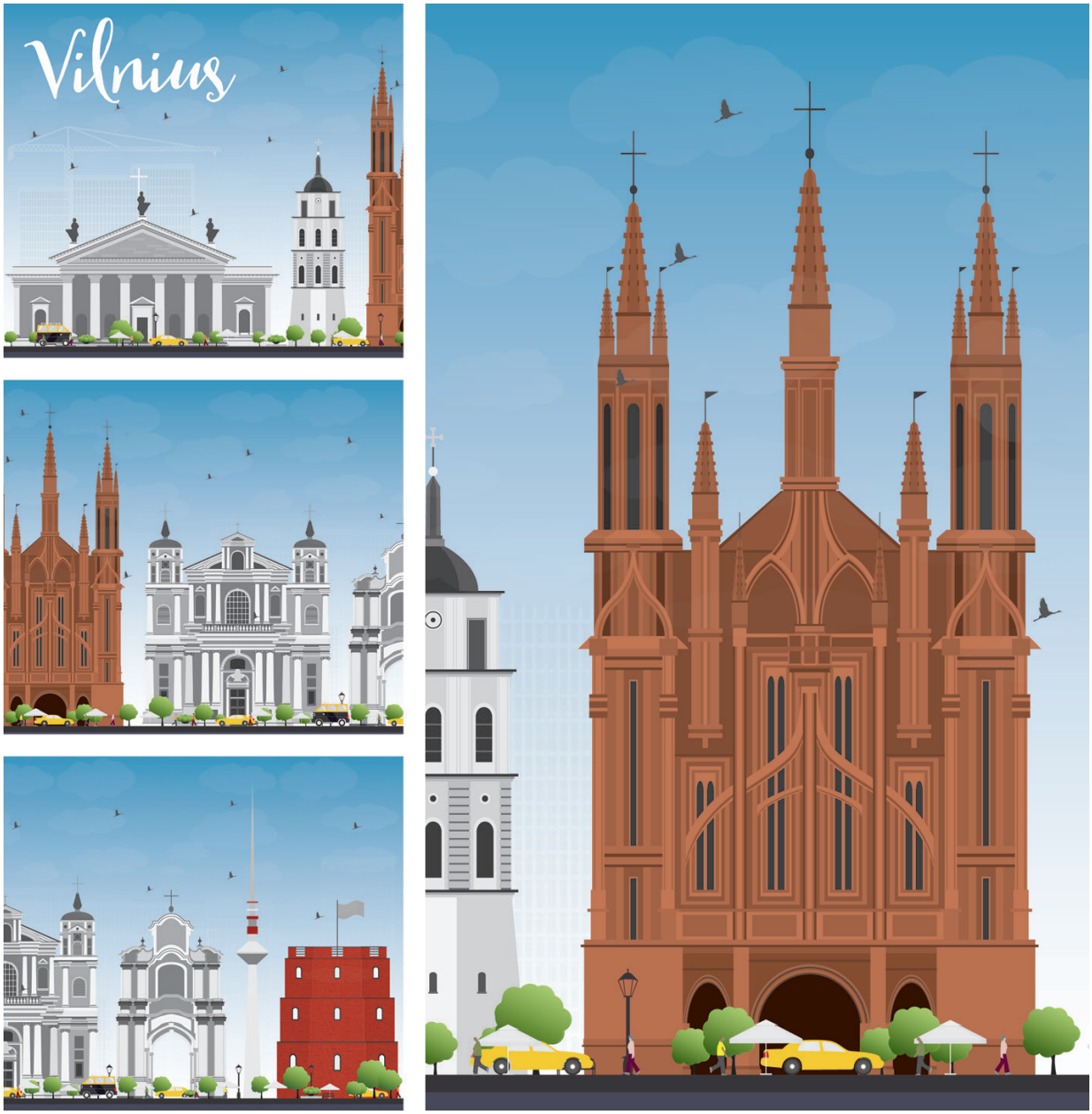


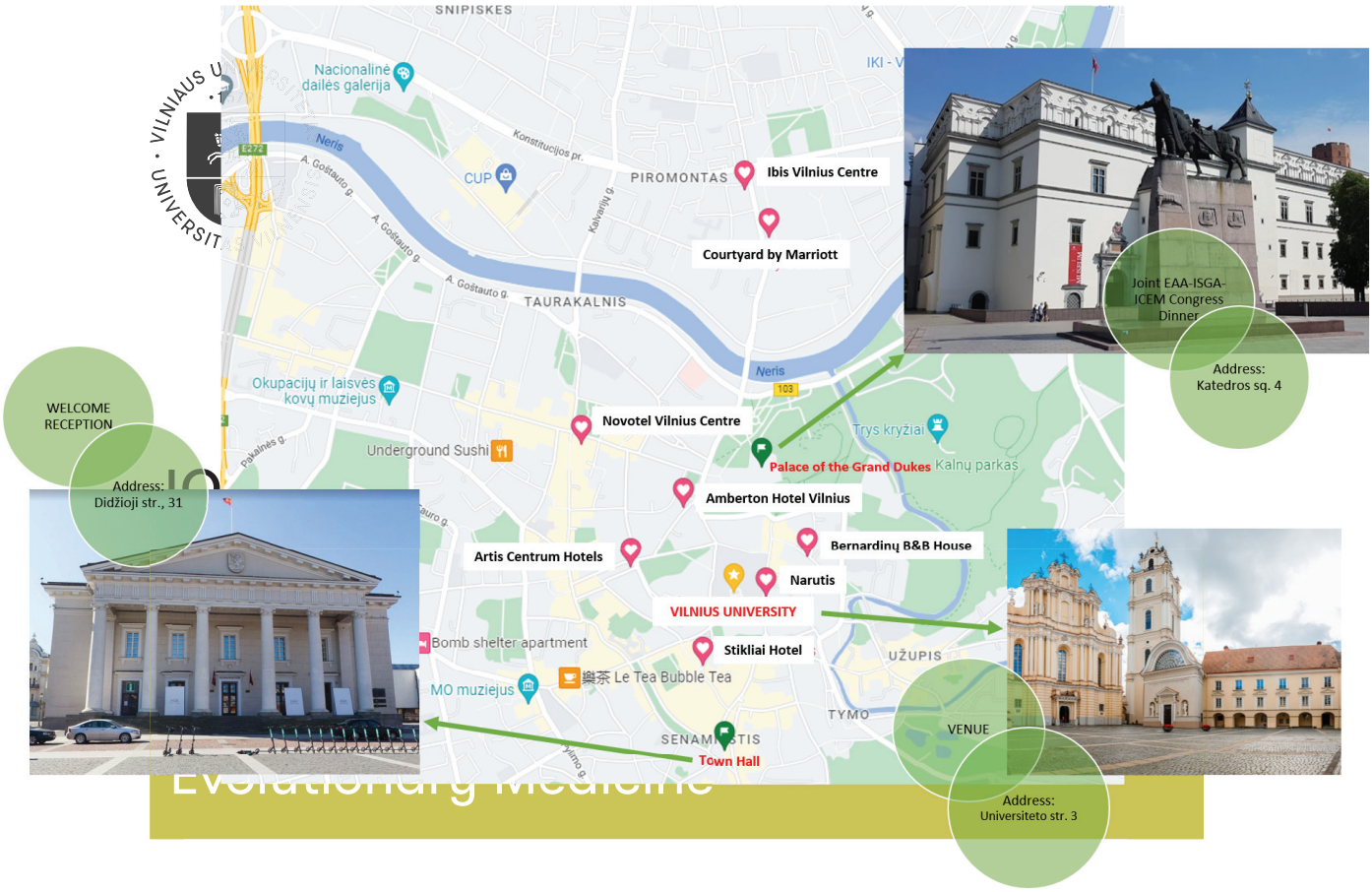
JOINT INTERNATIONAL MEETING

22nd EAA Congress – 15th ISGA Congress – 5th International Conference of Evolutionary Medicine

August 24-27, 2022
Vilnius, Lithuania

ABSTRACT BOOK

VILNIUS UNIVERSITY PRESS
2022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Ibis Vilnius Centre
Courtyard by Marriott
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Joint EAA-ISGA-ICEM Congress Dinner
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WELCOME RECEPTION
Okupacijų ir laisvės kovų muziejus
Novotel Vilnius Centre
Underground Sushi
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Palace of the Grand Dukes
Kalnų parkas
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VILNIUS UNIVERSITY
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Stikliai Hotel
UŽUPIS
MO muziejus
樂茶 Le Tea Bubble Tea
TYMO
VENUE
SENAMIESTIS
Town Hall
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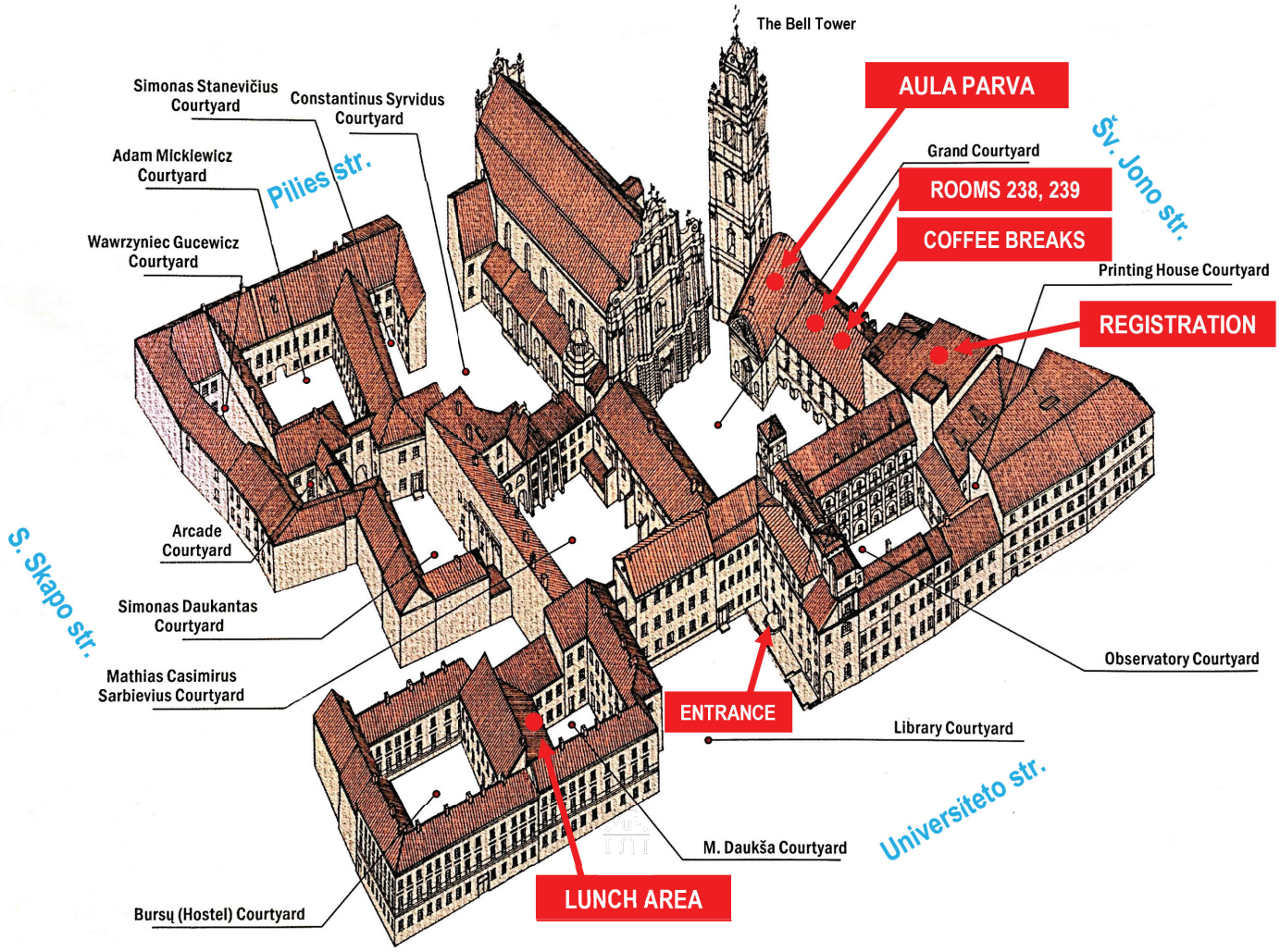
The Bell Tower
AULA PARVA
Simonas Stanevičius Courtyard
Constantinus Syrvidus Courtyard
Adam Mickiewicz Courtyard
Pilies str.
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ROOMS 238, 239
Šv. Jono str.
Wawrzyniec Gucewicz Courtyard
COFFEE BREAKS
Printing House Courtyard
REGISTRATION
Arcade Courtyard
S. Skapo str.
Simonas Daukantas Courtyard
Observatory Courtyard
Mathias Casimirus Sarbievius Courtyard
ENTRANCE
Library Courtyard
Universiteto str.
M. Daukša Courtyard
LUNCH AREA
Bursų (Hostel) Courtyard

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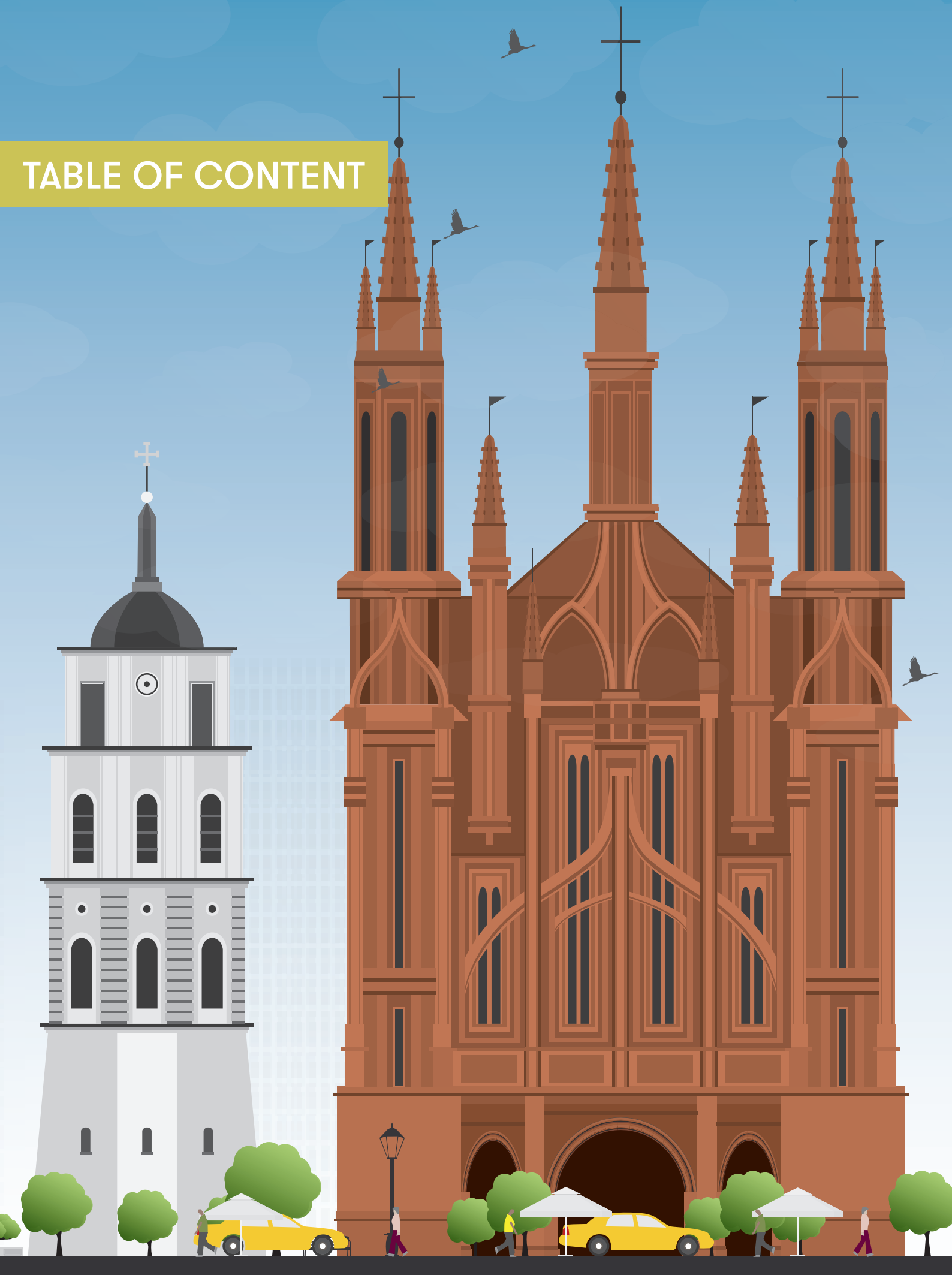
2022

TABLE OF CONTENT



WELCOME

Dear Colleagues

It is with a great pleasure that we welcome you to the Joint International Meeting: **22nd EAA Congress, 15th ISGA Congress, 5th International Conference of Evolutionary Medicine.** This event is organized at Vilnius University (Lithuania) in a hybrid way - live and virtual. In total, it will be possible to listen to **more than 180 presentations**: more than 110 podium presentations, as well as more than 70 pre-recorded audio electronic posters, which will be available during this event on *EAA-ISGA–ICEM Meeting website* (with a password only). Impressive number of keynote lecturers: 28 prominent scientists from Australia, Austria, Croatia, France, Germany, Italy, Lithuania, Netherlands, Norway, Poland, Switzerland, United Kingdom, USA and Venezuela will give keynote lectures.

The 22nd Congress of EAA (European Anthropology Association) will focus on Human variation and adaptation in a changing world. During this third decade of the 21st Century, when we are experiencing profound changes to our planet and our species as a result of variations in climatic, industrial, social, and economic circumstances, it is timely that we should have a special focus on worldwide variation and adaptation, physical, biopsychosocial and general health changes in the human body – in the past and today.

The 15th Congress of ISGA (International Society for the Study of Human Growth and Clinical Auxology) is organised in parallel with the 22nd Congress of EAA. ISGA was established to expand our understanding of human growth and development in health and disease. For anthropologists, human biologists, educators, neonatologists, paediatricians, family practitioners and health workers dealing with all aspects of child and adolescent development this combined meeting of the EAA and ISGA will be a great opportunity to review current research and future directions. This is even more important in the context of the current humanitarian disaster in the heart of Europe which disproportionately affects the health and wellbeing of children.

Simultaneously, we will be hosting **the 5th International Conference on Evolutionary Medicine**: *An interdisciplinary approach to understanding the diversity of human health and disease.* Recently, many research areas – from biological anthropology, life sciences and medicine to physical and social sciences – have been dealing with changes in human body and background of variation in human physical status and emerging pathologies. We kindly invite PhD students from Medicine and Health Sciences, also from the other research areas, as well as junior scientists and undergraduate students from different fields of research to take part at this international interdisciplinary scientific event, to share their research and cooperate to solve medical problems with the scientists from the other fields.

We believe that the present **joint international event will bring together participants** from these **different but related areas of research** to discuss morphological variations and changes in general health and disease in relation to different environments, to deepen our knowledge of the potential of human adaptation and evolutionary mechanisms in maintaining the health and wellbeing of our species. We would like to wish all participants active scientific discussions and fruitful interdisciplinary cooperation both in the abundant scientific program and social events. We hope to see you in Vilnius University (Lithuania) by the end of August, 2022.

On behalf of EAA, ISGA and the Organising Committee,

Prof. Noel Cameron

President of the European Anthropology Association (EAA)
Secretary-General of the International Society for the Study of Human Growth and Clinical Auxology (ISGA)
Emeritus Professor of Human Biology, School of Sport, Exercise and Health Sciences, Loughborough University, UK

Prof. Janina Tutkuviene

Head of the Department of Anatomy, Histology and Anthropology,
Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Lithuania

Organizers

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Linda S. Adair (University of North Carolina at Chapel Hill, USA)
Jesper L. Boldsen (University of Odense, Denmark)
Noel Cameron (Loughborough University, United Kingdom)
Tim Cole (Institute of Child Health, University College London, UK)
Erksin Gulec (University of Ankara, Turkey)
Rimantas Jankauskas (Vilnius University, Lithuania)
Will Johnson (Loughborough University, UK)
Maria Kaczmarek (Adam Mickiewicz University, Poland)
Nicholas Mascie-Taylor (University of Cambridge, United Kingdom)
Lawrence M. Schell (University at Albany, State University of New York, USA)
Janina Tutkuviene (Vilnius University, Lithuania)
Algirdas Utkus (Vilnius University, Lithuania)
Babette S. Zemel (University of Pennsylvania, USA)
Annamaria Zsakai (Eotvos Lorand University, Hungary)

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Conference & Event Management Agency

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PROGRAMME

The 24th of August	
8:00-17:30	**Registration**
9:30-11:00	**Opening ceremony** (Aula Parva) Words of Welcome: Rector of Vilnius University Professor Rimvydas Petrauskas Dean of the Faculty of Medicine Professor Algirdas Utkus EAA President Professor Noël Cameron On behalf of the Organizing Committee – Professor Janina Tutkuviene *Music*
	Plenary Session I (Aula Parva) Chairperson: JANINA TUTKUVIENE
	EAA keynote lecture: **NOËL CAMERON** Loughborough University, UK CHILD GROWTH AND ARMED CONFLICT
11:00-11:30	***Coffee Break***
11:30-13:00	**Plenary Session II** (Aula Parva) Chairperson: NOËL CAMERON
11:30-12:15	**ISGA** keynote lecture: **BABETTE S. ZEMEL** The Children's Hospital of Philadelphia, The University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, USA ADVANCES IN THE STUDY OF HUMAN GROWTH AND THE CHALLENGES AHEAD
12:15-13:00	**ICEM** keynote lecture: **MARTIN BRÜNE** LWL University Hospital, Research Department of Cognitive Neuropsychiatry and Psychiatric Preventive Medicine, Ruhr-University Bochum, Germany DESIGN FLAWS AND MISMATCH: WHY MEDICINE NEEDS EVOLUTIONARY THEORY
13:00-14:00	***LUNCH (ISGA Executive Committee Meeting, Room 238)***
14:00-15:30	**Session 1** (EAA; ISGA; ICEM) – see below for details
15:30-16:00	***Coffee Break***
16:00-17:30	**Session 2** (EAA; ISGA; ICEM) – see below for details
19:00-22:00	***Welcome Reception*** *Time: 19:00; Venue: Town Hall of Vilnius; Address: Didžioji str. 31, Vilnius*
14:00-15:30	**EAA Session 1** (Aula Parva): ***Humans and Environment; Applied Anthropology*** Chairperson: MARIA KACZMAREK
14:00-14:15	**Zbigniew Czapla** Institute of Human Biology and Evolution, Faculty of Biology, Adam Mickiewicz University, Poznań, Poland CHANGES IN BODY SIZE IN ADULT INHABITANTS OF POLAND AS AN INDICATOR OF LIVING CONDITIONS IN THE PERIOD OF SOCIOECONOMIC TRANSFORMATION AT THE TURN OF THE 19TH AND 20TH CENTURY

14:15-14:30	**Eugene Kobyliansky[1],** Anna Chumakova[2], Leonid Kalichman[3], Arkady Torchinsky[1] [1]Tel Aviv University, Israel, Tel Aviv [2]Research Institute and Museum of Anthropology, Lomonosov Moscow State University, Moscow, Russia [3]Department of Physical Therapy, Recanati School for Community Health Professions, Faculty of Health Sciences at Ben-Gurion University of the Negev, Beer-Sheva, Israel CHANGE OF THE TYPE OF PARENTAL INHERITANCE OF TELOMERE LENGTH UNDER STARVATION
14:30-14:45	**Maria Kaczmarek** Institute of Human Biology and Evolution, Adam Mickiewicz University, Poznań, Poland SOCIOECONOMIC FACTORS ASSOCIATED WITH NORMAL WEIGHT OBESITY IN POLISH ADOLESCENTS: EVIDENCE FROM A POPULATION-BASED CROSS-SECTIONAL ADOPOLNOR STUDY
14:45-15:00	**Katarzyna Kliś[1]**, Justyna Marchewka[2], Iwona Wronka[3] [1]Department of Human Biology, University of Wroclaw, Poland [2]Department of Human Biology, the Cardinal Stefan Wyszynski, University, Warsaw, Poland [3]Laboratory of Anthropology, Institute of Zoology and Biomedical Research, Jagiellonian University, Krakow, Poland RELATIONSHIP BETWEEN SELECTED ENVIRONMENTAL FACTORS AND FLUCTUATING ASYMMETRY
15:00-15:15	**Andrius Bleizgys** Faculty of Medicine, Institute of Clinical Medicine, Clinic of Internal Diseases, Family Medicine and Oncology, Vilnius University; Vilnius, Lithuania OBESITY AND VITAMIN D DEFICIENCY IN MODERN SOCIETIES – HOW ARE THEY INTERCONNECTED?
15:15-15:25	**Izabele Juskiene[1]**, Nina Prokopciuk[1], Arunas Valiulis[1] [1]Vilnius University Faculty of Medicine, Institute of Clinical Medicine, Clinic of Children's Diseases, Vilnius, Lithuania IMPACT OF COVID-19 PANDEMIC ON INDOOR AIR POLLUTION IN PRIMARY SCHOOLS TO COMMUNITY ACQUIRED PNEUMONIA IN CHILDREN
15:25-15:30	**Discussion**
15:30-16:00	***Coffee Break***
16:00-17:30	**EAA Session 2** (Aula Parva): ***Growth, Development and Aging*; *Applied Anthropology*** Chairperson: NOËL CAMERON
16:00-16:15	**Michael Hermanussen[1],** Christiane Scheffler[2] [1]Pediatrician, Eckernförde-Altenhof, Germany [2]University of Potsdam, Human Biology, Germany THE EVOLUTION OF SOCIAL COMPETITION, NEUROENDOCRINE SIGNALING AND GROWTH
16:15-16:30	**Aleksandra Gomula[1]**, Natalia Nowak-Szczepanska[1], Raja Chakraborty[2], Slawomir Koziel[1] [1]Department of Anthropology, Ludwik Hirszfeld Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Wroclaw, Poland [2]Department of Anthropology and Tribal Studies, Sidho-Kanho-Birsha University, Purulia, West Bengal, India LONG-TERM EFFECTS OF EARLY LIFE EXPOSURE TO A NATURAL DISASTER ON THE GROWTH AND DEVELOPMENT OF INDIAN CHILDREN
16:30-16:45	**Janis Vetra,** Silvija Umbrasko, Ilva Dulevska, Liene Martinsone - Berzkalne, Liana Plavina, Edgars Edelmers Institute of Anatomy and Anthropology, Riga Stradins University, Latvia GROWTH PROFILE OF PRESCHOOL-AGE CHILDREN OF LATVIAN REGIONS AND RIGA
16:45-17:00	**Ruta Almonaitiene[1],** Ona Nagreckaite[1], Dalia Smailiene[2] [1]Institute of Odontology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Lithuanian University of Health Sciences, Kaunas, Lithuania ANTHROPOMETRIC PARAMETERS OF THE HEAD AND FACE IN LITHUANIAN CHILDREN WITH PALATALLY IMPACTED MAXILLARY CANINES

17:00-17:10	**Agne Matuolyte[1,2],** Gintautas Domza[1,2], Diana Ramasauskaite[1,2], Jelena Volochovic[1,2], Gerda Deveikiene[1] [1]Clinic of Obstetrics and Gynecology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Center of Obstetrics and Gynecology, Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania ESTIMATING FETAL WEIGHT, USING FRACTIONAL LIMB VOLUME, IN TWIN PREGNANCIES
17:10-17:20	**Kristina Kuoliene**, Janina Tutkuviene Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania ASSOCIATIONS OF ANTHROPOMETRIC PARAMETERS AND BODY FLEXIBILITY WITH EYE SIZE AND DEGREE OF MYOPIA IN A STUDY OF LITHUANIAN ADOLESCENTS
17:20-17:30	**Dorina Annar[1]**, Anna Madarasi[2], Piroska Feher[1], Nicholas Mascie-Taylor[3], Anna Kekesi[4], Irina Kalabiska[5], Agota Muzsnai[2], Annamaria Zsakai[1] [1]Department of Biological Anthropology, Eotvos Lorand University Budapest, Hungary [2]Saint Janos Hospital and Unified Hospitals of North Buda, Budapest, Hungary [3]Department of Public Health and Primary Care, University of Cambridge [4]Istenhegyi Gene Diagnostic Centre, Budapest, Hungary [5]University of Physical Education, Research Center for Sport Physiology, Budapest, Hungary BODY STRUCTURAL AND CELLULAR AGEING OF ROMA WOMEN IN HUNGARY: A PILOT STUDY
14:00-15:30	**ISGA Session 1** (Room 238): ***The First 1000 Days*** Chairpersons: NOËL CAMERON and JELENA ŠARAC
14:00-14:45	Keynote lecture: **JANINA TUTKUVIENE** Janina Tutkuviene, Ruta Morkuniene and Simona Gervickaite Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Institute of Biomedical Sciences, Vilnius University, Vilnius, Lithuania GROWTH OF PRETERM CHILDREN IN EARLY CHILDHOOD: THE RELATIONSHIP BETWEEN GESTATIONAL AGE, BODY SIZE, GENERAL HEALTH STATUS, AND TIMING OF DISEASES
14:45-15:00	**Ruta Morkuniene[1]**, Vilmantas Gegzna[2], Janina Tutkuviene[1] [1]Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Institute of Biosciences, Life Sciences Center, Vilnius University, Vilnius, Lithuania THE INCIDENCE AND TIMING OF DIFFERENT DISEASES IN RELATION TO SUB-CATEGORIES OF PREMATURITY TILL THE ADOLESCENCE (RETROSPECTIVE LONGITUDINAL STUDY)
15:00-15:15	**Lina Zabuliene[1]**, Marius Miglinas[2], Deimante Brazdziunaite[3], Marija Smirnova[4], Jurgita Songailiene[3], Nomeda Bratcikoviene[3], Valdas Banys[5], Ernesta Macioniene[2] and Algirdas Utkus[3] [1]Clinic of Rheumatology, Orthopaedics Traumatology and Reconstructive Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Clinic of Gastroenterology, Nephro-Urology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [3]Department of Human and Medical Genetics, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [4]Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania [5]Department of Physiology, Biochemistry, Microbiology and Laboratory Medicine, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania NATIONAL NEWBORN SCREENING PROGRAM AS A TOOL FOR IODINE STATUS MEASUREMENT
15:15-15:30	**Magdalena Durda-Masny[1]**, Anita Szwed[1], Joanna Ciomborowska-Basheer[1], Izabela Makałowska[1], Mikołaj Smorowski[2], Marta Szymankiewicz-Bręborowicz[2] [1]Institute of Human Biology and Evolution, Adam Mickiewicz University, Poznań, Poland [2]Department of Neonatology, Poznan University of Medical Sciences, Poznan, Poland COMPOSITION OF THE GUT MICROBIOTA IN SGA CHILDREN DEPENDING ON THE FEEDING METHOD USED IN THE FIRST SIX MONTHS OF LIFE
15:30-16:00	***Coffee Break***

16:00-17:30	**ISGA Session 2** (Room 238): ***The First 1000 Days*** Chairpersons: JELENA ŠARAC
16:00-16:30	Keynote lecture: **MERCEDES LÓPEZ-BLANCO**[1], Coromoto Macías Tomei[2], Elizabeth Dini Golding[3], María José Castro[4] [1]Fundación Bengoa/ Grupo TAN / Comisión de Orígenes del Desarrollo de Salud y Enfermedad-ODSE (SVPP), Venezuela [2]Grupo TAN. Comisión de Orígenes del Desarrollo de Salud y Enfermedad ODSE (SVPP), Venezuela [3]Universidad Simón Bolívar (jubilado) / Fundación Bengoa, Grupo de Transición Alimentaria y Nutricional (Grupo TAN), Venezuela [4]Grupo TAN, Comisión de Orígenes del Desarrollo de Salud y Enfermedad-ODSE (SVPP), Venezuela PROBLEMS, OMISSION & GAPS IN THE FIRST 1000 DAYS OF LIFE IN LOW AND MIDDLE INCOME COUNTRIES
16:30-16:45	Dini Golding Elizabeth[1], **Mercedes López-Blanco**[2], Macías-Tomei Coromoto[3], Pérez Alonso María Mercedes[4] [1]Centro de Atención Nutricional Infantil Antímano-CANIA (jubilada). Grupo de Transición Alimentaria y Nutricional (Grupo TAN), Venezuela [2]Universidad Simón Bolívar (jubilado). Fundación Bengoa. Grupo de Transición Alimentaria y Nutricional (Grupo TAN). Comisión de Orígenes del Desarrollo de Salud y Enfermedad-ODSE (SVPP), Venezuela [3]Universidad Simón Bolívar (jubilado). Sociedad Venezolana de Puericultura y Pediatría (SVPP). Grupo de Transición Alimentaria y Nutricional (Grupo TAN). Comisión de Orígenes del Desarrollo de Salud y Enfermedad ODSE (SVPP), Venezuela [4]Hospital de Niños J. M. de los Ríos, Caracas. OPS-OMS, Salud de la Familia, promoción y curso de vida (FPL), Venezuela PROBLEMS, OMISSIONS AND GAPS IN THE FIRST 1000 DAYS OF LIFE IN LATIN AMERICA
16:45-17:00	Coromoto Macías-Tomei[1], **Mercedes López-Blanco**[3], Maria Jose Castro[2], Mariana Mariño Elizondo[4], Isbelia Izaguirre-Espinoza [5] [1]Universidad Simón Bolívar (jubilado), Sociedad Venezolana de Puericultura y Pediatría (SVPP), Grupo de Transición Alimentaria y Nutricional (Grupo TAN). Comisión de Orígenes del Desarrollo de Salud y Enfermedad ODSE (SVPP), Venezuela [2]Sociedad Venezolana de Puericultura y Pediatría / Hospital Miguel Pérez Carreño, Grupo de Transición Alimentaria y Nutricional (Grupo TAN), Comisión de Orígenes del Desarrollo de Salud y Enfermedad-ODSE (SVPP), Venezuela. [3]Universidad Simón Bolívar (jubilado) / Fundación Bengoa. Grupo de Transición Alimentaria y Nutricional (Grupo TAN). Comisión de Orígenes del Desarrollo de Salud y Enfermedad-ODSE (SVPP), Venezuela. [4]Centro de Atención Nutricional Infantil Antímano CANIA. Grupo Transición Alimentaria y Nutricional TAN, Venezuela Universidad Simón Bolívar (jubilado) / Grupo de Transición Alimentaria y Nutricional (Grupo TAN), Comisión de Orígenes del Desarrollo de Salud y Enfermedad-ODSE (SVPP). Venezuela. A LIFE COURSE APPROACH IN THE VENEZUELAN CONSENSUS ON NUTRITION IN THE FIRST 1000 DAYS OF LIFE
17:00-17:15	Marianella Herrera Cuenca[1], Mariana Mariño Elizondo[2], **López-Blanco Mercedes**[3] [1]CENDES-UCV. Fundación Bengoa. Observatorio Venezolano de la Salud. Grupo Transición Alimentaria y Nutricional TAN, Venezuela. [2]Centro de Atención Nutricional Infantil Antímano CANIA. Grupo Transición Alimentaria y Nutricional TAN, Venezuela [3]Universidad Simón Bolívar (jubilado). Fundación Bengoa. Grupo de Transición Alimentaria y Nutricional (Grupo TAN). Comisión de Orígenes del Desarrollo de Salud y Enfermedad-ODSE (SVPP), Venezuela. HUMAN CAPITAL AND MALNUTRITION IN LATIN AMERICA: THE CHALLENGE OF THE XXI CENTURY
17:15-17:30	**Paula van Dommelen**[1], Doenja Beek[2], Renate van Zoonen[1], Ilona Wildeman[1], Paul H. Verkerk[1] and Yvonne Schönbeck[1] [1]The Netherlands Organization for Applied Scientific Research TNO, The Netherlands [2]CJG Rijnmond, The Netherlands VIDEOS TO SUPPORT PARENTS IN ASSESSING THEIR CHILD'S DEVELOPMENTAL MILESTONES

14:00-15:30	**ICEM Session 1** (Room 239) Chairperson: MARTIN BRÜNE
14:00-14:40	ICEM keynote lecture: **NICHOLAS MASCIE – TAYLOR** Professor of Human Population Biology and Health and Director of Research in Global Health Department of Public Health and Primary Care University of Cambridge, UK GLOBAL HEALTH FLUCTUATIONS IN RELATION TO HUMAN EVOLUTION
14:40-14:50	**Dmitrij Kvitka**, Dainius H. Pauza Institute of Anatomy, Faculty of Medicine, University of Health Sciences, Kaunas, Lithuania BLOOD VESSELS OF EPICARDIAL GANGLIONATED NERVE PLEXUS IN THE PIG MODEL
14:50-15:00	**Egle Mazgelyte**[1], Neringa Burokiene[2], Zita Ausrele Kucinskiene[1], Dovile Karciauskaite[1] [1]Department of Physiology, Biochemistry, Microbiology and Laboratory Medicine, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Clinics of Internal Diseases, Family Medicine and Oncology, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania ASSOCIATION BETWEEN METABOLIC SYNDROME AND HAIR STEROID HORMONE LEVELS IN WOMEN PARTICIPATING IN THE NATIONAL CARDIOVASCULAR DISEASE PREVENTION PROGRAM
15:00-15:10	**Aleksandra Ekkert**[1], Daiva Milmantiene[2], Dalius Jatuzis[1] [1]Clinic of Neurology and Neurosurgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Faculty of Medicine, Vilnius University, Vilnius, Lithuania TIMELY REPERFUSION IN POSTERIOR STROKE – MISSION IMPOSSIBLE?
15:10-15:20	**Guoste Stankeviciute**[1], Kristupas Puodziukas[1], Justinas Bacevicius[2,3], Edvardas Jukna[2,3], Ricardas Kundelis[2,3], Eugenijus Jasiunas[4], Vaidotas Marozas[5], Audrius Aidietis[2,3] [1]Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Clinic of Cardiac and Vascular Diseases, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [3]Center of Cardiology and Angiology, Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania [4]Center of Informatics and Development, Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania [5]Biomedical Engineering Institute, Kaunas University of Technology, Kaunas, Lithuania "TriggersAF": RATIONALE OF CONCEPTION AND PRELIMINARY RESULTS OF THE TEMPORAL RELATION BETWEEN THE RISE OF ARTERIAL BLOOD PRESSURE AND ONSET OF ATRIAL FIBRILLATION
15:20-15:30	**Discussion**
15:30-16:00	***Coffee Break***
16:00-17:30	**ICEM Session 2** (Room 239) Chairperson: ZUZANA OBERTOVA
16:00-16:40	Keynote lecture: **SLAWOMIR KOZIEL** Department of Anthropology, Ludwik Hirszfeld Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Poland LOOKING FROM ABOVE - IS BEING TALL ADVANTAGEOUS?
16:40-16:50	**Edita Paulikaite**[1], Emilija Sermuksnyte[1], Egle Janusonyte[1], Valdas Simcikas[4], Virginija Bukelskiene[3], Grita Skujiene[2], Violeta Zalgeviciene[1] [1]Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Department of Zoology, Institute of Biosciences, Life Sciences Centre, Vilnius University, Vilnius, Lithuania [3]Department of Biological Models, Institute of Biochemistry, Life Sciences Centre, Vilnius University, Vilnius, Lithuania [4]UAB "Vandens tyrimai" [Closed joint stock company "Water researches"], Vilnius, Lithuania FLUORIDE IN DRINKING WATER - COULD BE MEANINGFUL FOR BODY SIZE IN SAMOGITIA?

