent increase, peaking at 250 µg/mL (207.10 ± 8.90 at 24 hours, $p < 0.001$), with a decline at higher concentrations due to cytotoxicity. Collagen deposition and migration were also optimal at 250 µg/mL, promoting enhanced wound-healing potential. SOD1 levels significantly increased at 250 µg/mL (3.12 ± 0.048 µg/mL, $p < 0.001$), indicating reduced oxidative stress, while p53 levels decreased, suggesting reduced apoptosis. However, higher concentrations led to fibroblast cytotoxicity. **Conclusions:** *Gynura procumbens* extract enhances fibroblast function by promoting proliferation, collagen synthesis, and migration while modulating oxidative stress and apoptosis-related biomarkers. These findings suggest its potential therapeutic application in diabetic wound healing.

Keywords: Fibroblasts; Hyperglycemia; Wound Healing; Collagen Metabolism; Antioxidants

Culture4Health&Healing: Embracing Health and Culture for Wellbein

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In times of global health challenges and crises (locally and globally), there is an increasing need to explore ways to strengthen health or alleviate certain illnesses, guided by the principle of “health in all policies” and the contribution of other sectors to health. The connection between culture and health offers an inexhaustible source to improve mental health and well-being. This paper discusses two approaches: using culture and art to promote health or in treating illness. Cultural contents can be prescribed at the primary healthcare level to improve health. A project implemented in Novi Sad for two consecutive years confirms that integrating culture into healthcare practices enriches the holistic approach to well being, combining medical care with cultural enrichment. “Culture on Prescription” can complement and enhance traditional healthcare services, creating a deeper link between healthcare and the cultural sectors. The “Culture for Health – Culture on Prescription” project involved primary healthcare and engaged the cultural sector (the Gallery of Matica Srpska) through curated tours and psychotherapeutic workshops, led by group analytic principles. The project included patients, doctors, nurses, and other healthcare professionals. A significant

number of participants were teachers working with children and youth. The curated tours and workshops, requiring high professionalism and collaboration in design, stimulated rich associations and contributed to positive reactions and new insights into the experience of health and illness, highlighting the importance of mental health and well-being. “Embrace” of health and culture for well-being leads to the enrichment of mental and physical health, fostering a holistic approach to well-being by linking the healthcare and cultural sectors.

Keywords: culture, art, health, wellbeing

Life beyond the pixels: single-cell analysis using deep learning and image analysis methods

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In this talk I will give an overview of the computational steps in the analysis of a single cell-based large-scale microscopy experiments. First, I will present a novel microscopic image correction method designed to eliminate illumination and uneven background effects which, left uncorrected, corrupt intensity-based measurements. New single cell image segmentation methods will be presented using differential geometry, energy minimization and deep learning methods. I will discuss the Advanced Cell Classifier (ACC), a machine learning software tool capable of identifying cellular phenotypes based on features extracted from the image. It provides an interface for a user to efficiently train machine learning methods to predict various phenotypes. For cases where discrete cell-based decisions are not suitable, we propose a method to use multi-parametric regression to analyze continuous biological phenomena. To improve the learning speed and accuracy, we propose an active learning scheme that selects the most informative cell samples. Our recently developed single-cell isolation methods, based on laser-microcapturing and patch clamping, utilize the selection and extraction of specific cell(s) using the above machine learning models. I will show that we successfully performed DNA and RNA sequencing, proteomics, lipidomics and targeted electrophysiology measurements on the selected cells.

From science to society: Transforming Education and Research into Real-World Impact

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There is an unmet need to translate scientific discoveries into real-world applications. Despite continuous medical advancements, EUROSTAT data reveals that 1.7 million people die annually in Europe, with 1.2 million of these deaths being preventable through better primary prevention and public health interventions.

A key barrier to achieving sustainable health is the gap between research and clinical practice, which stems from outdated educational models in both medicine and science (1). Academia Europaea has introduced a translational cycle model to facilitate the effective integration of scientific knowledge into healthcare (2). This model emphasizes the need for a balanced approach that fosters medical innovation while ensuring that healthcare professionals remain up to date with the latest research. However, current medical education focuses heavily on theoretical knowledge and bedside practice, offering minimal training on how to interpret and apply scientific findings in clinical settings. Similarly, traditional research training often lacks a focus on real-world impact, slowing the translation of discoveries into tangible health benefits. To address this challenge, we have developed a hybrid Ph.D./healthcare TM program that enables students to engage in scientific research and clinical practice simultaneously. Through a “learning by doing” and “retaining by teaching” approach, students acquire essential skills in critical appraisal, communication, and research methodology, ensuring that they not only consume but actively contribute to medical advancements (3). This model enhances their ability to produce high-impact, clinically relevant research while equipping them with the expertise needed to integrate new knowledge into practice. For healthcare to become truly sustainable, education in both medicine and science must evolve. Integrating translational medicine principles into training programs will accelerate the implementation of scientific discoveries, leading to better patient outcomes and a more resilient healthcare system. To achieve this, Academia Europaea seeks collaboration with academic and healthcare institutions worldwide, working together to build a future where the newest scientific results are utilized in healthcare.