16:50-17:00	**Gintare Bieliauskiene**[1], Vilius Janusauskas[1], Rita Kramena[2], Kestutis Rucinskas[1], Audrius Aidietis[1], Diana Zakarkaite[1] [1]Clinic of Cardiac and Vascular Diseases, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Center of Cardiology and Angiology, Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania INITIAL SINGLE-CENTER EXPERIENCE OF FIRST-IN-HUMAN TRANSCATHETER TRICUSPID ANNULUS REPAIR USING MICRO INTERVENTIONAL DEVICES ANNULOPLASTY TECHNOLOGY (MIDA PROCEDURE)
17:00-17:10	**Kristijonas Puteikis**[1], Ruta Mameniskiene[2] [1]Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Clinic of Neurology and Neurosurgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania FACTORS ASSOCIATED WITH SUICIDAL IDEATION AMONG OUTPATIENTS WITH EPILEPSY
17:10-17:20	**Andrej Podkopajev**, Vilius Janusauskas, Diana Zakarkaite, Kestutis Rucinskas Clinic of Cardiac and Vascular Diseases, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania NOVEL MINIMALLY INVASIVE APROACH FOR TREATMENT OF SECONDARY TRICUSPID REGURGITATION
17:20-17:30	**Discussion**
19:00-22:00	***Welcome Reception*** *Time: 19:00; Venue: Town Hall of Vilnius; Address: Didžioji str. 31, Vilnius*

The 25th of August	
8:00-17:30	**Registration**
9:00-11:00	**Plenary Session III** (Aula Parva) Chairperson: CHRISTOPHER KUZAWA
9:00-9:40	EAA keynote lectures: **CHARLOTTE ROBERTS** Professor Emeritus in the Department of Archaeology; Fellow of the Wolfson Research Institute for Health and Wellbeing, Durham University, UK HUMAN VARIATION AND ADAPTATION IN A CHANGING WORLD: PERSPECTIVES FROM THE PAST USING PALAEOPATHOLOGY
9:40-10:20	**WULF SCHIEFENHÖVEL** Human Ethology Group, Max Planck Institute for Biological Intelligence, Starnberg-Seewiesen, Germany FROM STONE AGE TO COMPUTER IN TWO GENERATIONS. DRAMATIC CULTURAL CHANGE IN HIGHLAND PAPUA AS PROOF OF THE PLASTICITY OF THE HUMAN BRAIN
10:20-11:00	ISGA keynote lecture: **LAWRENCE M. SCHELL** University at Albany, State University of New York, USA HUMAN SEXUAL MATURATION AND CHEMICAL EXPOSURE: CONSISTENCIES AND VARIATIONS IN RESULTS FROM STUDIES
11:00-11:30	***Coffee Break***
11:30-13:00	**Session 3** (EAA; ISGA; ICEM) – see below for details
13:00-14:00	***LUNCH (ISGA Business Meeting, Room 238)***
14:00-16:00	**Session 4** (EAA; ISGA; ICEM) – see below for details
15:30-16:00	***Coffee Break***
16:00-17:30	**Session 5** (EAA; ISGA; ICEM) – see below for details
11:30-13:00	**EAA Session 3** (Aula Parva): ***Bioarchaeology*** Chairperson: ALBERT ZINK
11:30-11:45	**Anna Spinek**[1], Marta Kurek[2], Anna Drazkowska[3] [1]Department of Anthropology, Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Wroclaw, Poland [2]Department of Anthropology, Faculty of Biology and Environmental Protection, University of Lodz, Lodz, Poland [3]Department of Archaeology of Late Middle Ages and Early Modern Period, Faculty of History, Nicolaus Copernicus University in Torun, Torun, Poland LEAD AND MERCURY CONCENTRATIONS IN INHABITANTS OF EARLY MODERN KRAKÓW (POLAND)
11:45-12:00	**Aleksandra Karykowska** Department of Anthropology, Wroclaw University of Environmental and Life Sciences, Wroclaw, Poland BIOLOGICAL CONDITION OF CHILDREN AND ADOLESCENTS FROM THE HISTORICAL POPULATION OF THE DISAPPEARED VILLAGE OF LIBKOVICE IN NORTH-WESTERN BOHEMIA (13TH-20TH CENTURY)
12:00-12:15	**Agata Cieślik** Department of Anthropology, Hirszfeld Institute of Immunology and Experimental Therapy of Polish Academy of Sciences, Poland ATYPICAL GRAVES FROM HISTORICAL (12TH – 17TH CENTURY) CEMETERY IN BYCZYNA: RESULTS OF ARCHAEOLOGICAL, ANTHROPOLOGICAL AND PHYSICOCHEMICAL RESEARCH
12:15-12:30	**Jesper Lier Boldsen** Unit of Anthropology (ADBOU), University of Southern Denmark, Odense, Denmark THE TALE OF TWO VILLAGES – TIRUP AND LADING

12:30-12:40	**Agata Bisiecka**, Barbara Kwiatkowska, Agnieszka Tomaszewska Division of Anthropology, Institute of Environmental Biology, Wrocław University of Environmental and Life Sciences, Poland SUTURE BONES, CRIBRA ORBITALIA AND SELECTED METRIC PROPERTIES OF THE SKULL – DO THEY RELATE?
12:40-12:50	**Joanna Heuchert**[1], Anna Spinek[1], Justyna Karkus[2] [1]Department of Anthropology, Hirszfeld Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Wrocław, Poland [2]Department of Anthropology, Faculty of Biology and Environmental Protection, University of Lodz, Lodz, Poland SELECTED DENTAL ANOMALIES IN EARLY MODERN (16TH-18TH CENTURY AD) INHABITANTS OF WROCŁAW (POLAND)
12:50-13:00	**Joanna Wysocka** Department of Anthropology, Hirszfeld Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Poland NONMETRIC TRAITS ON THE PROXIMAL PART OF THE FEMUR IN THE POLISH HISTORICAL COLLECTION
13:00-14:00	***LUNCH (ISGA Business Meeting, Room 238)***
14:00-15:30	**EAA Session 4** (Aula Parva): ***Bioarchaeology; Human Evolution*** Chairperson: DARIO PIOMBINO MASCALI
14:00-14:15	**Istvan Janos**[1], Laszlo Szathmary[2] [1]University of Nyíregyháza, Institute of Environmental Science, Nyíregyháza, Hungary [2]University of Debrecen, Department of Evolutionary Zoology and Human Biology, Debrecen, Hungary A PALAEODEMOGRAPHIC ASSESSMENT OF 10TH-13TH CENTURY POPULATIONS FROM EASTERN PART OF HUNGARY
14:15-14:30	**Robert Mahler** Polish Centre of Mediterranean Archaeology, University of Warsaw, Poland TOWARDS A FORMAL APPROACH TO SELECTING THE BEST STATURE RECONSTRUCTION METHOD FOR POORLY PRESERVED SKELETAL SERIES
14:30-14:45	**Leslie Quade** Department of Anthropology, Faculty of Sciences, Masaryk University, Czech Republic CORTISOL IN DENTAL TISSUES: CONNECTING STRESS IN THE PAST WITH THE PRESENT
14:45-15:00	**Vicki Kristensen**[1], Lars Larsen[2], Jesper Boldsen[3], Dorthe Pedersen[4] [1]Unit of Anthropology (ADBOU), Department of Forensic Medicine, University of Southern Denmark, Denmark [2]Viborg Museum, Denmark [3]Unit of Anthropology (ADBOU), Department of Forensic Medicine, University of Southern Denmark, Denmark [4]National Museum of Denmark, Denmark MORTALITY OF MEDIEVAL CITY DWELLERS
15:00-15:15	**Piotr Fedurek**[1,2], Dariusz Danel[2], Colette Berbesque[1] [1]Anthropology Programme, University of Roehampton, London, United Kingdom [2]Department of Anthropology, Ludwik Hirszfeld Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Wroclaw, Poland PROSOCIAL REPUTATION AND STRESS IN CONTEMPORARY HUNTER-GATHERES
15:15-15:25	**Weronika Karolina Cieszynska**[1], Enrico Cappellini[2], Frido Welker[2], Ryan Sinclair Paterson[2], Luca Pandolfi[1], Lorenzo Rook[1] Dipartimento di Scienze della Terra, Paleo[Fab]Lab, Università degli Studi di Firenze, Italy [1,2]Globe Institute, University of Copenhagen, Denmark USING ANCIENT PROTEINS TO RESOLVE THE EVOLUTIONARY HISTORY OF *OREOPITHECUS BAMBOLII*
15:25-15:30	**Discussion**
15:30-16:00	***Coffee Break***

16:00-17:30	**EAA Session 5** (Aula Parva): ***Applied Anthropology*** Chairperson: ANNAMARIA ZSAKAI
16:00-16:15	**Petr Kutáč**[1], Miroslav Krajcigr[2] [1]University of Ostrava, Human Motion Diagnostic Center, Czech Republic, Ostrava [2]Faculty of Physical Education and Sport, University of South Bohemia, Czech Republic CAN BONE MASS BE MEASURED BY THE BIA METHOD? VALIDITY OF MEASURING BONE MASS BY THE BIA METHOD
16:15-16:30	**Anita Szwed**[1], Magdalena Durda-Masny[1], Joanna Goździk-Spychalska[2], Wojciech Czaiński[2], Weronika Stróżewska 1, Halina Batura-Gabryel2 [1]Institute of Human Biology and Evolution, Faculty of Biology, Adam Mickiewicz University, Uniwersytetu Poznanskiego, Poznan, Poland [2]Department of Pulmonology, Allergology and Respiratory Oncology, Poznan University of Medical Sciences, Poznań, Poland SURVIVAL PROBABILITY OF ADULTS WITH CYSTIC FIBROSIS DEPENDING ON THEIR BIOLOGICAL STATUS
16:30-16:45	**Wojciech Branicki**[1], Rezvan Noroozi[2], Joanna Rudnicka[2], Aleksandra Pisarek[2], Bożena Wysocka[3], Aleksander Masny[3], Kamila Migacz-Gruszka[4], Anna Wojas-Pelc[4], Iwona Wronka[1], Aneta Sitek[5], Andrzej Ossowski[6], Magdalena Spólnicka[3], Ewelina Pośpiech[2] [1]Institute of Zoology and Biomedical Research of the Jagiellonian University, Poland [2]Malopolska Centre of Biotechnology, Jagiellonian University, Poland [3]Central Forensic Laboratory of the Police, Poland [4]Jagiellonian University Medical College, Poland [5]Department of Anthropology, University of Łódź, Poland [6]Department of Forensic Genetics, Pomeranian Medical University in Szczecin, Poland ASSESSING THE PRACTICAL VALUE OF EPIGENETIC CLOCKS FOR FORENSIC APPLICATIONS AND RESEARCH ON HEALTH AND FITNESS
16:45-17:00	**Gábor Áron Vitályos**[1], Gábor Dancs[2], Klára B. Zsoffay[1] [1]Eötvös Loránd University, Faculty of Primary and Pre-School Education, Department of Natural Sciences, Budapest, Hungary [2]Independent researcher, Budapest, Hungary COMPARİSON OF THE BODY COMPOSİTİON DATA FROM TWO- AND FOUR-COMPONENT MODELS WiTH THE SAME DATA GAİNED FROM INBODY 720 BODY COMPOSİTİON ANALYZER
17:00-17:15	**Agnieszka Suder**[1], Karol Makiel[1], Aneta Targosz[2] [1]Department of Anatomy, Faculty of Physical Rehabilitation, University of Physical Education, Krakow, Poland; [2]Department of Physiology, Faculty of Medicine, Jagiellonian University Medical College, Cracow, Poland EFFECT OF AEROBIC TRAINING ON BODY COMPOSITION AND ASPROSIN LEVEL IN MALES WITH METABOLIC SYNDROME
17:15-17:30	**Agnieszka Żelaźniewicz**, Judyta Nowak-Kornicka, Bogusław Pawłowski Department of Human Biology, University of Wrocław, Poland MORPHOLOGICAL MASCULINITY AND BIOMARKERS OF LONG-TERM HEALTH IN ME**N**
11:30-13:00	**ISGA Session 3** (Room 238): ***Nutrition and Body Composition*** Chairperson: BABETTE ZEMEL
11:30-12:10	Keynote lectures: **NICOLA L. HAWLEY** Yale University School of Public Health, USA GROWTH, BODY COMPOSITION AND CHRONIC DISEASE RISK AMONG SAMOAN CHILDREN: LESSONS FROM THE OLA TUPUTUPUA'E (GROWING UP) COHORT
12:10-12:50	**JONATHAN WELLS** UCL Great Ormond Street Institute of Child Health, , London, UK THE DOUBLE BURDEN OF MALNUTRITION: AN EVOLUTIONARY PERSPECTIV

12:50-13:00	**Ewa Bryl**[1], Tomasz Hanć[1], Paula Szcześniewska[1], Agata Dutkiewicz[2], Marta Tyszkiewicz-Nwafor[2], Agnieszka Słopień[2], Monika Dmitrzak-Węglarz[3] [1]Institute of Human Biology and Evolution, Faculty of Biology, Adam Mickiewicz University, Poznań, Poland [2]Department of Child and Adolescent Psychiatry, Poznan University of Medical Sciences, Poznań, Poland [3]Laboratory of Psychiatric Genetics, Department of Psychiatry, Poznan University of Medical Sciences, Poznań, Poland ADVERSE LIFE EVENTS AND THE STATUS OF BODY MASS AND ATTITUDE TO NUTRITION IN SCHOOL-AGE CHILDREN
13:00-14:00	***LUNCH (ISGA Business Meeting, Room 238)***
14:00-15:30	**ISGA Session 4** (Room 238)**: *Environmental Effects on Human Growth*** Chairperson: LAWRENCE SCHELL
	Keynote lectures:
14:00-14:30	**JELENA ŠARAC** Center for Applied Bioanthropology, Institute for Anthropological Research, Zagreb, Croatia ISLAND LIFE — DREAMS AND REALITIES
14:30-15:00	**PETUR BENEDIKT JULIUSSON** Petur Benedikt Juliusson[1], Mathieu Roelants[2], Line Haug[3], Ingvild Forthun[4], Lawrence Schell[5], Robert Bjerknes[1] [1]National Institute of Public Health, University of Bergen, Haukeland University Hospital, Bergen, Norway [1]University of Bergen, Norway [2]Centre for Environment and Health, KU_Leuven, Belgium [3]Norwegian Institute of Public Health, Norway [4]Children and Youth Clinic, Haukeland University Hospital, Bergen, Norway [5]University at Albany, USA INFLUENCES OF ENDOCRINE DISRUPTIVE CHEMICALS ON PUBERTAL DEVELOPMENT AMONG NORWEGIAN CHILDREN. THE BERGEN GROWTH STUDY 2 (BGS2)
15:00-15:30	**SLAWOMIR KOZIEL** Polish Academy of Sciences, Wroclaw, Poland HAND GRIP STRENGTH AND MATURATIONAL TIMING IN CHILDREN EXPOSED TO LEAD
15:30-16:00	***Coffee Break***
16:00-17:30	**ISGA Session 5** (Room 238): ***Environmental Effects on Human Growth*** Chairperson: LAWRENCE SCHELL
16:00-16:15	**Annamaria Zsakai**, Sara Ince, Piroska Feher, Dorina Annar Department of Biological Anthropology, Eotvos Lorand University, Budapest, Hungary ROMA CHILDREN'S BIOLOGICAL STATUS AND LIFESTYLE IN HUNGARY
16:15-16:30	**Ingvild Halsør Forthun**[1], Mathieu Roelants[2], Line Småstuen Haug[3], Lawrence M. Schel[4], Astanand Jugessur[5], Robert Bjerknes[6], Azemira Sabaredzovic[7], Ingvild Særvold Bruserud[6], Petur Benedikt Juliusson[8] [1]Department of Paediatric and Adolescent Medicine, Haukeland University Hospital, Norway [2]Department of Public Health and Primary Care, University of Leuven, Belgium [3]Department of Environmental Exposure and Epidemiology, Norwegian Institute of Public Health, Norway [4]Department of Epidemiology and Biostatistics, School of Public Health, University at Albany, USA [5]Department of Genetics and Bioinformatics, Norwegian Institute of Public Health, Norway [6]Department of Clinical Science, University of Bergen, Norway [7]Norwegian Institute of Public Health, Norway [8]Department of Health Registry Research and Development, Norwegian Institute of Public Health, Norway LEVELS OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFASS) IN NORWEGIAN CHILDREN STRATIFIED BY AGE AND SEX: DATA FROM THE BERGEN GROWTH STUDY 2

16:30-16:45	**Monika Krzyzanowska**[1], C.G. Nicholas Mascie-Taylor[2] [1]Department of Human Biology, University of Wroclaw, Poland [2]Department of Public Health and Primary Care, University of Cambridge, UK BIOSOCIAL INFLUENCES ON STATURE - A COMPARISON BETWEEN TWO BRITISH NATIONAL COHORTS
16:45-17:00	**Łukasz Kryst**[1], Magdalena Żegleń[2], Agnieszka Woronkowicz[1], Małgorzata Kowal[1] [1]Department of Anthropology, Faculty of Physical Education and Sport, University of Physical Education in Kraków, Poland [2]Jagiellonian University, Institute of Psychology, Pain Research Group, Kraków, Poland BODY HEIGHT, WEIGHT AND BMI – MAGNITUDE AND PACE OF SECULAR CHANGES IN CHILDREN AND ADOLESCENTS FROM KRAKÓW (POLAND) BETWEEN 1983 AND 2020
17:00-17:30	**Discussion**
11:30-13:00	**ICEM Session 3** (Room 239) Chairperson: SYLVIA KIRCHENGAST
11:30-12:10	Keynote lecture: **MARIA KACZMAREK** Institute of Human Biology and Evolution, Adam Mickiewicz University, Poznań, Poland MENARCHE, MENSTRUAL CYCLE AND MENSTRUATION VIEWED THROUGH THE LENS OF EVOLUTIONARY ECOLOGY INFORMATION ON SUBMISSION
12:10-12:20	**Rytis Stankevicius**[1], Mattias Brunström[2], Ernesta Macioniene[3], Monika Vitkauskaite[1], Marius Miglinas[3] [1]Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Department of Public Health and Clinical Medicine, Umeå University, Umeå, Sweden [3]Clinic of Gastroenterology, Nephro-Urology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania INFLUENCE OF BODY MASS INDEX AND CHANGE OF BODY MASS INDEX ON THE INCIDENCE OF KIDNEY DISEASES
12:20-12:30	**Inga Kisieliene**[1], Akvile Velaviciute [2], Odilija Rudzeviciene [3], Matilda Bylaite Bucinskiene [1] Clinic of Infectious Diseases and Dermatovenerology, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Faculty of Medicine, Vilnius University, Vilnius, Lithuania [3]Clinic of Children's Diseases, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania THE RELATIONSHIP OF ENDOGENOUS FACTORS TO ATOPIC DERMATITIS IN CHILDREN: A PILOT STUDY
12:30-12:40	**Edita Poluzioroviene**[1], Joanna Chorostowska-Wynimko[2], Arunas Valiulis[1,3] [1]Clinic of Children's Diseases, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Department of Genetics and Clinical Immunology, National Institute of Tuberculosis and Lung Diseases, Warsaw, Poland [3]Department of Public Health, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania THE INCIDENCE OF SEVERE ALPHA-1 ANTITRYPSIN DEFICIENCY ALLELES IN LITHUANIAN COHORT OF WHEEZING CHILDREN
12:40-12:50	**Aistis Zalnora** Centre for Health Ethics, Law and History, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania EVOLUTIONARY THOUGHTS IN JĘDRZEJ ŚNIADECKI'S "O FIZYCZNEM WYCHOWANIU DZIECI" AND JEAN-JACQUES ROUSSEAU "EMILE, OR EDUCATION"
12:50-13:00	**Discussion**
13:00-14:00	***LUNCH (ISGA Business Meeting, Room 238)***

14:00-15:30	**ICEM Session 4** (Room 239) Chairperson: SAŠA MISSONI
14:00-14:40	ICEM keynote lecture: **MARIAN VANHAEREN** Unité Mixte de Recherche 5199 De la Préhistoire à l'Actuel: Culture, Environnement et Anthropologie (UMR 5199 PACEA) Centre National de la Recherche Scientifique (CNRS) Université de Bordeaux, France *HOMO CURANS*. PERSPECTIVES ON PREHISTORIC HEALING PRACTICES
14:40-14:50	**Antanas Bliudzius**, Vytautas Kasiulevicius Clinic of Internal Diseases, Family Medicine and Oncology, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania PHYSICAL ACTIVITY EVALUATION USING FITBIT ACTIVITY TRACKERS FOR PATIENTS WITH PREDIABETES
14:50-15:00	**Egle Audronyte**, Gintaras Kaubrys Clinic of Neurology and Neurosurgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania OLFACTORY MEASURES AS A MARKER OF EARLY ALZHEIMER'S DISEASE
15:00-15:10	**Diana Kibickaja**, Rasmute Maneliene Institute of Dentistry, Faculty of Medicine, Vilnius University, Vilnius, Lithuania INFLUENCE OF ORAL HEALTH ON THE QUALITY OF LIFE OF OLDER ADULTS: A PILOT STUDY
15:10-15:20	**Rokas Arlauskas**, Donatas Austys, Rimantas Stukas Institute of Health Sciences, Faculty of Medicine, Vilnius university, Vilnius, Lithuania TRENDS IN THE CHANGING FOOD SELECTION CRITERIA OF THE LITHUANIAN POPULATION AND THE IMPACT OF THE COVID-19 PANDEMIC
15:20-15:30	**Discussion**
15:30-16:00	***Coffee Break***
16:00-17:30	**ICEM Session 5** (Room 239) Chairperson: MARIAN VANHAEREN
16:00-16:40	Keynote lecture: **ALBERT R. ZINK** Albert R. Zink and Frank Maixner Institute for Mummy Studies, Eurac Research, Bolzano, Italy MULTIDISCIPLINARY ANALYSIS OF INTESTINAL CONTENT IN ANCIENT MUMMIES: NEW INSIGHTS INTO DIET, DISEASE, AND THE EVOLUTION OF OUR GUT MICROBIOME
16:40-16:50	**Inga Kildusiene**[1,2], Karina Versockaite[3], Auguste Kaceniene[4], Ryte Rynkeviciene[5] and Giedre Smailyte[4,6] [1]Life Sciences Centre, Vilnius University, Vilnius, Lithuania [2]Department of Abdominal and General Surgery and Oncology, National Cancer Institute, Vilnius, Lithuania [3]Faculty of Chemistry and Geosciences, Vilnius University, Vilnius, Lithuania [4]Laboratory of Cancer Epidemiology, National Cancer Institute, Vilnius, Lithuania [5]Laboratory of Molecular Oncology, National Cancer Institute, Vilnius, Lithuania [6]Department of Public Health, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania SEARCH FOR NOVEL COLORECTAL CANCER BIOMARKERS
16:50-17:00	**Augustinas Bausys**, Martynas Luksta, Rimantas Bausys, Kestutis Strupas on behalf of PREFOG study group Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania PERSONALIZED TRIMODAL PREHABILITATION FOR GASTRECTOMY: INTERIM ANALYSIS OF RANDOMIZED CONTROL TRIAL (PREFOG STUDY)

17:00-17:10	**Martynas Luksta**, Augustinas Bausys, Rokas Rackauskas, Marius Paskonis, Skaiste Tulyte, Kestutis Strupas Clinic of Gastroenterology, Nephrourology, and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania PRESSURIZED INTRAPERITONEAL AEROSOL CHEMOTHERAPY (PIPAC) AND SYSTEMIC CHEMOTHERAPY FOR PERITONEAL CARCINOMATOSIS OF GASTRIC CANCER: MAYBE A NEW STANDARD AND THE FUTURE TREATMENT?
17:10-17:20	**Marius Kryzauskas[1,2],** Eligijus Poskus[1,2], Augustinas Bausys[1,3], Audrius Dulskas[3], Ugne Imbrasaite[4], Rimantas Bausys[3], Donatas Danys[2], Justas Kuliavas[1,3], Valdemaras Jotautas[1,2], Eugenijus Stratilatovas[3], Kestutis Strupas[1,2], Tomas Poskus[1,2] [1]Clinic of Gastroenterology, Nephrourology, and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Center of Abdominal Surgery, Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania [3]Department of General and Abdominal Surgery and Oncology, National Cancer Institute, Vilnius, Lithuania [4]Faculty of Medicine, Vilnius University, Vilnius, Lithuania EARLY RESULTS FROM A PROSPECTIVE COHORT STUDY ON COMPREHENSIVE TESTING OF COLORECTAL ANASTOMOSIS
17:20-17:30	**Discussion**

The 26th of August	
08:00-17:30	**Registration**
9:00-11:00	**Plenary Session IV** (Aula Parva) Chairperson: WULF SCHIEFENHÖVEL
9:00-9:40	EAA keynote lectures: **SYLVIA KIRCHENGAST** Department of Evolutionary Anthropology, University of Vienna, Austria MOTHERHOOD IN A CHANGING WORLD - THE CHALLENGE OF FEMALE REPRODUCTION FROM THE VIEWPOINT OF EVOLUTIONARY ANTHROPOLOGY
9:40-10:20	**CHRISTOPHER KUZAWA** Department of Anthropology and Institute for Policy Research, Northwestern University, Evanston, IL USA PRENATAL NUTRITION AS AN INFLUENCE ON ADULT HEALTH: STRATEGIES FOR HARNESSING A CHALLENGING POLICY LEVER
10:20-11:00	ISGA keynote lecture: **TIM COLE** Institute of Child Health, University College London, UK SITAR GROWTH CURVE ANALYSIS – UNIVERSAL PUBERTAL HEIGHT GROWTH AND SEASONAL INFANT WEIGHT GROWTH
11:00-11:30	***Coffee Break***
11:30-13:00	**Session 6** (EAA; ISGA; ICEM) – see below for details
13:00-14:00	***LUNCH*** *(EAA Council Meeting, Aula Parva)*
14:00-15:30	**Session 7** (EAA; ISGA; ICEM) – see below for details
15:30-16:00	***Coffee break***
16:00-17:30	**Plenary Session V** (Aula Parva) – see below for details **Session 8** (EAA; ISGA; ICEM)
19:00-23:00	***Joint EAA-ISGA-ICEM Meeting Dinner*** *Time: 19:00;* *Venue: Palace of the Grand Dukes;* *Address: Katedros sq. 4, Vilnius*
11:30-13:00	**EAA Session 6** (Aula Parva): ***Biopsychosocial Studies*** Chairperson: NICHOLAS MASCIE – TAYLOR
11:30-11:45	**Leslie Sue Lieberman** University of Central Florida, Orlando, USA PUBLIC HEALTH MESSAGING VS. POPULAR MEDIA: BODY POSITIVITY OF THE SEXY FAT GIRL
11:45-12:00	**Anna Ziomkiewicz**[1], Anna Apanasewicz[2], Magdalena Babiszewska[2], Marek Szołtysik[3] [1]Jagiellonian University, Institute of Zoology and Biomedical Research, Poland [2]Polish Academy of Sciences, Hirszfeld Institute of Immunology and Experimental Therapy, Poland [3]Wroclaw University of Environmental and Life Sciences, Department of Functional Food Products Development, Poland MATERNAL SOCIAL SUPPORT AND BREAST MILK COMPOSITION
12:00-12:15	**Anna Apanasewicz**[1], Dariusz Danel[1], Aleksandra Ciochon[2], Andrzej Galbarczyk[3], Magdalena Klimek[3], Magdalena Mijas[3], Urszula M. Marcinkowska[3], Anna Ziomkiewicz[4] [1]Department of Anthropology, Hirszfeld Institute of Immunology and Experimental Therapy, PAS, Poland [2]Doctoral School of Medical and Health Sciences, Department of Environmental Health, Jagiellonian University Medical College, Poland [3]Department of Environmental Health, Jagiellonian University Medical College, Poland [4]Laboratory of Anthropology, Institute of Zoology and Biomedical Research, Jagiellonian University, Poland FATHERS HELP IN CHILDCARE IS ASSOCIATED WITH MOTHERS' PARITY AND INFANT SEX

12:15-12:25	**Łukasz Pawelec**, Anna Lipowicz Institute of Environmental Biology, Division of Anthropology, Wroclaw University of Environmental and Life Sciences, Poland WOMEN'S ASSESSMENT OF MEN'S APPEARANCE FROM VOCAL CUES
12:25-12:35	**Dziugile Kersnauskaite**[1], Janina Tutkuviene[2] [1]Faculty of Medicine, Vilnius University, Vilnius Lithuania [2]Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Institute of Biomedical Sciences, Vilnius University, Vilnius Lithuania CHANGES IN BODY SIZE, BODY IMAGE AND SELF-ESTEEM OF LITHUANIAN ADOLESCENTS (16-20 YEARS OF AGE) IN 2011-2021, INCLUDING THE COVID-19 PANDEMIC PERIOD
12:35-12:45	**Martyna Sveikataite**[1], Gabija Stulgyte[1], Julija Rugelyte[1] and Janina Tutkuviene[2] [1]Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania PHYSICAL, MENTAL AND EMOTIONAL SYMPTOMS OF PREMENSTRUAL SYNDROME (PMS) IN LITHUANIAN WOMEN RELATED TO BODY SIZE AND SHAPE
12:45-13:00	**Discussion**
13:00-14:00	***LUNCH (EAA Council Meeting, Aula Parva)***
14:00-15:30	**EAA Session 7** (Aula Parva): ***Biopsychosocial Studies*** Chairperson: LESLIE LIEBERMAN
14:00-14:15	**Tomasz Hanc**[1], Ewa Bryl[1], Paula Szczesniewska[1], Agata Dutkiewicz[2], Agnieszka Slopien[2], Monika Dmitrzak-Weglarz[3] [1]Institute of Biology and Human Evolution, Faculty of Biology, Adam Mickiewicz University, Poznan, Poland [2]Department of Child and Adolescent Psychiatry, Poznan University of Medical Sciences, Poznan, Poland [3]Laboratory of Psychiatric Genetics, Department of Psychiatry, Poznan University of Medical Sciences, Poznan, Poland ADHD, EXCESSIVE WEIGHT AND CENTRAL OBESITY. ASSESSMENT OF THE ASSOCIATION.
14:15-14:30	**Anna Lipowicz**[1], Monika N. Bugdol[2], Andrzej W. Mitas[2] [1]Department of Anthropology, Wrocław University of Environmental and Life Sciences, Poland [2]Department of Medical Informatics and Artificial Intelligence; Silesian University of Technology, Poland THE LONG-LASTING EFFECT OF FAMILY STRUCTURE IN EARLY LIFE ON SOCIAL POSITION, WELL-BEING, AND HEALTH STATUS IN ADULTHOOD
14:30-14:40	**Monika Misevice**[1], Lina Gervinskaite-Paulaitiene[2] [1]Vilnius University, Faculty of Medicine, Clinic of Psychiatry, Vilnius, Lithuania [2]Vilnius University, Institute of Psychology, Vilnius, Lithuania IMPORTANT CHANGE IN CHILDREN'S (8-11YR) MENTAL HEALTH OVER 1 YEAR – RESULTS FROM A CASE-SERIES STUDY OF PSYCHOSOCIAL INTERVENTION IN A SOCIAL DAYCARE CENTER
14:40-14:50	**Agnieszka Witek**, Anna Lipowicz Institute of Environmental Biology, Division of Anthropology, Wroclaw University of Environmental and Life Sciences, Poland SLEEP PARAMETERS IN PEOPLE WITH DIFFERENT SLEEP DEFICIT LEVELS
14:50-15:00	**Povilas Kavaliauskas**[1], Domantas Jasilionis[2,3], Evaldas Kazlauskas[4], Giedre Smailyte[1] [1]Department of Public Health, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania. [2]Max Planck Institute for Demographic Research, Rostock, Germany [3]Demographic Research Centre, Vytautas Magnus University, Kaunas, Lithuania [4]Center for Psychotraumatology, Institute of Psychology, Vilnius University, Vilnius, Lithuania DIFFERENCES IN ALL-CAUSE AND SUICIDE MORTALITY BETWEEN HEALTH CARE AND OTHER EMPLOYEES IN LITHUANIA: A CENSUS-LINKED MORTALITY FOLLOW-UP STUDY, 2011-2019
15:00-15:30	**Discussion**
15:30-16:00	***Coffee Break***

11:30-13:00	**ISGA Session 6** (Room 238): ***Nutrition and body composition*** Chairperson: BABETTE ZEMEL
11:30-12:00	**STRUAN F.A. GRANT** University of Pennsylvania, USA 3D GENOMIC STRATEGIES TO UNDERSTAND COMPLEX TRAIT GENETIC ARCHITECTURE
	ISGA Session 6 (Room 238): ***Recent advances in growth data analysis*** Chairperson: TIM COLE
12:00-12:30	Keynote lectures: **WILL JOHNSON** Loughborough University, UK GROWTH MIXTURE MODELLING OF EARLY-CHILDHOOD BODY WEIGHT: A CAUTIONARY EXAMPLE
12:30-13:00	**STEF VAN BUUREN** University of Utrecht, Netherlands EXTENDING A CROSS-SECTIONAL REFERENCE WITH A LONGITUDINAL COMPONENT
13:00-14:00	***LUNCH (EAA Council Meeting, Aula Parva)***
14:00-15:30	**ISGA Session 7** (Room 238): ***Recent advances in growth data analysis*** Chairperson: WILLIAM JOHNSON
14:00-14:40	Keynote lecture: **JOSEPH FREER** Joseph Freer, Joanna Orr, Andrew Prendergast Queen Mary University of London, UK DOES STUNTING STILL MATTER IN HIGH INCOME COUNTRIES?
14:40-14:55	**Christiane Scheffler**[1], Michael Hermanussen[2] [1]University of Potsdam, Human Biology, Germany [2]Pediatrician, Eckernförde-Altenhof, Germany SHORT STATURE IS THE NATURAL HEALTHY PHENOTYPE, AND NOT PATHOLOGIC
14:55-15:10	Joseph Freer[1], **Joanna Orr**[1], Joan Morris[2], Robert Walton[1], Leo Dunkel[1], Helen Storr[1] and Andrew Prendergast[1] [1]Queen Mary University of London, UK [2]St George University of London, UK STUNTING AND LANGUAGE DEVELOPMENT IN UK CHILDREN AGED 3 TO 11 YEARS - AN ANALYSIS FROM THE MILLENNIUM COHORT STUDY
15:10-15:30	**Discussion**
15:30-16:00	***Coffee Break***
11:30-13:00	**ICEM Session 6** (Room 239) Chairperson: SLAWOMIR KOZIEL
11:30-12:10	Keynote lecture: **SAŠA MISSONI**[1,2] [1]Institute for Anthropological Research, Zagreb, Croatia [2]School of Medicine, "J. J. Strossmayer" University, Osijek, Croatia INSIGHT FROM CROATIAN ISLAND COHORT
12:10-12:20	**Gintare Klimantaviciute**[1], Indre Stankeviciene[2], Lukas Naktinis[3], Darius Padvelskis[4], Paulius Raskevicius[3], Alina Puriene[2] [1]Faculty of Mathematics and Informatics, Vilnius University, Vilnius Lithuania [2]Institute of Dentistry, Faculty of Medicine, Vilnius University, Vilnius Lithuania [3]Faculty of Medicine, Vilnius University, Vilnius Lithuania [4]MB [Small Partnership] "DentFuture", Vilnius Lithuania AUTOMATIC DMFT INDEX EVALUATION IN ORTHOPANTOMOGRAMS USING AI-CE1 TECHNOLOGY

12:20-12:30	**Donatas Jocius**[1], Donatas Vajauskas[2], Algirdas Edvardas Tamosiunas[1] [1]Department of Radiology, Nuclear Medicine and Medical Physics, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Department of Nuclear Medicine, The Hospital of Lithuanian University of Health Sciences Kauno Klinikos, Kaunas, Lithuania CHRONIC LIVER DISEASE STRATIFICATION WITH HEPATOBILIARY SCINTIGRAPHY
12:30-12:40	**Rokas Stulpinas**[1,5], Dovile Zilenaite-Petrulaitiene[1,5], Allan Rasmusson[1,5], Agne Grigonyte[2], Aiste Kielaite-Gulla[3,4,6], Kestutis Strupas[3,4], Arvydas Laurinavicius[1,5] [1]Department of Pathology, Forensic Medicine and Pharmacology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Faculty of Medicine, Faculty of Medicine, Vilnius, Lithuania [3]Centre for Visceral Medicine and Translational Research, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [4]Centre of Abdominal Surgery, Vilnius University Hospital Santaros klinikos, Vilnius, Lithuania [5]National Centre of Pathology, Affiliate of Vilnius University Hospital Santaros klinikos, Vilnius Lithuania [6]Department of Surgery, Memorial Sloan Kettering Cancer Center, USA AUTOMATED TUMOR-HOST INTERFACE ZONE DETECTION AND IMMUNE RESPONSE ASSESSMENT IN HEPATOCELLULAR CARCINOMA TISSUE
12:40-12:50	**Ramune Narutyte**[1], Aiste Navakauskaite[1], Andrius Brazaitis[2], Arunas Barkus[3], Janina Tutkuviene[3] [1]Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Department of Radiology, Nuclear Medicine and Medical Physics, Faculty of Medicine, Vilnius University, Vilnius, Lithuania [3]Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania METHODOLOGICAL PROBLEMS IN THE STUDIES OF PORTAL VEIN ANATOMICAL VARIABILITY IN CORROSIVE LIVER SAMPLES: COINCIDENCES AND DIFFERENCES USING THE CT METHOD VERSUS SOMATOSCOPIC EVALUATION AND MANUAL MEASUREMENTS
12:50-13:00	**Discussion**
13:00-14:00	***LUNCH (EAA Council Meeting, Aula Parva)***
14:00-15:30	**ICEM Session 7** (Room 239) Chairperson: RENATA SIMKUNAITE-RIZGELIENE
14:00-14:40	Keynote lecture: **ZUZANA OBERTOVA** Centre for Forensic Anthropology, University of Western Australia, Australia SAME OR DIFFERENT? FORENSIC FACIAL IMAGE IDENTIFICATION
14:40-14:50	**Egle Stukaite-Ruibiene**[1], Arunas Barkus[2], Renata Simkunaite-Rizgeliene[2], Janina Tutkuviene[2] [1]Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania VERTICAL FACIAL DIMENSIONS AND EYE MEASUREMENTS ARE THE MOST SUITABLE FOR FACIAL IDENTIFICATION BY PROFESSIONAL AND NON-PROFESSIONAL PHOTOGRAPHS
14:50-15:00	**Milda Vitosyte**[1], Dominyka Malinauskaite[1], Renata Chalas[2], Vilma Brukiene[1], Agnieszka Lasota[3], Alina Puriene[1] [1]Institute of Odontology, Faculty of Medicine, Vilnius University, Vilnius Lithuania [2]Department of Oral Medicine, Medical University of Lublin, Lublin, Poland [3]Department of Jaw Orthopaedics, Medical University of Lublin, Lublin, Poland DIFFERENCES IN LIP MORPHOMETRY AND MORPHOLOGICAL PATTERNS ACROSS ETHNIC GROUPS
15:00-15:10	**Milda Budryte**[1], Janina Tutkuviene[2] [1]Faculty of Medicine, Vilnius University, Vilnius, Lithuania [2]Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania WHAT ARE THE MOST ATTRACTIVE FACIAL FEATURES – THE ONES WE HAVE OURSELVES, THE OPPOSITE OR THE AVERAGE?

15:10-15:20	**Nigar Sultanova**, Rasim Bayramov Azerbaijan Medical University, Baku, Azerbaijan FACIAL SOFT TISSUE THICKNESSES IN AZERBAIJAN ADULTS: VARIABILITY AND SPECIFICITY
15:20-15:30	**Discussion**
15:30-16:00	***Coffee Break***
16:00-17:30	**Plenary Session V** (Aula Parva) Chairpersons: NOËL CAMERON and JANINA TUTKUVIENE
	ICEM keynote lecture: **FRANK RÜHLI** Institute of Evolutionary Medicine, Medical Faculty, University of Zurich, Switzerland EVOLUTIONARY MEDICINE – LEARNING FROM THE PAST FOR THE PRESENT AND THE FUTURE **General discussion, closing remarks, future plans**
19:00-23:00	***Joint EAA-ISGA-ICEM Meeting Dinner*** *Time: 19:00;* *Venue: Palace of the Grand Dukes;* *Address: Katedros sq. 4, Vilnius*

The 27th of August

9:00-14:00	*Trakai tour: Lake resort with a gothic insular castle (optional)* *Meetings of the Working Groups (according to the need)*

E-POSTERS

Pre-recorded audio e-posters will be available on the EAA-ISGA–ICEM Meeting website (with a password only)

E-posters of the 22nd Congress of EAA

Jeannette Becker, Birgit Bühler, Sylvia Kirchengast
THE SUSCEPTIBILITY TO UPPER RESPIRATORY INFECTIONS IS STRONGLY RELATED TO SOCIAL STATUS DURING EARLY MEDIEVAL TIMES

Agne Cerkauskaite, Marius Miglinas, Edita Kazenaite, Rimante Cerkauskiene
SEARCHING FOR ANCESTORS: MIDDLE AGES DATING COL4A5 VARIANT GLY624ASP IS FOUND IN LITHUANIAN COHORT WITH ALPORT SYNDROME

Anna Chumakova, Eugene Kobyliansky
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Svetlana Dauengauer-Kirliene, Alina Urnikyte, Laura Pranckeniene, Ingrida Domarkiene, Alma Molyte, Ausra Matuleviciene, Ingrida Pilypiene, Vaidutis Kucinskas
WHOLE-GENOME SEQUENCING STUDY IN HEALTHY LITHUANIAN NEWBORNS: INTRODUCTION TO THE ANALYSIS OF THE GENERATIONAL SHIFT

Anna Kabata-Pizuch, Tomasz Wloch, Zbigniew Dabrowski, Anna Marchewka, Agnieszka Suder
AN INFLUENCE OF VIBROTHERAPY TREATMENTS ON THE BODY COMPOSITION AND HEMORHEOLOGICAL COMPONENTS OF BLOOD IN FEMALES AGED 60-70 YEARS

Aleksandra Karykowska, Jacek Szczurowski, Agnieszka Witek
CIRCADIAN RHYTHM DISORDERS IN ADULT WOMEN AFTER SARS-CoV-2 VIRUS INFECTION

Dzintra Kazoka
DETECTION AND CHARACTERISTICS OF SOME ANTHROPOMETRIC MEASUREMENTS OF HUMAN BODIES ON THE VIRTUAL DISSECTION TABLE

Guoda Laurinaviciute, Kristupas Suslavicius, Janina Tutkuviene
RELATIONSHIP BETWEEN RETINAL PARAMETERS AND FEMALE BODY SIZE, SHAPE, AND PROPORTIONs

Liene Martinsone-Berzkalne, Silvija Umbrasko, Ilva Dulevska
IMPACT OF PHYSICAL ACTIVITIES ON POSTURE TYPE AMONG YOUNG CHILDREN

Dariusz Nowakowski, Jacek Krzysztof Bałchanowski, Zygmunt Domagała, Maciej Guziński, Mateusz Kolator, Yauheni Nikanovich, Jonatan Nowakowski, Jarosław Szrek, Sławomir Wudarczyk, Tomasz Zatoński
VIRTUAL ANTHROPOMETRY OF THE HYOID BONE (OS HYOIDEUM) IN MODERN HUMANS (HOMO SAPIENS)

Dario Piombino-Mascali, Charlene Greenwood, Nicholas Márquez-Grant
THE MUMMY MUSEUM OF FERENTILLO, UMBRIA (CENTRAL ITALY): A RESEARCH PLAN

Liana Plavina
EFFECT OF HIGH PHYSICAL LOAD EXERCISES TO BODY COMPOSITION CHARACTERISTICS

Paulina Pruszkowska-Przybylska, Aneta Sitek, Magdalena Kobus, Iwona Rosset, Elżbieta Żądzińska
ASSOCIATION BETWEEN MATERNAL TRAITS DURING PREGNANCY AND 2D:4D DIGIT RATIO I
N POLISH CHILDREN

Simona Radzeviciute, Kristina Lasiene, Donatas Gasiliunas, Nomeda Juodziukyniene, Aleksandras Vitkus, Birute Zilaitiene
MORPHOLOGICAL PARAMETERS OF 31-40-YEAR-OLD MEN TESTES

Laura Ramona Rozite, Silvija Umbrasko, Erika Nagle, Ilva Dulevska, Zeltite Cederstrema
ANTHROPOMETRIC EVIDENCE OF BRACHYDACTYLY TYPE D IN A FAMILY WITH UNUSUAL THUMBS

Greta Senkeviciute, Birute Burnyte
THE GENETIC HETEROGENEITY IN NEUROMUSCULAR DISORDERS: A STUDY OF NEXT-GENERATION SEQUENCING RESULTS

Egle Skukauskaite, Greta Asadauskaite, Diana Vasiljevaite, Jurgita Stasiuniene
PREVALENCE OF SEXUAL VIOLENCE IN LITHUANIABEFORE AND DURING THE COVID-19 PANDEMIC

Ana Solari, Gisele Daltrini Felice, Anne Marie Pessis, Gabriela Martin, Niede Guidon
A “DECARNATION HOUSE” IN PREHISTORIC BRAZIL: AN ARCHAEOTHANATOLOGICAL APPROACH TO INTERPRET A TWO-STAGE FUNERAL CYCLE AT TOCA DO ALTO DA SERRA DO CAPIM (MIDDLE-LATE HOLOCENE, NORTHEASTERN BRAZIL)

Agnieszka Tomaszewska, Barbara Kwiatkowska, Anna Spinek, Dominika Pindel
PROGNATHISM IN HUMAN POPULATIONS FROM DIFFERENT CLIMATIC CONDITIONS

Klára B. Zsoffay, Gábor Dancs, Beáta Venyingi, Gábor Áron Vitályos
CORRELATIONS OF CHILDREN’S BMI WITH PARENTAL BACKGROUND

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AGE-RELATED PEANUT SENSITIZATION TRENDS IN LITHUANIAN CHILDREN WITH SUSPECTED ATOPIC DISEASE

Egle Marija Jakimaviciene, Rita Perminaite, Justė Petkeviciute, Jelena Isakova, Nijole Drazdiene, Vytautas Basys, Janina Tutkuviene
BIRTH WEIGHT AND HEALTH PROBLEMS OF NEWBORNS RELATED TO MATERNAL ALCOHOL AND PSYCHOACTIVE SUBSTANCE USE DURING PREGNANCY (SURVEY OF LITHUANIAN MEDICAL BIRTH DATA, 1995–2016)

Zivile Sabonyte-Balsaitiene, Diana Buzinskiene, Tomas Poskus, Diana Ramasauskaite, Grazina Drasutiene
MATERNAL DIETARY, PHYSICAL ACTIVITY AND UNHEALTHY BEHAVIORS CHANGES OVER THE PAST DECADE IN LITHUANIA: A MULTICENTER CLINICAL TRIAL

Meghan K. Shirley, Gary D. Wu, Hongzhe Li, Andrea Kelly, Eileen Ford, Yun Li, Ceylan Tanes, Patricia DeRusso, Kyle Bittinger, Babette S. Zemel
INFANT EATING BEHAVIORS ARE ASSOCIATED WITH GROWTH AND ADIPOSITY IN THE FIRST TWO YEARS OF LIFE

Magdalena Żegleń, Łukasz Kryst, Małgorzata Kowal, Agnieszka Woronkowicz
INTERGENERATIONAL CHANGES IN SELECTED CRANIAL MEASUREMENTS OF ADOLESCENTS FROM POLAND FROM 1938 TO 2020

Yanitsa Zhecheva, Ivaila Yankova Ivanova-Pandourska, Racho Stoev, Albena Dimitrova, Boyan Kirilov, Aleksandra Ravnachka, Zoya Mateeva, Rayna Georgieva
SECULAR CHANGES IN BODY WEIGHT AND LENGTH IN NEWBORNS FROM SOFIA, BULGARIA

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Urte Aliosaitiene, Zaneta Petrulioniene
ALGORITHM FOR DETECTION AND SCREENING OF FH IN LITHUANIAN POPULATION

Linas Andreika, Diana Ramasauskaite, Vilius Rudaitis
THE EVALUATION OF UTERINE SENTINEL LYMPHNODE VISUALISATION

Rokas Arlauskas, Donatas Austys, Rimantas Stukas
THE IMPACT OF THE COVID-19 PANDEMIC ON THE CONSUMPTION OF DIETARY SUPPLEMENTS BY THE LITHUANIAN POPULATION

Tomas Aukstikalnis, Juozas Raistenskis
WHAT DURATION OF COMPLEX REHABILITATION IS REQUIRED TO MANAGE NON-SPECIFIC CHRONIC LOW BACK PAIN IN ADOLESCENTS?

Elvin Francisek Bogdzevic, Justina Kozakaite, Janina Tutkuviene
TOPOGRAPHIC LOCATION OF NUTRIENT FORAMINA, FORAMEN NUTRICIUM, IN RIGHT AND LEFT FEMURS AND TIBIAS (BASED ON PALEO-OSTEOLOGICAL DATA FROM 19TH C. MALES, LITHUANIA)

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REMOTELY PROGRAMMABLE DEEP BRAIN STIMULATOR COMBINED WITH INVASIVE BLOOD PRESSURE MONITORING SYSTEM FOR NON-TETHERED RAT MODEL IN HYPERTENSION RESEARCH

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ANALYSIS OF POTASSIUM AND SODIUM IN POSTMORTEM HEART TISSUE IN THE CASES OF SUSPECTED SUDDEN CARDIAC DEATH

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IN VITRO COMPARATIVE EVALUATION OF ULTRA-HIGH AND LOW TEMPERATURE PROCESSED MILK, SALIVA, TAP WATER, AND SALINE SOLUTION FOR PRESERVATION OF AVULSED TOOTH

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Rita Kunigeliene, Odeta Kinciniene, Vytautas Usonis
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PLATELET AND WHITE BLOOD CELL COUNTS ARE ASSOCIATED WITH DIFFERENT DEPRESSIVE SYMPTOM DIMENSIONS IN PATIENTS WITH BIPOLAR DISORDER

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GYNECOMASTIA SYMPTOMS PREVALENCE AND THEIR ASSOCIATION WITH MEN'S LIFESTYLE AND SELF-ESTEEM

Kristina Norvilaite, Juozas Kurmanavicius, Diana Ramasauskaite
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Gyte Pakulaite-Kazliene, Gintaras Kaubrys
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Ruhr-University Bochum, Germany
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PROF. STEFAN VAN BUUREN
University of Utrecht, Netherlands
Topic: **Extending a Cross-sectional Reference with a Longitudinal Component**

PROF. NOËL CAMERON
Loughborough University, UK
Topic: **Child Growth and Armed Conflict**

PROF. TIM COLE
University College London, UK
Topic: **SITAR Growth Curve Analysis - Universal Pubertal Height Growth and Seasonal Infant Weight Growth**

DR. JOSEPH FREER
Queen Mary University of London, UK
Topic: **Does Stunting Still Matter in High Income Countries?**

PROF. DR. STRUAN F.A. GRANT
University of Pennsylvania, USA
Topic: **3D Genomic Strategies to Understand Complex Trait Genetic Architecture**

DR. NICOLA HAWLEY
Yale University, USA
Topic: **Growth, Body Composition and Chronic Disease Risk Among Samoan Children: Lessons from the Ola Tuputupua'e (Growing Up) Cohort**

DR. WILL JOHNSON
Loughborough University, UK
Topic: **Growth Mixture Modelling of Early-childhood Body Weight: a Cautionary Example**

PROF. PÉTUR BENEDIKT JÚLÍUSSON
University of Bergen, Norway
Topic: **Influences of Endocrine Disruptive Chemicals on Pubertal Development among Norwegian Children**

PROF. MARIA KACZMAREK
Adam Mickiewicz University, Poland
Topic: **Menarche, Menstrual Cycle and Menstruation Viewed Through the Lens of Evolutionary Ecology**

PROF. SYLVIA KIRCHENGAST
University of Vienna, Austria
Topic: **Motherhood in a Changing World - the Challenge of Female Reproduction from the Viewpoint of Evolutionary Anthropology**

PROF. SLAWOMIR KOZIEL
Polish Academy of Sciences, Poland

Topic: **Looking from Above - Is Being Tall Advantageous?**

Topic: **Hand Grip Strength and Maturational Timing in Children Exposed to Lead**

PROF. CHRISTOPHER KUZAWA
Northwestern University, USA

Topic: **Prenatal Nutrition as an Influence on Future Health and Human Capital: Strategies for Harnessing a Challenging Policy Lever**

PROF. MERCEDES CHECHETA LÓPEZ DE BLANCO
Simon Bolivar University, Venesuela

Topic: **Problems, Omission & Gaps in the First 1000 Days of Life in Low and Middle Income Countries**

PROF. NICHOLAS MASCIE - TAYLOR
University of Cambridge, UK

Topic: **Global Health Fluctuations in Relation to Human Evolution**

PROF. SAŠA MISSONI
Institute for Anthropological Research, Croatia

Topic: **Insight from Croatian Island Cohort**

DR. ZUZANA OBERTOVA
University of Western Australia, Australia

Topic: **Same or Different? Forensic Facial Image Identification**

DR. JOANNA ORR
Queen Mary University of London, UK

Topic: **Does Stunting Still Matter in High Income Countries?**

PROF. CHARLOTTE ROBERTS
Durham University, UK

Topic: **Human Variation and Adaptation in a Changing World: Perspectives from the Past Using Palaeopathology**

PROF. FRANK RÜHLI
University of Zurich, Switzerland

Topic: **Evolutionary Medicine – Learning from the Past for the Present and the Future**

DR. JELENA ŠARAC
Institute for Anthropological Research, Croatia

Topic: **Island Life — Dreams and Realities**

PROF. LAWRENCE M. SCHELL
University at Albany, State University of New York, USA

Topic: **Human Sexual Maturation and Chemical Exposure: Consistencies and Variations in Results from Studies**

PROF. WULF SCHIEFENHÖVEL
Max Planck Institute for Biological Intelligence, Germany

Topic: **From Stone Age to Computer in Two Generations. Dramatic Cultural Change in Highland Papua, as Proof of the Plasticity of the Human Brain**

PROF. JANINA TUTKUVIENE
Vilnius University, Lithuania

Topic: **Growth of Preterm Children in Early Childhood: the Relationship Between Gestational Age, Body Size, General Health Status, and Timing of Diseases**

PROF. JONATHAN WELLS
UCL Great Ormond Street Institute of Child Health, UK

Topic: **The Double Burden of Malnutrition: an Evolution Perspective**

DR. MARIAN VANHAEREN
University of Bordeaux, France

***Topic: Homo Curans*. Perspectives on Prehistoric Healing Practices**

PROF. BABETTE S. ZEMEL
Perelman School of Medicine at the University of Pennsylvania, USA

Topic (Tanner lecturer): Advances in the Study of Human Growth and the Challenges Ahead

PROF. ALBERT R. ZINK
Institute for Mummy Studies, Eurac Research, Italy

Topic: **Multidisciplinary Analysis of Intestinal Content in Ancient Mummies: New Insights into Diet, Disease, and the Evolution of our Gut Microbiome**

ABSTRACTS OF KEYNOTE SPEAKERS

DESIGN FLAWS AND MISMATCH: WHY MEDICINE NEEDS EVOLUTIONARY THEORY

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Anatomically modern humans have deviated – to some degree – both genetically and behaviorally from our hunter-gatherer ancestors, and there is growing evidence suggesting that humans continue to evolve. However, no adaptive trait is optimal by design in space or time. In fact, with regard to humans, fast changing environments may turn adaptations into risk factors for somatic disease and psychological disorders. For example, adaptations to past environments including nutritional requirements, exposure to pathogens, social issues etc. have now turned into "epidemics" of autoimmune diseases, cardiovascular disease, diabetes and obesity, several forms of cancer, depression, anxiety and other psychiatric conditions. Understanding the impact of evolutionary explanations of disease for clinical medicine is thus not just an academic exercise, but imperative to better diagnose, prevent, and treat medical conditions.

Keywords: medicine, mismatch, design flaws, vulnerability

EXTENDING A CROSS-SECTIONAL REFERENCE WITH A LONGITUDINAL COMPONENT

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Age-related growth references are critical in monitoring and evaluating growth trajectories. Most published references are cross-sectional, even if calculated from longitudinal data. We propose a generic and straightforward extension to enrich an existing reference with a longitudinal component.

For the reference of interest, transform all measurements into Z scores. The broken stick model approximates each resulting trajectory by a series of connected straight lines on a specified age grid. The three types of model parameters (fixed effects, variance-covariance matrix and error term) form the longitudinal component and describe the evolution of the Z scores in the longitudinal sample relative to the reference. We may use the component to calculate conditional gain scores and to interpolate, smooth, simulate and predict individual values. The procedure is modular and applicable to any combination of reference and longitudinal data.

Calculations are quick enough to form the basis for online personalized prediction systems. We demonstrate the use of the R package brokenstick and its application inside the Joint Automatic Measurement and Evaluation System (JAMES) application programming interface (API).

Keywords: broken stick model, growth references, methodology, JAMES

CHILD GROWTH AND ARMED CONFLICT

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The widely publicised invasion of the Ukraine by Russia has highlighted yet again the devastation caused by armed conflict at individual, community, and national levels. Human society in the 20th and 21st Centuries has never been free of armed conflict either within or between nations. Whilst the first half of the 20th century was dominated by the 'World Wars' of 1914-18 and 1939-45, the Uppsala Conflict Data Program records that never less than 40 countries worldwide were involved in armed conflicts between 1989 and 2018. In their Lancet review of 2021, Bendavid et al (2021) emphasise that whilst "...every conflict-affected region, every conflict, and every affected community is different from all others..." common features are shared and yet the evidence that supports health consequences is "weak" and "limited", and in the case of adolescents almost "non-existent".

The status of human growth and development over time has been used globally to determine the health and wellbeing of children. Given the ubiquitous nature of armed conflict, it is not surprising that research in human growth and development has provided several significant studies highlighting the effects of armed conflict on children and adolescents in war zones. Data reflecting the effect of the 1st and 2nd World wars on young people in England, Germany, and Japan, demonstrates the power of armed conflict to interrupt the positive secular trends characteristics of improved physical growth and development at national levels in both those experiencing conflict first hand, and, through data from the Netherlands, the long-term consequences in terms of health and growth to those experiencing it through maternal exposure during pregnancy.

Studies of the growth outcomes of armed conflict are, of course, complicated by the inability to plan prospective studies. Most studies examine proximal outcomes of conflict such as mortality, malnutrition, injury, disability, and disease. However, the existence of repeated cross-sectional surveys provides unequivocal retrospective evidence for the reduction of growth rates across the age range from infancy to adulthood and the differential effects of armed conflict in children and adolescents.

SITAR GROWTH CURVE ANALYSIS – UNIVERSAL PUBERTAL HEIGHT GROWTH AND SEASONAL INFANT WEIGHT GROWTH

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Background and Aim. The SITAR growth curve model summarises longitudinal growth in individuals, combining a cubic spline mean curve with a set of subject-specific random effects for size, timing and intensity that tailor the curve to the individual. The aims are twofold: to test a key SITAR assumption that for height in puberty, the fitted mean curve— suitably transformed—matches the mean growth pattern of individuals from many different populations over two centuries; and separately to explore the seasonal pattern of weight growth in Gambian infants based on seasonally adjusted SITAR curves.

Material and Methods. Data were collected from 8 longitudinal surveys of height in puberty, for 9751 boys age 7-20 born 1770-1990. SITAR models were fitted to each survey, and then as a second stage SITAR models were fitted to the 8 mean curves, to explain population differences in height size, timing and intensity. Separately, serial data on weight in infancy were available for 520 infants from The Gambia where growth has a strong seasonal component. A SITAR model was fitted adjusting for seasonal differences in size, timing and intensity.

Results. SITAR fitted all 8 height datasets to high accuracy, with residual standard deviations (SD) of ~0.8 cm, and the mean curves showed large differences in mean size, timing and intensity. Fitting a SITAR global mean curve to the 8 mean curves provided an extremely good fit, with residual SD 0.2 cm. The infant weight SITAR model showed seasonal patterns in size, timing and intensity that applied to both month of birth and month of measurement.

Conclusions. Height growth in puberty is tightly constrained in that SITAR adjustment explains most of the inter-survey differences in variability. Weight growth in infancy is affected by timing of birth and measurement, with size reduced, timing delayed and intensity reduced in hard times.

Keywords: SITAR, height, weight, puberty, seasonality

DOES STUNTING STILL MATTER IN HIGH INCOME COUNTRIES?

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Socially-determined linear growth in childhood is a research and public health priority in low- and middle-income countries (LMIC), due to evidence that short stature – often termed 'stunting' – has ramifications for a child's health and neurocognitive development. Numerous studies investigating longitudinal relationships of stunting in infancy and downstream health, cognitive and economic outcomes in LMICs highlight the importance of understanding both the mechanisms underlying these relationships and interventions that can alleviate the long-term sequelae of linear growth faltering. In contrast linear growth is overlooked as a marker of a child's health in many high-income countries. Recently published evidence from a national child growth screening programme has identified a link between short stature and deprivation in England. Many countries (including the UK) only measure children's heights routinely at school entry and do not use these results to trigger any further intervention. The focus in the UK and in other high-income settings remains overweight and obesity. Conversely, pre-school growth screening is already embedded in the public health infrastructure of many LMIC settings, and in some high-income countries such as Finland and the Netherlands. We evaluate the evidence that early life growth faltering has long term consequences for children growing up in high-income countries. We also discuss the public health implications of this evidence base, highlighting effective approaches to early intervention.

Keywords: stunting, linear growth, high-income countries

3D GENOMIC STRATEGIES TO UNDERSTAND COMPLEX TRAIT GENETIC ARCHITECTURE

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We are employing cutting-edge 3D genomic approaches to facilitate understanding of genetic loci for common complex disease, including in the context of metabolic traits. While the cellular basis for the development of such traits is relatively well characterized, there are only a few human genes characterized to date known to regulate these processes that are clinically relevant to the related diseases. There is a significant need to discover and validate new genetic targets that influence obesity, diabetes and bone-related traits to advance therapies to prevent and treat the related debilitating diseases.

We are focused on the functional significance of genome wide association study (GWAS) signals associated with bone mass accrual, diabetes and childhood obesity. We are leveraging those signals to discover effector genes involved in the pathogenesis of these common complex traits. While numerous GWAS efforts have been successful in discovering key genetic variants associated with bone mass accrual, diabetes and childhood obesity, including our own efforts, GWAS only reports genomic signals associated with a given phenotypic trait and not necessarily the precise localization of culprit effector genes. Approaches are now emerging to make these determinations; however, they typically suffer from low-resolution and inaccuracies.

For instance, we recently published our high-resolution genome-wide 'variant to gene mapping' efforts, where we integrated RNA-seq, ATAC-seq and chromatin conformation capture (promoter-focused Capture C) in primary human osteoblasts to implicate culprit effector genes for osteoporosis, including validating two novel effector genes, *EPDR1* and *ING3*. ~30% of GWAS signals were found to reside in enhancers with direct physical contact with genes expressed in osteoblasts, totaling 86 leads - many being novel and warranting functional follow-up. However, this also means that many GWAS loci remain to be resolved, so in order to uncover additional aspects of the genetic architecture of bone density determination we are now studying temporally specific roles that are dependent on the stage of differentiation

In the absence of robust public domain genomic datasets for bone and other key cell and tissues types, our goal is to comprehensively functionalize GWAS by discovering and validating genes that physically interact with key enhancers harboring putatively causal SNPs involved in the genetic etiology of our traits of interest, thus representing the genomic basis for metabolic disease. Crucially, our pipeline does not involve large sample sizes, but rather uses primary healthy human cells to triangulate key enhancers coinciding with, and signposted by, putatively causal variants. The ultimate aim is to provide the community with new, high value targets to aid in understanding mechanism, and eventually therapies, for metabolic disease.

GROWTH, BODY COMPOSITION AND CHRONIC DISEASE RISK AMONG SAMOAN CHILDREN: LESSONS FROM THE OLA TUPUTUPUA'E (GROWING UP) COHORT

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Despite being disproportionately at risk for cardiometabolic disease, Pacific Islanders are underrepresented in research to both understand the etiology of disease and to discover the best intervention approaches. To address this, the *Ola Tuputupua'e* ("Growing Up") cohort was established in Samoa with the goals of documenting the burden of malnutrition, identifying critical periods for cardiometabolic disease intervention, and supporting government policy making to protect and promote child health. Three waves of data collection (2-4 years, 4-6 years, 6-9 years) have been completed, with a fourth (8-11 years) beginning in September 2022. The n=509 mother-child pairs currently enrolled represent 11 villages on the Samoan island of 'Upolu with varying urbanicity and exposure to nutrition transition, offering opportunity to explore the impact of ongoing globalization on child health. Since the cohort's inception, obesity prevalence among child participants has more than doubled from 16.1% among 2–4-year-olds to 36.2% among 6–9-year-olds. At age 6-9 years 10.0% of girls and 16.4% of boys had glycated hemoglobin (HbA1c) levels indicative of pre-diabetes (5.7%) while over a third of the cohort had elevated blood pressure, demonstrating how early cardiometabolic disease risk is established in this population. Early childhood growth trajectories and environmental risk factors associated with these outcomes differ markedly by sex: early life growth is indicative of risk in boys, who are also more sensitive to household socioeconomic position and urbanicity, and whose body fatness predicts HbA1c. While girls who adopt a modern diet early in life are at greater risk of high BMI in late childhood, our work to date has shed little light on correlates of disease risk. This presentation will highlight the key scientific and translational lessons learned from the cohort to date, the next steps for intervention development, and the potential role for human biological surveys in informing health policy.

Keywords: child cohort, Samoa, cardiometabolic disease, community engagement, health policy

GROWTH MIXTURE MODELLING OF EARLY-CHILDHOOD BODY WEIGHT: A CAUTIONARY EXAMPLE

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Background. Growth mixture models (GMMs) are used to identity unobserved classes of individuals who have similar growth curves. Fitting latent class trajectory models (LCTM: a heavily co nstrained type of GMM) has been made easier by user-friendly statistical packages but developing good, full GMMs that produce meaningful classes is challenging.

Aim. To demonstrate the robust application of GMMs in auxological epidemiology.

Materials and Methods. The sample comprised 1,390 children in ALSPAC with 12,188 serial measurements of weight between 0-5 years of age. A GMM was developed (for weight in kg) in Mplus considering several age functions for the trajectory shape, removing default constraints on the growth term variances and covariances, and different specifications of the within-class residual variance/error structure. Features of the best fitting model include a Berkey-Reed structural growth function and class-specific (once and twice removed) autocorrelated errors.

Results. While the final 1-6 class solution models only took 8.5 hours to run on a good PC (i9-9980XE processor), model development took months. We selected the 5-class solution as the most plausible. Although the degree of separation between the classes was low (entropy 0.66), the results were enlightening. The smallest class (3%) had an average trajectory that, following an initial big decline in Z-score against the WHO Standard, rapidly increased from below the 50th centile at 4 months to above the 91st centile at 60 months. In secondary analyses, we provide novel information on how/why this class is the most deleterious and differs from the other "at risk of obesity" class that consistently approximated the 91st centile between 4-60 months. Refitting as a LCTM, with default constraints, resulted in a worse BIC, higher entropy, and uninformative classes with parallel mean trajectories.

Conclusions. Failure to meticulously develop full GMMs may result in the most interesting and important latent classes of children being overlooked.

Keywords: ALSPAC, Berkey-Reed growth model, growth mixture model, infant weight gain, latent classes and patterns

INFLUENCES OF ENDOCRINE DISRUPTIVE CHEMICALS ON PUBERTAL DEVELOPMENT AMONG NORWEGIAN CHILDREN. THE BERGEN GROWTH STUDY 2 (BGS2)

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Background and Aim. Early pubertal development is linked to several negative health outcomes later in life including malignancy, cardiovascular diseases and diabetes. During the last years, several studies have reported an earlier onset of puberty. Endocrine disruptive chemicals (EDCs) are a heterogeneous pool of metabolites that are capable of influencing hormonal pathways. To date, several man-made EDCs have been linked to perturbations in growth and pubertal development in children. However, the effects on the timing of pubertal onset appear to be equivocal.

Material and Methods. The Bergen Growth Study 2 (BGS2), a cross-sectional study conducted in 2016, included 1174 children aged 6-16 years, represented not only the first pubertal reference study conducted in Norway, but also provided novel objective ultrasound references of breast development and testicular volume. The references that have now recently been published for these traits are the first of their kind in the literature. In addition, BGS2 provides data on the traditional Tanner B and P pubertal stages, anthropometry, body composition, hormonal profiles and EDCs. Further, data on growth from birth are available on all participants, and 453 children were also included into the Norwegian Mother, Father and Child Cohort (MoBa) study.

Results. Per- and polyfluoroalkyl substances (PFAS) are now recently being analyzed and the first findings will be presented at the meeting.

Further work will focus on the effects of EDCs on the onset and development of puberty by assessing ultrasound-defined breast developmental stages/testicular volumes and the traditional Tanner stages in addition to a detailed characterization of hormonal levels. Also, we aim to investigate the effect of EDCs on growth trajectories and body composition, and in a subset of these children we will also investigate the effect of prenatal exposure to these chemicals on postnatal growth and later pubertal development.

MENARCHE, MENSTRUAL CYCLE AND MENSTRUATION VIEWED TROUGH THE LENS OF EVOLUTIONARY ECOLOGY

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Background and Aim. This literature review is designed to provide a broad outline on menarche, menstrual cycle and menstruation in humans viewed from an evolutionary ecology perspective.

Material and Methods. Literature search was based on scholarly articles published between 2000 and 2022. The electronic search of relevant references was conducted according to the PRISMA methodology in March 2022 at EBSCO Discovery Service (EDS) at the Adam Mickiewicz University library and Google Scholar. The topics that the desired articles should address included: *human female*, *evolutionary ecology*, *life history theory*, *natural selection*, *puberty*, *menarche*, *menstrual cycle*, *menstruation*, and *fertility*. Seventy-three articles identifying by searching EDS and secondary referencing was qualified for inclusion in this analysis.

Results. The search results were discussed using the proximate and ultimate levels of analysis. The proximate level of analysis posits the question 'what is the proximate causation?' It provided explanation of factors that derive within the life of the organism and generate the first menstruation (menarche) and menstrual cycle. The data revealed worldwide variation in age at menarche and the well-established secular declining trend in menarcheal age over the past century. The ultimate level of analysis attempts to answer the question 'what is the ultimate causation' i.e. what are the causes that derived over evolutionary time. The evolutionary origins of menstruation in humans were explained within the frame of hypotheses on the significance of menstruation that have been developed to date. Variation in menarche timing and a downward shift of this event were explained in terms of the alternative reproductive tactic (ART) concept. Finally, the concept of 'reciprocal causation' suggesting that proximate and ultimate causes interact simultaneously were introduced as an alternative conception to proximate-ultimate distinction.

Conclusions. The evolutionary ecology approach improves our understanding the evolutionary trajectory shaped the contemporary human reproductive health patterns.

Keywords: menarche, menstruation, proximate, ultimate, reciprocal causations, reproductive health

MOTHERHOOD IN A CHANGING WORLD – THE CHALLENGE OF FEMALE REPRODUCTION FROM THE VIEWPOINT OF EVOLUTIONARY ANTHROPOLOGY

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From a biological perspective, successful reproduction is the key to evolution and thus the ultimate goal of every living being. However, reproduction, the success of which depends on many endogenous and exogenous factors, is also challenging and can even mean death. In species with internal fertilization, the female sex must make a disproportionately greater contribution to successful reproduction. The maternal investment is in most cases significantly higher than that of the fathers. This results not only in a pronounced sexual dimorphism with respect to potential reproductive success but also in sex-typical differences in physique and behavior. In *Homo sapiens*, the situation is even more special. *Homo sapiens* is the only species that consciously intervene in its reproductive events, plans reproduction, and also puts a lot of effort into preventing successful reproduction. Nevertheless, motherhood is also a special challenge in recent *Homo sapiens*. In no other species are pregnancy and childbirth as life-threatening as in Homo sapiens, and high maternal morbidity and mortality are ingrained in the collective memory of humans. Even at present, despite all medical advances, far too many women worldwide still die in association with pregnancy and childbirth. This is especially true in low-income countries or regions of the world that are exposed to particular social or environmental stress. But even in high-income countries, social or economic changes often lead to new challenges. A significantly increasing mean age at first birth, a rising prevalence of overweight and obesity among women of childbearing age, the urgent desire to plan birth down to the smallest detail, but also psychosocial stress, and economic, political, and environmental crises influence motherhood in *Homo sapiens* to a high degree. Undeniably, we are currently living in a rapidly changing world, and the consequences for reproductive planning, pregnancy outcome, fetal development, and birth are the subject of this paper.

Keywords: motherhood, pregnancy outcome, fetal growth, changing world

LOOKING FROM ABOVE – IS BEING TALL ADVANTAGEOUS?

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Height is the most visible and representative biological feature in humans. It has received considerable attention by many researchers in human biology, sociology, epidemiology and psychology. In most of these studies, higher stature is perceived as a favorable biological feature in a variety of contexts.

This review provides a comprehensive overview of the various aspects of human height. It includes a short description of the mechanisms underlying the variation in human stature. It also considers height as an indicator of social class variation in living conditions and relatively short-term inter-generation changes in economic well-being, as well as an expression of climate adaptation evident in statural gradients associated with geographic conditions reflecting long-term trends in the hominid lineage. Moreover, height is discussed here as a characteristic having a direct effect on Darwinian fitness, as a trait, in males, related to female mating preferences, as a subject of social selection, specifically in the process of individual's movement up and down the social scale, as a mortality differentiating factor, and finally as a morphological marker of biological quality.

Keywords: body size, height, selective social mobility, attractiveness, mortality

HAND GRIP STRENGTH AND MATURATIONAL TIMING IN CHILDREN EXPOSED TO LEAD

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Background and Aim. The aim of this study was an assessment of the effect of blood lead concentration on hand grip strength (HGS) in boys and girls and timing of puberty in girls.

Material and Methods. Two samples were explored in this study: 344 children (175 boys and 169 girls) aged 9-12 years examined in 1996 year, and 489 girls aged 7-18 years examined in 2008, living in Copper Basin in Upper Silesia, Poland. During examination all children underwent basic anthropometric measurements, HGS test, and in 2008 provided information on menarcheal status. Blood samples were taken in order to assess the blood lead and other heavy metals concentrations. Relative weight was calculated by body mass index (BMI, kg/m2). Girls studied in 2008 were divided in two groups based on blood lead concentration: low <3.7 μg/dl and high ≥ 3.7 μg/dl contamination. Menarcheal age was assessed by probit analysis using status quo method.

Results. Girls examined in 1996 showed significant negative relationship between blood lead level and HGS of both hands, controlling for body size and mother's education. No relationship was found in boys. In 2008, girls with higher blood lead level had later menarcheal age (12.93 *vs.* 12.59 years).

Conclusions. Exposure to lead of environmental origin despairs the muscle function in girls, but not in boys. Moreover, higher blood lead concentration decelerates menarcheal timing.

Keywords: hand grip strength, menarche, blood lead level, growth

PRENATAL NUTRITION AS AN INFLUENCE ON FUTURE HEALTH AND HUMAN CAPITAL: STRATEGIES FOR HARNESSING A CHALLENGING POLICY LEVER

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There is great policy interest in role of the gestational environment as a sensitive period when the mother's experiences can influence offspring health (e.g. the "first 1000 days" initiatives). This work reflects the sensitivity and plasticity of prenatal development, which links fetal nutrition or maternal hormone exposures to lifelong health. Although there is understandable excitement around this literature, an evolutionary, anthropological perspective illuminates biological and ethical challenges to translating these findings into public health policy. Compared to other mammals, human biology is unusually effective at buffering the fetus against changes in the mother's macronutrient (protein-energy) intake – whether stressful (e.g. famine) or beneficial (e.g. supplementation). Consistent with this, human pregnancy macronutrient supplementations typically result in negligible improvements in offspring birthweight, while studies that link pregnancy famine to offspring outcomes similarly point to modest, inconsistent negative long-term health effects. In contrast, increasing maternal protein-energy intake during pregnancy can lead to large effects on the mother's own body composition, mood and energy level. Maternal pregnancy supplementations can also increase fertility, suggesting that maternal biology may harness increases in energy intake to increase the number of pregnancies. In contrast to the muted intergenerational benefits of increasing macronutrient intake during pregnancy itself, there is evidence that improving a mother's chronic, lifelong nutrition and growth can yield more substantial intergenerational benefits. These findings suggest that targeting nutritional improvement during pregnancy alone is not a viable policy "short cut"; rather, the DOHaD field emphasizes the importance of investing in sustained, intergenerational nutritional improvement to optimize population health.

Keywords: DOHaD, fetal development, evolutionary biology, anthropology, global public health

PROBLEMS, OMISSIONS AND GAPS IN THE FIRST 1,000 DAYS OF LIFE IN LOW AND MIDDLE-INCOME COUNTRIES

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Human Development Index (HDI) measures a country's health, education, living standards. A LIC: GNI per capita less than $1,045, a Low Middle Income Country, between 1,045 to $4,095, an Upper Middle Income Country: $ 4,095 to $12,605, a High Income Country, more than $12,696 Highest HDI: Europe, some Asian countries. Lowest: sub-Saharan Africa. Antenatal Care (AC), Fertility Prevalence, Adolescent Pregnancies, Maternal Short Stature, Prematurity, Small-for-Date, Breast Feeding. Growth, Nutrition and Adult Outcomes. Perinatal, Maternal Mortality, are inversely related to A C.; the current goal of 6/8 visits, gaps associated with educational level. Global fertility: 2.5 children per woman: highest in Africa, intermediate in L.A. Africa highest in Adolescent Pregnancies, followed by L..A... 95% of the 16 million adolescent pregnancies in LMICs, constitutes a multi-sectorial social failure, recycling poverty and increasing underdevelopment. Approximately 6.5 million SGA and preterm birth in LMICs associated with short maternal stature. Prematurity prevalence: South Asia, Sub-Saharan Africa, the highest. In LMICs, approximately half of LBW babies are preterm; leading cause of death in the first month of life. Small for Date prevalence in LMICs: highest in South Asia. Breastfeeding low in LMICs.The Human Capital Index, World Bank 2018: Survival, Schooling, Health. Highest ranking: Singapore, Hong Kong, Japan, South Korea; Canada, Finland, Sweden, Iceland. Nutrition is an investment rather than a social grant. Maternal height associated with birth weight and height; strongest associations for height: adulthood and at two years of age. According to World Bank a 1% loss in adult height due to stunting equals 1.4% loss of economic productivity. Stunted children have 20% less income, schooling, productivity. The "catch-up dilemma" was performed in high-income countries, without a consideration of how linear growth and weight gain affect adult outcomes. The key question for pediatricians and policymakers: ¿What is the age for promotion of growth for survival and Human Capital and will this lead to an increase in cardio metabolic disease?

GLOBAL HEALTH FLUCTUATIONS IN RELATION TO HUMAN EVOLUTION

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Background. This presentation examines the changes in health through human evolution initially by showing that life expectancy has dramatically increased – from <20 years in prehistory to over 75 years, on average in modern times. Even so, in the present day life expectancy varies by up to 40 years between countries. An obvious factor accounting for increase in life expectancy from prehistory to the present day is changing relationship of humans with disease. A model for understanding the evolution and spread of diseases was put forward by Omran in 1971 (the epidemiological transition) based on an Age of Pestilence and Famine, an Age of Receding Pandemics and an Age of Degenerative and Man-Made Diseases. But, nowadays, Omran's model is thought to be too simplistic and out of date.

Although the shift from hunter-gatherer to agriculture was thought to be a major reason for the increase in diseases, lice and tapeworms were likely to have infected Homo erectus and Neanderthals were also likely to have had leprosy, TB and some viruses.

Pandemics have had a dramatic impact on the health of human populations for example the Black Death (1347-52) killed 25-50% of Asian and European populations. Disease eradication has been limited to smallpox (in 1980).

The recent changes in health are due to the re-emergence of old diseases (e,g. TB) and the emergence of new ones e.g. HIV, SARS, MERS and COVID-19 as well as a dramatic increase in non-communicable diseases such as cardiovascular, diabetes and cancers. These changing disease patterns are a consequence of variation in many factors including poverty/wealth, food production and storage, climate change, lifestyle, ecology and environment, demography and microbial change.

Conclusions. Although life expectancy has increased dramatically, human populations continue to be exposed to life-threatening infectious diseases while non-communicable diseases continue to rise.

Keywords: health, life expectancy, epidemiological transition, pandemics, infectious and non-communicable diseases

INSIGHT FROM CROATIAN ISLAND COHORT

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In 2015, the first birth cohort study in Croatia, named "Croatian Islands Birth Cohort Study (CRIBS)" was initiated. Our aim was to prospectively follow a sample of 500 pregnant women and their children in two sub-populations – island population (Croatian Dalmatian islands - Hvar and Brač) and mainland population (City of Split with its surroundings). Data on social factors (age, marital status, education, employment, income, religious views, number of children), psychosocial factors (quality of life, health beliefs and attitudes, postnatal depression), lifestyle (smoking, alcohol consumption, dietary habits, physical activity), as well as medical data (maternal obstetric data and medical history, potential pre-, peri- and post-natal complications, information on child's growth and development, feeding habits, allergies, vaccination, other medical issues etc.) and biological samples (blood samples from the mother and cord blood samples from the newborns) were collected. So far, the results are showing the influence of environmental and biological variables (e.g., maternal age, smoking, parity, lipid profile and fasting blood glucose level) as risk factors for the devepoment of metabolic syndrome (MetS) and adverse pregnancy outcomes in this Croatian birth cohort. Pre-pregnancy BMI has been observed as an indicator of maternal health disorders during pregnancy (deviated biochemical parameters, high blood pressure), as well as an indicator of adverse pregnancy outcomes. The main advantage of the CRIBS birth cohort is the quality of the collected data (including biological samples of mother-child dyads), thus enabling future research of biological and environmental risk factors for the development of MetS and associated complex disorders.

Keywords: birth cohort, metabolic syndrome, pregnancy

SAME OR DIFFERENT? FORENSIC FACIAL IMAGE IDENTIFICATION

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Images of human faces are omnipresent in today's society. Consequently, they have also become an important source of evidence in forensic investigations. Facial images are used as evidence of identity for suspects and victims in a variety of cases, including terrorism, abuse and interpersonal violence, identity fraud, burglaries, missing persons, or traffic law violations. Forensic facial image identification is based on anthropological methodology using comparison of morphological facial features. This methodological approach is recommended by forensic guidelines, and admissible in the court of law for conclusions regarding identity. This is in contrast to facial recognition, which is an intuitive, holistic approach, based on the innate ability of humans to recognize previously seen faces. Forensic facial image identification is undertaken by facial examiners, who are trained to analyze morphological facial features in one-to-one image comparisons. This presentation will discuss the practice of forensic facial image identification, its advantages and limitations, from the perspective of a forensic anthropologist with experience working as facial examiner in a European law enforcement agency.

Keywords: facial image comparison, forensic anthropology, human morphology, identification

HUMAN VARIATION AND ADAPTATION IN A CHANGING WORLD: PERSPECTIVES FROM THE PAST USING PALAEOPATHOLOGY

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Good mental and physical health and well-being of populations can be argued as crucial for successful functioning and even survival of societies today. Contextually-driven multidisciplinary analyses of skeletons from archaeological sites may also be argued as central to understanding the past and relevant to the here and now. Through their analyses, palaeopathologists, in particular, possess the skills and knowledge to enable people from the past to tell their life stories, thereby highlighting the health challenges they faced and whether/how they were able to adapt to changing circumstances. Palaeopathology as a discipline has had a "chequered career" extending over a few hundred years, starting with the study of disease in animal remains, then in individual skeletons and mummies, and moving on to exploring the value of analysing large numbers of skeletons. In recent years it has increasingly become recognized as a valuable source of evidence for understanding who we are today and what might face us in the future.

This presentation will provide a window on the contributions palaeopathologists make to linking the past to the present through question driven approaches, and the relevance of palaeopathology to other disciplines. In doing so I will first focus on the methods we use to explore disease in skeletons, including those that have been more recently developed and what additional/new information they provide (e.g. DNA analysis), and what methodological limitations we face. Secondly, using examples from the published literature will be a consideration of what skeletons have told us about the impact of the epidemiological transitions on the health of our ancestors. Thirdly, and finally, I will discuss a future for palaeopathology, a discipline that now works with cutting edge techniques and across the sciences, social sciences and humanities. This last section will emphasise the need for continuing dialogue in relation to ethical considerations of human remains, increasing engagement with beneficiaries beyond academia, and extending our research that addresses contemporary global challenges.

Keywords: palaeopathology, epidemiological transitions, ethics, global challenges, societal value

EVOLUTIONARY MEDICINE – LEARNING FROM THE PAST FOR THE PRESENT AND THE FUTURE

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Evolutionary medicine has already shown an enormous impact on medicine in the last few years. Globally research and teaching at medical schools increases. In this presentation, our own research of the impact on ongoing evolution - such as “relaxed natural selection” on disease prevalence - will be shown. Also, the impact of applying evolutionary perspectives on the interpretation of the current COVID-19 pandemic and on how to best achieve the UN Sustainable Development Goals will be shown. The importance of evolutionary medicine and its scientific acceptance among the medical community will increase by addressing such issues of future human global health.

Keywords: evolutionary biology, clinical medicine, global health

ISLAND LIFE — DREAMS AND REALITIES

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Background and Aim. The importance of environmental influences on 'early life programming' is well known and investigated thoroughly in the past decade. Among other, maternal health and lifestyle before and during pregnancy influences fetal programming and can have long-term effects on child's health later on. The aim was to investigate the association of maternal health and lifestyle in Dalmatia, Croatia with child's early growth and development and detect potential mainland-island differences.

Material and methods. CRoatian Islands' Birth Cohort Study (CRIBS) encompasses 500 mother-child dyads from the city of Split and islands Brač and Hvar. Maternal demographic, socioeconomic, medical, anthropometric and lifestyle data, as well as data on child health and development were retrieved from the hospital medical records or collected through self-completed questionnaires.

Results. Significant differences between women from the mainland and from the islands have been observed. Namely, women from the islands have lower education and household budget and a higher unemployment rate, but higher activity levels. Additionally, women from the islands have higher parity, low contraception practice and smoke more often than women from the mainland. Adherence to Mediterranean diet is generally low to moderate among pregnant women in this study, with no significant mainland–island differences. Also, women with higher weight before and during pregnancy gave birth to larger babies and mothers with allergies more often gave birth to children that developed allergies in the first year of life. Exclusive breastfeeding is dominant in the first month and highly prevalent in the first six months of a child's life in our cohort, with a more pronounced percentage in the island populations.

Conclusion. Results from the CRIBS study underline significant mainland-island differences in certain maternal characteristics. Despite that, CRIBS children are generally in good health and minimal mainland-island differences have been observed in their early growth and development.