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Biobanking in Healthcare: Supporting Research, Ethics, and Patient Care

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Biobanking has emerged as a cornerstone of pharmaceutical research, drug development, and precision medicine, providing an essential platform for advancing therapeutic innovations. By granting researchers access to high-quality human biological specimens - including tissues, blood, and DNA - biobanks facilitate the study of disease mechanisms at a molecular level, enabling the identification of biomarkers and expediting drug discovery. These resources are invaluable for developing targeted therapies and enhancing personalized medicine approaches, ultimately improving patient outcomes. Despite its transformative impact, biobanking presents complex ethical and legal challenges that must be carefully navigated. Informed consent remains a fundamental issue, requiring transparent communication

to ensure donors fully understand how their specimens and associated data will be utilized. Data privacy and security concerns are also increasingly critical, given the sensitive nature of genetic and health related information. Without stringent safeguards, there is a risk of data misuse, discrimination, or breaches of confidentiality, undermining public trust in biobanking initiatives. Moreover, ensuring equitable access to biobank resources is paramount to promoting diversity in research and avoiding disparities in healthcare advancements. Underrepresentation of certain populations in biobank collections may lead to biased findings and limit the generalizability of biomedical discoveries. Ethical frameworks must, therefore, emphasize inclusivity and benefit-sharing to ensure that all populations can reap the rewards of scientific progress. As biobanking expands, integrating rigorous ethical standards with its operational practices is crucial to fostering responsible, transparent, and equitable research in life sciences, ultimately driving innovation while upholding public confidence.

Keywords: biobanks, informed consent, data privacy, personalized medicine

The Role of Artificial Intelligence in Healthcare

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Artificial intelligence (AI) is revolutionizing healthcare by enhancing diagnostic accuracy, aiding treatment planning, and improving patient management across multiple medical fields. AI-driven solutions have been particularly effective in dermatology, radiology and pathology, where image recognition algorithms assist in early disease detection and risk assessment. In surgery, robotic-assisted techniques enhance precision, while AI-powered predictive analytics contribute to personalized medicine and treatment optimization. Within dermatology, AI has shown significant promise in diagnosing skin diseases and improving access to care through teledermatology applications. Deep learning algorithms have demonstrated high accuracy in detecting conditions such as skin cancer, often matching or surpassing expert-level dermatologists. AI-powered tools also aid in monitoring disease progression, optimizing treatment plans, and educating patients on skincare. Teledermatology applications integrated with AI have expanded access to specialized care, particularly in underserved regions, enabling early detection and timely interventions. Despite these advancements, the implementation of AI in dermatology and other medical fields faces challenges, including data privacy concerns, regulatory issues, and ethical considerations in decision-making. Ensuring the responsible integration of AI requires interdisciplinary collaboration between clinicians, researchers, and policymakers. This presentation will examine AI's diverse applications in clinical medicine, with a special emphasis on dermatology. Insights into AI-driven innovations, their benefits, and the challenges that must be addressed for successful adoption in modern clinical practice will be explored.

Keywords: Artificial Intelligence, Healthcare, Dermatology

Health behavior and health understanding of college students

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Lifestyle and health-conscious behavior have a decisive influence on an individual's state of health. However, health professionals are not only responsible for their own health, but they also have an indirect impact on those who they care for. Their decisions for their own health will be determined by their health literacy, and their understanding of health will also affect their future health promotion activities. The aim of our research is to examine the health behavior and understanding of our students and their correlations. Between September and October 2021, we conducted a quantitative, descriptive cross-sectional survey among students participating in health science training at the University of Szeged, with targeted sampling (n = 152). Data collection was online and completed voluntarily and anonymously. The data collection tool was a questionnaire composed of self-edited questions and validated question sets. In addition to descriptive statistical analysis using IBM SPSS Version 25.00 software, a chi-square test, Fisher's exact test, and Mann Whitney test were performed at a 95% confidence level (p < 0.05). The majority of respondents (82.1%) have at least good subjective health, but only half of the sample participants (51%) exercise for at least 150 minutes per week. 43.7% of the participants consume fruit and 41.7% vegetables daily. One-third of them have an excellent understanding of health. Vegetable consumption is significantly affected by body shape (p = 0.001), and none of the obese eat vegetables at least once a day. First-graders consume a significantly higher proportion of fruit per day (p = 0.006), but consumption of sugary soft drinks is also more common among them (p = 0.033). It is more common in the lower age group (p = 0.027) to move enough. The health perception of nurses was significantly worse (p = 0.013). Our results on physical activity were certainly affected by the pandemic period, however, along with progress in studies, none of the factors related to health behaviors showed improvement. The workload of students in the upper grades is increasing, but it would be important to ensure that their lifestyles can improve as their knowledge expands.