Keywords: CRIBS cohort study, maternal lifestyle, maternal health, early growth and development, Croatia

HUMAN SEXUAL MATURATION AND CHEMICAL EXPOSURE: CONSISTENCIES AND VARIATIONS IN RESULTS FROM STUDIES

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Background and Aim. There is concern that chemicals in the environment may alter the pattern of human growth and alter the timing of sexual maturation. The question of which chemicals are relevant and how much of an effect do they have is not resolved. Many new chemicals are produced each year and added to our environment. Their effects are largely unknown. Based on the many studies that have occurred on lead and certain organochlorine chemicals, it can be seen that there is a variety of results. The sources of this variation are important to determine in order to ensure that future studies of new suspect materials will produce more consistent results.

Material and Methods. Studies of human sexual maturation were obtained from pub med with the terms Tanner Stage, sexual maturation, or menarche in the title or abstract. Results from these published papers were compared in terms of sample size, age at the assessment of the chemical exposure, sex of sample, and age and type of maturation assessment.

Results. Most studies of lead agreed in direction of effect. Studies of DDT or DDE were not as consistent and different associations were seen in males and females. Studies of polychlorinated biphenyls and perfluorinated compounds showed more variation. The fact that the latter compounds exist in multiple forms contributed to the variety of the results. Lead and DDT/DDE are monomorphic. Many samples were exposed to more than one compound.

Conclusions. Variations among studies in exposures, their extent and timing, were important sources of variation in results. These are difficult to prevent in research design. However, variation in sample sizes and in the reporting of results also contributed to the apparent variation in effects.

Keywords: sexual maturation, DDE, lead, perfluorinated compounds, polychlorinated biphenyls

FROM STONE AGE TO COMPUTER IN TWO GENERATIONS. DRAMATIC CULTURAL CHANGE IN HIGHLAND PAPUA AS PROOF OF THE PLASTICITY OF THE HUMAN BRAIN

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The famous rock paintings of Spain and France, recently outcompeted, with regard to their seniority, by the Maros rock paintings in Southern Sulawesi, seem to have appeared, like a Lorenzian „fulguration" out of nowhere... and disappeared again.

How did the biological and cultural evolution of Homo sapiens happen? Why did we get the most performing brain, why did we make, in the animal kingdom, by far the most remarkable steps in the tradigenetic shaping of culture? Questions, despite their central importance, still little understood. Did new inventions become part of tradition only very gradually and slowly or did early humans invent and embrace new technologies and new ideas much faster than is usually thought?

The inhabitants of once isolated mountain valleys in West-New Guinea were first briefly contacted by a group of adventurers in 1959 and hosted the members of an interdisciplinary German Research Team from 1974 on. Until then, they had lived according to their traditions as neolithic horticulturists, pig breeders, gatherers and hunters. Today, 48 years later, the society as a whole has accepted Christianity, warfare and cannibalism have completely stopped, almost everyone speaks Indonesian, about 60 young persons have received university education and some have positions in the localized church, the school system or the local government. The younger ones manage laptops, mobile phones and tablets with the same ease as we in Europe, find their way through the complexity of Indonesian life and reflect about the human condition. Yet, none of them has ever read Aristotle. How is this dramatic change possible? The obvious answer is the enormous flexibility of our human brain. It is likely to have enabled all the amazing cultural achievements in our history. I will exemplify this claim on the basis of 6 decades of research in New Guinea.

Keywords: Melanesia, Eipo ethnic group, culture change, adaptive responses

GROWTH OF PRETERM CHILDREN IN EARLY CHILDHOOD: THE RELATIONSHIP BETWEEN GESTATIONAL AGE, BODY SIZE, GENERAL HEALTH STATUS, AND TIMING OF DISEASES

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Background and Aim. There is a lack of comprehensive studies covering the full spectrum of general health status of preterm infants, taking into account the onset and timing of various diseases. The purpose of present study was to summarize the morbidity of premature children during the first three years of life, also to determine the first diagnosed diseases (timing) in relation to gestational age (GA) and birth weight (BW).

Material and Methods. A systematic literature review was performed in order to summarize the morbidity of premature children during the first three years: a total of 140 articles (2007-2022) were analysed. Longitudinal growth data of 423 preterm Lithuanian children and the timing of diseases was analysed (according the International Statistical Classification of Diseases and Related Health Problems 10th Revision; ICD-10, 2016).

Results and Conclusions. Literature analysis has shown that the most common health problems in premature children were: neurodevelopmental disorders, retinopathy, respiratory diseases, neonatal sepsis, also metabolic syndrome. However, data on the timing of diseases are very limited. A study of preterm Lithuanian children showed that during the first three years, on average two diagnoses per child were recorded (M[SD]=1.9[1.2]). Overall, in the first three years, diagnoses accounted for 53% of the total diagnosed cases (N=1552) from birth till the adolescence. The following diseases were most common (out of n=823 diagnoses): 1) endocrine, metabolic (12,5%); 2) blood, immune (11,5%); congenital (11,4%); 3) nervous (10,8%), respiratory (10,8%). However, neurodevelopmental disorders were diagnosed less frequently in early than in late childhood (4,7%; $p<0.01$). The lower the GA and BW, the more diseases were diagnosed, but the associations between GA level and BW category with the onset of certain diseases did not always coincide. Present analysis may help to better understand the growth of different body systems in relation to GA and GW.

Keywords: early childhood, growth, health status, premature children, timing of diseases

HOMO CURANS. PERSPECTIVES ON PREHISTORIC HEALING PRACTICES

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During the last 300,000 years *Homo sapiens* spread across the entire globe. This success story is certainly complex as it implies sustained population growth and adaptation to multiple ecological niches. An essential co-factor in the evolutionary success of our species might well be conspecific care and healing, as it would augment chances of survival, reproduction and promote health and collective immunity to newly encountered pathogens and diseases. We already know that some adaptive features of our species result from selective pressure imposed by disease (e.g. blood groups linked to risks and severity of specific diseases). The human body which functions as a bio-psycho-neuro-endocrinological system may however also benefit from adaptive features in behaviour that would give advantage in the face of disease. Common features in traditional healing practices certainly suggest this is the case. But how to trace healing practices and their possible evolutionary significance back into the prehistoric past? Archaeologists can investigate human bones, which may yield diagnostic traces of disease and healing, as well as identify medical plant remains associated with human remains. But archaeologists may potentially find even more. A cross-cultural study of healing practices and the ethno-archaeological study of traditional healing tools shed new light on the kind of archaeological objects that might well have been used in healing practices in the prehistoric past.

Keywords: archaeology, traditional healing, material culture, evolution

THE DOUBLE BURDEN OF MALNUTRITION: AN EVOLUTIONARY PERSPECTIVE

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The double of burden of malnutrition (DBM) refers to the co-occurrence of forms of undernutrition and overweight. Initially detected within countries, then communities and families, there is increasing awareness that individuals may experience the DBM through the life-course, through being exposed to undernutrition (low birth weight, infant growth faltering) in early life and subsequently developing overweight. From an evolutionary perspective, two key questions are (a) whether early undernutrition actually predisposes to later overweight, and (b) how life-course exposure to the DBM impacts reproductive fitness. Fetal/infant undernutrition, indicating reduced maternal investment, may alter early life-history trade-offs, favouring the allocation of energy to reproduction and defence, at a cost to maintenance and growth. In environments of nutritional constraint, such trade-offs may alter the regional profile of fat deposition without directly driving overweight, however in obesogenic settings catch-up growth may contribute to increased risk of overweight developing. Adults exposed to the DBM may demonstrate earlier initiation of the reproductive career, but women may experience an increased risk of childbirth complications. Overall, life-course exposure to the DBM indicates an interaction between adaptive responses and obesogenic stresses that may vary across populations.

ADVANCES IN THE STUDY OF HUMAN GROWTH AND THE CHALLENGES AHEAD

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Since its inception in 1977, the International Congress of Auxology has served as an important venue to bring together researchers from around the globe to advance our understanding of human growth and development in context. These past 45 years have witnessed profound changes; technological advances in biomedicine have led to imaging methods for characterizing growth and maturation in organs and tissue compartments, genomics for understanding the genetic basis for common traits and mutations that alter growth processes, development of biomarkers for investigating disease and environmental mechanisms that alter growth, advanced statistical techniques for developing growth charts and analyzing longitudinal growth, and the first international growth reference for monitoring growth of young children. The importance of intergenerational influences, the intrauterine environment and the first thousand days have also been identified as important determinants of growth, well-being and later health outcomes. Yet the public health issues of present profound challenges. The international obesity epidemic that has evolved over the past 45 years shows no signs of abatement, and with it are declines in physical activity, inadequate sleep, poor dietary quality, increasing prevalence of type 2 diabetes, and in many situations, stunting juxtaposed with obesity. The challenges ahead require multi-disciplinary teams with broad expertise including growth, nutrition, behavior, ecology, economics, public health policy, medicine and implementation science to promote optimal growth and development of all children.

Keywords: growth, genetics, obesity

MULTIDISCIPLINARY ANALYSIS OF INTESTINAL CONTENT IN ANCIENT MUMMIES: NEW INSIGHTS INTO DIET, DISEASE, AND THE EVOLUTION OF OUR GUT MICROBIOME

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The application of metagenomic analysis on ancient human mummies allows unique insights into their ancestry, living conditions and the presence of diseases. Thereby, intestinal content and paleofeces represent an important source of information to study the evolution of dietary habits and human health. By undertaking a complementary -omics approach, including high throughput sequence analysis of ancient biomolecules (DNA, proteins, lipids) and microscopy, we analyzed the stomach content of the 5,300-year-old Iceman mummy, commonly known as Ötzi. The analysis of samples from his stomach and intestinal contents revealed genetic evidence for a virulent *Helicobacter pylori* strain. A comparative whole-genome analyses of the 5,300-year-old bacterium allowed new important insights into the ancestry and evolution of the pathogen and underlined the high complexity of ancient European population history. In addition, the analysis showed that the Iceman seemed to have had a remarkably high proportion of fat in his diet, supplemented with dried wild meat, cereals, and traces of toxic bracken. The presence of stool content in the Iceman's intestines further provided the opportunity to study the gut microbiome of a Copper Age individual. The results seem to confirm a loss of microbial diversity in modern populations with a westernized lifestyle. In current studies, we are applying this methodological approach to further mummified intestinal content and paleofeces samples, deriving from different time periods and geographic areas. This will allow us to obtain a better understanding of the complexity of different lifestyles by deciphering the nutritional habits, meal composition, and food-processing methods of our ancestors. It will further extend our knowledge on the presence and evolution of intestinal pathogens, such as *Helicobacter pylori*. Moreover, by comparing ancient and modern human gut microbiomes we may get first evidence for changes in gut microbial diversity within the last millennia.

Keywords: Iceman, pathogens, ancient DNA, microbial diversity

ABSTRACTS OF PODIUM PRESENTATIONS

ANTHROPOMETRIC PARAMETERS OF THE HEAD AND FACE IN LITHUANIAN CHILDREN WITH PALATALLY IMPACTED MAXILLARY CANINES

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Background and Aim. Impaction of the permanent maxillary canine is a rare pathology, but early diagnostics is mandatory to prevent complications. It is important to search for non-harmful diagnostic criteria to suspect this pathology early. The aim was to evaluate whether children with palatally impacted permanent maxillary canines have different head and face anthropometric features and number of erupted permanent teeth compared to children without impactions.

Material and Methods. Study was conducted at Vilnius University and Lithuanian University of Health Sciences. The head and face parameters of 44 children (SG), 10 -16 years of age, with impacted canines were measured according to standard anthropometric methodology. Control group (CG) data were taken from anthropometric study: "Permanent teeth emergence time and growth of the face and jaws of Lithuanian children (data of 4-16 years old children, residents of Vilnius city)". Statistical analysis was performed using SPSS 21.0 program.

Results. Out of 32 measurements – 11 in SG were lower than 50th percentile of CG. The width of cranial base showed the largest difference – 68,18% of participants values were lower than 5th percentile. The medians *of philtrum* width and the depth of maxilla in the SG were distributed near the 5th percentile or below while medians of the lower face height, the mandible ramus height and the lateral upper lip height were distributed between 50th and 5th percentiles of CG. 47,73% of subjects in the SG had a lower number of erupted permanent teeth.

Conclusions. Children, 10 to 16 years old, with impacted permanent maxillary canines have narrower upper third and shorter lower third of the face, less protruded face in the sagittal plane and tend to have a delayed eruption of the permanent teeth. The cranial base width, the depth of maxilla and *philtrum* width might be considered as diagnostic traits in such children.

Keywords: anthropometry, impacted teeth, children, maxillary canines, face.

BODY STRUCTURAL AND CELLULAR AGEING OF ROMA WOMEN IN HUNGARY: A PILOT STUDY

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Background and Aim. Roma is one of the largest ethnic minority group in Hungary. The majority of the Roma population lives in poor conditions in segregated settlements in Hungary. It is evidenced that the increased prevalence of chronic illnesses in Roma adults leads to their shortened life expectancy, but it has not been studied yet whether the ageing processes in Roma people are more accelerated than in non-Roma age-peers. Therefore, our aim was to study the biological status and ageing of female Roma adults living in a segregated settlement (Monor) in Hungary. The ageing of the body and bone structural parameters, as well as cellular ageing and their interactions, were analysed in Roma and non-Roma women.

Material and Methods. Roma and non-Roma women aged between 35-65 years (Roma women n: 20; control non-Roma group for cellular ageing analysis n: 30; Hungarian reference group for body structural and reproductive ageing analysis n: 2500) were enrolled to the present analysis. Body mass components were estimated by body impedance analysis (InBody 720 device), bone structure was estimated by quantitative ultrasound technique (DTU-one osteometer). Cellular ageing was estimated by X chromosome loss estimation (FISH probe). Data on health status, lifestyle and socioeconomic factors were collected by questionnaires.

Results. The results revealed that Roma women are prone to be more obese, to have a higher amount of abdominal body fat, and they have worse bone structure than the national reference values. The results suggested that the age-adjusted rate of X chromosome loss could be related to the socioeconomic status.

Conclusions. The results are rather preliminary, that aimed to explore explanatory components in the changes in the rate of X chromosome loss. In order to establish the findings, further investigations, as well as the increase of the sample size is required.

Keywords: ageing, body structure, chromosome loss, Roma women, Hungary

FATHERS HELP IN CHILDCARE IS ASSOCIATED WITH MOTHERS' PARITY AND INFANT SEX

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Background and Aim. Pregnancy and postpartum periods are challenging moments during a woman's life. Previous studies have demonstrated that social support, especially provided by fathers, has a significant effect on birth outcome, breast milk immune properties, and child development. In this study we investigated factors associated with the amount of childcare help provided by fathers in cross sectional sample from the Polish population during the Covid-19 pandemic.

Material and Methods. The study included 152 women taking part in an online survey on pregnancy and childbirth outcome during the pandemic (Corona Mums project). During the survey, mothers were asked about their parity status, sex of the infant born during pandemic, and how many hours the father (mean age 33.45 years, SD=4.81) spent helping with childcare. We ran the Poisson log-linear (GLZ) model to examine the relationship between paternal investment, parity and infant sex.

Results. We found differences in the time of child-caring between partners of primiparous and multiparous women ($W=8.81$, $p<0.001$). There was also a significant interaction between parity status and infant sex ($W=40.57$, $p<0.001$). Primiparous mothers received more help in childcare from fathers, especially if they had daughters (daughters: 29.50h vs sons: 23.90h). The fathers gave the least amount of help to multiparous mothers of daughters (16.80h).

Conclusions. We found that the amount of fathers' help in childcare is associated with maternal parity and infant sex. This result confirms prediction from Trivers-Willard parental investment hypothesis, which states that parents will allocate more resources into female offspring when the environmental condition worsen. Although in Western populations fathers usually prefer to invest in sons we observed more paternal care in first born girls. We propose that this effect might be associated with the lasting Covid-19 pandemic characterized by the decrease in financial resources and higher parental stress.

Keywords: parental investment, childcare, social support

TRENDS IN THE CHANGING FOOD SELECTION CRITERIA OF THE LITHUANIAN POPULATION AND THE IMPACT OF THE COVID-19 PANDEMIC

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Background and Aim. Since the onset of the COVID-19 pandemic, changes in diet and physical activity have occurred worldwide. Given a lack of representative research in Lithuania in this field, our study evaluated the changing food selection criteria of the Lithuanian adult population in 2014-2021.

Material and Methods. In October-November 2021, a representative survey of Lithuanian population aged 16-64 was conducted. The sample was formed by age, gender, marital status, education, income, position, region of the country. 1,600 respondents were interviewed about food selection criteria. The data obtained was compared to surveys of 2014 and 2019.

Results. In 2014, 2019 and 2021, respectively 13.1% , 27.4% and 31.1% of adult Lithuanian population chose food to improve health. The price was indicated by 31.9% of the adult population of Lithuania in 2014, 14.3% - in 2019, and 24.7% in 2021. In 2014, 2019 and 2021, the taste as the main food selection criterion was respectively indicated by 39.7%, 39.0%, and 27.7% of adult Lithuanians. Interests of other family members as the main factor determining food choices, in 2014, 2019 and 2021 were highlighted by respectively 12.4%, 15.0% and 12.4% of residents. Other food selection criteria (a necessity of a special diet) were important for only a small proportion (<5%) of respondents.

Conclusions. The COVID-19 pandemic had an impact on the changes in the food selection criteria of the Lithuanian population: more people started to choose food for improving their health and according to price.

Keywords: COVID-19, food selection criteria, Lithuania

OLFACTORY MEASURES AS A MARKER OF EARLY ALZHEIMER'S DISEASE

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Background and Aim. Early and accurate diagnosis of Alzheimer's disease (AD) is increasingly important. Reliable and widely available markers are needed to achieve that. Olfactory impairment occurs in the earliest stages of the disease and thus olfactory testing could be used for this purpose. The aim of this study was to determine whether olfactory measures could be used as a valid marker of early AD.

Material and Methods. 80 subjects were enrolled in the study. 30 patients with mild dementia due to AD (MD-AD), 30 patients with mild cognitive impairment due to AD (MCI-AD) and 20 cognitively normal elderly subjects (CN). Cognitive examination (MMSE, CDR, ADAS-Cog 13, fluency tests) and olfactory testing (Burghart Sniffin' Sticks odour identification and odour discrimination tests) was performed on all the subjects.

Results. Results of odour identification task differed significantly between the groups (CN 13.25±1.37, MCI-AD 9.30±2.23, MD-AD 7.00±2.13; $p<0.001$). Odour identification test had AUC of 0.943 for differentiating CN subjects from MCI-AD subjects and AUC of 0.99 for differentiating CN subjects from MD-AD subjects. Odour identification had sensitivity of 67% and specificity of 100% for differentiating CN subjects from MCI-AD subjects at the cut-off score of ≤11.

Results of odour discrimination task also differed significantly between the groups (CN 12.45±1.64, MCI-AD 8.23±1.63, MD-AD 6.37±1.67; $p<0.001$). Odour discrimination test had AUC of 0.98 for differentiating CN subjects from MCI-AD subjects and AUC of 0.99 for differentiating CN subjects from MD-AD subjects. Odour discrimination had sensitivity of 73% and specificity of 100% for differentiating CN subjects from MCI-AD subjects at the cut-off score of ≤10.

Conclusions. The study confirmed that olfactory testing can reliably differentiate patients with early stages of AD from cognitively normal subjects. Odour identification and odour discrimination tasks can be useful in diagnosing early AD.

Keywords: Alzheimer's disease, odour discrimination, odour identification, olfaction

PERSONALIZED TRIMODAL PREHABILITATION FOR GASTRECTOMY: INTERIM ANALYSIS OF RANDOMIZED CONTROL TRIAL (PREFOG STUDY)

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Background and Aim. Surgery is the only curative treatment for gastric cancer, however, it remains associated with significant morbidity and mortality. The present study aims to investigate if home-based prehabilitation can reduce postoperative morbidity after gastrectomy for gastric cancer.

Material and Methods. PREFOG is a multi-centre, open-label randomized control trial comparing the 90-days postoperative morbidity rate after gastrectomy for gastric cancer between patients with or without prehabilitation. One hundred twenty-eight patients are anticipated to be randomized into prehabilitation or control groups. Trimodal home-based prehabilitation includes nutritional, psychological, and exercise interventions. This interim analysis is performed after 57 patients were included. The primary endpoint of this study is 90-day postoperative morbidity.

Results. Fifty-seven patients were randomized to control (n=27) and prehabilitation (n=30) groups. All (100 %) patients received neoadjuvant chemotherapy. The 90-day postoperative morbidity rate was similar between the control and prehabilitation groups (44.0% vs 41.4%, p=0.999). There were deaths of patients during the intrahospital period. The 90-day postoperative mortality rate was also similar between the groups (4.0% vs 3.6%, p=0.999). There was a tendency, that prehabilitation increased the proportion of patients able to receive all planned neoadjuvant therapy (85.7% vs 65.4%, p=0.114). No adverse events related to prehabilitation were observed.

Conclusions. Prehabilitation is safe and feasible in patients undergoing gastrectomy for gastric cancer. Interim results suggest that prehabilitation undergoing patients better tolerate chemotherapy.

Keywords: gastrectomy, gastric cancer, prehabilitation

INITIAL SINGLE-CENTER EXPERIENCE OF FIRST-IN-HUMAN TRANSCATHETER TRICUSPID ANNULUS REPAIR USING MICRO INTERVENTIONAL DEVICES ANNULOPLASTY TECHNOLOGY (MIDA PROCEDURE)

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Background and Aim. Severe functional tricuspid regurgitation (TR) is associated with higher mortality. However, the indications for functional TR surgery are rather limited. Transcatheter tricuspid valve interventions are the alternative for patients with high surgical risk. We sought to present the first experience of our single-center first-in-human MIDA procedure, to describe detailed changes in tricuspid valve (TV) anatomy during the procedure and the factors leading to the successful outcomes.

Material and Methods. 10 patients were treated for significant, symptomatic TR using MIDA technology. Procedural success was defined as TV bicuspidisation with at least one TR grade reduction. Detailed TV anatomy and geometry, as well as, mechanics and severity of TR, before and after the MIDA procedure, were described based on intraprocedural two- and three-dimensional transesophageal echocardiography.

Results. MIDA procedure achieved TV annulus reduction in all 10 patients. Tricuspid annulus (TA) area and circumference were reduced from 15.75 (IQR: 14.93, 16.93) cm^2 to 9.85 (7.7, 12.93) cm^2 ($p = 0.002$) and from 14.3 (13.75, 14.93) cm to 11.6 (10.5, 13.35) cm ($p = 0.008$), respectively. In 5 patients the successful TV bicuspidisation was achieved. In these cases, there were greater changes in TA shape, and the impact of MIDA procedure was more notable on TA short axis. These changes were related with the larger number of implanted anchors and the longer implanted anchors line. The successful bicuspidisation had more effect on the central TR jets. There were no cases of periprocedural mortality, stroke, or myocardial infarction.

Conclusions. MIDA procedure is technically feasible in patients with severe TR. By implanting an adequate number of anchors and retracting them sufficiently this procedure could be effective in reducing TA dimensions and TR grade. Further studies are needed to refine patient selection for this device and to determine long-term outcomes.

Keywords: bicuspidisation, transcatheter procedure, three-dimensional transesophageal echocardiography, tricuspid regurgitation

SUTURE BONES, CRIBRA ORBITALIA AND SELECTED METRIC PROPERTIES OF THE SKULL – DO THEY RELATE?

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Background and Aim. Cranial suture bones (SB) appear as extra bones resulting from the formation of additional centers of ossification. They coexist with numerous congenital disorders and their number >10 is considered as potentially related to pathology. Therefore it is advisable to consider them as a possible indicator of biological condition and/or health. The aim of the research was to determine the relationship between SB, skull's size parameters and a selected physiological stress indicator: *cribra orbitalia* (*CO*).

Material and Methods. 182 (134 male, 48 female) adult skulls from the Rybitwy (Poland) were analyzed. Following measurements were made: g-op, eu-eu, ba-b, l-o, arch l-o (based on them, the cranial indexes were calculated). The presence of *CO* was noted. SB were counted in coronal, sagittal, squamosal, lambdoid, occipitomastoid sutures and in the bregma, lambda, pterions, asterions. Statistical analyzes were performed using the STATISTICA 13.5 software.

Results. A difference in the number of SB was found between the sexes (Z = 2.634). In females, the SB co-formed by lambdoid suture correlated with the skull length (Spearman's r = 0.285) and the total SB number correlated with the horizontal circumference (Spearman's r = 0.307). In males, the mesocephalic skulls differed in the SB number from the hyperdolichocephalic (Kruskal-Wallis test = 11.159). In both sexes, *CO* were observed often in individuals with a high SB number compared to those with a normal value. All results were significant with $p < 0.05$.

Conclusions. Sexual dimorphism in the number of SB and the correlation between their number and cranial size parameters were confirmed. It was found that the presence of *CO* is associated with the occurrence of higher SB numbers. Such a relationship has not been reported so far. It is necessary to continue research in this area.

Keywords: anthropometry, cranial index, *cribra orbitalia*, suture bones

OBESITY AND VITAMIN D DEFICIENCY IN MODERN SOCIETIES – HOW ARE THEY INTERCONNECTED?

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The prevalence of both pathological conditions – obesity and low vitamin D status – continues to rise in many countries. There is no final view on how these two illnesses are interrelated and aggravate each other. But the main pathophysiological pathways (e. g., chronic low-grade inflammation) as well as common risk factors (e. g., sedentary lifestyle) are well-known. Some of them could be corrected, e.g., by changing their lifestyle habits. It is important to emphasize that to achieve the best results, it is necessary to act simultaneously in two directions – to lose weight and to improve vitamin D status. The spread of such basic knowledge among physicians might help to improve clinical outcomes. Notably, all obese patients should be considered at high risk for vitamin D deficiency and usually need supplementation with large vitamin D doses.

Keywords: humans, obesity, vitamin D, risk factors

PHYSICAL ACTIVITY EVALUATION USING FITBIT ACTIVITY TRACKERS FOR PATIENTS WITH PREDIABETES

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Background and Aim. Diabetes mellitus is one of the most rapidly growing health problems, and the leading cause is overweight. To prevent this condition, lifestyle-changing measures, like increasing physical activity, should be taken. Before proceeding to physical activity promotion, we need innovative tools to evaluate time spent actively to build a more efficient intervention. This study explores the use of Fitbit activity trackers to assess physical activity in prediabetic patients.

Material and Methods. Observational cohort study. Thirty volunteers (9 males and 21 females) aged 32-65 years, with impaired glucose levels and without diabetes or moving disorders, attended. Participants received Fitbit Inspire activity trackers and physical activity recommendations. A routine blood check was taken during the first visit, and body composition was analyzed. The second visit was after six months, and we repeated the first visit procedures and extracted data from Fitbit accounts. Physical activity variability in time was assessed using a Poincare plot.

Results. The median weight was 87.6 ± 16.9 kg and BMI 32.0 [26.4–34.6] kg/m^2. The count of steps per day and variability differed between patients and during the research period, but the change in total physical activity wasn't statistically significant. Significant positive correlations between changes in lipid values, body mass composition, and variability of steps count, distance, and minutes of very active physical activity were observed.

Conclusions. Assessing physical activity data, doctors should evaluate not just the totals or the medians of the steps count, but also physical activity variability in time. The best tool is jet to come, but this study shows that the Poincare plot method is one solution for evaluating and visualizing physical activity change in time.

Keywords: prediabetes, activity trackers, variability

THE TALE OF TWO VILLAGES – TIRUP AND LADING

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Since the 1980s it has been a truism in paleodemography that changes in population growth rates (often called fertility) affect the mortality profile much more than changes in the pattern of mortality do. This assumption has in recent years been challenged with the argument that population growth rates – positive or negative – should be very large to accommodate observed differences in empirical mortality profiles. The favorite statistic to characterize mortality profiles is the Juvenility Index (JI, proposed by Bouquet-Appel). Generally, growth rates should have been under -1.5% or over +1.5% to accommodate observed variation in JI. To illustrate this, the pattern of mortality and population growth in two Danish villages are analyzed based on the mortality profiles – that is the distribution of ages at death in the cemeteries.

Two peasant villages in Eastern Jutland, Denmark (Tirup AD 1150 – 1350 and Lading 1665 – 1740) have each in their way provided data suitable for paleodemographic analysis. The Tirup population is one of the best-known medieval populations based on the totally excavated cemetery. Lading, on the other hand, is known from an early parish register, covering all burials during 76 years in the early modern period.

None of the communities underwent significant natural population growth during the periods studied. Despite this, the JI was significantly higher in Tirup than in Lading. This reflects differences in the pattern of mortality – higher age independent mortality in Tirup than in Lading – driven by differences in the epidemiology of infectious diseases.

Keywords: Juvenility Index, infectious diseases, age independent mortality

ASSESSING THE PRACTICAL VALUE OF EPIGENETIC CLOCKS FOR FORENSIC APPLICATIONS AND RESEARCH ON HEALTH AND FITNESS

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Background and Aim. Recently, several epigenetic clocks have been developed that can be used to estimate age and age-related fitness. Their practical importance in forensic investigations stems from their ability to predict chronological age and facilitate human identification. Age estimation can also be useful in forensics to improve the prediction of age-related physical traits. It is still unclear whether the prediction of the pace of epigenetic aging can help to implement the known principle "prevention is better than cure".

Material and Methods. We examined Infinnium MethylationEIPC arrays in 799 blood and 250 buccal swab well-characterized samples (mean age = 44.62±16.4, 45.08±20.7, respectively) and used various epigenetic clocks to measure epigenetic age and related parameters. The clocks used for estimating chronological age included Horvath's Pan-Tissue and Skin & Blood as well as Hannum's model. PhenoAge clock, trained on epigenetic surrogates of aging-related clinical markers, was used as an epigenetic biomarker of lifespan and healthspan. We used DNAmGrimAge to estimate mortality risk and the DunedinPoAm to calculate the pace of aging and analysed epigenetic age acceleration defined as the residual of regressing DNAm age on age. The telomere length was estimated using surrogate epigenetic markers.

Results. The study confirmed the high accuracy of chronological age prediction. The highest accuracy was obtained using the Skin & Blood clock (Mean Absolute Error = 2.51 for blood and 3.59 for buccal cells). We found an association between the pace of aging and several lifestyle factors, including BMI, smoking and physical activity. Smoking, BMI and for example average sleep length were associated the mortality risk. Telomere length showed a negative correlation with chronological and biological age.

Conclusions. Available epigenetic clocks provide excellent tools for studying age and age-related fitness in the dynamic and diverse environment of modern humans.

Keywords: aging, forensics, health and fitness, epigenetic age prediction, epigenetic age acceleration

ADVERSE LIFE EVENTS AND THE STATUS OF BODY MASS AND ATTITUDE TO NUTRITION IN SCHOOL-AGE CHILDREN

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Background and Aim. Adverse life events may have an impact on the mental development of adolescent children. Increasingly, eating disorders are observed not only in adolescents and young adults, but also in younger children. Traumatic life events can contribute to the development of eating disorders. The aim of the study was to assess the relationship between adverse life events, body weight status and attitudes towards food.

Material and Methods. 276 boys and 254 girls aged 6 to 12 from primary schools in Poznań participated in the study. We used the Children's Eating Attitude Test (ChEAT) to assess children's attitudes towards food. We used the Traumatic Events Screening Inventory (TESI) questionnaire to assess the occurrence of adverse life events. The body composition was assessed using electric bioimpedance method (TANITA MC-780). Body mass status was assessed on the basis of BMI according to the IOTF criterion and on the basis of body fat according to McCarthy criterion.

Results. The experience of at least one stressor in girls with too much adipose tissue was associated with a higher score on the dieting subscale (F=3.48, p=0.03). Boys with normal body fat who experienced stressors such as being a witness to violence (F=3.4, p=0.03) and severe problems with grades (F=3.09, p=0.004) had higher scores on the food preoccupation subscale. Longer separation from one parent was associated with higher scores on the vomiting subscale in girls who were overweight (F=3.57, p=0.01) – diagnosed by BMI, and in boys who were overweight and obese (F=4.75, p=0.03) – diagnosed by adipose tissue.

Conclusions. Adverse life events influence attitudes towards food. The experience of stressors may have an impact on the behavior related to food intake restriction and interest in eating. Stressors influence eating behavior in children with both normal and excess body fat.

Keywords: adverse childhood events, eating behaviours, BMI, fat tissue

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WHAT ARE THE MOST ATTRACTIVE FACIAL FEATURES – THE ONES WE HAVE OURSELVES, THE OPPOSITE OR THE AVERAGE?

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Background and Aim. It is assumed that individuals are more attracted to the self's features. However, there is a lack of studies relating actual (real) features of an individual with his/her preferences for the most attractive features. The purpose of present study was to identify the diversity of facial features in relation to most attractive facial features of young Lithuanian adults.

Material and Methods. The study included 115 females and 47 males, aged 18-40 years. The prevalence and attractiveness of 9 facial features were investigated using online questionnaires: five categories for each trait were generated using *FaceGen ModellerDemo3* program (average feature matched 3rd category). Respondents had to assign their facial feature to a certain category and select the most attractive one. Cross tabulation was performed (MS Excel 2019).

Results. Respondents with average features mostly chose them as the most attractive (females/males, respectively): eyes' size (56/75%, $p<0.01/p<0.01$), protruding cheekbones (65/65%, $p<0.001/p>0.05$), accentuated cheeks (only males – 67%, $p<0.01$), length of nose (only males – 89%, $p<0.001$), nostril width (55/93%, $p<0.01/p<0.01$), lip thickness (54/73%, $p>0.05/p<0.01$); chin height (81/86%, $p<0.01/p>0.05$), width of lower jaw (66/81%, $p>0.05/p<0.001$) and protrusion of lower jaw (86/75%, $p<0.001/p<0.01$). In very similar proportions, respondents with smaller cheekbones, cheeks, nose and lower jaw (only males) chose their size traits as the most attractive, as well as the respondents with more expressed eyes, lips and lower jaw (only males). Respondents, who chose opposite features as the most attractive: men with more protruding cheekbones and cheeks chose less protruding cheekbones and cheeks, men with thinner lips chose thicker lips as the most attractive.

Conclusions. Most respondents (regardless of trait category) chose their facial features as the most attractive. Men were more likely than women to choose their traits as the most attractive, and there was a tendency for men to value less "masculine" traits.

Keywords: attractiveness evaluation, cross tabulation, facial features, ideal features, real features

ATYPICAL GRAVES FROM HISTORICAL (12TH – 17TH CENTURY) CEMETERY IN BYCZYNA: RESULTS OF ARCHAEOLOGICAL, ANTHROPOLOGICAL AND PHYSICOCHEMICAL RESEARCH

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Background and Aim. The definition of an atypical burial is based on the identification of unique elements of the funerary practices, which were not characteristic of the specific population and archaeological dating of the burial site. The main purpose of this project was an attempt to interpret apotropaic practices observed within the graves at the historical cemetery in Byczyna on the basis of interdisciplinary archaeological, anthropological, and physicochemical research.

Material and Methods. The physicochemical analyses were conducted on skeletal and dental samples taken in total from 50 individuals. To determine the local or different provenance of the deceased, the strontium Sr87/Sr86 signatures were calculated for 33 individuals. The dietary patterns based on the level of δ 13C and δ15N stable isotopes were also characterized for all individuals (N=50) to reveal differences between the skeletons excavated from the regular and „deviant" graves. Six samples were also sent for radiocarbon dating.

Results. The distinctive feature of 17 out of 50 individuals was the presence of heavy stones placed under their lower jaws (both in children and adults), and as the study showed, the strontium Sr87/Sr86 signatures established for these skeletons were different than the signatures calculated for the local inhabitants. Dietary characteristics for individuals buried in regular and „atypical" graves also significantly differed in terms of δ 13C level values.

Conclusions. Some burials at the historical cemetery in Byczyna were characterized by traces of apotropaic funeral practices which might have been connected to the different provenance of the deceased. Therefore, it was possible that the „strangers" coming to Opole Silesia from other regions of Europe brought also their own funeral customs and those unique elements of the burial ceremonies were then adapted and consolidated in the local population (this custom lasted at least from the 13th to the 16th century).

Key words: apotropaic practices, atypical burials, stable isotopes

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USING ANCIENT PROTEINS TO RESOLVE THE EVOLUTIONARY HISTORY OF *OREOPITHECUS BAMBOLII*

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Background and Aim. *Oreopithecus bambolii* is one of the best-represented fossil hominoids in Europe. It evolved under insular conditions and was endemic to Tuscan-Sardinian paleobioprovince (Abbazzi et al. 2008; Rook 2016). Despite being accepted as a hominoid, the phylogenetical position of this ape is uncertain. Its anatomy is a mosaic of primitive features and numerous hominid features. Therefore, it is extremely difficult and controversial to determine the phylogeny of *Oreopithecus bambolii* based only on morphological analysis. Some researchers consider this primate as a representant of a great ape that originated from European dryopithecines while others argue that it is a late survivor of the African nyanzapithecine lineage. The clarification of the phylogenetic position of *Oreopithecus* could provide a contribution to the reconstruction of the evolutionary history of European hominoids (Harrison and Rook 1997; Finarelli and Clyde 2004; Pugh 2022).

Paleoproteomics, an emerging branch of molecular sciences, is giving a chance to resolve the evolutionary history of *Oreopithecus bambolii*. Paleoproteomics focuses on obtaining ancient proteins from osteological remains (Cappellini, Collins, and Gilbert 2014). Phylogenetical reconstruction in paleoproteomics is based on the detection of variations between protein sequences coming from different species. For doing this Mass spectrometry is used to identify through mass spectra analysis short peptides from a protein database that consists of genome sequences of related species (Hendy et al. 2018).

A pilot study was already made to check the presence of proteins in the enamel of *Oreopithecus*. Our analysis of dental enamel from a specimen from the site of Fiume Santo (Sardinia) allowed recovering only fragmentary proteins. Interestingly fragments of similar proteins were obtained from dental remains of *Maremmia lorenzi* and *Maremmia haupti*, bovids belonging to the same assemblage of the *Oreopithecus* Zone Fauna.

This information arouses another question: Why do specific peptides survive into deep time? By answering this question, we may be able in the future to develop the methods in paleoproteomics and increase the probability of obtaining informative proteins.

Keywords: paleoproteomics, miocene primates, phylogeny

CHANGES IN BODY SIZE IN ADULT INHABITANTS OF POLAND AS AN INDICATOR OF LIVING CONDITIONS IN THE PERIOD OF SOCIOECONOMIC TRANSFORMATION AT THE TURN OF THE 19TH AND 20TH CENTURY

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Background and Aim. At the turn of the 19th and 20th century, Poland underwent a major socio-economic transformation. The aim of the study was to investigate the changes in body height and BMI in the selected populations of historical adult inhabitants of Poland under partitions in the 19th and 20th centuries, in relation to their living conditions.

Material and Methods. Material included archival individual body height measurement data: men (N = 732) and women (N = 569) from the Russian partition, and men (N = 285) and women (N = 65) from the Austrian partition. Based on the archival measurement data of height and weight, BMI was calculated: men (N = 304) and women (N = 275) from the Russian partition and men (N = 9965) from the Prussian partition. Analyses of changes of the examined traits were considered in terms of the economic factors. Statistical analysis (ANOVA, t-Student, Tukey's test, and factor analysis) was performed using STATISTICA.10.

Results. The greater mean height of men and women was in the guberniyas with a higher level of economic development. Both women and men of the Austrian partition at the beginning of the 20th century were taller than those from the second half of the 19th century. Nobles had a higher BMI compared to peasants. The noblemen were overweight more often. There were no such relationships among women. In the Prussian partition the highest BMI characterized sons of peasants, workers, and craftsmen, while the lowest sons of intelligentsia. Factor analysis distinguished two groups of factors determining BMI: ''cultural'' and ''socio-economic''.

Conclusions. Height and BMI are a good indicator of the standard of living of the inhabitants of Poland at the turn of the 19th and 20th centuries. A greater adaptive response was observed to life conditions in men compared to women.

Keywords: BMI, body height, socioeconomic status, socioeconomic transformation

PROBLEMS, OMISSIONS AND GAPS IN THE FIRST 1000 DAYS OF LIFE IN LATIN AMERICA

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Background and Aim. Adolescent pregnancies, poor antenatal care, prematurity, small-for-date newborns, inadequate breastfeeding and complementary feeding are found in the Region. Prevalence differs according to the country and education level. An overview of antenatal care, adolescent pregnancies, short stature, prematurity and small-for-date newborns is presented.

Materials and Methods. A systematic review of the literature: MEDLINE, BIREME and LILACS, WHO, UNICEF, PAHO, from July 2021 to April 2022.

Results. Antenatal care could save millions: Leaders pledged to ensure universal access to maternal health care by the year 2000. Yet 44 million women in the developing world receive no antenatal care; responsible each year for nearly 600,000 maternal and 5 million perinatal deaths. Coverage in Chile, Cuba, Puerto Rico, Paraguay, Dominican Republic and Belize: ≥ 90%; in Bolivia < 50%; lower in rural zones and differed according to education level; in Nicaragua 77%, Haiti 67%, Ecuador 58%. In Bolivia, 85% of women with secondary education upwards attended clinics versus 14% with lower levels. Coverage in the Region tends to increase. Surveys in Venezuela revealed that ignorance of its importance reached >50%, consistent with educational level, also, rural dwellings far from clinics. Perinatal and maternal mortality were inversely related to adequate antenatal care. Short stature in women < 155 cm in: Guatemala, Peru, Ecuador, México, Bolivia, Honduras, Nicaragua. Adolescent pregnancies in Latin America are the second highest: 66/1000 15-19 years; high in Ecuador, Guyana, Honduras, Nicaragua, Venezuela, Guatemala and Dominican Republic; low in Chile, Uruguay, Cuba, Brazil, Peru, Costa Rica. Prematurity: mean 9%, low in Chile, Cuba; high in Salvador, Honduras. Small-for-date: regional mean 9.1%; Guyana 16%; 11% in Ecuador, Nicaragua, Guatemala, Dominican Republic, Honduras; Cuba 5%, Chile 6%, Argentina, Bolivia, Costa Rica 7%.

Conclusions. Problems, omissions and gaps in the first 1000 days exist, to be solved for a prosperous future of the Region.

Keywords: adolescent pregnancy, birth weight, Latin America, prematurity, prenatal care

VIDEOS TO SUPPORT PARENTS IN ASSESSING THEIR CHILD'S DEVELOPMENTAL MILESTONES

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Background and Aim. Dutch Youth Health Care (YHC) routinely monitors the development of children (0-4 years) living in The Netherlands using the Dutch Development Instrument (DDI). Short videos were developed to support parents/caregivers in assessing their child's developmental milestones of the DDI to prepare them for the YHC visit. We will present several videos and discuss experiences and determinants of current and future use of the videos in YHC.

Material and Methods. A qualitative study with semi-structured interviews was conducted to identify the experiences, facilitators and barriers of using the videos as experienced by YHC professionals (n=14) and parents (n=10). In a quantitative study, data were collected among 4,370 parents to study experiences with the videos and outcomes on their child's milestones.

Results. The qualitative survey showed that the use of the videos was perceived as positive by most YHC professionals and parents. Points of attention were the fact that some groups participated less (e.g. non-native speakers), lack of time from parents, feedback/advice is missed, and the outcomes on milestones were not always in agreement between parents and YHC professionals. The quantitative study showed that parents graded the videos an average 8.2 out of 10. About half of the parents felt (more) involved in the development of their child and were also better prepared for the visit at YHC after watching the videos. The videos were understood by 96-100% of the parents. Some milestones required the use of materials that were not present in every household, such as a tricycle.

Conclusions. The videos were positively evaluated by both professionals and parents. Improvements in the way of implementation can facilitate and increase the use. Based on these results and other activities, we developed an implementation plan to support YHC organizations when they want to implement the use of the videos.

Keywords: digital support, child development, empowerment

COMPOSITION OF THE GUT MICROBIOTA IN SGA CHILDREN DEPENDING ON THE FEEDING METHOD USED IN THE FIRST SIX MONTHS OF LIFE

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Background and Aim: There are indications that the quality of growth of SGA children is largely determined by the type of feeding and the ability to use milk components through the interaction of the host organism with the developing intestinal microbiota, i.e. a set of microorganisms, mainly bacteria, that make up the complex ecosystem in the human gastrointestinal tract. While the relationship between the type of feeding and the succession of the gut microbiota in AGA children has been quite well described, the same relationship in SGA children remains unclear.

The aim of the study was to initially estimate the colonization patterns of the intestinal microbiota in SGA children depending on the feeding method used in the first six months of life.

Material and Methods: The study group consisted of 15 SGA infants. Faeces collected on the 2nd week, and on the 3rd and 6th months of life were analyzed. Bacterial DNA was isolated using the DNeasy PowerSoil Pro Kit (QIAGEN). In order to define the bacterial composition, the 16S rRNA gene sequencing method was used. 16S Barcoding Kit 1-24 (Oxford Nanopore Technologies, ONT) was used to amplify and prepare the libraries for sequencing, which was performed using a MinION sequencer (ONT). Data was then bioinformatically analyzed using software developed by ONT.

Results: A higher incidence of pathogenic bacteria such as *Klebsiella* and *Haemophilus* at all time points tested was observed in formula-fed than in breast-fed SGA children. *Veilonella* was present in breastfed SGA infants at 2 weeks and 6 months of age. At each stage of the study, *Clostridium* was present in breastfed SGA children and *Citrobacter* was found in formula-fed SGA children.

Conclusions: The type of feeding used in the first 6 months of life differentiated the course of the succession of the intestinal microbiota in SGA children.

Keywords: 16S rRNA, breast milk, formula, gut microbiota, SGA children

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TIMELY REPERFUSION IN POSTERIOR STROKE – MISSION IMPOSSIBLE?

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Background and Aim. Knowledge about posterior stroke (PS) is scarce and reperfusion therapy (RT) is used relatively rarely compared to anterior stroke. Standard scales include not all PS symptoms, and medical professionals are also hesitant to apply RT because of the lower scores. Our aim was to analyse the factors compromising reperfusion therapy using the data of subjects suffering from PS, who were hospitalized to Vilnius University Hospital Santaros Klinikos (VUHSK) in 2018-2020.

Material and Methods. Data was analysed using R Commander and MS Excel after receiving approval from the Institutional Review Board. Kruskall-Wallis test was used to compare the data between groups, logistic regression was used to determine the chance for timely arrival and getting RT.

Results. 500 subjects were included, median age - 69±18, NIHSS - 4±4. RT was applied to 120 (24%) subjects: thrombolysis – 72 (14.4%), thrombectomy – 37 (7.4%), combined therapy – 11 (2.2%). Median door-to-needle time (DNT) 60±30 min, median door-to-puncture time - 87±86 min. Median onset-to-door time - 12±24.5 hours. 343 (68.6%) subjects had absolute contraindications (AC), 288 (68.6%) of them arrived too late. Paresis, speech disturbance and face asymmetry increased the chance of timely arrival. 105 (21%) subjects had relative contraindications: 62 (59%) had NIHSS <5.36 (34%) – age >80. RT group had longer hospital stay, higher baseline NIHSS, higher intracranial haemorrhage, recurrent stroke and infection rate.

Conclusions. RT was applied in less than 1/4 cases. The most common AC was late arrival, RC – low NIHSS score and age>80. Paresis, speech disturbance and face asymmetry were the symptoms, that increased the chance timely RT. RT group had more severe strokes, as measured by NIHSS, and higher rates of subsequent complications.

Keywords: posterior stroke, reperfusion therapy, thrombectomy, thrombolysis, vertebrobasilar stroke

PROSOCIAL REPUTATION AND STRESS IN CONTEMPORARY HUNTER-GATHERES

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Background and Aim. It has been argued that having a reputation for being prosocial is a critical part of social status across all human cultures. In addition, some studies suggest that prosocial behavior confers benefits, whether in terms of boosting social prestige (i.e., building allies or becoming more popular) or physiological such as stress reduction. However, most studies on the interplay between prosociality and health have been conducted in large-scale hierarchical societies. Here we investigated whether perceived prosociality is related to chronic stress among hunter-gatherers living in North Tanzania, the Hadza.

Material and Methods. The study participants comprised 83 women and 64 men living in 8 Hadza camps. Perceived prosociality was derived during interviews and measured as being named by other camp members as someone others would ask for help when in need. Chronic stress was derived from hair and measured as hair cortisol concentration (HCC). We used linear mixed models with HCC as dependent variable and perceived prosociality, age, sex as (fixed) independent and camp as random variable.

Results. We found that perceived prosociality nominations were highly skewed (i.e., a small fraction of Hadza members received most of the nominations), and unrelated to chronic stress. We also found that older men were more likely to be named as potential helpers (i.e., perceived as more prosocial).

Conclusions. Our findings do not support the idea that physiological rewards for prosocial behaviors are a 'human universal'. We argue that helping behavior may provide a careful maintenance of long-term, reliable relationships rather than accruing other tangible benefits related to social prestige, such as better indices of wellbeing. We believe that although helping behavior is ubiquitous among the Hadza, it is not generally related to social prestige but, rather, an honest signal of commitment to maintaining social relationships.

Keywords: prosocial behavior, wellbeing, social relationships

LEVELS OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFASS) IN NORWEGIAN CHILDREN STRATIFIED BY AGE AND SEX: DATA FROM THE BERGEN GROWTH STUDY 2

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Background and Aim. Several studies indicate that early-life exposure to per- and polyfluoroalkyl substances (PFASs) affect fetal and postnatal growth. Yet, the effects of PFASs on growth and development are understudied. Due to the long-term persistent accumulation and potential adverse health effects, there have been restrictions and phase out in the production of certain PFASs from the early 2000s. Published levels of PFASs across childhood are conflicting, and may reflect confounding effects of age, sampling year, and exposure history. The reported sex-related differences are also inconsistent. The aim of the current study is therefore to determine serum concentrations of PFASs in Norwegian schoolchildren, according to chronological age and sex.

Material and Methods. Serum samples from 1094 children aged 6-16 years, collected cross-sectionally, were analysed for 19 PFASs. These samples were collected as a part of the Bergen Growth Study 2 in January-June 2016.

Results. In the current study 12 of the 19 PFASs were detected in the serum samples. Significantly lower serum concentrations in girls compared to boys for perfluorooctanesulfonic acid (PFOS), perfluorononaoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS) and perfluoroheptanesulfonic acid (PFHpS) was found when considering all age groups combined. A significant sex difference with lower values in girls than boys was observed in the age group 12-14 years for perfluorooctanoic acid (PFOA) specifically. Furthermore, serum concentrations of PFOS, PFOA, PFHxS and PFHpS were significantly lower in children above the age of 12 years. For several of the PFASs the decreasing age trend started two years earlier in girls compared to boys. PFNA was the only PFAS that showed increasing serum concentration with age.

Conclusions. The majority of the analysed PFASs showed lower levels in girls than boys, and decreasing serum concentrations with age. Future analyses will examine the relationships of these levels in relation to growth and maturation.

Keywords: adolescents, biomonitoring, children, per- and polyfluoroalkyl substances (PFAS)

STUNTING AND LANGUAGE DEVELOPMENT IN UK CHILDREN AGED 3 TO 11 YEARS - AN ANALYSIS FROM THE MILLENNIUM COHORT STUDY

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Background and Aim. A link between linear growth and early childhood development has often been reported in low- and middle-income countries, where poverty and impaired growth may prevent children from meeting their cognitive developmental potential. This relationship has been neglected in research in high-income countries.

Material and Methods. The height and language development scores of 12,536 children born between 2000-2002 in the United Kingdom and participating in the Millennium Cohort Study (MCS) were analysed. Children with a height-for-age more than 2 standard deviations below the median (<-2 SDS) at age 3 years were categorised as having short stature. Standardized British Abilities Scales II (BAS-II) language measures at ages 3, 5, 7 and 11 years, were the main outcome assessed. We also adjusted for child, parental and socioeconomic factors. Mixed effects and trajectory analyses were used to assess longitudinal relationships.

Results. 4.1% of children had short stature at age 3 years. These children had language development scores which were consistently lower from ages 3 to 11 years. This effect was attenuated but remained significant after adjustment for covariates. Trajectory analysis produced four distinct patterns of language development scores. Multinomial logistic regression models showed that children with short stature had a higher risk of being the in the low-scoring groups.

Conclusions. Children in the MCS who had short stature at age 3 had lower language development scores on average from age 3 to 11 years. The relationship was attenuated but remained after adjustment for important child, parental and socioeconomic factors.

Keywords: stunting, early childhood development, millennium cohort study

LONG-TERM EFFECTS OF EARLY LIFE EXPOSURE TO A NATURAL DISASTER ON THE GROWTH AND DEVELOPMENT OF INDIAN CHILDREN

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Background and Aim. Fetal period and infancy are critical for human growth and development. Adverse environmental conditions, such as natural disasters, operating in early life may result in long-term adverse developmental and health consequences. Therefore, the aim of this study was to assess the effect of exposure to severe cyclone Aila in utero or during infancy on selected anthropometric indices in preadolescent Indian children.

Material and Methods. The study was conducted in West Bengal, India, and included approx. 840 preadolescent children exposed to the cyclone prenatally (in utero), or postnatally (during infancy), and their non-affected peers from the neighbouring region. All subjects were delivered from rural communities with similar socioeconomic living conditions and lifestyle, dependent on the natural environment. Anthropometric measurements included body height, weight, mid upper arm circumference, selected skinfolds and head dimensions. Socioeconomic status was based on parental education, family income and family size. Statistical analyses included i.a. principal component analysis, analysis of covariance, and Tukey post-hoc test for unequal samples.

Results. Statistical analyses revealed significant differences ($p<0.05$) in relative weight, nutritional status, relative fat distribution and head dimensions (controlling for socioeconomic status) between children exposed to Aila during early life and the control group. Children exposed to the cyclone in utero or during infancy had deteriorated indices related to weight, nutritional status and fat distribution as well as head dimensions.

Conclusions. Natural disaster experienced in early life may have long-term adverse effect on human growth and development. Therefore, the implementation of early disaster-related interventions in areas affected by natural disasters should be of particular importance, especially for pregnant women and infants.

Keywords: body weight, early human development, head dimensions, natural disaster, nutritional status

ADHD, EXCESSIVE WEIGHT AND CENTRAL OBESITY. ASSESSMENT OF THE ASSOCIATION

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Background and Aim. Previous research has found a link between ADHD and obesity although the results were not consistent. Obesity has been defined by Body Mass Index (BMI) in most research. However, high BMI may indicate elevated levels of fat free mass (e.g. muscle, bone) instead of fat mass. There is a need to apply more comprehensive assessments to confirm the relation between ADHD and obesity.

The Aim of the study was to assess the differences in body size, proportion and composition between children with ADHD and a control group.

Materials and Methods. Waist and hip circumference, BMI, waist-to-height ratio (WHtR) and body composition (BIA method) have been compared between children with ADHD (n=45) and a control group (n=457) aged between 6 to 12y. Obesity was diagnosed according to IOTF criteria and the risk of central obesity was diagnosed with WHtR>0.5.

Results. Higher obesity (13.33 vs 4.76%, OR=3.08), *z* scores waist (0.26 vs. 0.00), hip circumference (0.31 vs. -0.01), WHtR (0.54 vs. -0.05) and the risk of central obesity (20 vs 8.68%, OR=2.63) were all found in children with ADHD compared to the control group. There were no significant differences in body composition and no significant group *x* sex interaction on parameters assessed.

Conclusions. Despite the lack of differences in body composition between children with and without ADHD, the results obtained suggest higher risk of obesity and differences in fat distribution resulting in more than 2.5 higher risk of the central obesity related to ADHD.

Keywords: ADHD, obesity, body composition

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THE EVOLUTION OF SOCIAL COMPETITION, NEUROENDOCRINE SIGNALING AND GROWTH

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Background. Current evidence links social competition and its effect on dominance hierarchies in social structures and body size, via the neuronal networks of the ventrolateral part of the ventromedial hypothalamus. The Growth-Hormone-Releasing-Hormone (GHRH) and somatostatin signaling system regulating growth hormone, Insulin like Growth Factor 1 and skeletal growth, is well conserved and dates back to the early evolution of vertebrata, some 400 million years ago. The link between size and status permits adaptive developmental plasticity, competitive growth and strategic growth adjustments. This link is also present in humans. Humans perceive physical size as a signal of social dominance with tall stature being favored and particularly prevalent in the upper social class.

Material and Methods. Literature review by snowball system.

Discussion. Modern westernized societies are competitive. The people are tall, and "open to change". Social values include striving for status and prestige implying socio-economic domination. We consider the historic transition of political and social values following the revolutions and civil wars that occurred in the European populations since the late 19th and the early 20th century, as key elements that have interacted with the evolutionarily conserved neuroendocrine competence for adaptive developmental plasticity, and have triggered socially induced permanent overstimulation of the hypothalamic growth regulation.

Keywords: body height, endocrinology of growth, adaptive plasticity, strategic growth adjustment

HUMAN CAPITAL AND MALNUTRITION IN LATIN AMERICA: THE CHALLENGE OF THE XXI CENTURY

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Background and Aim. Latin America has been defined as the most unequal region in the world. Plenty of gaps need to be filled and the attention of present disadvantage across all age groups deserve a closer look to improve the wellbeing of next generations and therefore the development of human capital.

Methods. A systematic review of the literature: MEDLINE, BIREME and BIBLAT, WHO, UNICEF, PAHO, CEPAL, WORDL BANK from July 2021 to April 2022.

Results. One of the most important issues that need to be highlighted is the double burden of malnutrition. The region is facing an increase of overweight and obesity on one side while undernutrition and stunting result of chronic malnutrition on the other, and micronutrient deficiencies and food insecurity is common to both. This phenomenon is present in women and children during their early life years, which in addition to the many disadvantaged conditions in which an important proportion of the population lives are factors that interfere with optimum development, thus making an impact in human capital. Women of fertile age are either overweight and obese or deficient in micronutrients. Food insecurity presents differences by gender that has been increasing. Variations on infant mortality are enormous between one country and another, expressing the gaps between countries. Differences in infant mortality and mortality in children under five are relevant when considering rural vs urban areas. Housing conditions seem to be an important factor associated to infant mortality.

Conclusions. These factors are to be taken into account when designing public policies. Mother's level of education, head of the house occupation, housing conditions, are intertwined with geographical localization and constitute key information to determine the routes in increasing wellbeing of the next generations, and ensure human capital is in the best condition possible in order to achieve the best potential.

Keywords: malnutrition, human development, health inequality indicators, Latin America, economic development.

SELECTED DENTAL ANOMALIES IN EARLY MODERN (16TH-18TH CENTURY AD) INHABITANTS OF WROCŁAW (POLAND)

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Background and Aim. Irregularity in the number of teeth or impacted teeth concerns both deciduous and permanent dentition. This phenomenon is influenced by both genetic and environmental factors. Additionally, changes in the number of teeth may have evolutionary significance, so it is necessary to conduct dentition examination in historical populations. The study was performed to determine the prevalence of selected dental abnormalities in population of adult inhabitants of early modern Wrocław.

Material and Methods. 323 individuals (180 females and 143 males) with complete permanent dentition were selected for the study from the early modern (16th-18th century AD) cemetery of Our Saviour in Wrocław. All of the individuals were examined and divided into three age categories: *adultus* (N=153), *maturus* (N=135), and *senilis* (N=35). The kind of anomaly was noted as well as the type of tooth it was related to, and the frequency of the feature was calculated. The results were obtained based on macroscopic observations and radiographic images.

Results. Of the 323 individuals, 23 (7,12%) had dental anomalies. 18 (5,57%) cases of hypodontia, 3 (0,93%) cases of impacted teeth, and 2 (0,62%) cases of supernumerary teeth were observed. Abnormalities were found in 12 (3,72%) males and 11 (3,41%) females. The observed anomalies concerned mainly the upper teeth, the most common of which were the incisors. In order to investigate the evolutionary aspect of the observed traits, the obtained results will be presented on the background of studies conducted on populations from different historical periods.

Conclusions. The vast majority of publications on, selected for the present study, dental anomalies, come from the clinical literature, and there are only a few sources in the field of biological anthropology. Each subsequent study conducted on historical populations broadens the knowledge about evolutionary changes in human dentition.

Keywords: dental anomalies, hypodontia, impacted teeth, supernumerary teeth

A PALAEODEMOGRAPHIC ASSESSMENT OF 10TH-13TH CENTURY POPULATIONS FROM EASTERN PART OF HUNGARY

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Background and Aim. Current study is a comparative demographic analysis of skeletal populations dating from the 10th (age of the Hungarian conquest) and 11th-13th century (Arpadian age) excavated in Eastern Hungary. The main aim is to describe and present the most important demographic parameters and compare them between the two distinct archaeological periods. The study makes an attempt to discover the demographic elements which are the most indicative of the differences between populations.

Material and Methods. The demographic analysis was carried out on more than 4300 skeletal individuals. The sample was separated to two subgroups for the 10th century and 11th-13th century respectively. Demographic parameters were calculated on the basis of the age at death and sex data according to population and archaeological period respectively. The most important parameters were evaluated by using life table data and appropriate statistics.

Results. The life expectancy at birth ranges from 29 years to 35 years in the 10th century and from 30 years to 36 years in the 11th-13th century. Demographic features indicate considerable differences among the 10th century populations and show more uniform image in the 11th-13th century. The population pyramids reflect the shape typical for present day developing countries.

Conclusions. The traceable morphological diversity of the 10th century ancient Hungarian populations in different regions seemed to be present also in demographic parameters. However, the more uniform picture both in morphology and demographic features in the 11th-13th century is may be in connection with the settled way of life, the calculable food supply and political interventions.

Keywords: palaeodemography, 10th century, 11th-13th ancient Hungarian populations

CHRONIC LIVER DISEASE STRATIFICATION WITH HEPATOBILIARY SCINTIGRAPHY

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Background and Aim. Viral hepatitis B and C is the one of leading causes of chronic liver damage resulting liver fibrosis and cirrhosis.

Routine work up for viral hepatitis patients includes laboratory testing, medical imaging (ultrasound and magnetic resonance elastography) and liver biopsy, however the latest one is highly questionable "gold" standard. Nuclear medicine imaging is not used as an option determining the degree of liver damage, however there is theoretical potential using hepatobiliary scintigraphy with 99mTc labelled mebrofenin. The aim is to investigate the potential value of hepatobiliary scintigraphy with 99mTc labelled mebrofenin staging chronic liver disease.

Materials and Methods. We prospectively enrolled patients with chronic viral hepatitis B and C infection referred for liver biopsy. All patient underwent dynamic liver scintigraphy with 99mTc-mebrofenin prior to liver biopsy.

Dynamic liver scintigraphy was performed immediately after intravenous tracer injection for 30 minutes scanning time. Multiple scintigraphy parameters were calculated (whole liver lobe and focal area time to peak (TTP), 30 minutes to peak ratio (30/peak), whole lobe and focal area slope index in 350s (slope_350).

Liver biopsy took place shortly after imaging.

Results. Total of 72 HCV (68) and HBV (4) patients were included in the study.

Quantitative hepatobiliary scintigraphic parameters were found to be statistically significant differentiating significant and nonsignificant fibrosis (30/peak_dex – p=0.03; focal 30/peak_dex – p=0.016), also separating both advanced fibrosis (e.g. ttp_dex – p=0.007; focal ttp_dex – p=0.025; slope_dex – p=0.0001 etc) and cirrhosis (e.g. ttp_dex – p=0.024; 30/peak_dex – p=0.000006; slope_dex – p=0.00001 etc).

Conclusions. Dynamic hepatobiliary scintigraphy with 99mTc labelled mebrofenin is good quantitative imaging tool evaluating patients with diffuse liver disease. Moreover, whole liver imaging may give additional information about fibrosis heterogeneity imaging whole liver.

Keywords: chronic liver disease, hepatobiliary scintigraphy, liver fibrosis, 99mTc-mebrofenin.

IMPACT OF COVID-19 PANDEMIC ON INDOOR AIR POLLUTION IN PRIMARY SCHOOLS TO COMMUNITY ACQUIRED PNEUMONIA IN CHILDREN

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Background. It was reported before relatively high levels and differences of indoor air pollution in primary schools during Covid-19 period 2020-2021.

Methods. Aerosol pollution was measured during the period 2020-2021 in primary schools of Vilnius. The total aerosol particle number concentration (PNC) in the size range 0.01 to > 1.00 μm was evaluated using a condensation particle counter (CPC, TSI model 3007). Particle number (PN) and particle mass (PM) concentrations in the size range 0.3 - 10 μm were measured using an Optical Particle Separator (OPS, TSI Model 3330). Retrospective morbidity data of pupils aged 6-11 years of 10 Vilnius schools were presented by State Institute of Hygiene. The number of pupils participating in the study was 3435.

Results. The level of morbidity of pneumonia among children in schools varied from 0.8 to 3.2%. It was found significant correlation between the prevalence of pneumonia per person and PNC as well as PMC in the particle size range of 0.3 to 1.0 μm (r=0.72, p=0.019 and r=0.75, p=0.020). It was found no correlation in the size range of 0.3-2.5 μm and 0.3-10 μm for PNC and PMC.The level of indoor air pollution in this size range (0.3-1.0 ***μm***) varied in schools from 40.47-189.88 parts/cm^3 (PN) to 2.02-7.63 μg/m^3 (PM).

Conclusions. Despite Covid 19 restrictions indoor aerosol pollution in the particle size range of 0.3-1.0 μm is related to community acquired pneumonia morbidity in children. Further prospective studies are needed to confirm these results.

Keywords: Covid-19, pneumonia, children, indoor air pollution

SOCIOECONOMIC FACTORS ASSOCIATED WITH NORMAL WEIGHT OBESITY IN POLISH ADOLESCENTS: EVIDENCE FROM A POPULATION-BASED CROSS-SECTIONAL ADOPOLNOR STUDY

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Background and Aim. Normal weight obesity (NWO) is defined as a condition of having an adequate BMI but an increased body fat percentage and thus being at higher risk of developing noncommunicable chronic diseases. This study aimed to establish relative importance of family socioeconomic status (SES) on the development of NWO condition in Polish adolescents.

Material and Methods. Data were collected from an ethnically homogeneous group of 4,941 students (2,490 girls and 2,451 boys) aged 10-18 years, participants in the ADOPOLNOR study. Body weight and height were measured. Body composition was assessed using bioelectrical impedance analysis (BIA). SES was self-reported by students and parents and included: place of residence, paternal and maternal educational level, and family wealth level (FAS II). Family history of obesity (FHO) was obtained from medical records. NWO condition was determined when body fat percentage (BF%) exceeded the 85th centile value. All computations were performed using Statistica 13.1 software.

Results. The overall prevalence of NWO was found to be 8.3% in boys and 7.2% in girls. Adjusted multifactorial logistic regression model (MLR) revealed that sex (p=0.057), place of residence (p=0.171) and maternal education level (p=0.204) were not associated with NWO. Two factors, the older age (OR=1.1 95%CI:1.01-1.19) and FHO (OR=1.82, 95%CI:1.11-2.98) significantly increased probability of developing NOW. Higher father education level (OR=0.74, 95%CI 0.55-0.99) and high FASII level (0.77, 95%CI 0.6-0.99) were inversely associated with NWO.

Conclusions. This study showed that SES inequalities may be an increased risk for adolescent normal weight obesity. Body fatness may be of utility in clinical practice to effectively identify adolescents at risk of noncommunicable disease and permit recommendation of public health prevention.

Keywords: normal weight obesity, adolescents, body fat, socioeconomic inequalities

BIOLOGICAL CONDITION OF CHILDREN AND ADOLESCENTS FROM THE HISTORICAL POPULATION OF THE DISAPPEARED VILLAGE OF LIBKOVICE IN NORTH-WESTERN BOHEMIA (13TH-20TH CENTURY)

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Background and Aim. Libkovice is an agricultural settlement in north-western Bohemia, which was demolished in connection with the development of an opencast lignite mine. The area is unique in that it is characterised by an unusually long period of settlement: from the Neolithic to the 19th century. The aim of the project was to evaluate the health condition of children and adolescents from an abandoned village with particular emphasis on dental status, physiological stress markers, and possible bone pathologies.

Material and Methods. The material consisted of bone remains of children and adolescents and archaeological data from sites within the church cemetery in Libkovice. Among the graves, 41 graves belonging to children (*Infans I*, *Infans II*) and 8 graves of juveniles (*Juvenis*) were distinguished. Analysis includes metric features, indicators of stress (according to the guidelines of Data Collection Codebook 2007), peridontal and dental disease and paleopathologies.

Results. In 28 specimens, indicators of physiological stress were observed, i.e. *cribra orbitalia* (6 cases), *cribra cranii* (4 cases), enamel hypoplasia (22 cases), and diseases within the dental apparatus: calculus (26 cases), periodontitis (21 cases), dental caries (10 cases), premolar inflammation (1 case), and traumatic wear (20 cases). In addition, in one child skeleton (*Juvenis I*), signs of congenital syphilis were observed in the region of the appendages of the long bones.

Conclusions. The observed bone lesions give preliminary information on the health status of children and adolescents of the studied population. They indicate that the probable cause of death of almost half of the examined individuals was perinatal infections or childhood diseases, which cannot be observed macroscopically. Due to the state of preservation of the remains, bone samples were subjected to isotopic studies for more detailed analysis.

Keywords: osteology, palaeopathology, stress indicators

DIFFERENCES IN ALL-CAUSE AND SUICIDE MORTALITY BETWEEN HEALTH CARE AND OTHER EMPLOYEES IN LITHUANIA: A CENSUS-LINKED MORTALITY FOLLOW-UP STUDY, 2011-2019

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Background. Lithuania shows the highest suicide rate in the WHO European Region and one of the highest suicide rates worldwide. Studies from other countries report on the elevated suicide risk among certain health care occupations even though mortality from other causes of death among medical doctors has become generally lower than mortality in the general population.

Aim. To assess the all-cause mortality and suicide risks among health care workers in Lithuania.

Material and Methods. This study is based on the census-linked mortality dataset covering the entire population of Lithuania. The anonymized individual-level dataset includes all records from the 2011 census and death and emigration records between 1 March 2011 and 31 December 2019. The main variable of analysis identifies three groups: physicians, nurses and assistant nurses, and other health care employees. All cause and suicide mortality rate ratios were estimated using a simple Cox survival regression model controlling for sex and age. The modeling was performed using STATA software.

Results. Physicians, nurses and assistant nurses, and other health care employees have significantly higher all-cause mortality than the highly educated employees working in all other sectors (1.32 (1.07-1.64), 1.42 (1.21-1.66), and 1.48 (1.23-1.76), respectively). The corresponding ratios for suicide risk were 1.75 (0.87-3.55) for physicians and 0.58 (0.19-1.82) for nurses and assistant nurses, indicating lacking statistically significant relationships. Lacking statistically significant results for suicides can be explained by overall very low numbers of suicides among highly educated people (also including health workers).

Conclusions. The study indicates that health care workers systematically show statistically significant excess all-cause mortality. The same (albeit statistically insignificant) tendency was observed in the case of suicide risk among physicians. Further research is needed in order to identify exact causes of death responsible for all-cause mortality disadvantage of health care employees in Lithuania.

Keywords: Lithuania, health care workers, mortality, suicide

CHANGES IN BODY SIZE, BODY IMAGE AND SELF-ESTEEM OF LITHUANIAN ADOLESCENTS (16-20 YEARS OF AGE) IN 2011-2021, INCLUDING THE COVID-19 PANDEMIC PERIOD

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Background and Aim. Changing lifestyle and socioeconomic conditions in recent decades have had a major impact on body size, an increase in overweight among adolescents in many countries. The difference between actual (real) and an "ideal" body can lead to a negative body image and other psychological problems. The aim of this study was to evaluate the associations of changes in body size, body image and self-esteem of Lithuanian adolescents in 2011-2021.

Material and Methods. Adolescents aged 16-20 were asked to complete a questionnaire on their body measurements, body size perception (Stunkard Scale, 1983) and self-esteem (Rosenberg Scale, 1965). Data were collected according to the same methodology and grouped as follows: 2011-2014, 2015-2019 and 2021. The entire sample consisted of 1 320 respondents (70/30.00% of girls/boys, respectively).

Results. The BMI of girls and boys increased, particularly during the pandemic: M(SD)=20.62(2.64) in 2011-2014 vs. M(SD)=22.11(4.27) in 2021 ($p<0.01$) for girls and 22.04(2.63) vs. 22.30(4.14) for boys ($p>0.05$). The highest self-esteem was determined in 2011-2014: the average score in girls was M(SD)=22.16(4.46), in boys – M(SD)=23.17(3.90), and it was much higher than during the pandemic being in girls/boys – M(SD)=15.32(1.97)/16.61(2.98); $p<0.001$/$p<0.01$ (respectively). A decrease in the assessment score for different body parts in both sexes was observed in 2021: M(SD)=36.64(7.74) in 2011-2014 vs. M(SD)=33.03(8.31) in girls; 38.55(6.43) vs. 34.36(7.75) in boys ($p<0.001$ – for both sexes). However, in 2021, both girls and boys chose a one-unit larger Stunkard figure as ideal than in previous years ($p<0.05$/$p<0.001$ in girls/boys, respectively).

Conclusions. The BMI of boys and girls has risen over the past decade, but the most beautiful figure has also shifted to a larger side. Negative dynamics in the evaluation of all body parts was also observed. The self-esteem of both boys and girls declined, especially during the pandemic period.

Keywords: adolescents, body image, Rosenberg scale, self-esteem, Stunkard scale

INFLUENCE OF ORAL HEALTH ON THE QUALITY OF LIFE OF OLDER ADULTS: A PILOT STUDY

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Background and Aim. World population ages rapidly, more people retain their teeth. Institutionalization of elderly becomes evident. Understanding of the impact of dental treatment on patient's life becomes substantial for treatment planning. Aim of this study was to evaluate seniors' perceptions of oral health and general health related quality of life.

Material and Methods. Cross-sectional study comprised older adults from Lithuania, living in a residential home and non-institutionalized seniors. Two instruments – Lithuanian versions of Oral Health Index Profile (OHIP-14) and the World Health Organization Quality of Life Bref (WHOQoL-BREF) were applied among older adults above 60 years of age. Results were analyzed using the SPSS 26.0 version and Office Excel 2016 using descriptive analysis, Mann-Whitney U and Kruskal-Wallis tests.

Results. A total of 47 older adults participated in the study: 36 (76.6%) women and 11 (23.4%) men, age ranging from 63 to 104 years. The average score of the OHIP-14 questionnaire for residential home seniors was 12.55(±10.945), for non-institutionalized seniors - 23.84(±14.932). Higher average scores of the WHOQoL-BREF domains were found in seniors living in residential home 13.84(±2.43) and 12.00(±2.43) in the physical health, 15.45(±1.65), 13,33(±2.61) in social relations, 15,30(±1.42) and 13,48(±2.58) in the environment domain. In residential home' group, statistically significantly lower average OHIP-14 score was found for seniors with higher education 8.09(±8.19), and higher for seniors with lower education 17.00(±11.87).

Conclusions. Oral health of residential home seniors had less of an impact on quality of life than of non-institutionalized seniors (p=0.007). The main differences in general health related quality of life were found in physical health (p=0.029), social relationships (p=0.000048) and environment domains (p=0.003) between the two groups. Age, gender, marital status and independence level did not affect the oral health-related quality of life of seniors (p>0.05). Education was a significant factor for seniors living in a residential home (p=0.045).

Keywords: ageing, elderly, oral health, quality of life, residential homes

SEARCH FOR NOVEL COLORECTAL CANCER BIOMARKERS

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Background and Aim. Natural ageing in human population is often accompanied by age related diseases one of which is cancer. A colorectal cancer (CRC) screening program in Lithuania consists of performing an occult blood test (FIT or iFOBT) every two years starting at age 50 (until age 74) and a colonoscopy if the latter is positive. Despite new-generation iFOBTs were found to have a significantly higher diagnostic performance of CRC as compared with guaiac fecal occult blood tests (gFOBTs), the results of test sensitivity for detection of polyps or early stage CRC are limited, that causes unnecessary colonoscopies jeopardizing the attractiveness and efficacy of the CRC prevention program. Obviously additional CRC and premalignant lesions diagnostic markers are on demand for better CRC prevention and healthy ageing. The aim of this study was to investigate the promoter methylation and expression of the retrotransposon Line1 as potential CRC and tubular adenoma diagnostic marker.

Material and Methods. Line1 promoter methylation and expression have been investigated in 16 Colon carcinoma and tubular adenoma patients using pyrosequencing and qPCR respectively. Correlation between the Line1 promoter methylation, Line1 expression in healthy tissue, tubular adenoma and CRC have been analyzed.

Results. Our results indicate the decreased Line1 promoter methylation and increased Line1 expression both in colon carcinoma and tubular adenoma patients.

Conclusions. Line1 promoter methylation, Line1 expression levels are potential biomarkers for colon cancer and premalignant lesions and therefore could be applied to better prevent CRC and increase the period for healthy ageing.

Keywords: CRC biomarkers, gene expression, healthy ageing, Line1, methylation

THE RELATIONSHIP OF ENDOGENOUS FACTORS TO ATOPIC DERMATITIS IN CHILDREN: A PILOT STUDY

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Background and Aim. Atopic dermatitis (AD) is one of the most common skin diseases found in children. Among the various etiological factors responsible for the increased prevalence of atopic diseases over the past few decades, the role of vitamin D and other endogenous factors such as stress and hormonal disbalance has been emphasized. The aim - to evaluate the relationship between vitamin D, serum prolactin, serum cortisol, thyrotropic hormone, and cholesterol concentrations with disease activity of pediatric atopic dermatitis patients.

Material and Methods. We compared 2 groups of children from 6 to 17 years of age: 27 children in the atopic dermatitis group (according to Hanifin and Rajka Diagnostic Criteria) and 15 healthy children in the control group. Disease severity was determined using the SCORing Atopic Dermatitis index (SCORAD). A t-test or Mann-Whitney test was used to compare the difference between mean values. A P value <0.05 was considered significant.

Results. Serum levels of 25(OH)D were higher in patients with AD compared to control group (p<0.001; mean concentration in AD group: 63.05 nmol/l, control group – 43.77 nmol/l). We did not find difference between vitamin D level and AD severity according to SCORAD index (r=0.132, p=0.549).We did not find difference between groups comparing serum morning cortisol ((p=0.351), median value AD 158.70 nmol/l (88.81-527.80), control - 242 nmol/l (2.73-520.60)), thyreotropic hormone ((p=0.401; median value AD 1.96 mkU/ml (0.89-4.88), control – 1.59 mkU/ml (0.96-3.89)) and cholesterol level (p=0.793; median value in AD 3.97 mmol/l (3.33-5.61), control - 4.11 mmol/l (3.07-5.51)). We found that prolactin level was lower compared with controls (p=0.049; median value AD group 144.95 mU/l (64.00-1417.00), control – 228.40 mU/l (104.70-502. 10)).

Conclusions. Data suggest that lower prolactin and higher vitamin D levels may be related to AD, but not significantly related to AD severity. Cortisol, thyrotropic hormone, and cholesterol levels in atopic dermatitis were not different from controls.

Keywords: atopic dermatitis, children, endogenous factors, prolactin, vitamin D

AUTOMATIC DMFT INDEX EVALUATION IN ORTHOPANTOMOGRAMS USING AI-CE1 TECHNOLOGY

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Background and Aim. In the epidemiology of dental caries the decayed, missing, and filled teeth (DMFT) index has been used since the beginning of the 20th century and today is the predominant population-based measure of caries experience worldwide. To the best of our knowledge, currently, there is no technology that automates the assessment of DMFT using machine learning technology. The aim is to assess the accuracy of the machine learning technology, which is dedicated to the automatic evaluation of the DMFT index in orthopantomograms.

Material and Methods. After obtaining the approval of the Vilnius Regional Biomedical Research Ethics Committee, 2050 depersonalized orthopantomograms were evaluated. Two examiners independently evaluated the DMFT value in each orthopantomogram, where inconsistencies were found, and the third examinator determined the final value. For the development of technology AI-CE1, training and validation datasets were established from the reference dataset. In this experimental study, we used Python 3.8 as the main programming language. EfficientNet B2 algorithm was applied to classify images into five classes: a tooth is healthy, is missing, has dental decay, has a filling, or is impacted/unerupted. The performance of the model was evaluated using F1-score metrics and tested on 100 images.

Results. In the first phase of model training, the accuracy of 85% for the DMFT index was achieved. The major problems were identified as the disbalance of classes and the model's lower performance in identifying teeth having dental decay, compared to other classes.

Conclusions. Training and testing of technology AI-CE1 revealed promising results in machine learning of the DMFT index from orthopantomograms.

Keywords: deep learning, DMFT index, orthopantomogram

RELATIONSHIP BETWEEN SELECTED ENVIRONMENTAL FACTORS AND FLUCTUATING ASYMMETRY

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Background and Aim. Fluctuating asymmetry (FA) is slight, random deviations from the perfect symmetry of the organism and is considered a measure of developmental instability. The aim of current study was to analyze relationships between socioeconomic factors and air pollution in the place of residence during childhood and the level of fluctuating asymmetry in young women and men.

Materials and Methods. Survey data were collected from 650 female students and 605 male students of Polish universities, aged 19-25 years. The composite body FA was assessed based on five bilateral traits. The measurement of length and width of the ear, the length of digits 2 and 4 as well as wrist width of the right and left body size was taken twice in accordance with standard methodology. Information on place of residence, parental education, number of older siblings and laterality was collected. The level of air pollution was determined using monitoring data from the Environmental Protection Inspectorate. The level of particulate matter, sulphur dioxide, nitric oxide and benzene was considered. The Generalized Linear Model method was used to evaluate the effect of environmental factors on FA level.

Results. It was found that all analyzed environmental factors have a significant impact on the level of FA (p-values varies from 0.001 to 0.05). The cFA scores increase with decreasing childhood socioeconomic status and increasing air pollution in the place of residence during infancy and childhood. In almost all cases, differences in the degree of FA depending on environmental factors are greater for men.

Conclusions. The results suggest that environmental factors - socioeconomic status and air pollution – may influence the level of asymmetry and thus the growth and development. They also confirm that fluctuating asymmetry can be considered a good indicator of unfavorable living conditions in the early stages of development.

Keywords: developmental instability, air pollution, socioeconomic status

CHANGE OF THE TYPE OF PARENTAL INHERITANCE OF TELOMERE LENGTH UNDER STARVATION

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Background and Aim. Telomeres are special nucleoprotein complexes that consist of repeats of the TTAGGG sequence located at the ends of chromosomes. Compelling evidence has been collected showing that telomere length (TL) is substantially heritable and that environmental/lifestyle factors have also been associated with changes in TL over time. In the current work, we evaluated the influence of parental factors on leukocyte TL (LTL) of offspring in the Chuvash population that was comprised of survivors of the mass famine of 1922–1923 and in these survivors' descendants.

Materials and Methods. The tested cohort consisted of native Chuvash men (n = 687) and women (n = 647) who were born between 1909 and 1980 and who resided in small villages in the Chuvash Republic of the Russian Federation. Data were gathered during 3 expeditions undertaken in 1994, 1999, and 2002. The DNA of peripheral blood leukocytes was used to measure the telomere length with a quantitative polymerase chain reaction technique. To investigate the correlation between LTL in different family members, Pearson's partial correlation with age- and sex adjustment was performed.

Results. The heritability of LTL in the tested cohort was estimated to be 0.63. While analyzing the whole population, we observed a highly significant correlation between parents and offspring's LTL, independent of the sex of the parents and the offspring No statistically significant differences between the correlation coefficients (i.e., R-values) were observed. At the same time, in the group where parents were born in 1923-1928, TL correlation between fathers and offspring was found to be significantly stronger), whereas TL correlation between mothers and offspring did not differ significantly from that observed in the whole population. Conclusion -This study implies that famine may affect the mode of TL inheritance.

Keywords: telomere length, starvation, parental-children inheritance

MORTALITY OF MEDIEVAL CITY DWELLERS

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Background and Aim. Written or historical sources are rarely enough to fully understand earlier populations. They seldom include information of the difference in socioeconomic status and are often incomplete if even preserved. By studying the skeletal remains excavated from six medieval cemeteries from the same town, it is possible to make comparisons and to detect any differences. These differences can help us understand medieval burial practice and possibly give an understanding to a difference in mortality in the parishes of the medieval town. A town which has only little known of the social topography.