Mapping the role of various sensory information in postural control

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Introduction: The postural control during static positions and locomotion is the result of a complex perceptual-motor process in which sensory feedback plays an essential role. **Objective:** The aims of our studies were to assess the effects of changes in various sensory information on postural sway under normal and pathological (diabetic polyneuropathy) conditions by analysing the frequency spectra of the postural sway with Fast Fourier transformation. **Material and method:** Sensory interaction on balance were assessed by posturography recording the displacements of centre of pressure on a force plate (Neurocom Balance Master) under eyes open (EO) and eyes closed (EC) positions while standing on either a firm or

foam surface, both before and after an 12-week balance training intervention on a foam surface with EC in case of healthy students (n=30), in case of neuropathic patients (n=17). Visual dependency was assessed in case of 33 students. We subjected the data to frequency power analysis to find any differences between the frequency bands linked with various sensory information. **Results:** Manipulated visual information decreased postural sway in low frequency band while increasing it in the other bands. Training on unstable devices with EC improves more the vestibular system in healthy students. In neuropathy: training on unstable devices with EO and EC: improvements in ML sway in proprioceptive frequency band. **Conclusions:** Our frequency spectrum analysis is valuable method providing more insight into the complex nature of postural control than assessing the sway path alone. We provided evidences for the frequency bands linked different sensory modalities.

Keywords: postural control, frequency, visual, vestibular, proprioceptive

Integration of telemedical facilities in the physiotherapy of cardiometabolic patients

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Introduction: The development of info-communication technologies makes it possible to integrate intelligent, wearable devices and telemedical facilities in the everyday healthcare practice. **Objective:** Our aim was to evaluate the physiological and psychological effects of a home-based and telemonitored physical training program of Metabolic syndrome (MetS) patients, to see the changes of different risk factors and parameters with using distant heart rate monitoring, online supervision, individual coaching by physiotherapists and weekly feedback for 12 weeks. **Material and method:** For 59 Metabolic syndrome patients (37 men, mean age 49.35±8.51 years) anthropometric parameters, max. exercise (stress-ECG) and functional capacity (6MWT), body composition (with BIA), psychological state (with questionnaires) and laboratory parameters were measured. **Results:** Average weekly training time was 152.0±116.2 minutes. 55 participants completed the program, 22 patients (40%) performed 150 minutes or more per week. All the measured circumferences; 6MWD (539.69±78.62 vs 569.72±79.96 m, p< 0.001); max. exercise capacity (11.02±2.6 vs 12.14±2 MET, p< 0.001), stress-ECG duration time (13.74±3.29 vs 15.66±2.64 min, p< 0.001); body weight (98.72±21.7 vs 97.45±21.76 kg, p=0.004); HDL-cholesterol (n=45, 1.28±0.31 vs 1.68±0.36 mmol/L, p< 0.001); FPG (n=47, 6.16±1.26 vs 5.44±1.31 mmol/L, p=0.001); HbA1c (n=41, 6.22±0.68 to 5.87±0.78 %, p=0.01) significantly changed. The overall scores of the Maastricht Vital Exhaustion Questionnaire (3.37±2.97 vs 2.63±2.70 points, p< 0.05) significantly changed. **Conclusion:** A 12-week home-based and telemedically supported training program produces positive, statistically significant changes in many core components in MetS patients and can be integrated in the physiotherapy

practice.

Keywords: telerehabilitation, telemonitoring, Metabolic syndrome, physiotherapy, home-based exercise training

Comparative Study: Effects of High-Dose Vitamins on Neuroprotective Mechanisms

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Introduction: Neurodegeneration is characterized by the gradual destruction of neurons, which can lead to cognitive and motor impairments. Vitamins D, A, and E play a key role in the prevention of neurodegenerative diseases as they effectively influence the extent of neuronal damage. Research into neuroprotective substances is essential to find effective treatments for diseases such as Alzheimer's and Parkinson's. The PGC-1 alpha gene is known to play an important role in neuroprotection by supporting mitochondrial function and reducing neuronal damage. **Objective:** Investigation of the presumed neuroprotective effects of high-dose vitamin treatment in mice by measuring changes in PGC-1 alpha gene expression. **Material and method:** The mice received high-dose A, D, or E vitamin treatment for 12 days, dissolved in sesame oil. The vitamin treatment was administered via gavage once daily. The control group was given sesame oil only. The animals were terminated and samples were collected 90 minutes after the last treatment. The PGC-1 alpha gene expression changes were examined in striatum, cerebellum, and cortex samples. **Results:** Although we expected neuroprotective effects from high-dose vitamin treatment, at the time points we examined, the administration of different vitamins had both positive and negative effects on gene expression across various brain regions. **Conclusion:** We can conclude that the administration of vitamins was able to induce a significant effect on gene expression in nearly all regions. However, based on the mixed results obtained regarding the effect on the PGC-1 alpha gene, we can infer that the administration of high doses of vitamins at this time point does not always enhance neuroprotective mechanisms.

Keywords: neurodegeneration, vitamin, gene expression, neuroprotection

Effect of tryptophan on the pathomechanism of migraine

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Introduction: Migraine is the most common form of primary headache, affecting a substantial part of the population. Its rising prevalence and therapy-resistant cases highlight the urgent need to investigate its underlying pathological mechanisms, which remain unclear despite intensive research. Growing evidence suggests that diet plays a crucial role in neurological disorders, likely due to the bidirectional communication between the central nervous system and the gastrointestinal system. **Objective:** In this study, we aimed to investigate the effects of tryptophan on the pathophysiology of migraine attacks, building on our previous findings that demonstrated significant alterations in the kynurenine pathway of tryptophan metabolism in individuals with migraine. **Material and method:** Twelve female patients with episodic migraine were enrolled in the study. They were divided into three groups and provided with dietary instructions. In addition to dietary guidance, two groups received a tryptophan supplement in tablet form at doses of 500 mg and 1000 mg, respectively. Peripheral blood samples were collected on days 0, 30, and 90, followed by metabolomic analysis using the UHPLC MS method. **Results:** A significant alteration in kynurenine metabolism was observed following exogenous tryptophan intake, characterized by an increase in neuroprotective metabolites and a decrease in neurotoxic metabolites. **Conclusion:** In this study, we conducted extensive metabolomic analysis to investigate the impact of exogenous tryptophan intake on migraine attacks. Our findings demonstrated that tryptophan supplementation influences both the onset and frequency of migraine episodes, suggesting a potential role for dietary interventions in migraine management.

Keywords: migraine, nutrition, tryptophan, kynurenines

The moral dilemmas encountered by students in health science education

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Students enrolled in healthcare education programs (such as medicine, nursing, physiotherapy, health visitor, etc.) face numerous challenges on their path to graduation, many of which carry ethical implications. While the formal curriculum transparently outlines the fundamental moral values and ethical standards of the profession, adhering to these principles can sometimes prove difficult in practice. Building on the work of Andrew Jameton, the literature refers to such situations as moral distress—those borderline cases in which a healthcare professional recognizes the morally appropriate course of action but is unable to pursue it due to external or internal constraints (insufficient resources, uncooperative patients, critical workload, intra-team conflicts, worldview-based incompatibilities, etc.). This experience is often accompanied by intense negative emotions (such as anger, fear, or anxiety, etc.), which, over time, may contribute to

interruptions in students' academic progress, delayed graduation, or even permanent withdrawal from their studies. In addition to reviewing the key terminology, the presentation offers an up-to-date overview of the literature, explores the underlying causes and consequences of moral distress, and outlines a prevention and intervention program tailored to both undergraduate and graduate level training.

Keywords: bioethics, moral distress, moral injury

Gender differences in predicting infertility related distress as measured by the Fertility Problems Inventory