The aim is to detect differences in survival between the urban cemeteries whilst talking into account the dating of the skeletal remains.

Material and Methods. The study includes skeletal remains from six cemeteries in and around the medieval town of Viborg, Denmark resulting in 1055 individuals, dating from 1050 to 1529 AD.

Kaplan-Meier survival analysis and Log Rank tests are run on the cemeteries including all individuals over the age of 18 years and on males and females separately.

Results. The mortality plots and Log Rank tests of the different cemeteries show two of the cemeteries as having a much lower mean age at death and survival than the others in the town for both male and females. In one the mean age at death and the survival was significantly higher especially regarding older females.

Conclusions. This considerable difference in mortality expresses that there was a selective burial practice between the parish churches. The lesser survival suggesting a lower social status, however, the specific reasons behind are yet to be determined.

Keywords: mortality, paleodemorgraphy, socioeconomic status, survival analysis

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BODY HEIGHT, WEIGHT AND BMI – MAGNITUDE AND PACE OF SECULAR CHANGES IN CHILDREN AND ADOLESCENTS FROM KRAKÓW (POLAND) BETWEEN 1983 AND 2020

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Background and Aim. Recent studies regarding secular trends conducted in Poland showed a decrease in the prevalence of excess body weight, as measured by Body Mass Index (BMI), between 2008 and 2018. The presence of such changes can be associated with a shift in the environmental, particularly socioeconomic, factors, but also changing attitudes towards diet, exercise, and overall lifestyle choices. The aim of this study was to analyse the occurrence and pace of secular trends regarding body height, mass, and BMI among children and adolescents from Kraków (Poland) examined in 1983, 2000, 2010 and 2020.

Material and Methods. The study group consisted of 17 407 individuals (8 650 females and 8 757 males) aged 3-18 included in four cross-sectional studies conducted in 1983, 2000, 2010 and 2020. Analysed anthropometric characteristics included body height (measured according to Martin's technique, with an anthropometer) and body weight. Body Mass Index [BMI] was calculated as follows: body weight [kg]/ body height^2 [m].

Results. Results of the current study suggest that there was a cessation of previously observed secular increase in the body height in the examined population in the recent decade. Additionally, secular changes regarding stature, body mass, and BMI occurred noticeably slower in the recent decade compared to the previous years.

Conclusions. In conclusion, the rapid increase of body height in the years 1983-2000 and later positive secular changes regarding body mass and BMI in 2000-2010 were probably associated mainly with significant socio-economic progress of the country. On the other hand, deceleration of those trends in 2010-2020, especially in regards to stature, may be associated with reaching the maximum genetically attainable body height in the examined population.

Keywords: secular trends, BMI, body height, body mass

EARLY RESULTS FROM A PROSPECTIVE COHORT STUDY ON COMPREHENSIVE TESTING OF COLORECTAL ANASTOMOSIS

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Background and Aim: This study was designed to test a novel comprehensive intraoperative colorectal anastomosis testing technique that potentially reduces the risk of anastomotic leak through early detection of anastomosis construction failure.

Material and Methods. Sixty consecutive patients undergoing resection for colorectal cancer with an anastomosis at a distance ≤15 cm from the anal verge were included. The comprehensive testing technique was trimodal and included indocyanine green fluorescent angiography, air-leak test, and methylene blue tests to evaluate the perfusion and mechanical integrity of the anastomosis.

Results. Trimodal test was positive in 16 (26.6 %) patients resulting in the change of operative plan. Fourteen (87.5 %) of these patients received diverting ileostomy. Despite these preventive actions, 2 (12.5 %) patients developed clinically significant anastomotic leakage. In comparison, among 44 (73.4 %) patients who had a negative trimodal test preventive ileostomy was constructed in 19 (43.2%) patients. However, the anastomotic leakage rate among these patients was still significant – 9.1 % (cases).

Conclusions. Trimodal testing identifies technical failure at the time of colorectal anastomosis construction. Testing may reduce the rate of preventive ileostomy, although the anastomotic leakage rate remains high in technically well-performed anastomoses.

Keywords: anastomotic leakage, colorectal cancer, indocyanine green fluorescent angiography

BIOSOCIAL INFLUENCES ON STATURE - A COMPARISON BETWEEN TWO BRITISH NATIONAL COHORTS

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Background and Aim. Substantial increases in height have occurred concurrently with economic development in most populations in the last century. In high-income countries, environmental exposures appeared to have lessened and variation in height by socioeconomic position may have diminished. The aim of this study was to investigate biosocial inequalities in height in the two British national cohorts.

Material and Methods. The data used in these analyses were collected as part of the 1958 National Child Development Study (NCDS) as well as 1970 British Cohort Study (BCS70). Each child's height was measured (in bare feet) as part of a medical examination. The analyses were restricted to singletons as in utero conditions may differ for multiple pregnancies, term births (>=37 weeks), children without known disorders such as spina bifida or without other physical handicaps. Foreign-born children were also excluded.

Results. Analyses of the height variation of 16-year-old members of the two British national cohorts (N=5260 for NCDS and N=4109 for BCS70) who were born in 1958 as well as in 1970 revealed a number of biosocial factors associated with stature. Of the twenty two (excluding sex) pre- and postnatal variables studied in each cohort five showed no significant association with height for the cohort members of the NCDS and eight for the cohort members of the BCS70.

Conclusions. Within Great Britain, the adverse effects of biosocial factors on height at 16-year-old cohort members have lessened.

Keywords: height, biosocial factors, the British national cohorts

ASSOCIATIONS OF ANTHROPOMETRIC PARAMETERS AND BODY FLEXIBILITY WITH EYE SIZE AND DEGREE OF MYOPIA IN A STUDY OF LITHUANIAN ADOLESCENTS

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Introduction. Uncorrected refractive errors (myopia, hyperopia or astigmatism) are one of the main causes of visual impairment (WHO). Yet, the pathogenetic mechanisms underlying myopia remain poorly understood, although an excessive axial elongation of the eye is considered to be one of the major structural causes of myopia. Hence, different growth processes of the body, also ocular growth might be related to the development of myopia in children.

Aim. The purpose of this study was to investigate the anatomical and physiological ocular parameters in adolescents with myopia, to examine the relations between refraction, biometry parameters and anthropometric parameters in myopic individuals.

Material and Methods. A cross-sectional study of 184 myopic adolescents, aged 16 to 18 years. Refractive error and corneal curvature measures of the eye were evaluated using an autorefractometer under cycloplegia. Central corneal thickness was determined by contact pachymetry. The ocular axial length, anterior and vitreous chamber depth, and lens thickness were measured using A-scan biometry ultrasonography. Height, body weight, and joint flexibility were measured according to a standardized protocol. Body mass index (BMI) was subsequently calculated. Beighton scale was used to measure joint flexibility.

Results. Body stature was positively correlated with axial length ($r=0.37$, $p<0.05$) and vitreous chamber depth ($r=0.36$, $p<0.05$). There was a negative correlation between height and refraction ($r=-0.46$; $p<0.05$). Beighton score and body weight had weak positive correlations with axial length and vitreous chamber depth, and a weak negative correlation with refraction. A significantly more negative refraction was observed in the increased joint mobility group ($p<0.05$) as compared to normal joint mobility group: -4.29±1.89 diopters and -3.78±1.63 diopters respectively.

Conclusions. There was a strong association between height and axial length, as well as refraction. Higher degree of myopia significantly correlated with greater Beighton score (increased joint mobility).

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CAN BONE MASS BE MEASURED BY THE BIA METHOD? VALIDITY OF MEASURING BONE MASS BY THE BIA METHOD

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Background and Aim. Besides the soft tissue analysis in body composition measurement, a hard tissue – bone mass analysis is also performed. The bone parameter values can be used for the assessment of the effect of exercise on the individual's supporting system and in osteoporosis diagnostics. Bone mass is usually analyzed by the DXA method. However, BIA analyzers are also used, resulting in bone mineral content values (BMC), even though the BIA method is not primarily designed for such analyses. Thus a question arises: how precise are the BIA-measured BMC values and can we use them in a diagnostic practice? The objective of the study was to check the validity of BIA-measured BMC values.

Material and Methods. The study had 1311 participants. 705 male (38.0±12.3 years) and 606 female (38.2±12.7 years). The validity of BIA-measured BMC values was checked with the criterial validity concept. The DXA method results were used as the empirical criterion for the BIA-measured BMC values. These were whole body values (BMC DXA_{total}) and the values of the analysis without head (BMC $DXA_{subttal}$).

Results: The BIA-measured values in the monitored group were higher by 0.95 kg than BMC DXA_{total} values and by 1.44 kg than BMC $DXA_{subtotal}$ values. Statistical and practical significance was documented in both cases. The standard error of estimate was 0.34 – 0.38 kg and the boundary error value was 0.68 – 0.76 kg in both cases.

Conclusion: The BIA-measured values are significantly higher than the DXA-measured values. The correlations of the BIA-measured values with the DXA-measured values are very strong. The BIA method can be used to assess the effect of physical activity on the locomotive system of a healthy individual. However, it cannot be used for medical diagnostics with regard to the boundary error values.

Keywords: body composition, bone mineral content, measurement validity

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BLOOD VESSELS OF EPICARDIAL GANGLIONATED NERVE PLEXUS IN THE PIG MODEL

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Background and Aim. The study aimed to identify the possible sources of blood supply of epicardial ganglionated nerve plexus (epiGP) characterizing the anatomy of blood vessels (BVs) of the epiGP.

Material and Methods. Eight newborn Landrace pigs were used in the study. Hearts with the intact arches of aorta were extirpated from the chest, washed out from blood with saline, and prefixed by 4% paraformaldehyde through coronary arteries (CAs). Subsequently, eight hearts were perfused with the black ink saline either via the CAs or via non-CAs ligating both CAs. Tissue samples were dissected from the different parts of epiGP in atria and cardiac ventricles using microsurgical instruments. The taken samples were embedded into a mixture of resins Epon 812 and Araldite. Routine semi-thin sections were stained with a methylene blue solution while thin sections were cut with an ultra-microtome. Tissue samples were analyzed with light and electron microscopes.

Results. The pig epiGP is supplied by blood via both CAs and non-CAs which presumably access the heart together with the mediastinal nerves. Commonly, epicardial nerves had only one epineurial blood vessel that extended along the nerve above the perineural sheath. We found that one-two arterioles in diameter 26-37 μm and 8-12 capillaries in diameter 3-10 μm are present regularly in the sections of ventricular and atrial nerves. Vessels supplying the blood via non-CAs were found in the atrial nerves close to the heart hilum and these blood vessels were present together with capillaries of CAs.

Conclusions. Epicardial nerves and ganglia are supplied by blood via endoneurial capillaries, networks of which are formed from the epineurial arterioles. The mean diameter of the epineurial arterioles is 17.2 ± 0.4 micrometers and the size of epineurial blood vessels within epiGP is not related either to their origin or to their location in the heart.

Keywords: blood vessels, epicardial nerves, pig

PUBLIC HEALTH MESSAGING VS. POPULAR MEDIA: BODY POSITIVITY OF THE SEXY FAT GIRL

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Background and Aim. The year 2019 was a watershed year for body positivity with the mainstream rise of Lizzo, an obese, glamorous, sexy multi-talented singer, songwriter, flute player and actress named *Time* Magazine Entertainer of the Year. It catalyzed a 'body confidence revolution' pitting medical and public health professionals' messages about obesity, the disease, (American Medical Association 2013) and its co-morbid biopsychosocial and economic costs against organizations promoting inclusiveness at any size, self-love, self-esteem and an anti-fat shaming agenda (e.g. Association for Health at Every Size, Obesity Action Coalition). This presentation elucidates relevant issues (e.g., rising obesity prevalence, implicit fat bias and stigmatization, failure of weight reduction interventions, depression and eating disorders, role of social media messaging, reimaged sexiness, etc.)

Material and Methods. Quantitative and qualitative thematic analyses using PubMed: 'positive body image' (N=1284, 2015-April,2020), 'social media and body size' (N=601), PsyInfo, ObesityandEnergetics.org; obesity organization websites (e.g., National Association to Advance Fat Acceptance); electronic (i.e., Facebook, Twitter) and print social/popular media references to 'Lizzo' and body positivity; interviews with swim suite industry designers, manufacturers, buyers, models (N~30) and participant-observation at 3 international swim conventions.

Results. Preliminary results indicate an increasing trend in positive images and messaging (e.g. decreasing emphasis on weight loss "thinspiration" or exercise "fitspiration" and fat-shaming vs. self-acceptance); health-at-any-size; adoption of the Industry Code of Conduct on Body Image in advertising, fashion, and media; increased socio-environmental approaches to weight loss; etc.

Conclusions. The medical and public health war on obesity has failed to curb the increasing prevalence of obesity in the United States. It has led to unintended, well documented, negative biopsychosocial consequences. This study documents the current body positive revolution refocusing large body acceptance vs. prejudice, societal vs. individual efforts, and health outcomes vs. weight loss.

Keywords: body image, obesity, body positivity, social media

THE LONG-LASTING EFFECT OF FAMILY STRUCTURE IN EARLY LIFE ON SOCIAL POSITION, WELL-BEING, AND HEALTH STATUS IN ADULTHOOD

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Background and Aim. An extreme case of childhood deprivation is growing up without parents. The absence of even one parent, especially early in a child's life decreases the child's chances of survival and has short- and long-term effects on the child's current and future health. The aim of the present study was to describe long-lasting effect of growing up in incomplete families on biological characteristics and biomarkers of adult men.

Material and Methods. Data came from the archives of the Lower Silesian Medical Center (DOLMED) in Wrocław, Poland. For the purpose of the study data for 4528 males, aged 25-60 year were selected. Questionnaires were collected and information was gathered on actual socio-economic status, lifestyle, biological condition. Also, respondents provided information about their family of origin. 329 men declared that they grew up in incomplete families. Among others height, weight, body fatness, cardiovascular and respiratory systems parameters, blood parameters and health status of men who grew up in full and single-parent families (without father, without mother, without both parents) were compared. Finally, the results were presented graphically in the form of profiles.

Results. Being raised in a complete family promoted greater body height in adulthood. Men who were growing up in a single-parent family were characterized by lower body fatness, lower haemoglobin values, and higher blood glucose and phosphorus values. Additionally, a statistically higher percentage of men raised without both parents suffered from cardiovascular diseases (including myocardial infarction, atherosclerosis, coronary artery disease) compared to men from full families.

Conclusions. Living conditions in childhood, in addition to an unhealthy lifestyle in adulthood, may be responsible for the following worse functioning of the body's physiological systems. This may be due to unsatisfiable material, health, and emotional needs in childhood.

Keywords: incomplete family, one-headed families, parent absence

PRESSURIZED INTRAPERITONEAL AEROSOL CHEMOTHERAPY (PIPAC) AND SYSTEMIC CHEMOTHERAPY FOR PERITONEAL CARCINOMATOSIS OF GASTRIC CANCER: MAYBE A NEW STANDARD AND THE FUTURE TREATMENT?

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Background and Aim. Gastric cancer is one of the most common cancers that metastasizes to the abdominal cavity. Standard treatment of peritoneal carcinomatosis of gastric cancer is systemic chemotherapy, although, the treatment results remain extremely poor. PIPAC is a new modern treatment option for peritoneal carcinomatosis, that optimize the drug distribution by applying an aerosol and increased intraperitoneal hydrostatic pressure to drug penetration. There are only a few studies on combination therapy of systemic chemotherapy and PIPAC. In our study, we will investigate PIPAC and systemic chemotherapy combination for gastric cancer with peritoneal carcinomatosis.

Material and Methods. We are going to include 37 participants, who have diagnosed gastric cancer (HER-2 negative) with a peritoneal carcinomatosis. The inclusion criteria: age≥18; ECOG≤1; patient for 1st line systemic chemotherapy. The exclusion criteria: extra-abdominal metastases; gastroesophageal junction cancer; mechanical bowel obstruction; allergy to study drugs; history of previous chemotherapy; pregnancy of refusal for birth-control at least 6 months post-study treatment.

Results. The primary outcome: the feasibility of the treatment defined as the proportion of patients who receive all planned treatment. The secondary outcomes: overall survival and progression-free survival, PCI score at every PIPAC procedure; Histological regression of peritoneal metastases by peritoneal regression grading score at every PIPAC procedure; Ascites volume at every PIPAC procedure; Adverse effects of systemic or intraperitoneal chemotherapy through study period by CTCAE v5 grading score; Postoperative morbidity after each PIPAC procedure.

Conclusions. This study will provide us on the feasibility and efficacy of treatment by systemic chemotherapy and PIPAC. The results from this study will be the future design of a full phase III trial.

Keywords: gastric cancer, carcinomatosis, PIPAC

A LIFE COURSE APPROACH IN THE VENEZUELAN CONSENSUS ON NUTRITION IN THE FIRST 1000 DAYS OF LIFE

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Background and Aim. The Life Course Model takes into account the trajectories of the population, integrating factors that influence development and changes at the individual, collective and generational levels. The First 1000 Days of Life, from conception to age two are considered "a window of opportunity for health", and have a critical role in the Life Course due to the acceleration of growth and maturity.**:** To describe growth, development, nutritional status, human breastfeeding and complementary feeding based on embryology, physiology, acquisition of functions, abilities, and nutritional risk factors detection, in order to intervene successfully in optimal development.

Methods. A working group of researchers specialized on the First 1000 Days of Life: Obstetricians, Pediatricians, Nutritionist, Auxologists, performed a systematic review of the literature: PubMed Central, Google Scholar and LILACS used the words the first thousand day`s risk, a life course approach from November 2019 to March 2022.

Results. Antenatally, irreversible fetal programming, secondary to maternal macro and micronutrient deficient diets, hypoxia, pathologies like diabetes, diminishes fetal capillaries, number of neurons and nephrons, deposits of glycogen and fat. In the neonatal period, when development is fastest, especially in the nervous system, an accelerated weight gain may produce metabolic programming, particularly in intrauterine growth retardation. In infants (1-23 months): essential nutrient deficiencies can predispose to infectious disease, morbidity/ mortality, growth delay, neurodevelopment defects. High intake of energy and proteins, low polyunsaturated fatty acids, absence of breastfeeding, inadequate and early complementary feeding increase probability of insulin resistance, dyslipidemias, overweight, hypertension, alterations of appetite and endothelial malfunction, especially in cases of intestinal microbiota alterations.

Conclusions. Along the first 1000 days of life, transcendental changes occur in mother-child binomial health. An adequate knowledge of the factors that affect growth, development and nutrition in this period of life, allows interventions to prevent adverse effects and promote optimal growth.

Keywords: first 1000 days of life, growth and development, life course approach, risk factors, Venezuela

TOWARDS A FORMAL APPROACH TO SELECTING THE BEST STATURE RECONSTRUCTION METHOD FOR POORLY PRESERVED SKELETAL SERIES

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Background and Aim. Stature is one of the most ecosensitive characteristics of the human body and is used as a universal measure of the well-being of human groups. For skeletal series from archaeological excavations, stature reconstructed using linear regression formulae based on long bones is used in the majority of cases. It is generally agreed that stature to limb bone ratios are population dependent, therefore making the proper choice of regression formulae for stature reconstruction is essential when studying the well-being of past populations. This study is aimed at developing a procedure that may help make a choice in the case of poorly preserved skeletal series.

Material and Methods. When studying skeletal populations it is rarely possible to compare reconstructed to actual stature. The consistency of seven methods using pairs of long bones were tested instead. A poorly preserved skeletal series – 867 females and 910 males from Kom el-Dikka in Egyptian Alexandria – was used to develop the procedure. As a reference, a well preserved skeletal series of 61 female and 117 male individuals from Naqlun in the Fayoum Oasis was used.

Results. For Kom el-Dikka the most consistent estimations were reached using Ruff et al. for females and Trotter-Glesser Asian formulae for males. In the case of Naqlun it was Raxter et al. and Trotter-Glesser Asian respectively, and the composite bone reconstruction delta comparison supported the results.

Conclusions. Although the ranking of mean deltas between statures reconstructed for available pairs of long bones is not always unambiguous in pointing to methods giving the most consistent results, it seems plausible that it may facilitate their choice.

Keywords: bioarchaeology, stature reconstruction, linear regression

ESTIMATING FETAL WEIGHT, USING FRACTIONAL LIMB VOLUME, IN TWIN PREGNANCIES

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Background and Aim. The rate of multiple pregnancies is increasing and the accurate estimation of fetal weight in the case of multiple pregnancy is important. Our study aimed to compare formulas used to predict fetal weight in twin pregnancies, using fractional limb volume (FLV).

Material and Methods. 27 women, expecting to give birth to twins in 10 days, participated in the study. Using VolusonE8 ultrasound machine, fetal lie, position, presenting part, amount of amniotic fluid, biparietal distance, head and abdominal circumference, femoral length and maternal abdominal subcutaneous thickness were measured. Using 3D ultrasound FLV was measured. Using eight formulas, estimated fetal weight (EFW) was calculated. The correlation between EFW and neonatal weight was calculated using intraclass correlation coefficient (ICC). The Cronbach's Alpha coefficient (CAC) was used to evaluate internal consistency of the formulas. Mean average percentage error (MAPE) and standard deviation (SD) from MAPE were calculated for all the formulas. ICC was used to determine a correlation between each formula's MAPE and the amount of amniotic fluid, fetal position, maternal abdominal subcutaneous thickness, and duration of pregnancy.

Results. ICC for all formulas was >0,5, CAC >0,6. MAPE values were the lowest (from 6.39% to 9.09%) for *Hadlock IV*, *Shinozuka*, *F3* formulas. Lowest SD was also seen in *Hadlock*, *Shinozuka* and *F3* formulas. ICC values for all formulas and factors listed above were <0.1.

Conclusions. 1) most accurately EFW was calculated using *Hadlock IV* and *Shinozuka* formulas; 2) in twin pregnancies, formulas with FLV do not estimate fetal weight more accurately than fetal biometry formulas; 3) while using formulas with FLV, the weight of the second twin is estimated more accurately than that of the first; 4) no correlation was found between MAPE of each formula and amount of amniotic fluid, maternal abdominal subcutaneous thickness, fetal position or duration of pregnancy.

Keywords: fetal weight estimation, fractional limb volume, fetal biometry formulas.

ASSOCIATION BETWEEN METABOLIC SYNDROME AND HAIR STEROID HORMONE LEVELS IN WOMENPARTICIPATING IN THE NATIONAL CARDIOVASCULAR DISEASE PREVENTION PROGRAM

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Background and Aim. Metabolic syndrome (MetS) is a highly prevalent disorder defined as a cluster of cardiometabolic risk factors including obesity, hyperglycemia, hypertension, and dyslipidemia. MetS is associated with a 5-fold increased risk for type 2 diabetes and two times higher risk for the development of cardiovascular diseases (CVD). It is estimated that about one quarter of the world population is affected with MetS. Previous studies showed that prolonged stress or stressful life events are related to the higher prevalence of MetS and its components. Thus, we sought to explore the association between metabolic syndrome and stress-related hair steroid hormone (cortisol and cortisone) levels.

Material and Methods. The study included 145 women (aged 50–64 years) participating in the national CVD prevention program. Fasting blood samples, hair specimens and anthropometric data were collected by the trained personnel. Hair steroid hormone concentrations were determined using ultra-high-performance liquid chromatography-tandem mass spectrometry method.

Results. According to the criteria of the National Cholesterol Education Program Expert Panel and Adult Treatment Panel III, 64 (44.14%) of women met the criteria of MetS. The prevalence of MetS significantly increased with hair cortisol level, expanding from 31.2% to 57.1% from the first to the third hair cortisol level tercile. Similarly, a significant expansion of MetS incidence (from 25.0% to 63.3%) was observed from the first to the third hair cortisone concentration tercile. Also, we found that the highest hair cortisol and cortisone concentration terciles were associated with significantly increased odds ratio for MetS (2.66 (95% CI: 1.14, 6.24) and 4.74 (95% CI: 1.94, 11.58), respectively) in age-adjusted logistic regression models.

Conclusions. Chronic stress induced activation of hypothalamic-pituitary-adrenal axis leads to elevated glucocorticoid levels which might be potential contributing factors to the development of MetS. Thus, quantitative determination of hair cortisol and cortisone concentrations might be utilized to predict the risk of metabolic syndrome.

Keywords: metabolic syndrome, chronic stress, hair steroid hormones

IMPORTANT CHANGE IN CHILDREN'S (8-11YR) MENTAL HEALTH OVER 1 YEAR – RESULTS FROM A CASE-SERIES STUDY OF PSYCHOSOCIAL INTERVENTION IN A SOCIAL DAYCARE CENTER

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Background and Aim. Consistent long-term clinical psychosocial interventions did not exist in Lithuania until one pilot daycare center was founded in 2018. However, there are many social daycare centers, where vulnerable children attend, so they could be at high risk of developing various disorders. Therefore, in one social daycare center, a Trust-based relational intervention (TBRI®) was implemented. The purpose was to evaluate the mental status of the children and the impact of TBRI® on their mental health.

Material and Methods. 12 participants took part in the study. Assessments were scheduled before (T1), after 6 months (T2), and after 1 year of attendance (T3). Strengths and Difficulties and Child Behavior Checklist questionnaires for parents and teachers, and a semi-structured clinical psychiatric interview for parents were used. Children completed the Child attachment interview at T1 and T3 and had a clinical psychiatric interview at T1, T2, and T3. The staff had semi-structured interviews about the use of TBRI® at T2 and T3. Statistical analysis was used for quantitative data and all data were analyzed clinically.

Results. 9 participants appeared to have clinical symptoms, which corresponded to diagnoses. At T1, 8 children had an insecure attachment, and 4 were found disorganized. For 5 participants the important improvement was noticed. For the other 5 participants, the improvement was less expressed, and for 2 the improvement was not obvious. The classification of attachment changed from disorganized into insecure - avoidant for 2, positive changes in subscales were noticed for the majority. Statistically significant difference was seen between T1 and T3 in some variables of the scales. TBRI® was well accepted by staff.

Conclusions. Social daycare center attending children appeared with serious clinical symptoms, so they need special interventions to improve their mental health. TBRI® was easily accepted and used by staff and its impact on children is positive.

Keywords: children, child attachment interview, mental health, trust-based relational intervention

THE INCIDENCE AND TIMING OF DIFFERENT DISEASES IN RELATION TO SUB-CATEGORIES OF PREMATURITY TILL THE ADOLESCENCE (RETROSPECTIVE LONGITUDINAL STUDY)

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Background and Aim. Prematurity has significant negative short- and long-term health effects. The aim of the study was to analyse the differences in morbidity and timing of diseases in preterm children with respect to their gestational age (GA) and birth weight (BW) from birth to adulthood.

Material and Methods. A retrospective longitudinal study of 423 preterm Lithuanian children included the incidence and timing of the first disease diagnosed according to the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) in relation to GA and BW. Kruskal-Wallis followed by *post-hoc* Conover–Iman's tests were applied for comparison of nonparametric data.

Results. The incidence of the first diseases diagnosed from birth till adulthood varied by ICD-10 Chapters: overall, diseases of the eye composed 14,5% of total count (N=1552); infections – 11.3%; congenital abnormalities – 9.3%; endocrine, metabolic – 8.2%; mental and behavioural – 7.9%. In the first three years, diagnoses accounted for 52.8% of the total count (most often – endocrine, blood, and immune; $p<0.01$) and continued to be diagnosed later (0-3y./3-1y.): 1) infections (24/76%); 2) mental, behavioural (26.2/73.8%); 3) eye diseases (39.6/60.4%). Extremely low BW preterm newborns revealed higher total incidence [M(SD)=4.3(2.4)] of the first diagnoses from birth till adulthood than preterm children of normal BW [(M=2.8(1.8)]. The lower the BW and GA, the higher the incidence of the first diagnosis according ICD-10. Very preterm newborns close to two-times earlier ($p<0.01$) developed their first mental and behavioural disorders [M(SD)=2.84(1.7) years] than late preterm newborns [M(SD)=4.92(2.45) years]. A more detailed analysis will be provided.

Conclusions. About half of all diseases were diagnosed after the age of three years, especially infectious, behavioural, and eye diseases, but till three years of age more frequent endocrine, blood, and immune diseases were diagnosed (the lower the BW and GA, the more frequent the first diagnosis).

Keywords: disease, incidence, preterm newborns, timing, sub-categories

METHODOLOGICAL PROBLEMS IN THE STUDIES OF PORTAL VEIN ANATOMICAL VARIABILITY IN CORROSIVE LIVER SAMPLES: COINCIDENCES AND DIFFERENCES USING THE CT METHOD VERSUS SOMATOSCOPIC EVALUATION AND MANUAL MEASUREMENTS

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Background and Aim. The aim of present study was to investigate the intrahepatic branching of portal vein using different methods – somatoscopic and computed tomography (CT) and compare with similar studies.

Material and Methods. A total of 105 liver corrosion specimens from 1960-1980 period (51 male and 54 female individuals; min-max age variation – 21-90 y., M=59.46 y.) were investigated. The branching patterns of the hepatic (HPV), left (LPV), right (RPV) portal vein and their branches were examined and scanned using CT. Standard HPV ramification was considered, when HPV divided into LPV and RPV, RPV bifurcated to anterior and posterior branches (Covey et al., 2004), further segmental ramification into superior and inferior branches was considered standard. We compared HPV main branch length and diameter measurements between manual and CT method. A review of literature concerning portal vein branching variations was performed.

Results. Standard HPV ramification pattern was detected in 85.7% cases in both somatoscopic and CT evaluation. Variations related to the main branches were HPV trifurcation – 7.6%, right posterior portal vein branching from HPV – 4.8% and 5.7%, HPV quadrifurcation 1.9% and 1% respectively in somatoscopic and CT evaluation. There was a significant difference between LPV length and diameter in CT and manual measurements (p=0.031 ir p=0.002). According to the literature more variations was seen using CT method versus somatoscopic corrosion cast evaluation. The varying variation frequency in studies may be explained by a lack of one unanimous classification of branching patterns (some authors do not consider segmental variations as standard HPV ramification) and different evaluation methods.

Conclusions. In this study a difference between distribution of HPV variations and measurements was seen when comparing CT and somatoscopic evaluation therefore making CT evaluation a more accurate method. A lack of one anatomical classification complicates comparing results between studies.

Keywords: anatomic variation, computed tomography, corrosion cast, Portal vein

FLUORIDE IN DRINKING WATER - COULD BE MEANINGFUL FOR BODY SIZE IN SAMOGITIA?

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Background. Fluoride is a mineral that naturally occurs in soil and water, and in the western Lithuania (Samogitia) exceeds the permitted levels in the drinking water. Fluoride was shown to have an inhibiting effect on bone growth in vitro. Could the differences in the fluoride concentration of drinking water be related to the differences in body size?

The aim of the study was to investigate the effect of fluoride consumed through drinking water on rat's embryo body and bones' length.

Material and methods. 15 Long-Evans female rats (two months old) were divided into 3 groups: the first one (F3) received drinking water with 3 mg/L of fluoride, the second – 12 mg/L (F12), the third, control group - tap water with 0,12 mg/L of fluoride (K). All groups were paired after a month. Half were euthanized, embryos were removed on the 21st pregnancy day, embryo weight, length, and bone length was measured. Another half gave birth to the second generation which continued the experiment in the same design for 4 months.

Results. Prolonged excessive intake of fluoride stimulated bone growth in rats. In both generations, rat embryo length and weight changed: F3 and F12 groups were longer than control (Welch F test in the case of unequal variances: $F=8.58$, $df=87.89$, $p<0.01$). Discriminant analysis LDA was performed using all bones and their Z values. In second generation significant differences were obtained in F12 group bones length.

Conclusions. The higher the dose of fluoride consumed by rat affected the longer the body and bone length and body weight of embryos. There is a need for further investigation of possible body size relation to fluoride in West Lithuania.

Keywords: bone length, body size, fluoride, prenatal development, rat

Funding: Vilnius University, UAB "Vandens tyrimai".

WOMEN'S ASSESSMENT OF MEN'S APPEARANCE FROM VOCAL CUES

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Background and Aim. The human voice is an important biological signal and crucial component in male-female attractiveness. Men with specific voice features are assessed by women as more attractive, older, stronger, more intelligent and dominant. Men, like males of many other animals species, intentionally lower their voices to appear larger - a phenomenon known as the acoustic size exaggeration hypothesis. The aim of this study was to examine which vocal cues women use to assess men's body appearance and whether these rates are correct.

Material and Methods. 60 men's voice recordings were divided into 3 equal groups and assessed by heterosexual female judges. The judgment contained assessment of men's body characteristics (i.e. body height, weight etc.) based on graphic scales. A series of anthropometric measurements were applied to every man. Voice acoustic parameters (i.e. fundamental frequency, F_0; formant frequencies, F_1-F_4 and perturbation parameters: *Jitter*, *Shimmer*, *Harmonic-to-noise ratio*, *HNR*) were computed in PRAAT® software from five vowels: /ɑː/, /ɛː/, /iː/, /ɔː/, /uː/. Agreement between judges was assessed with Kendall *W* coefficient. To reduce a number of acoustic parameters Principal Component Analysis (PCA) was applied. Relationship between body assessments and voice traits/real body characteristics was determined using rank correlations (*rho* Spearman and *tau* Kendall), multiple regression and analysis of variance (*one-way ANOVA*). All analyses were performed in Statistica 13. software.

Results. Agreement of women's rates was found. Men with lower, deeper voices were assessed as taller, heavier, more hairy, stronger and older. Furthermore, multiple regression revealed that men with lower voice pitch were assessed as older and stronger and those with higher harmonic component were rated as older and more hairy. Neither rank correlation nor *ANOVA* showed any significant relationship between assessed and actual men's characteristics

Conclusions. Female judges were consistent in their assessment. Women rated men's appearance based mainly on fundamental/formant frequencies and harmonics. The women's ratings did not reflect the actual men's characteristics. We proposed *acoustic size exaggeration* hypothesis as an explanation of this phenomenon.

Keywords: formants, physique, pitch, shimmer, vocal tract

NOVEL MINIMALLY INVASIVE APROACH FOR TREATMENT OF SECONDARY TRICUSPID REGURGITATION

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Background and Aim. The MIA system concept based on bicuspidalization method treating secondary tricuspid regurgitation (TR). It enables implantation of "anchors" in posterior portion of tricuspid valve anulus using a surgical approach. The aim of this study is to evaluate the safety and feasibility of novel technique using MIA system for tricuspid annular repair in patients with secondary TR.

Material and Methods. 3 patients with heart failure symptoms due to severe secondary mitral regurgitation (MR) and mild – moderate or severe secondary TR on optimal medical treatment were reported to our tertiary center between August and November 2017. Tricuspid valve treated with the MIA system concomitant with mitral valve surgery through sternotomy. Safety, defined as periprocedural device related adverse events such as death, myocardial infarction, stroke, or cardiac tamponade, and feasibility, defined as successful implantation of 5 or more MIA devices and reduction of TR by at least 1 grade or reduction of anulus dimensions, were evaluated before discharge and up to 24 months.

Results. Device implantation was achieved in all 3 patient. Mean patient age was 69 years, 2 were females (66%). Mean EuroSCORE II was 2%. At baseline, 2 patients (66%) were in NYHA functional class III, with a mean left ventricular ejection fraction of 58%. After device cinching, an average 38% and 20% reduction in tricuspid valve area and annular circumference was observed respectively. There were no serious adverse events related to the device implantation at thirty-day period. At discharge and 24-month follow-up all 3 patients had trace TR.

Conclusions. Confirmed the safety and feasibility of tricuspid valve repair with the MIA system. However, clinical data are still limited, and further studies are needed to confirm these data in larger cohorts of patients and to investigate whether this technique leads to clinical benefit in patients with secondary TR.

Keywords: minimally invasive annuloplasty (MIA), tricuspid regurgitation, tricuspid valve, valve repair

THE INCIDENCE OF SEVERE ALPHA-1 ANTITRYPSIN DEFICIENCY ALLELES IN LITHUANIAN COHORT OF WHEEZING CHILDREN

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Background and Aim. It was earlier reported the importance of homozygous SS, SZ, and ZZ phenotypes on alpha-1 antitrypsin deficiency (AATD) and a wide range of clinical manifestations including chronic obstructive pulmonary disease (COPD) while the role of heterozygous variants of MS, MZ are still unclear. We aimed to evaluate the frequency of protease inhibitors (Pi) Pi*M, Pi*S, and Pi*Z among the Lithuanian cohort of preschool wheezers.

Methods. 145 wheezing children under 72 months of age were enrolled. Alpha-1 antitrypsin (AAT) serum dry blood spot (DBS) concentration was measured by nephelometry and Pi phenotype was identified by real-time PCR. The Pi*S and Pi*Z alleles were identified by isoelectrofocusing. Rare phenotypes of AAT were identified by sequencing. We compared the frequency of Pi*S and Pi*Z in a cohort of wheezing children with earlier reported data on the frequencies of the same alleles in COPD patients from the Central-Eastern European AAT Network and non-disease specific epidemiological studies done in Lithuania (Chorostowska-Wynimko J, 2013; Serapinas D, 2009).

Results. Mean age of wheezers was 23.55±16.67 months with the predominant male gender in 94 (64.8%) cases. PiMM was found in 129 (88.97%) children, Pi*S in 3 (2.07%), and Pi*Z in 10 (6.9%). Rare mutations were identified in 3 (2.07%) cases. The mean AAT concentration was 143.4±40.7 mg/dl. Patients with the PiZZ had lower AAT concentrations (45.67±5.86, $p<0.05$) than those with the PiMM, PiMS, and PiMZ. The frequency of Pi*S and Pi*Z alleles among wheezing children was 10.3 (95% CI: 4.0-16.6) and 44.8 (95% CI: 32.1-57.5), respectively. It is close to the frequency of these alleles among COPD patients – Pi*S 15.8 (95% CI: 6.92-24.6) and Pi*Z 46.1 (95% CI: 31.1-60.9). Pi*Z allele was statistically significant more common if compare with data from non-disease specific epidemiological studies – 44.8 (95% CI: 32.1-57.5) vs 13.6 (95% CI: 10.7-17.4).

Conclusions. We concluded that some wheezing phenotypes in early childhood can be the target for the future investigation of the origin and first manifestation of COPD.

Keywords: alpha-1 antitrypsin, alpha-1 antitrypsin deficiency, children, chronic obstructive pulmonary disease, Pi alleles, SERPINA1 gene, wheezing

FACTORS ASSOCIATED WITH SUICIDAL IDEATION AMONG OUTPATIENTS WITH EPILEPSY

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Background and Aim. People with epilepsy (PWE) are at greater risk of suicide as compared to the general population. We aimed to establish major determinants of suicidal risk among PWE and select a convenient suicidality screening tool.

Material and Methods. A cross-sectional anonymous survey was conducted at Vilnius University Hospital Santaros Klinikos from October 2021 to March 2022. PWE completed the Geriatric depression scale, the Hospital anxiety and depression scale, the Beck depression inventory (BDI) and the Neurological Disorders Depression Inventory for Epilepsy (NDDI-E). Suicidal risk and clinically relevant symptoms of depression were defined as a non-zero score of the suicide item of the BDI and a total BDI score exceeding 16, respectively. PWE also provided demographic and clinical data as well as their suicidal history.

Results. The study sample consisted of 246 PWE (145 [58.9%] female, aged 39.9±16.3 years). Suicidal risk was identified in 31 (12.6%) and symptoms of depression – in 41 (19.5% of fully-completed BDI) respondents. Patients with suicidal risk more often reported suicidal attempts and suicides among their family members ($p<0.001$, $p=0.027$, respectively). They were more likely to report medication use and medical visits for depression or anxiety as well as previous suicidal thoughts or attempts ($p<0.001$). Previous suicidal thoughts as well as the NDDI-E score were major determinants of suicidal ideation in a binary regression model (OR=15.9, 95%CI=3.7-69.3 and OR=1.3, 95%CI=1.1-1.5, respectively). There was no statistically significant difference between selected scales in detecting suicidal risk or clinically significant symptoms of depression. NDDI-E is the shortest instrument and demonstrated good diagnostic properties (area under the curve (AUC)=0.858, 95%CI=0.791-0.925 [suicidal risk], AUC=0.885, 95%CI=0.829-0.940 [depression]).

Conclusions. We suggest that symptoms of depression and history of suicidality are the most relevant factors for current suicidal risk among PWE. NDDI-E is a convenient instrument to detect suicidal ideation in outpatient settings.

Keywords: screening, suicide, depression, epilepsy

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CORTISOL IN DENTAL TISSUES: CONNECTING STRESS IN THE PAST WITH THE PRESENT

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Background and Aim. The relationship between 'stress', health, and life experience is a primary focus in bioarchaeology, with a considerable body of research directed towards the examination of skeletal stress indicators. However, the analysis of skeletal lesions such as dental enamel hypoplasia, growth disruption and new bone formation face some important limitations. Skeletal stress markers are most often indirect and non-specific measures of stress and it is not clear how 'stressed' an individual must be for the development of skeletal lesions. Further, these indicators are rarely used or consulted in studies of stress in modern populations, creating methodological barriers to interdisciplinary research. Cortisol is a hormone produced by the body in response to stressors and is regularly assessed in modern stress analyses. Recent pilot studies have detected cortisol from modern and archaeological tooth structures, meriting further investigation.

Material and Methods. To explore and develop the dental cortisol method, 25 permanent (7 modern, 18 archaeological) teeth were analysed for cortisol concentrations via ELISA (enzyme-linked immunosorbent assay). Multiple samples of dentine and enamel from each tooth were assessed.

Results. Cortisol was successfully detected in many, but not all of the tested samples. Modern dentine and enamel tissues generally had higher cortisol concentrations than archaeological tissues. However, some archaeological teeth yielded notably high cortisol concentrations, surpassing the values observed in modern tissues.

Conclusions. These results suggest that diagenesis may impact dental cortisol and should be investigated in future research. Simultaneously, the high cortisol concentrations observed in several archaeological dental tissues demonstrates that other factors also contribute to dental cortisol concentrations. With further research, dental cortisol concentrations may provide a direct and quantifiable measure of chronic stress. This has the potential to provide new opportunities for investigating stress in the past but also for connecting bioarchaeology with assessments of stress in modern populations.

Keywords: dentine, diagenesis, enamel, interdisciplinary research

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SHORT STATURE IS THE NATURAL HEALTHY PHENOTYPE, AND NOT PATHOLOGIC

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Background and Aim. Body height of *Homo sapiens sapiens* is the result of a long evolutionary history, and except for a few very recent populations, has always been much shorter than currently prescribed by modern WHO standards. Conventional wisdom associates body height with genetic, nutritional, health and environmental conditions. We question this understanding.

Material and Methods. We reinvestigated height data from archeological (10 000–1000 BC), and historical studies (1877–1913) including different social strata. In addition, we analyzed height, weight, and skinfold thickness of 1666 contemporary Indonesian schoolchildren from six representative rural and urban elementary schools in Bali and West Timor with a stunting prevalence of up to 50%.

Results. Since Holocene, average height of Near East and Europe populations varied with maxima for women usually ranging below 160 cm, and maxima for men between 165 and 170 cm (equiv. to some -1 to -2 height SDS). Until the late 19th/early 20th century, average height also of European and white US-American schoolchildren ranged between 1.5 and 2.2 hSDS, without any evidence for chronic or recurrent undernutrition or frequent illness, poverty, or otherwise disadvantageous living conditions. The same applies for the short schoolchildren of contemporary Indonesia.

Conclusions. Not only in Low-and-Middle-Income Countries; but also in affluent well-nourished social strata of the last 10,000 years stunting has been the omnipresent healthy phenotype. Not before the last century, and only in a few democratic, modern societies, height has increased beyond the long-lasting historic height average. We interpret the persistent prevalence of short height in the human history from an evolutionary perspective and consider adaptive plasticity of height, community effects, and competitive growth and strategic growth adjustments as primary factors in the regulation of human growth. Viewing from this perspective stunting is the natural condition of human height.

Keywords: short body height, adaptive plasticity, strategic growth adjustment

LEAD AND MERCURY CONCENTRATIONS IN INHABITANTS OF EARLY MODERN KRAKÓW (POLAND)

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Background and Aim. Of all environmental pollutants, heavy metals deserve special attention from scientists because of their toxic nature. Many of the elements included in this group (e.g. arsenic, lead, mercury or cadmium) are very dangerous for human health, even in small quantities, because they are not metabolized by the human organism and accumulate in the tissues, leading to serious diseases.

The aim of the study was to analyze the concentration of selected heavy metals: lead and mercury in the inhabitants of modern Kraków (XVII-XIX century) belonging to the then elite of the city.

Material and Methods. The research material consisted of the ribs collected from 29 adult individuals buried in the crypts of the church of St. Francis of Assisi in Krakow (Poland).

After cleaning and grinding, the samples were mineralized in concentrated nitric acid. Then, the content of selected heavy metals was assessed using the Atomic Absorbtion Spectrometry (AAS) method.

The level of calcium and phosphorus was also determined in order to calculate the Ca/P index informing about the process of diagenesis.

Results. Studies have shown a high lead content in the bone material of the subjects (mean value 145.77 mg/kg), which may indicate their frequent exposure to this heavy metal. In the case of mercury only for 3 individuals measurements significantly deviated from the mean values of the group (mean value 36.93 µg/kg) and were close to 1000 µg/kg.

Conclusions. Both mercury and lead serve no physiologic function in the human body, therefore their level determined in archaeological skeletal material can be interpreted as resulting from exposure attributed to residential and occupational settings, everyday objects, and medical treatments.

Measuring the content of these heavy metals in historical populations can therefore make a significant contribution to the study of reconstruction of their lifestyle and biological condition.

Keywords: early modern population, heavy metals, lead, mercury

INFLUENCE OF BODY MASS INDEX AND CHANGE OF BODY MASS INDEX ON THE INCIDENCE OF KIDNEY DISEASES

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Background and Aim. Obesity is a major public health issue. However, the association between body mass index (BMI) change and kidney diseases is lacking research. In this study, we aim to analyse the influence of BMI in early adulthood and the change of BMI on the incidence of chronic kidney disease (CKD), stage 5 chronic kidney disease (CKD5), end-stage renal disease (ESRD) and acute kidney injury (AKI).

Material and Methods. Population consisted of subjects included in Swedish Military Conscription Register (1969-2010) and the same subjects that were also included in Northern Sweden Health and Disease Study (NSHDS) (1985-2020). Diagnoses were taken from Swedish National Patient Register and data analysis was conducted using Cox proportional hazards model.

Results. 1.4 million subjects met the inclusion criteria for BMI evaluation in early adulthood. 6466 subjects developed CKD, 2143 developed CKD5, 2840 developed ESRD and 8788 developed AKI. After dividing subjects into BMI quintiles and adjusting for covariates, the hazard ratio (HR) in the fifth quintile was 2.44 for CKD, 2.08 for CK5, 1.85 for ESRD and 1.96 for AKI. 32 221 subjects met the inclusion criteria to evaluate BMI change. CKD has developed in 83 subjects, CKD5 in 27, ESRD in 40 and AKI in 180. Covariate-adjusted HRs for BMI increase of 1 kg/m^2 were 1.07 (0.98-1.16) for CKD, 0.96 (0.78-1.17) for CKD5, 0.84 (0.70-1.01) for ESRD and 1.11 (1.06-1.16) for AKI.

Conclusions. Higher BMI in early adulthood as well as BMI increase with age were found to be associated with increased incidence of CKD and AKI. It suggests that higher BMI is an important risk factor for developing kidney diseases.

Keywords: acute kidney injury, body mass index, chronic kidney disease, end-stage renal disease

"TRIGGERSAF": RATIONALE OF CONCEPTION AND PRELIMINARY RESULTS OF THE TEMPORAL RELATION BETWEEN THE RISE OF ARTERIAL BLOOD PRESSURE AND ONSET OF ATRIAL FIBRILLATION

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Background and Aim. Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia. In order to gain a profound understanding of the mechanisms that are involved in inducing AF episodes, a prospective cohort study that aims to investigate a temporal relation between different triggers and AF episodes was initiated.

Material and Methods. Possible AF triggers such as changes in arterial blood pressure (ABP), sleep disorders, physical activity and individual patient triggers are closely monitored for 7 days, together with Holter single-lead electrocardiogram (ECG) registration for the arrhythmia reference. Acquired ECG data is then annotated in search of atrial arrhythmias such as atrial tachycardia, atrial flutter, atrial fibrillation or atrial bigeminy/trigeminy. Additionally, laboratory tests and echocardiography are performed, and a questionnaire is completed

Results. A preliminary statistical analysis of 11 completed annotations was conducted, in search of the temporal relation between ABP and arrhythmia episodes. The analysis of pooled patient data did not reveal any significant differences between ABP in sinus rhythm versus before the episodes of atrial arrhythmia. 4 patients who had 6 or more arrhythmia episodes were analysed individually. When analysed separately, significantly higher medians of mean arterial pressure (MAP) (83.3 vs. 90.0; p=0.02) and diastolic blood pressure (DBP) (71.0 vs. 77.0; p=0.01) were associated with atrial arrhythmia episodes in one of the patients. It is worth noting that this patient was the only one without diagnosed hypertension and also was diagnosed with hyperthyroidism.

Conclusions. "TriggersAF" is the first study to investigate a temporal relation between AF episodes and possible different triggers. Preliminary results revealed that the increase in ABP (especially MAP and DBP) might directly trigger atrial arrhythmia episodes. However, this mechanism occurs individually, which might explain statistically insignificant results of pooled data analysis.

Keywords: atrial fibrillation, blood pressure, remote monitoring, TriggersAF

VERTICAL FACIAL DIMENSIONS AND EYE MEASUREMENTS ARE THE MOST SUITABLE FOR FACIAL IDENTIFICATION BY PROFESSIONAL AND NON-PROFESSIONAL PHOTOGRAPHS

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Background and Aim. Facial studies are crucial in personal identification, however, research on facial changes during puberty is limited. The aim of present study was to obtain the most appropriate facial indices for adolescent facial identification from photographs.

Material and Methods. Anthropometric landmarks were placed on front face photographs (taken professionally and non-professionally), 11 facial measurements were performed, 48 facial indices were calculated. Indices obtained from different photographs were compared with those calculated from facial anthropometry of the same 18–21-year-olds (35 boys and 39 girls).

Results. Eleven indices did not differ ($p>0.05$) estimated from both types of photographs and from direct anthropometry: 4 indices (se-sto/ex-ex, se-gn/pu-pu, se-gn/ex-ex, se-sn/pu-pu) were suitable for girls and boys, boys' indices were larger than girls' ($p<0.05$). Four indices were suitable for boys only (se-sn/ch-ch, en-en/ch-ch, se-gn/se-sto, pu-pu/ch-ch), and 3 - for girls only (se-gn/ch-ch, se-sto/pu-pu se-sn/en-en). Fourteen indices were larger estimated from direct anthropometry than from both type of photographs, and 6 indices - smaller.

Conclusions. Indices suitable for facial identification from different photographs mostly included vertical facial dimensions at the numerator and eye measurements at the denominator. Compared to the direct anthropometry, the bizygomatic width and bifrontotemporal width were shorter, and the nasal width was wider when measured using photographs.

Keywords: anthropometry, facial indices, longitudinal study, photographs

AUTOMATED TUMOR-HOST INTERFACE ZONE DETECTION AND IMMUNE RESPONSE ASSESSMENT IN HEPATOCELLULAR CARCINOMA TISSUE

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Background and Aim. The most common primary liver malignancy is hepatocellular carcinoma (HCC), an inflammation-driven tumour with a five-year survival rate of 18.4%. We aimed to assess the anti-tumoural immune response from digital microscopic images of surgical excision samples and explore computational models to predict patient outcomes.

Material and Methods. Our retrospective cohort included 106 patients who underwent surgery for HCC in Santaros Clinics (Vilnius). The median follow-up time was 31.3 months with 56 fatalities (52.8%) recorded. Archived paraffin-embedded tissue was used for CD8 immunohistochemistry, then digitized for automatic segmentation into tumour, liver, stroma, and background classes using artificial intelligence classifiers. Hexagonal grid-based analytics was applied to process the outputs to detect the tumour edge and the interface zone around it as well as spatial CD8+ cell density profiles (immunogradient) across the zone. These indicators were tested in patients' survival statistical models along with routine clinical and pathological variables.

Results. Univariate analysis of clinicopathological parameters with subsequent multiple Cox regression models revealed five independent predictors of patient overall survival: patient age (HR=3.3), intravascular invasion (HR=2.5), hospitalization time (HR=4.5), mean CD8+ lymphocyte density in the surrounding liver parenchyma (HR=3.5), and CD8+ density gradient (HR=0.43) at the tumour edge. The combination of preoperative laboratory data (eosinophil, basophil, neutrophil counts, total bilirubin, alanine transaminase) and the tissue CD8 indicators further improved the predictive power of the model (likelihood ratio 76.7, $p < 0.0001$) and did not require any other clinical or pathology parameters.

Conclusions. We present a comprehensive predictive model for the overall survival of HCC patients, integrating automatically extracted information on host immune response, eosinophil, basophil, neutrophil counts, total bilirubin, and alanine transaminase. This model outperforms conventional clinicopathological parameters and is exclusively based on laboratory and computational pathology data.

Keywords: artificial intelligence, computational, hepatocellular carcinoma, immune response, prognostic model

EFFECT OF AEROBIC TRAINING ON BODY COMPOSITION AND ASPROSIN LEVEL IN MALES WITH METABOLIC SYNDROME

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Background and Aim. Asprosin is a novel biomarker that is associated with metabolic syndrome (MS). However, the available evidence on the association of asprosin, physical activity and MS status are still scarce. Therefore, the present study aimed to investigate the effect of aerobic exercise training on asprosin and other biochemical parameters in men with MS.

Material and Methods. The study included 29 males with MS (age 35.8±6.0 years, BMI 33.8±4.5 kg/m^2), randomly assigned to: the examined group (EG, n=14) that realised health trainings of aerobic character (HR_{max}70%) for 12 weeks, and the control group (CG, n=15) without interventions. Anthropometric measurements, body composition (DXA-Dual X-ray Absorptiometry: BM-body mass [kg], FAT [%]-percentage fat tissue content) as well as biochemical blood test (ASP-asprosin [ng/ml], GL-glucose [mg/dl], TCH-total cholesterol [mmol/l]) were performed at the beginning of the project, after 6 and 12 weeks of interventions and after 4 weeks of observations (follow-up). Intergroup comparisons employed the U Mann-Whitney test while intra group ones the Friedman test.

Results. In EG after 6 weeks a decrease of ASP (p=0.020) was observed as well as BM (p=0.003), FAT [%] (p=0.040), and TCH (p=0.020). Between 6 and 12 weeks of interventions in EG a further decrease in %FAT (p=0.030), and GL (p=0.020) was recorded, whereas in CG an increase of BM (p=0.030) and %FAT (p=0.030) was found. After 4 weeks of observation since the end of the health training, further decrease of %FAT (p=0.020) and GL level was confirmed in EG whereas in CG there was an increase of ASP (p=0.010) in relation to the initial measurement.

Conclusions. Application of a health training of aerobic character induces positive changes in body composition and asprosin concentration in blood in males with MS.

Keywords: asprosin, cholesterol, metabolic syndrome, obesity, physical activity of aerobic character

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FACIAL SOFT TISSUE THICKNESSES IN AZERBAIJAN ADULTS: VARIABILITY AND SPECIFICITY

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Background and Aim. Facial soft tissue thickness (FSTT) is essential for plastic surgeons, maxilla-facial surgeons, orthodontists for treatment planning and to forensic anthropologists for facial reconstruction. In spite of this, there is no database of the facial soft tissue thickness of the Azerbaijan population.

The aim of this study was to evaluate the variation in facial soft tissue thickness in Azerbaijan population according to sex, age, body mass index and to establish a database.

Material and Methods. The variability of facial soft tissue thickness (FSTT) was measured at 13 unilateral and 11 bilateral anthropological landmarks on head CT-scans of 150 male and 150 female adult subjects of Azerbaijan population. Age groups: I - 18-25; II - 26-45; III- 46-60 years. CT-scans were mode available after being a part of the diagnostic procedure concerning the paranasal sinuses of the patients. The height and weight of all subjects were determined and their body mass index (BMI) was calculated. A correlation between skinfold thickness and body mass index with that of FSTT was observed. Data of mean, standard deviation, maximum and minimum soft tissue thickness values of the faces individuals were evaluated and differences related to age, sex, and body mass index were calculated. The specificity of new database was evaluated by comparing values with published datasets of various populations.

Results. Sexual dimorphism was noted, with males having thicker facial soft tissue at all measured points. BMI showed good correlation with FSTT in both males and females, which was confirmed statistically. Differences were observed in thicknesses for Azerbaijan population when compared to other studies.

Conclusion. FSTT is influenced by the age, sex, ethnicity and the body mass index of the individual. The thickness of soft tissue of Azerbaijan population was different from that described in the literature and reported for samples from other countries.

Keywords: Azerbaijan population, face, soft tissue thicknesses

PHYSICAL, MENTAL AND EMOTIONAL SYMPTOMS OF PREMENSTRUAL SYNDROME (PMS) IN LITHUANIAN WOMEN RELATED TO BODY SIZE AND SHAPE

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Background and Aim. PMS studies are widespread, however, associations between severity of physical, mental and emotional PMS symptoms, BMI and body shape remain poorly researched.

Material and Methods. An anonymous online questionnaire including questions on body height, weight and shape (apple, hourglass, inverted triangle, rectangle, pear) was designed to evaluate most common physical, mental and emotional symptoms of PMS according to a 5-point Likert scale. Lithuanian women from 21 to 30 years old, not using oral contraceptives (N=4999) were included in the study. Statistical analysis was carried out using IBM SPSS 17 software. One-way ANOVA was used to compare mean values.

Results. Severity of PMS physical symptoms fluctuated from M(SD)=2.869(0.7) to M(SD)=3.065(0.73) between females with different BMI, being the highest among overweight (BMI 25,0 – 29,9) and the lowest among women with low BMI (<19,9), and from M(SD)= 2.899(0.71) to M(SD)= 3.052(0.75) between females with different body shapes, being the highest among apple shaped and the lowest among rectangle shaped women. Severity of PMS mental and emotional symptoms varied from M(SD)=2.918(0.93) to M(SD)= 3.041(0.94) between females with different BMI, being the highest among women with high BMI (>30) and the lowest among women with low BMI, and from M(SD)=2.952 (0.94) to M(SD)=3.054 (0.96) between females with different body shapes, being the highest among apple shaped and the lowest among pear shaped women.

Conclusions. 1. Most severe physical, mental and emotional PMS symptoms were experienced by overweight females and women with high BMI respectively.2. The weakest both physical, mental and emotional PMS symptoms were found in women with low BMI. 3. Women with apple shaped figure experienced the strongest PMS symptoms. 4. The weakest physical, mental and emotional PMS symptoms were reported by women with rectangular and pear body shapes respectively.

Keywords: BMI, body shape, PMS

SURVIVAL PROBABILITY OF ADULTS WITH CYSTIC FIBROSIS DEPENDING ON THEIR BIOLOGICAL STATUS

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Background and Aim. Cystic Fibrosis (CF) is a multiorgan disease with a great spectrum of diversity, and therefore the causes of the life expectancy are not a simple reflection of the most important symptoms of the disease. The basis of the disease is *CFTR* gene mutation (Cystic Fibrosis Transmembrane Conductance Regulator) and consequently invalid structure and function of CFTR protein. The most important factors related to the disease course and the life expectancy of patients are the mutation type in the *CFTR* gene, nutritional status, lung function, and the prevalence of *Pseudomonas aeruginosa*. Considering the current state of knowledge, the study aimed to assess the relationship between the severity of the mutation, nutritional status, lung function, and the prevalence of *Pseudomonas aeruginosa* and the probability of the adult CF patient's survival.

Material and Methods. 124 (68 women and 56 men) CF patients aged 18–51 years were assessed for (1) type of mutation in the *CFTR* gene, (2) nutritional status (BMI), (3) lung function (FEV1%) and (4) the prevalence of *Pseudomonas aeruginosa*. Statistical analysis included: Kaplan-Meier survival analysis, chi-square test for multiple samples, and logistic regression.

Results. The mutation type (χ^2=12.73, df=3, p=0.005), FEV1% (chi^2=15.20, df=2, p< 0.001), prevalence of *Pseudomonas aeruginosa* (chi^2=11.48, df=3, p< 0.01), and BMI (chi^2=31.08, df=4, p<0.001) significantly differentiated the survival probability of CF patients. The shortest life expectancy was observed in patients with a severe type of mutation on both alleles, FEV1%<40, in patients in whom *Pseudomonas* culture was extensively drug-resistant or pandrug-resistant, and in those with BMI<18.5. The risk of death in CF patients doubled with *Pseudomonas aeruginosa* prevalence (OR=2.06, 95% CI 1.29; 2.28) and eightfold when the bacteria acquired antibiotic resistance (OR=8.11, 95% CI 1.67; 38.15).

Conclusions. All factors included in the study were significantly related to the survival probability of CF patients.

Keywords: cystic fibrosis, lung function, survival probability, BMI, *Pseudomonas aeruginosa*

GROWTH PROFILE OF PRESCHOOL-AGE CHILDREN OF LATVIAN REGIONS AND RIGA

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Background and Aim. The first seven years play an essential role in the development of a child's body. Body growth and development are continuous, but not even and consecutive. At the same age, children's growth, development, and functional capacity can be variable. The main goal of this study is to compare the physical development of boys and girls aged six and seven years in Riga and other regions of Latvia.

Material and Methods. The study surveyed and measured 241 girls, 272 boys from the city of Riga (R), and 204 girls, 201 boys from Latvian regions (LR). All children have been divided into groups of 6 and 7 years old. The parameters were determined using the R methodology. Martin and K. Saller (1957 – 1966). Only children with parents' written permissions have been measured.

Results. The height of 6-year-old girls in R on average is 117.8 ± 5.8 cm, in LR on average is 117.1 ± 6.3 cm; 7-year-old girls in R on average is 122.7 ± 5.2 cm, in LR on average is 122.2 ± 5.5 cm. For girls, at the age of 6 to 7 years, the average breast circumference in R – 1.6 cm/year, in LR – 1.5 cm/ year; VC (vital capacity) – in R – 139 ml/year, in LR – 128 ml/ year.

The height of 6-year-old boys in R on average is 118.7 ± 5.0 cm, in LR - 118.6 ± 5.1 cm; for 7-year-old boys in R on average is 124.7 ± 5.0 cm, in LR on average is 122.8 ± 5.1 cm. The increase in average breast circumference per year in R – 2.4 cm/year, in LR – 2.0 cm/year; VC – in R - 251 ml/ year, in LR – 142 ml/ year.

Conclusions. Significant differences in the children's growth in Riga and Latvian regions cannot be observed; however, there is a substantial distribution of all parameters within each age group. At 6 years of 6 years, the speed of height growth decreases.

Keywords: 6- and 7-years old children, physical development, functional maturation, posture, Latvia

COMPARISON OF THE BODY COMPOSITION DATA FROM TWO- AND FOUR-COMPONENT MODELS WITH THE SAME DATA GAINED FROM INBODY 720 BODY COMPOSITION ANALYZER

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Background and Aim. The first two decades of human life are accompanied with significant changes of relative values of components of body composition, and also sexual dimorphism. Accordingly, monitoring the changes of body composition components in growing children has great importance. These values are automatically calculated by Inbody 720 body composition analyzer so it is not known what kind of regression equations are used or which human population they are based on. The aim of our survey is to compare the values of body composition components calculated with different regression equations – based on data measured with manual examinations - with those calculated by InBody 720, in order to proof the validity of Inbody 720 measurement.

Material and Methods. In 2021 physical status and body composition of 51 children (between 3–14) have been examined by InBody 720. Different data of children's body size were taken manually with the help of different anthropometrical equipments. The components of their body composition were estimated by two-component (based on models of Goran et al.; Yuhasz and Slaughter et al.) and four-component (Drinkwater-Ross) models. Statistical analysis was made with SPSS v.20.0 software.

Results. Comparing the values of four-component (Drinkwater-Ross) model with the values of InBody 720 showed a correlation of 0,93 in body fat and 0,96 in muscle mass and skeletal mass. High correlation – 0,84 in chest and 0,8 in abdomen, arm, thigh – were also found between circumferential values. Correlation with two-component model was 0,91 with Goran et al. (body fat mass), 0,8 with Slaughter (body fat percentage) and 0,76 with Yuhasz (body fat percentage).

Conclusions. Based on these results it is statable that values calculated by two- and four-component models largely correspond with those measured by InBody 720, meaning that InBody 720 can be well used during anthropometrical examinations on Caucasian population.

Keywords: body composition, two- and four-component anthropometric models, InBody 720

DIFFERENCES IN LIP MORPHOMETRY AND MORPHOLOGICAL PATTERNS ACROSS ETHNIC GROUPS

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Background and Aim. Lip prints, much like fingerprints, exhibit unique patterns that might vary depending on a person's race and gender. The researches suggest that different ethnic groups have different predominant types of lip prints. The aim of this study is to describe and characterize typical lip print patterns and lip measurements, as well as to analyse their variances across Polish, Russian, and Lithuanian women.

Material and Methods. 371 women from Vilnius University (151 Lithuanians, 145 Poles, and 75 Russians) took part in this study. Both a survey and a collection of lip prints were administered. Each lip print was divided into six sextants, examined and classified. The lips of 120 women were studied using a Vectra M3 3D (Canfield Imaging Systems, USA) camera.

Results. In all lip print sextants, Type I was the most common among Lithuanians, Type III - among Polish and Type V - among Russian women. Type I lip print pattern was statistically significantly related to Lithuanian ethnicity (p=.001) and Type III - to Polish ethnicity (p=.015). The values of medial vertical height of cutaneous upper lip (p=.045), height of upper lip (p=.034), philtrum width (p=.020), height of lower vermilion (p=.015), upper lip vermilion area (p=.022), upper lip volume (p=.034) and total lip volume (p=.05) statistically significantly varied between the ethnicities.
Conclusions. Type I lip print was the most common among Lithuanians, while Type III was the most common among Polish and Type V - among Russian women. Morphometric analysis showed that the values of medial vertical height of cutaneous upper lip, height of upper lip, philtrum width, height of lower vermilion, upper lip vermilion area, upper lip volume differed significantly between ethnicities. Total lip volume values were highest in Polish women population and differed significantly between ethnicities.

Keywords: cheiloscopy, ethnicity, lip morphometry, lip print pattern, morphology.

SLEEP PARAMETERS IN PEOPLE WITH DIFFERENT SLEEP DEFICIT LEVELS

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Background and Aim. The chronotype refers to preferred times of circadian activity and three types of activity are distinguished: morningness (larks), eveningness (night-owls) and neither type. Starting activities in the morning, for example work/education, causes an accumulation of sleep deficit in evening people and it is usually regulated by sleeping more on work-free days.Such irregularities in times of sleep can cause sleep disorders like insomnia and lead to numerous health complications. The aim of this study was to compare sleep parameters and health indicators in people who sleep more on work-free days than on work days, to those who do not.

Material and Methods. The data came from polysomnography and questionnaires filled in by 85 adult patients (24 females) of Polysomnography Laboratory of Stobrawskie Medical Center in Opolskie province, Poland. Statistical analysis was conducted in Statistica® software.

Results. Patients sleeping more on work-free days than on work days spent significantly less time with oxygen blood saturation less than 90% compared with those who slept the same or shorter (absolute and relative time: Pearson's r = -0.2868, p = 0.023 and Pearson's r = -0.3023, p = 0.016, respectively). Additionally the more they slept on free day than on work day they had less oxygen desaturations per hour of sleep (Pearson's r = -0.2589, p = 0.039).

Conclusions. The more hours of sleep on work-free days compared to work days people declared the less hypoxia they had in polysomnography study. It may be a result of a mismatch between chronotype and actual time of activity that causes sleep deprivation and symptoms of sleep disorders, therefore they register for polysomnography to diagnose.

Keywords: eveningness, polysomnography, sleep deprivation

NONMETRIC TRAITS ON THE PROXIMAL PART OF THE FEMUR IN THE POLISH HISTORICAL COLLECTION

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Background and Aim. Nonmetric traits have been proven useful both in historical population studies when kinship or/and origin is tracked, as well as in the case of a criminal investigation when the identification of an individual is performed. However, the nonmetric traits studies are not much novel, there are still a lot of inconsistencies in the literature that should be addressed, and enriching the area is needed. The aim of the study was to examine the prevalence of the nonmetric traits on the proximal part of the femur in the context of sex and to characterize epigenetic traits similar in appearance, to make them easier to distinguish.

Material and Methods. In the study, the author decided to survey four nonmetric features, located on the proximal part of the femur: Allen's fossa, Porier's facet, plaque, and third trochanter. The sample included 121 individuals from an early-modern Polish series. The skeletons (68 male and 53 female) were excavated from the Orthodox cemetery near Czysty Square in Wrocław (Poland), dated to the 16th-19th century. Due to insufficient preservation, 109 right and 113 left femora were studied.

Results. The majority of the nonmetric traits were observed bilaterally**.** The most commonly noticed traits were Allen's fossa (11-16%) and Porier's facet (13%). However, the prevalence depended on the sex of the individuals with Allen's fossa observed more commonly on female femora and Porier's facet on males.

Conclusions. In the studied collection, female and man differed in case of Allen's fossa and Porier's facet prevalence. However, the presented results are only partial and a larger sample needs to be examined to obtain reliable conclusions.

Keywords: Allen's fossa, third trochanter, (femoral) plaque, Porier's facet

NATIONAL NEWBORN SCREENING PROGRAM AS A TOOL FOR IODINE STATUS MEASUREMENT

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Background. World Health Organization, United Nations International Children's Emergency Fund, and the International Council for Control of Iodine Deficiency Disorders included neonatal thyroid stimulating hormone (nTSH) as one of the indicators for assessing iodine deficiency at a population level. A prevalence of nTSH concentrations in dry blood spots (DBS) above 5 mIU/L below 3% has been proposed as the threshold indicating iodine sufficiency. The aim of this study was to evaluate nTSH data to assess the current iodine status in Lithuania.

Methods. We analyzed the results of nTSH tests from the National Newborn Screening Program for congenital hypothyroidism database as a part of nationwide program NATRIJOD. Heel-prick blood samples were collected on the 3–5th day of life on filter paper cards. nTSH concentration was measured in DBS using fluorometric enzyme immunoassay (Labsystems). Anonymized results of nTSH tests from 492143 cards collected in 2002-2018 were retrieved, congenital hypothyroidism cases and inadequately sampled DBS were excluded, frequency of results at the cut-off of TSH above 5 mIU/L was calculated.

Results. Since 2002 National Newborn Screening Program laboratory has been testing 26,000 – 32,000 samples per year. The prevalence of nTSH above 5 mU/L varied between 1,21% and 5,43%. In 2005 before mandatory universal salt iodization program implementation prevalence of nTSH above 5 mU/l exceeded 3% in 6 counties. In 2018 the prevalence above 3% remained in 3 counties indicating possible mild iodine deficiency in these regions.

Conclusions. The National Newborn Screening Program for congenital hypothyroidism was successfully used for the first time as a tool for iodine status measurement in Lithuania. Prevalence of nTSH above 5 mU/L in Lithuania was low, but mild iodine deficiency in some counties suggested the need of further investigation of potential factors impacting nTSH to achieve sustainable elimination of iodine deficiency.

Keywords: The National Newborn Screening Program, neonatal thyroid stimulating hormone, iodine deficiency

EVOLUTIONARY THOUGHTS IN JĘDRZEJ ŚNIADECKI'S "O FIZYCZNEM WYCHOWANIU DZIECI" AND JEAN-JACQUES ROUSSEAU "EMILE, OR EDUCATION"

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Aim of the study was to compare Jędrzej Śniadecki's and Jean-Jacques Rousseau's evolutionary ideas

Material and Methods. Our study was based on the comparative analysis of the primary historical sources such as Jędrzej Śniadecki's "O Fizycznem Wychowaniu Dzieci" (1840) and Jean-Jacques Rousseau "Emile, or education" (1762)

Results. The study revealed that both works of Śniadecki (1768-1838) and Jean-Jacques Rousseau (1712-1778) were characteristic to the Enlightment and Romanticist periods. Śniadecki's in his book "O Fizycznem Wychowaniu Dzieci" rose a main goal - to draw guidelines for the positive and experience based education. So did and Jean-Jacques Rousseau with his work "Emile, or education". Both authors based their theories on the analogies with the rest living beings as well as observation of natural cycles and natural logics. They focused on the means that would help to maintain good physical and mental health of a child.

Conclusions. Śniadecki as well as Rousseau believed that modern way of living was unnatural and artificial. Therefore, such life mode was considered to be harmful for harmonious physical and mental development of a child. Both authors had their arguments.

Keywords: Emile, evolutionary thought, physical education of children, Rousseau's, Śniadecki

MORPHOLOGICAL MASCULINITY AND BIOMARKERS OF LONG-TERM HEALTH IN MEN

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Background and Aim. Morphological masculinity is perceived as a cue of a man's biological condition and "good genes" that may be passed to offspring and increase its viability. However, there is little evidence that masculinity is linked with any aspect of biological condition in men of reproductive age. According to the disposable soma hypothesis, any increase in investment in one trait of an individual's biological condition will be traded-off against the cost of decreased investment in another trait. Here, we suggest that developing and maintaining high morphological masculinity may bring health costs that may manifest later in ontogenesis e.g. faster senescence rates and lowered long-term health, which might explain the lack of the relationship between masculinity and health in men of reproductive age. Here we verify if morphological masculinity level in men is related to long-term health.

Material and Methods. 185 healthy men of mean age 35.31±3.49 (29-44 years) participated in the study. Long-term health and pace of aging were evaluated based on the levels of inflammation, s-klotho, oxidative stress markers, antioxidants, and markers of cardiometabolic risk (lipid profile, homocysteine level). Body masculinity was measured based on sexually dimorphic traits of face and body (facial WHR, body SHR, WCR, WHR, grip and torso strength). SES, lifestyle-related factors, body adiposity, testosterone, and cortisol levels were controlled.

Results. We found no relationship between morphological masculinity and markers of long-term health in the studied population. The negative relationship between masculinity and biomarkers of cardiometabolic risk (hsCRP, homocysteine level, and lipid profile) was mediated by body adiposity. Masculinity was not related to the oxidative stress level, antioxidants, hsIl-6, or klotho level. The results were similar when controlled for potential confounders.

Conclusions. Morphological masculinity is not related to markers of future health in men between 30-45 years. At this age range, long-term health is predominantly linked with body adiposity.

Keywords: biological cue, masculinity, trade-off, biomarkers, biological condition

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MATERNAL SOCIAL SUPPORT AND BREAST MILK COMPOSITION

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Background and Aim. Social support from close relatives and friends reduces psychological stress of the mother, which contributes to easier initiation and longer breastfeeding. The association between social support and breast milk composition has not been studied so far. This study aims to fill this gap by analyzing the effect of social support on breast milk components in exclusively breastfeeding mothers.

Material and Methods. Milk samples were collected from 146 Polish mothers of healthy, 5 m.o., born on term infants. Milk composition (main nutrients, fatty acids, and immunoproteins) was determined in a single sample. Laboratory analysis was performed by enzyme immunoassay (immunoproteins), gas chromatography (fatty acids) and mid-infrared analysis (main nutrients). Social support and search for support were determined based on Berliner Social Support Scales. The questionnaire consisted of 31 statements. Participants indicated their agreement with the statements on a four-point Likert-type scale. Scale scores were obtained by adding up item responses. Maternal anthropometric, socioeconomic, and dietary pattern and infant birth parameters were also monitored. Statistical analysis of the collected data was performed using GLM.

Results. After adjusting for several covariates, a positive relationship was observed between mother's social support and milk IgG ($\beta = 0.25$, $p = 0.017$). A negative association was also observed between the search for support and the energy content ($\beta = -0.21$, $p = 0.008$), fat ($\beta = -0.20$, $p = 0.012$), medium-chain ($\beta = -0.20$, $p = 0.012$), long-chain saturated ($\beta = -0.21$, $p = 0.008$) and unsaturated fatty acids ($\beta = -0.17$, $p = 0.030$) in breast milk.

Conclusions. Mothers enjoying greater social support and those who do not need to seek support, produced milk with better immunoactive and nutritional components. This finding has important implications by showing that psychosocial factors may be important in the composition of breast milk as are dietary and anthropometric factors.

Keywords: social support; childcare; breastfeeding; breast milk composition

ROMA CHILDREN'S BIOLOGICAL STATUS AND LIFESTYLE IN HUNGARY

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Background and Aim. The main purpose was to study the physical development of children living in the Taban Roma settlement in Monor (Hungary), by collecting data not only on their body structure and bone structure components, but also gained insights into their everyday life, lifestyle and socioeconomic background.

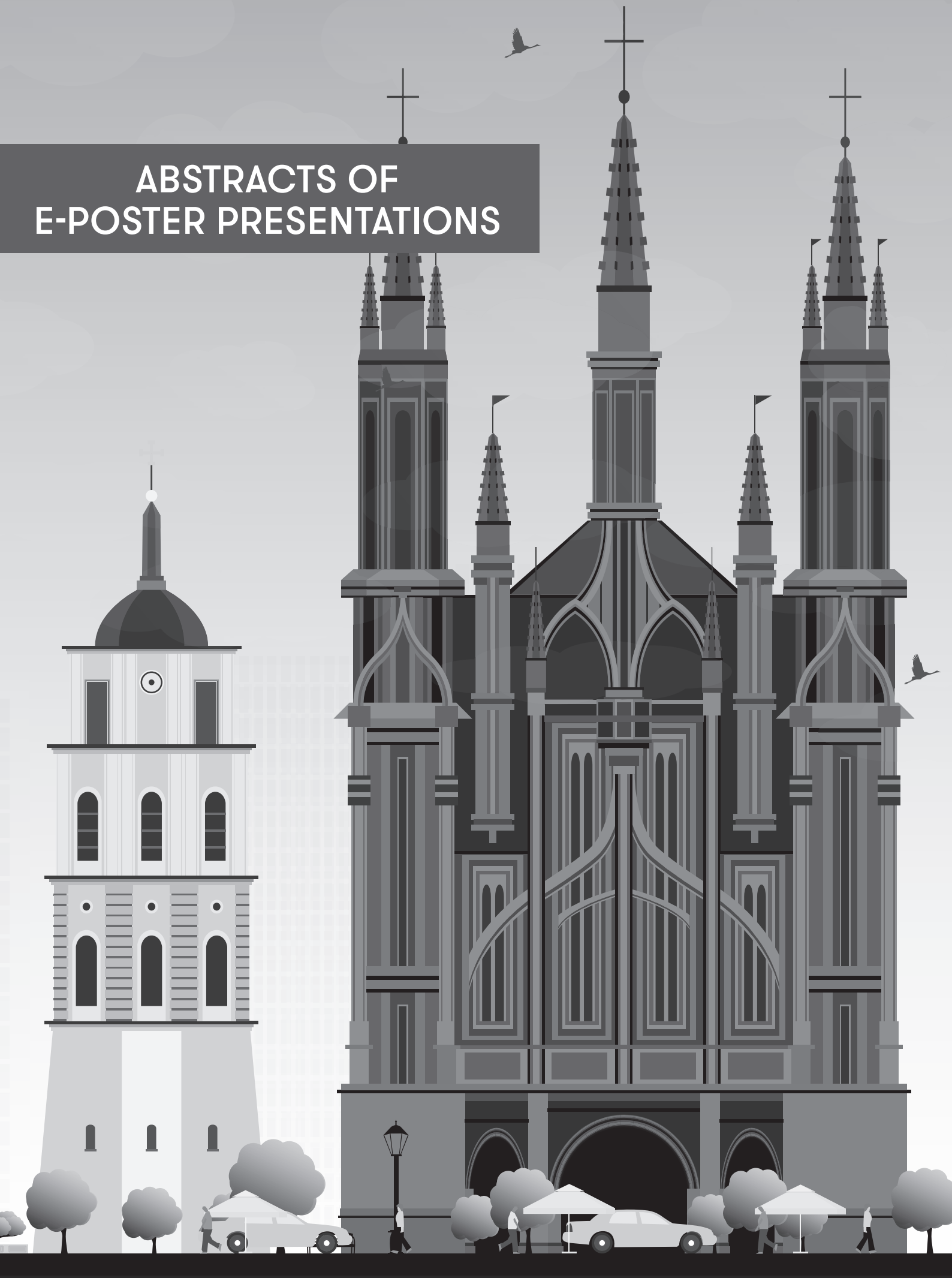
Material and Methods. Absolute and relative body dimension, body mass components, somatotype and bone structural parameters were used to estimate the biological status of children. Roma children's biological status was compared to the national references.

Results. Roma children had a shorter stature, but at the same time, a heavier body weight than their peers. Both the body structure and bone structure components were heavier/higher than the national reference values, overall the group of children studied was stronger and more robust than the peers participated in the national study. It could be seen the biggest difference in terms of nutrition, as Roma families do not have the right knowledge about conscious nutrition, and their financial circumstances do not allow them to choose healthy foods, so there is not enough diversity in their children's nutrition. Active exercise is common in most Roma children outside of school, but in most cases, they are not members of any sports association, but they rather do some sport activities at home with their friends. Psychosomatic symptoms were experienced more often by Roma children than by their age-peers.

Conclusions. A longitudinal study with an expanded number of subjects, including other settlements if possible, can help to obtain a more accurate picture of the biological condition of Roma children and their lifestyle factors, because, in many respects – e.g. in terms of their physical activity, quality indicators of their nutrition, and their nutritional status – they lag behind their contemporaries.

Keywords: Roma children, Hungary, body structure, bone structure, auxology

ABSTRACTS OF E-POSTER PRESENTATIONS



AGE-RELATED PEANUT SENSITIZATION TRENDS IN LITHUANIAN CHILDREN WITH SUSPECTED ATOPIC DISEASE

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Background and Aim. Peanut allergy is one of the most common food allergies in childhood, based on recent studies, the prevalence of peanut allergy may be increasing. Therefore, the aim of this study was to explore the age-related trends of molecular peanut sensitization profiles among Lithuanian children with suspected atopic disease.

Material and Methods. We performed a retrospective analysis of peanut sensitization profiles in 576 Lithuanian children with suspected atopic disease. Patient data were categorized according to age groups: 0-2, 3-6, 7-12 and 13-18 years. Specific immunoglobulin E levels to peanut molecular components: Ara h 1, Ara h 2, Ara h 3, Ara h 6, Ara h 8, Ara h 9, Ara h 15 and birch major allergen component Bet v 1 were analyzed.

Results. Ninety-one children (15.8%) were ≤2, 241 (41.8%) 3-6, 159 (27.6%) 7-12 and 85 (14.8%) ≥13 years old. Sensitisation to at least one peanut protein was observed in 148 (25.7%) children. In children ≤2 years, most children were sensitized to Ara h 1 – 11 (12.1%). In children from 3 to 6 years, the sensitisation to Ara h 1 remained the most prevalent in 40 (16.6%) children, followed by sensitisation to Ara h 8 in 26 (10.8%). The most prevalent sensitisation in children from 7 to 12 years was to Ara h 8 in 39 (24.5%), sensitisation to Ara h 1 was the second most common in 12 (7.5%) children. In children ≥13 years, Ara h 8 remained the most prevalent sensitizer in 21 (24.7%).

Conclusions. One-fourth of children with a suspected atopic disease are sensitized to at least one peanut molecular component in Lithuania. Age-dependent patterns were observed – infants and preschool children were most commonly sensitized to seed storage proteins, meanwhile school-age children were most commonly sensitized to Ara h 8 allergen.

Keywords: peanut allergy, sensitization, specific IgE

ALGORITHM FOR DETECTION AND SCREENING OF FH IN LITHUANIAN POPULATION

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Background and Aim. Familial hypercholesterolemia (FH) is underdiagnosed congenital disorder associated with premature cardiovascular (CVD) morbidity and mortality. In this study we aim to establish an algorithm for FH detection and screening in Lithuania.

Material and Methods. FH screening in Lithuania started in 2016 on the basis of Lithuanian High Cardiovascular Risk (LitHiR) primary prevention programme. Identification of FH patients is performed by: extraction of lipidograms from LitHir database, evaluating high CVD risk subjects, and screening of adults with early onset of CVD. Since 2016 more than 220 FH patients have been selected for detailed examination and included in Lithuanian FH registry. The clinical diagnosis of FH according to Dutch Lipid Clinic Network (DLCN) criteria were determined. Patients with DLCN score ≥6 and/or LDL-C ≥6.5 mmol/L were referred to genetic testing. Cascade first-degree relatives screening were initiated if an index-case meets DLCN criteria for definite or probable FH.