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Introduction: Infertility distress is a major concern for couples. **Objective:** The primary aim of this study was to predict fertility distress measured by the Fertility Problems Inventory (FPI). **Materials and method:** 94 randomly selected couples responded to instruments that measured coping, stress, anxiety and depression as key variables. We used multiple linear regression analysis to predict FPI scores for participants. **Results:** A significant difference was identified in the use of emotional coping (females using more emotional coping compared to males) ($z = -4.18, p < 0.001$). Considering the impact of treatment on everyday life, female respondents indicated a significantly greater effect ($z = -2.67, p = 0.008$). One-point increase in anxiety scores increased fertility distress by 0.83 and 1.25 points for women and men, respectively. One-year increase since infertility diagnosis was linked to a 1.61-point increase in fertility distress for males. For women, every one-point increase in the perception of their inability to discuss personal issues with someone else led to a five-fold increase in infertility-related distress. **Conclusions:** Stress, anxiety, and depression were linked to problem-solving in women, but were associated with emotional coping in men. However, the study did not find a significant association between coping, depression, stress, and infertility distress as measured by the FPI scale. Since coping types were not associated with infertility distress, we suggest utilizing other instruments besides the FPI to detect fertility-related distress. For women to reduce the infertility stress, nurses need to enable them to talk freely about their feelings with their partners.

Keywords: infertility stress, anxiety, stress, depression, coping

Stress and coping strategies among university students

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Introduction: University students have difficulties in managing stress, which often lead to a bad mental state. In the last 10 years, the psychological resilience of young Hungarians has been decreasing, so there is a need for interventions that support students' coping skills, self- and emotional regulation. **Objective:** In the framework of a pilot research, we examine the students' mental health and the level of perceived stress. We present shortly the used Art Therapy methods of the stress-reducing intervention group. **Material and method:** Questionnaire research measuring instruments: WHO Well Being Index (hungarian version,

Susánszky és mtsai, 2006), Copenhagen Psychosocial Questionnaire (hungarian version, Nistor, 2015). In addition, the document and content analysis of the student works of the intervention group. **Results:** Based on the results, the majority of students experience moderately high levels of stress, but few of them have working emotion regulation and coping techniques. Students are open to creative programs and visual Art Therapy opportunities. The youth of the intervention group improved their emotion regulation capacity. **Conclusions:** University students are exposed to many stressors, and stress management and emotion regulation are a challenge for them. As an effective intervention option, Art Therapy can help them to develop their personality and coping skills.

Keywords: university students, mental health, stress, coping, Art Therapy

People's experiences of how physical activity influences health and wellbeing during bereavement

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The death of a loved one is one of the biggest challenges in life and it can negatively impact mental wellbeing and social relationships. Being able to cope with the negative impact of bereavement is important for people in later adulthood since they are more often affected by grief. Based on previous research, people tend to use physical activity (PA) to improve their mental wellbeing while coping with stressful life events. This qualitative longitudinal study aimed to understand the role of PA as a potential coping process in bereavement. Participants were recruited through local groups and the Centre for Ageing Research Panel. Eleven bereaved individuals (7 women and 4 men), aged 55 years or older, were interviewed on two occasions. During the three months between the interviews, the participants recorded their PA patterns in a physical activity log diary. The interviews were analysed with reflexive thematic analysis, and the findings indicated that the participants used PA to improve their mental wellbeing and physical health and to cope with the negative impact of bereavement on mental health. Caregiving was associated with a decreased amount and enjoyment of PA prior to the loss of a loved one. In addition, the findings also indicated that PA routines before bereavement helped the participants to return to their former PA levels after bereavement. The outcomes highlighted the positive impact of PA on mental wellbeing during bereavement and the importance of PA routines that can decrease the negative impact of grief on physical and mental health.

Health Issues Related to Space Activities – Focusing on Space Nutrition

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From the beginning of space travel, ensuring the crew's adequate food supply has been a significant

concern. Naturally, the duration of the journey is a crucial factor, as there is a considerable difference between preparing for a short trip and a long-term space mission lasting several months. The transportation of food, its nutrient content, and its shelf life are essential considerations. Additionally, space environment's unique impact on nutrient absorption and the potential for increased nutrient loss must be taken into account. When designing space meals, ensuring both safety and proper nutrient intake is paramount, along with considering the psychological aspects of nutrition. A key requirement is that space food should be tasty, varied, and fresh while generating minimal waste. Space environment affects digestion and alters the physiological processes the body is accustomed to under Earth's gravity. The energy demands of rigorous exercise routines in space also influence nutrition, as physical training requires higher energy intake. During space travel, various modifying factors impact the human body, such as radiation, microgravity, and psychological stress, leading to physiological changes. These effects can be mitigated through proper nutrition and medication. The lecture examines the physiological changes occurring during spaceflight across different organ systems and explores nutritional and pharmaceutical strategies devised to counteract these catabolic processes. Particular focus is given to bone and muscle loss, cardiac muscle atrophy, changes in the microbiome and immune system, along with potential psychological effects, as similar phenomena can also be seen in the care of chronically ill patients.

Keywords: space nutrition, nutritional strategies, long-term space tasks

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