Results. During the period of 2016-2021 data of 220 patients were included in the analysis. Mean age at FH diagnosis were 45,3 (±12.6) years. Definite FH has been diagnosed for 56 subjects (25.5%), probable FH–65 patients (29.5%), possible FH–68 subjects (30.9%), unlikely FH–31 patients (14.1%). Results of genetic testing have been received for 126 patients. No mutation or variant of unknown significance (VUS) had been detected in 83 patients (65.87%), LDL receptor mutation–in 24 patients (19.05%), ApoB receptor mutation-19 subjects (15.08%). Premature CAD was found in 38.5% patients with definite FH, 33.3% with probable FH, 14.7% with possible FH and 7.1% - with unlikely FH. According to genetic FH diagnosis, premature CAD was determined in 47% patients with FH mutation and 19% without mutations (p=0.049).

Conclusions. The algorithm we use for FH detection seems to be valuable tool for recognizing patients who are in the highest probability of having FH gene mutation.

Keywords: cardiovascular disease, cascade screening, coronary heart disease, Familial hypercholesterolemia, genetic testing

THE EVALUATION OF UTERINE SENTINEL LYMPHNODE VISUALISATION

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Background and Aim. Uterine cancer numbers are increasing. Lymph node (LN) metastasis have great clinical influence to disease relapse. 20% patients with advanced and 10% with early stage uterine cancer have LN metastases. Complete LN removal does not improve overall survival, is associated with high incidence of complications and significantly impairs quality of life, but avoiding it may lead to inappropriate treatment. Metastases which spread lymphogenously are first detected in the nearest LN draining the organ. If sentinel lymph node (SLN) has no metastases, other LN also should be unaffected. Examination of the SLN alone avoids complete lymphadenectomy and ensures an appropriate surgical stage for low- and moderate-risk tumors. A tracer substance is injected into the cervix for the lymphatic system visualization. Three agents are used: Technetium-99m colloid, blue dye, indocyane green (ICG) or a tracer combination. Visualization methods of SLN in uterine cancer have not been studied in Lithuania. The sensitivity of these methods varies considerably in the literature. The main goal of the study is to analyze sensitivities of tracers and their combination and to determine factors which lead to successful bilateral visualization. Findings would allow an individual selection of optimal method for patients.

Material and Methods. Prospective randomized observational study. 150 participants. Subjects are divided into groups: 1) methylene blue; 2) ICG; 3) combination of dyes. The tracer is selected randomly. Data gathered: age, menopause status, pregnancies, weight, height, uterine size, SLN staining, operation time, complications, histological findings: tumor type, immunohistochemical markers, differentiation, tumor size, stage, LN size, count, presence of metastases.

Expected results. Best results should be found in combination group. BMI, tumor type, uterine size and metastases should be greatest predictors.

Keywords: blue dye, dye combination, ICG, sentinel lymph node, uterine cancer

THE IMPACT OF THE COVID-19 PANDEMIC ON THE CONSUMPTION OF DIETARY SUPPLEMENTS BY THE LITHUANIAN POPULATION

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Background and Aim. The COVID-19 pandemic has undoubtedly introduced changes in the dietary supplements intake of the population. The aim of this study is to assess the impact of the COVID-19 pandemic on the use of dietary supplements in a representative sample of the Lithuanian population.

Material and Methods. The survey data were collected from October to November 2021. The survey was conducted using an anonymous questionnaire online. In all, 1600 males and females aged 16–64 of the country's population were interviewed. The chi-square criterion was used to estimate the distribution of respondents according to categorical variables. Differences are considered statistically significant when $p \leq 0.05$.

Results. This survey revealed that 86% of the respondents used dietary supplements during the pandemic: 85% of men and 87% of women. A daily intake of dietary supplements was determined in 24% of the subjects, 20% of respondents consumed supplements more than 4 months a year, 21% - from 1 to 3 months per year, 13% - briefly or incidentally, while 22% did not report anything at all. There were no statistically significant differences in the use of dietary supplements depending on gender, place of residence, education and position. 78% of the respondents, who have been exposed to COVID-19 in person or in families, intend to use food supplements in the future as well as 63% of the respondents who have escaped COVID-19 and who do not know anyone who is suffering, or has suffered from coronavirus infection.

Conclusions. The COVID-19 pandemic led to an increase in the use of dietary supplements and an accelerating number of daily dietary supplements consumers.

Keywords: COVID-19 pandemic, dietary supplements, dietary supplement use

WHAT DURATION OF COMPLEX REHABILITATION IS REQUIRED TO MANAGE NON-SPECIFIC CHRONIC LOW BACK PAIN IN ADOLESCENTS?

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Background and Aim. A hypodynamic lifestyle and its side effects, as obesity, low physical activity, back pain, have been spreading rapidly. Complex rehabilitation (CR) is well known as an effective adolescents non-specific low back pain (ANLBP) treatment method. However, there is a lack of evidence on the effectiveness of multidisciplinary rehabilitation programs, depending on CR duration. Our goal was to determine pain and functional state changes of ANLBP, depending on CR duration.

Material and Methods. The study included 106 adolescents (39 boys (36.8%), 67 girls (63.2%)), 14 to 17 years old, according the ANLBP diagnostic rules: pain at least 12 weeks; pain intensity by VAS (Visual Analogue pain Scale) ≤7 points; ability to answer the questions. The pain was assessed using the VAS score, functional state changes were assessed using the Oswestry Disability Index (ODI), 12-Item Short-Form Survey (SF-12), Hospital Anxiety and Depression Scale (HADS), and physical functional capacity were assessed using an isokinetic dynamometer. Participants performed CR, consisting of physiotherapy, TENS, magnetotherapy, massage, vibroacoustic-therapy. The active CR cycle lasted for 22 sessions (with intermediate measurements after 5, 16 sessions), after which passive observation for another half a year was performed.

Results. Variables reached norms: VAS <=3, ODI <=10, SF-12 >50 was achieved during 16 CR sessions. HADS <7 was achieved during 5 CR sessions. Physical capacity has improved all the time during CR. After the completion of CR, neither statistical nor clinical changes occurred. Reduction of pain during CR had a positive medium-high correlation with an improvement in functional state, but didn't correlate with physical capacity.

Conclusions. CR is effective in reducing pain, improving functional state, physical capacity. In 16 CR sessions, clinically satisfactory pain rehabilitation results were achieved. Achieved good CR results didn't change in six months after CR completion. Pain intensity did not interfere with physical capacity.

Keywords: adolescents, complex rehabilitation program, duration, low back pain, non-specific

THE SUSCEPTIBILITY TO UPPER RESPIRATORY INFECTIONS IS STRONGLY RELATED TO SOCIAL STATUS DURING EARLY MEDIEVAL TIMES

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Background and Aim. Divergences of burial customs and material culture in graves are mostly due to social differences, enabling a reconstruction of the previous social hierarchy in human remains. Individuals of lower socioeconomic groups are at highest risk of infectious diseases, especially upper respiratory infections. A combined analysis involving anthropological and archaeological approaches to assess the upper respiratory health of early medieval Avars in the context of their social status has never been performed before.

Material and Methods. We examined 200 adult individuals of an Avar-period (7th – 8th century AD) cemetery located in Vienna, Austria. Paranasal sinusitis, which is one of the most common upper respiratory infections in humans, was used to determine the general susceptibility to respiratory infections. Therefore, inflammatory changes associated with paranasal sinusitis were recorded within maxillary and frontal sinuses by using an endoscopic camera. The archaeological approach involved the characterization of burial customs such as an above-average depth, large burial chambers or horse-human-burials, and the material culture taking into account the presence of multi-part belt-sets, weapons or metal jewellery.

Results. There were significant differences in the prevalence of paranasal sinusitis between high and low socioeconomic groups. The high-ranking Avars were less likely to develop paranasal sinusitis, however, when they displayed signs of infection, the inflammatory changes were found to be less diverse compared to their low-ranking counterparts. This applied to both male and female Avars within their respective socioeconomic groups.

Conclusions. A high social status has the capability to positively influence the upper respiratory health among early medieval Avars.

Keywords: Avar archaeology, human osteology, paranasal sinuses, social status

TOPOGRAPHIC LOCATION OF NUTRIENT FORAMINA, *FORAMEN NUTRICIUM*, IN RIGHT AND LEFT FEMURS AND TIBIAS (BASED ON PALEO-OSTEOLOGICAL DATA FROM 19TH C. MALES, LITHUANIA)

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Background and Aim. Knowledge of exact nutrient foramina position is crucial to clinical practice. A damage caused to nutrient foramina during surgical procedures may lead to devascularization of the bone. The aim of this study was to determine the topographic location of nutrient foramen in right and left femurs and tibias and to identify the most common variations.

Material and Methods. The study comprised examination of tibias (n=203: left side – n=99, right side – n=104) and femurs (n=191: left side – n=91, right side – n=100). The count of nutrient foraminas and their position on the bones shaft were observed macroscopically. The bone length and the distance of major nutrient foramina from proximal end of the bone were measured using an osteometric board, standard measuring tape and Viernier caliper. Foraminal index (FI) was calculated by the *Hughes* formula (1952).

Results. The mean bone length was (M±SD) 44.59±2.04 cm in the right femurs; (M±SD) 44.51±2.08 cm – in the left femurs (p=0.78). The average foraminal index was (M±SD) 44.68±10.49 in the right femurs; (M±SD) 43.96±9.62 – in the left femurs (p=0.63). In case of tibias, the mean bone length was (M±SD) 36.36±2.15 cm in the right tibias; (M±SD) 36.47±2.18 cm – in the left tibias (p=0.71). The average foraminal index was (M±SD) 33.82±2.45 in the right tibias; (M±SD) 33.63±3.54 – in the left tibias (p=0.66).

Conclusions. The right femur was on average slightly longer than the left femur, while the length of the left tibia was slightly bigger than of the right tibia (differences were not significant, p>0.05). In addition, no significant differences were found between foraminal indices of the right and left bones (both, femur and tibia). However, there was a tendency for the foraminal index of the right femur to be higher, indicating more distal localization of nutrient foraminas in the right femurs.

Keywords: femur, foraminal index, nutrient foramina, tibia

INTRAVASCULAR ULTRASOUND GUIDANCE IS ASSOCIATED WITH NO RESIDUAL MYOCARDIAL ISCHEMIA AND FAVOURABLE ONE-YEAR TARGET VESSEL FAILURE RATE AFTER PERCUTANEOUS TREATMENT OF VERY LONG CORONARY ARTERY LESIONS

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Background and Aim. Studies have shown that percutaneous coronary intervention (PCI) to long coronary artery lesions (≥30mm) is associated with more frequent target vessel failure (TVF) and significant proportion of lesions continue to induce ischemia after PCI (FFR ≤ 0.8). We investigated the impact of intravascular ultrasound (IVUS) on the functional PCI result and one-year TVF rate after percutaneous treatment of long coronary artery lesions.

Material and Methods. 80 consecutive patients underwent IVUS guided PCI to long coronary artery lesions. The PCI result was validated with IVUS and fractional flow reserve (FFR). Procedural outcomes were the proportion of patients with: (1) optimal physiology result (post PCI FFR value ≥ 0.9); (2) optimal anatomy result (all IVUS PCI optimization criteria met); (3) optimal physiology and anatomy result. The clinical outcome was TVF during one-year follow-up (target vessel (TV) related death, TV-myocardial infarction, ischemia driven TV revascularization).

Results. The mean stented segment length was 62mm. The target vessel (TV) was the left anterior descending artery in 82.5% of cases. There were no patients with residual ischemia (FFR ≤ 0.8) after PCI. Optimal coronary flow (FFR ≥ 0.9) was achieved in 37.5%, optimal anatomy as assessed by IVUS was achieved in 68.4%, and both optimal flow and anatomy in 25% of patients. Target vessel failure during 12 months follow up was 2.5%.

Conclusions. In percutaneous treatment of very long coronary artery lesions the use of IVUS guidance is associated with low TVF rate during one-year follow up and no residual myocardial ischemia as assessed by FFR.

Keywords: fractional flow reserve, intravascular ultrasound, IVUS, long coronary artery lesions, percutaneous coronary intervention

SEARCHING FOR ANCESTORS: MIDDLE AGES DATING *COL4A5* VARIANT GLY624ASP IS FOUND IN LITHUANIAN COHORT WITH ALPORT SYNDROME

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Background and Aim. Alport syndrome (AS) is an inherited disorder caused by pathogenic variants in *COL4A3-A5* genes leading to hematuria, proteinuria, and kidney function impairment, and frequently associated with ocular and hearing abnormalities. Some variants in the *COL4A5* such a p.(Gly624Asp) usually leading to milder clinical course were found on the same rare haplotype background, indicating a founder effect dating back to the 12-13th century. All G624D alleles were spread over several generations through demographic events affecting Central and East Europe (CEE). Here we analyse clinical manifestation in Lithuanian cohort with G624D variant.

Material and Methods. molecular analysis by next generation sequencing (NGS) was performed with individuals from a Lithuanian cohort, with suspected AS. Only individuals with p.(Gly624Asp) in *COL4A5* gene were involved in this study. *COL4A3-5* genes are described as hypomorphic as they are not fully damaging and thus obtain a residual collagen IV function.

Results. Molecular testing of 174 suspected individuals led to the detection of 102 individuals from different regions of Lithuania with 44 disease causing variants. The c.2996G>A substitution (p.Gly624Asp) in *COL4A5* was found in 18 individuals from 12 unrelated families and accounted for 32.14 % of the genetically confirmed X-linked AS (XLAS) as a predominant variant in the screened cohort. All the individuals presented haematuria. Significantly higher proportion of p.Gly624Asp individuals reported proteinuria < 1g/24 hours ($p<0.001$) while glomerular filtration rate <60 ml/1.73/m2 was found in 6 individuals. Hearing abnormalities were more common in p.Gly624Asp men.

Conclusions. In this study we describe Lithuanian families with G624D variant in *COL4A5* gene indicating Lithuanians as common ancestors to CEE dating from Middle Ages. AS manifestation of Gly 624Asp varies among Lithuanians and other Europeans leading to hypothesis of different and not yet identified modifier genes. Further epidemiological studies are needed to further knowledge of hypomorphic variants.

Keywords: Alport syndrome, *COL4A5* Gly624Asp variant, hypomorphic variant, middle-ages genetic variant, ancestors in Eastern Europe.

DISCORDANCE BETWEEN LOW-DENSITY LIPOPROTEIN CHOLESTEROL OR NON-HIGH-DENSITY LIPOPROTEIN CHOLESTEROL AND APOPROTEIN B BASED CLASSIFICATION OF ATHEROSCLEROSIS RISK IN FEMALE PATIENTS

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Background and Aim. In clinical practice atherosclerosis risk is evaluated by low-density lipoprotein cholesterol (LDL-C) concentration. ESC/EAS guidelines for the management of dyslipidaemias recommend to assess the risk by LDL-C, apoprotein B (ApoB) and non-high-density lipoprotein cholesterol (non-HDL-C) concentrations. Thus, our aim was to evaluate classification of female patients into atherosclerosis risk group by using LDL-C, non-HDL-C and ApoB concentration cut-offs from ESC/EAS guidelines.

Material and Methods. The study included 115 women (aged 50–64 years) participating in the national CVD prevention program. Fasting blood samples were collected by the trained personnel. Serum lipid concentrations were assessed by enzymatic methods and apoprotein B by immunonephelometric methods. In ESC/EAS guidelines for the management of dyslipidaemias, LDL-C >3 mmol/L, non-HDL-C >3.4 mmol/L and ApoB >1.0 g/L are cut-off values for increased risk of atherosclerosis.

Results. Using cut-off values for LDL-C, non-HDL-C and apoB we found that 85/115 (73.9%), 90/115 (78.3%) and 44/115 (38.3%) women respectively, were classified as having higher risk for atherosclerosis. Additionally, 41/115 (35.7%) and 46/115 (40%) of women had LDL-C > 3 mmol/L or non-HDL-C >3.4 mmol/L respectively, but their apoB was <1.0 g/L. Furthermore, 0/115 (0%) of the women had LDL-C <3 mmol/L or non-HDL-C <3.4 mmol/L while their apoB was > 1.0 g/L. The proportion of women who were classified as high atherosclerosis risk group did not differ by LDL-C and non-HDL-C based classifications (X^2 (1, N=115) = 1.13, p=0.288) and that the proportion of women who were classified as high atherosclerosis risk group statistically significant differed by LDL-C or non-HDL-C and ApoB based classifications (X^2 (1, N = 115) = 75.7, $p<2.2x10^{-16}$), (X^2 (1, N = 115) = 108.5, $p<2.2x10^{-16}$) respectively.

Conclusions. The discordance between LDL-C or non-HDL-C and apoB atherosclerosis risk classification may be due to methodological differences and apoB being superior marker of atherogenic lipoprotein particle number than their cholesterol content.

Keywords: apoprotein B, atherosclerotic risk classification, LDL-C, non-HDL-C

REMOTELY PROGRAMMABLE DEEP BRAIN STIMULATOR COMBINED WITH INVASIVE BLOOD PRESSURE MONITORING SYSTEM FOR NON-TETHERED RAT MODEL IN HYPERTENSION RESEARCH

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Background. The control circuits of blood pressure have a strong neural regulatory element and are therefore believed to be important in the pathogenesis of essential drug-resistant hypertension. Targeting lower medullary neural control mechanisms of blood pressure by electric stimulation could be of potential value in controlling drug-resistant hypertension. A novel device is needed for this purpose.

New method. This paper presents a remotely programmable deep brain stimulator with an invasive continuous blood pressure monitoring system in a non-tethered rat model designed specifically for lower medullary deep brain stimulation research. This device can be reprogrammed remotely with the possibility of closed-loop stimulation without interfering in the daily routines of animals. The study was done on 10 Wistar rats with electrodes implanted in the caudal ventrolateral medulla. Animal survivability, catheter patency rates, and device data drift were evaluated.

Results. Eight out of ten rats survived the surgery and testing period of two weeks with no or only mild temporary neurological compromise. The study revealed that filling the carotid catheters with heparinized glycerol ensures exceedingly better catheter patency rates and blood pressure transduction characteristics than using heparinized dextrose solutions. There was no significant drift in the pressure sensitivity of the devices in the two weeks of the experiment.

Discussion. To our knowledge this is the first device that combines the abilities to measure blood pressure and generate a pulse in a closed-loop fashion. This is the first experimental study to show considerable animal survival after lower medullary implantation.

Conclusion. A remotely programmable brain stimulator combined with an invasive blood pressure monitoring system could be used in haemodynamic animal research.

Keywords: closed loop stimulation, deep brain stimulation, hypertension, rat model, telemetry

SOMATOLOGICAL FEATURES OF THE SOUTHERN SINAI BEDOUIN POPULATION

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Background and Aim. Not all morphological adaptations to extreme conditions of arid climate have been studied in detail. It's important to clarify the morphological status of the adult Bedouin population of South Sinai in the tribal and age aspects.

Material and Methods. Using statistical methods somatological data for 490 men 17-60 years old and 90 women 18-45 years old were studied.

Results. According to anthropometric indices, the combined male sample of South Sinai Bedouins is characterized by average dimensions of the trapezoidal soma, narrow pelvis, short arms, and average leg length.

A comparison of male samples of four tribes according to morphological characteristics revealed significant differences in stature, head circumference, face size, illiospinale anterior height, foot breadth, biacromial, biiliac and bideltoid diameters, chest circumference, the transversal diameter of the chest and skinfolds.

Analysis of age-related variability showed that the highest were Bedouins 19-39 years old.

Analysis of somatological indicators for the female sample revealed differences between age cohorts only in body length and BMI, and the same phenomenon was found in men: the smallest body length in the older age group.

Conclusions. Significant differences between Bedouin tribes were established for a number of morphological features. The bigger stature in the age cohort of 19-39 years suggests that the generation of Bedouins born in the late 1940s did not escape the acceleration processes. It seems most likely that the increase in growth indicators is associated with temporary improvements in the Bedouin living conditions caused by the Israeli presence in the Sinai Peninsula when broad support was provided to the Bedouin tribes (medical care, food, and medical supplies).

We believe that in this group of endogamous tribes living in arid conditions, morphological differences persist due to the complex historical genesis of the tribes and are supported by the tradition of close marriages.

Keywords: age-related variability, arid climate, Bedouin tribes, South Sinai

WHOLE-GENOME SEQUENCING STUDY IN HEALTHY LITHUANIAN NEWBORNS: INTRODUCTION TO THE ANALYSIS OF THE GENERATIONAL SHIFT

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Background and Aim. Most genetic variants are rare and specific to the population, highlighting the importance of characterizing local population genetic diversity. Many countries have initiated population-based whole-genome sequencing (WGS) studies. Genomic variations within Lithuanian families are not available in the public databases. The study describes initial findings of a high-coverage (an average of 36.27×) whole-genome sequencing for 25 trios of the Lithuanian population.

Material and Methods. 35 Lithuanian family trios who lived in Lithuania for at least three generations according to the pedigree were collected for the study group: 35 newborns and 70 parents were included. Whole-genome sequencing (WGS) was performed for 25 trios that met the criteria. Structural variation, *de novo* mutation detection, analysis, and annotations were performed.

Results. Each genome on average carried approximately 4,701,473 (±28,255) variants, where 80.6% (3,787,626) were single nucleotide polymorphisms (SNPs), and the rest 19.4% were indels. An average of 12.45% was novel according to dbSNP (build 150). The WGS structural variation (SV) analysis identified on average 9133 (±85.10) SVs, of which 95.85% were novel. *De novo* single nucleotide variation (SNV) analysis identified 4417 variants, where 1.1% de novo SNVs were exonic, 43.9% intronic, 51.9% intergenic, and the rest 3.13% in UTR or downstream sequence. Three potential pathogenic de novo variants in the *ZSWIM8*, *CDC42EP1*, and *RELA* genes were identified.

Conclusions. Our findings provide useful information on local human population genomic variation, especially for de novo variants, and will be a valuable resource for further genetic studies, and medical implications.

Keywords: whole-genome; SNV; *de novo* variation; newborns; trios

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ANALYSIS OF POTASSIUM AND SODIUM IN POSTMORTEM HEART TISSUE IN THE CASES OF SUSPECTED SUDDEN CARDIAC DEATH

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Background and Aim. Sudden cardiac death is the leading cause of death but its precise incidence is still unknown. Due to poor morphological evidence a part of sudden cardiac deaths remains unexplained after forensic medical investigation and these cases are referred to a sudden unexplained death. The aim of present study was to verify the usefulness of the determination of potassium and sodium in heart tissue defining sudden cardiac death.

Material and Methods. Research was performed at the Vilnius branch of The State Forensic Medicine Service. During autopsies heart samples were taken from different sites of cardiac tissue of left ventricle: the apex and anterior, lateral and posterior walls, anterior and posterior papillary muscles and the middle of the interventricular wall. Autopsy samples for trace element analysis were digested in the presence of concentrated nitric acid and perhydrol. The standard method of flame atomic emission spectroscopy was used to study the concentration of potassium and sodium. The data collected was processed using R software. Differences with P values less than 0.05 were considered significant.

Results. The study sample consisted of 215 cases (159 males and 56 females). The mean age of the subjects was 46,4 years (range 2-97 years). In the case of ischemic heart disease prominent peaks in electrolyte disturbances have been observed in ischemic areas. In the case of acute toxic effects of alcohol, meanwhile, minor electrolyte disturbances were expressed evenly throughout the myocardium.

Conclusions. Forasmuch study showed that sudden cardiac death can not be related in a high degree of coronary artery arteriosclerosis, we suggest that the main cause of cardiac death in the investigated group was arrythmias due to electrolytes abnormalities in cardiac tissue. The ionic K/Na ratio in heart tissue allows distinguishing the sudden cardiac death and death due to acute toxic effects of alcohol.

Keywords: alcohol, coronary heart disease, electrolytes, forensic science, sudden death

COMPARISON OF THE EFFECT OF DIFFERENT GALLIC ACID ESTERS ON THE ABILITY TO INHIBIT *STREPTOCOCCUS MUTANS* BIOFILM FORMATION AND ACIDOGENICITY

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Background and Aim. Dental caries still has a high worldwide prevalence. Cariogenic bacteria such as *Streptococcus mutans* are implicated in the pathogenesis of dental caries due to the production of biofilm and organic acids from dietary sucrose. According to biological therapy trends, it is important to find the new pharmaceuticals in order to combat tooth decay without disturbing the balance of the oral ecosystem. This study aim is to investigate the efficacy of different gallic acid esters, which found naturally in plants, against *S. mutans* biofilm formation on solid surface and acidogenicity *in vitro* conditions.

Material and Methods. For the investigation, *S. mutans* UA159 bacteria were grown anaerobically in 24-well polystyrene cell culture plates, containing Todd Hewitt broth with 1% sucrose, under exposure to different concentrations of methyl gallate (550, 700, 850, 1000 µg/ml), ethyl gallate (610, 640, 670, 700 µg/ml), octyl gallate (27.7, 27.9, 28.1, 28.3 µg/ml) and lauryl gallate (30.5, 31.5, 32.5, 33.5 µg/ml). Untreated bacteria served as controls. After 24 h, biomass of the formed biofilm was evaluated using colorimetric assay and pH of the biofilm growth medium was measured with microelectrode. Data were analyzed using SPSS 23.0 program, One-Way ANOVA, LSD post-hoc test.

Results. The highest concentrations of studied gallic acid esters significantly reduced *S. mutans* biofilm biomass as well as prevented a decrease in pH level, as compared to controls ($p<0.05$). This investigation showed that gallic acid esters containing longer alkyl chains produce up to ~27.6-fold stronger inhibitory activity against *S. mutans* biofilm formation.

Conclusions. Due to capacity to inhibit effectively *S. mutans* biofilm formation and the acidogenicity, gallic acid esters with longer alkyl chain might be used as anticaries agents for oral formulations to reduce the prevalence of dental caries.

Keywords: ethyl gallate, lauryl gallate, methyl gallate, octyl gallate, *Streptococcus mutans*

LONG-TERM QUALITY OF LIFE FOLLOWING CARDIAC SURGERY

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Background and Aim. Cardiac surgery may have a significant negative effect on patients' quality of life therefore in our study we aimed to estimate the longitudinal change and predictors of health-related quality of life (HRQOL) at 5-year follow-up after elective cardiac surgery.

Material and Methods. Adult patients undergoing elective cardiac surgery were enrolled in the study. HRQOL was measured using the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) questionnaire before and 5-years after cardiac surgery. A multivariate latent change modeling was performed for statistical analysis.

Results. A total of 286 patients were enrolled into the study. At 5-year follow-up 210 patients were contacted and included into final data analysis. Median age was 62.29 [19–84] years, and 70 % of the were male. 65 % of study participants underwent coronary artery bypass grafting (CABG).

Statistically significant ($p<0.001$) improvement was achieved in Physical Functioning (PF), Mental Health (MH), Vitality (VT) and Social Functioning (SF) domains of HRQOL assessment. Moreover lower levels of all QoL domains before surgery were associated with larger increases in these domains 5 years after cardiac surgery.

Significant gender effects were found on mean levels of GH ($p=0.003$), PF ($p<0.001$), BP ($p<0.001$), MH ($p=0.006$), VT ($p<0.001$) and SF ($p=0.019$), indicating higher scores of these HRQOL domains before heart surgery in men, compared to women.

Out of 5 investigated preoperative factors, only the arrhythmia was found to be a significant moderator of the HRQOL domains.

Conclusions. There was an improvement in HRQOL five years after cardiac surgery. Lower rates of all SF-36 domains before surgery, valve and combined surgery were associated with more significant improvement. Female gender was associated with lower scores in HRQOL before heart surgery, and poorer improvement of physical functioning in comparison to male patients.

Keywords: cardiac surgery, health-related quality of life, long-term, risk factors

BIRTH WEIGHT AND HEALTH PROBLEMS OF NEWBORNS RELATED TO MATERNAL ALCOHOL AND PSYCHOACTIVE SUBSTANCE USE DURING PREGNANCY (SURVEY OF LITHUANIAN MEDICAL BIRTH DATA, 1995–2016)

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The aim of this study was to determine characteristics of newborns and their mothers who used alcohol or drugs during pregnancy.

Material and Methods. Lithuanian Medical Birth Data (1995–2016) were analysed and divided into two groups: alcohol use (AU; n=1216) and drugs use (DU; n=414) during pregnancy. Socio-demographic and health indicators of mothers, also birth weight and health status of newborns was studied. Data were analysed using SPSS statistics 25.0 (chi square test, Student's t-test were used).

Results. The number of newborns in AU group decreased and in DU – gradually increased during the 1995-2016. Newborns were often premature – 22/24% in AU/DU respectively (in the general population – 5.5%). The average birth weight was smaller than in general population (2737g /2797g; AU/DU respectively). Neonates with drug withdrawal syndrome (n=233), foetal alcohol syndrome (n=44) and neonatal alcohol abuse (n=44) were recorded. The mean age of mothers was 30.9/26.9 (AU/DU, respectively) years. Socioeconomic status indices differed significantly from the general population: almost half of the women in both groups had lower than secondary school education, and 65.0/43.3% (AU/DU, respectively) of mothers were single. Unfavourable obstetric history in both groups was more common than in general population: almost 30% of women voluntarily terminated their pregnancies, more than 10% experienced spontaneous miscarriage. Stillbirths accounted for 3.8/1.0% in AU/DU groups respectively (in the general population – 0.6%). There were significant differences among mothers in the incidence of anaemia, infectious diseases and hypertension in AU/DU groups (20.4/13.0%, 2.0/2.9% and 13.0/0%, respectively), being far more common than in the general population.

Conclusions. Newborns in both groups had lower birth weights and markedly poorer overall health status (including a much higher stillbirth rate) compared to the general population, and mothers who used alcohol and drugs during pregnancy were less educated and more likely to have an unfavourable obstetric history.

Keywords: alcohol consumption, drug abuse, pregnancy, newborns

IN VITRO COMPARATIVE EVALUATION OF ULTRA-HIGH AND LOW TEMPERATURE PROCESSED MILK, SALIVA, TAP WATER, AND SALINE SOLUTION FOR PRESERVATION OF AVULSED TOOTH

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Background and Aim. Effective avulsed tooth treatment depends on storage conditions and the amount of time from injury to replantation. The main purpose of storage media is to minimize extraalveolar dry period and to prevent periodontal ligament (PDL) cells dehydration. This study aims to compare ultra-high and low temperature processed milk, saliva, tap water, and saline solution storage media on PDL cell survival.

Material and Methods. 100 mature human teeth with healthy periodontal tissue were randomly divided into five groups (n=20) according to the storage media: ultra-high temperature processed milk (UHTPM), low temperature processed milk (LTPM), saline solution, tap water and saliva. After extraction teeth were left to dry for 15 minutes and then placed in a storage media for 30 minutes. The scrapings of the periodontal ligament were collected in Falcon tubes containing 0.5 ml of collagenase in 2.5 ml of phosphate buffer saline, incubated for 30 minutes and centrifuged for 5 minutes at 800 rpm. PDL cells viability was analysed by Trypan blue (0.4%) exclusion. Statistical analysis was performed using R Commander software by one-way ANOVA and Tuckey's Post Hoc tests.

Results. LTPM storage media conserved 55% (±0.08) of fibroblasts viability, UHTPM – 47% (±0.11), saliva – 45% (±0.13), saline solution – 40% (±0.04) and tap water – 39% (±0.08). LTPM had a significantly higher number of viable cells compared to saline solution ($p<0.001$) as well as compared to saliva ($p=0.017$) and tap water ($p<0.001$). There was no statistically significant difference between LTPM and UHTPM ($p=0.109$).

Conclusions. Within the limits of this study, we concluded that LTPM is able to maintain PDL cells viability of avulsed teeth better than UHTPM, saliva, saline solution or tap water. Saliva could be used as an alternative tooth storage media when milk is not accessible.

Keywords: avulsion, periodontal ligament cell viability, storage media

EARLY POSTNATAL LUNG AERATION OF TERM NEWBORNS CAN BE INFLUENCED BY METHOD OF DELIVERY

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Objective. Evaluate the lung aeration at early adaptation period of term neonates born naturally and during caesarean section using electrical impedance tomography.

Methods. 52 spontaneously breathing newborns participated in our case control study. Of these, 20 were born naturally and 32 neonates were born during caesarean section. The measurements were performed by Electrical impedance tomography. Three data recording episodes were performed on each newborn on the day of birth. The first data recording was performed as early as possible after birth not later than 30 min. (mean time - 13 min. after birth). The second data recording took place on average 62 minutes and the third one – one and a half hour (on average 93 minutes) after the birth.

Results. Statistically significant changes associated with parameter "silent places" were seen only in the dependent lung regions, which are more exposed to gravity. The neonates in the study group had more "silent area" in the dependent lung regions 1 hour after birth than those born naturally. Statistically significant differences in relative stretch of lung tissue between natural-born and post - CPO neonates were observed at 1 hour and 1.5 hours after birth.

Conclusions. No statistically significant differences in lung aeration were found between neonates born naturally and via CPO immediately after birth. 1 hour after birth poorer aeration was observed in the CPO group. 1.5 hours after birth more intense changes in lung tissue tension in the natural-born group were still observed.

Keywords: caesarean section, electrical impedance tomography, lung aeration, normal vaginal delivery, spontaneous breathing, term neonates

PREDICTIVE VALUE OF ARTERIAL MARKERS FOR CARDIOVASCULAR DEATH AMONG METABOLIC SYNDROME SUBJECTS

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Background and Aim. Metabolic syndrome (MetS) is a cluster of proatherogenic risk factors, which promotes the development of cardiovascular (CV) diseases. The aim of this study was to analyze CV death among subjects with MetS and assess the predictive value of main arterial markers.

Material and Methods. A prospective study enrolled 7457 patients from the Lithuanian High Cardiovascular Risk primary prevention program. Inclusion criteria was defined as middle-age (40-64 years old) and diagnosed MetS. Exclusion criteria included patients with overt CV disease. 3294 (44.2%) of the enrolled patients were men, 4163 (55.8%) were women. Patients were followed-up for 5.07±2.28 years for CV deaths after their initial assessment including evaluation of carotid intima-media thickness (cIMT), aortic pulse wave velocity (aPWV), carotid stiffness index, and cardio-ankle vascular index (CAVI). The outcome data was retrieved from Lithuanian National Death Registry and National Healthcare Fund Disease and Services Database.

Results. 134 (1.8%) patients had died during the follow-up period, 39 (29.1%) out of them died from CV related death. Relationships between CV deaths and increase in cIMT (HR 1.00, 95% CI 1.00-1.01, p=0.049), aPWV (HR 1.42, 95% CI 1.24-1.62, p<0.001), CAVI (HR 1.48, 95% CI 1.25-1.76, p<0.001) was found using Cox proportional hazard regression analysis.

The likelihood ratio test in combination with the Cox regression models was used to find the optimal cut-off values that was discriminative for CV deaths. Cut-off points of aPWV>9.5 (p<0.001) and CAVI>9.3 (p<0.001) for lower survival rate were discovered.

Conclusions. Our follow-up study reveals that increased aortic PWV and CAVI are associated with CV death among middle-aged patients with MetS.

Keywords: arterial markers, cardiovascular death, metabolic syndrome

NEWS SCORE IN ONCOHAEMATOLOGICAL PATIENTS ADMITTED TO INTENSIVE CARE UNIT

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Background and Aim. Patients with blood cancer are very high-risk patients. The key factor for faster transfer to intensive care unit (ICU) and better survival is prompt recognition of worsening patient condition. NEWS score is tool which is used for that. The aim of our study was to analyse NEWS scores in oncohaematological patients admitted to Intensive Care Unit

Material and Methods. We retrospectively analysed data of oncohaemathological patients who were admitted to the 3rd ICU in Vilnius university hospital Santaros clinics from 13 07 2017 to 27 12 2019. Inclusion criteria were: oncohaematological malignancy, age > 18 years, transfer to ICU, arterial or central line inserted, signed informed consent form. NEWS score was recorded according to the data at the time of transfer to ICU. If this data or part of it was not available, we used data obtained on admission to ICU. Statistical analysis was performed with R statistical package. A p-value of less than 0.05 was considered to be statistically significant.

Results. 114 patients (49 males and 65 females with the average age of 59.8 ± 15,38) were included into the study. Medium time from ICU referral to ICU admission was 69.46 ± 69.45 minutes. The mean NEWS score on admission to ICU was 7.66 ± 3.70 (range 0 – 17). ICU mortality was 44.74%. The mean NEWS score was statistically significantly higher in patients who died (8.55 vs 6.95, $p<0.005$). There were more patients who died when NEWS score was higher than 10 (45.1% vs 25.4%, $p<0.005$).

Conclusions. Patients with blood cancer were transferred to ICU with high NEWS scores. The NEWS score ≥ 10 was associated with higher mortality.

Keywords: blood cancer, intensive care, NEWS score

AN INFLUENCE OF VIBROTHERAPY TREATMENTS ON THE BODY COMPOSITION AND HEMORHEOLOGICAL COMPONENTS OF BLOOD IN FEMALES AGED 60-70 YEARS

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Background and Aim. Civilisation diseases are a serious problem. Efforts are taken to find innovative methods supporting treatment of disorders in motor organs, blood circulation system and metabolism. Oscillation-cycloid vibration generates mechanical waves spreading simultaneously into three directions thus better penetrating tissues. The tests results confirm potential health benefits of vibrotherapy in athletes, however, fewer studies assess its influence on hemorheological blood parameters in elderly patients.

The aim was to assess the influence of vibrotherapy treatments on body composition and hemorheological components of blood in females aged 60-70 years. There was an aluminium smelter in Skawina, which may be related to the increased concentration of aluminium in the residents.

Material and Methods. The tests included 69 females aged 60-70 years (64.22±5.12) randomly assigned to three groups: 1. Vibration training with metabolism module, 2. Vibration training with the knee module and 3. Control group without interventions. Vibrotherapy was conducted in three series of 10 treatments each, for three months with the vibrotherapy system (Vitberg). Anthropometric measurements were taken, body composition was analysed, blood was examined twice – before and after 3 months and concentration of aluminium was assessed with an optical emission spectrophotometer with inductively coupled plasma. Markers of erythrocytes elongation index EI and indexes of erythrocytes aggregation were done, i.e. the level of total extend of aggregation (AMP), half time kinetics of aggregation (T1/2) and aggregation index (AI). The Hardeman method was used to determine deformability and aggregation of erythrocytes. The measurements were conducted with the LORCA analyser (Laser Assisted Optical Rotational Cell Analyser).

Results. Blood hemorheological parameters improved in two groups with the vibration training in comparison to the control group. The level of aluminum concentration increased after vibrotherapy which is connected with its detoxification from organism through releasing it from tissues.

Conclusions. Vibrotherapy positively affects body composition and blood hemorheological indexes, and accelerate detoxification of aluminium from organism.

Keywords: aluminium, blood indicators, detoxification, hemorheology, vibrotherapy

VENTILATION INHOMOGENEITY IN ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION RECIPIENTS

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Background and Aim. Lung injury in the context of chronic graft vs host disease (GvHD) is a well-recognized potentially life-threatening complication of allogeneic hematopoietic stem cell transplantation (HSCT). However, data on post-transplant lung injury in the absence of chronic GvHD are scarce. We hypothesized that deterioration of the lung function can occur even without GvHD lung function deteriorates after HSCT.

Material and Methods. We performed a case-control study. Nitrogen multiple breath washout (NMBW) was performed in 10 children before conditioning (control group) and 10 allogeneic graft recipients at least 3 months after HSCT (transplant group). All patients required HSCT because of malignancies or immunodeficiency. Only one patient had developed chronic pulmonary GvHD. Lung clearance index (LCI-5), acinar (Sacin) and conductive (Scond) ventilation heterogeneity, Pacin, Moment ratio and end-tidal N2 after 6 lung volume turnovers (CnTO6) values were calculated using Exhalyzer D (ECO MEDICS, Switzerland). All results are shown as median and interquartile range (IQR), control group vs transplant group. Because of small sample size two sample Wilcoxon rank sum exact test was used.

Results. Median LCI-5 values were much higher after allogeneic HSCT, 5.82 (1.48) vs 6.89 (1.32), p=0.04.

CnTO6 difference between groups (p=0.017) was remarkable at 4.34 (2.33) in control group and 6.32 (2.08) in transplant group.

Contrary to previously published data no obvious differences were seen in acinar (Sacin) and conductive (Scond) ventilation heterogeneity, 0.215(0.325) vs 0.525(0.328) p=0.19 and 0.016(0.014) vs 0.023(0.054) p=0.27.

Moment ratio M1.M0 and M2.M0 were similar in both groups 1.81(0.48) vs 2.12(0.36) p=0.12 and 6.76(4.04) vs 8.63(3.01) p=0.11.

The patient who had developed pulmonary GvHD had the highest LCI, moment ratios and CnTO6 of all study participants.

Conclusions. Lung function deterioration after allogeneic HSCT is not limited to GvHD and most patients experience lung function deterioration after HSCT even without pulmonary GvHD.

Keywords: allogeneic hematopoietic stem cell transplantation, lung clearance index, nitrogen multiple breath washout

CIRCADIAN RHYTHM DISORDERS IN ADULT WOMEN AFTER SARS-COV-2 VIRUS INFECTION

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Background and Aim. Disturbances of circadian rhythms are increasingly common due to, among other things, excessive use of blue light emitting devices. Recently, the influence of SARS-CoV-2 infection on the length and quality of sleep and thus on sleep-wake rhythms has also been noted. The aim of this study was to evaluate the influence of past SARS-CoV-2 infection on sleep quality and circadian rhythms in adult women.

Material and Methods. The material was collected in January 2022. It consisted of responses from 136 women who were infected with Sars-Cov-2 virus in 2020-22 (confirmed by PCR test). The average age of female respondents was 34.4 years. The author's questionnaire contained 31 closed-ended questions (metrics, course of infection, and subjective assessment of changes in health and well-being after infection compared to before the disease). Five 60-minute hourly intervals were created to assess shifts (spikes) in sleep and wakefulness time. Analysis was performed using Statistica 13.3 package (basic statistics, Pearson's χ^2 test and Kruskal-Wallis ANOVA, test of differences of the structure index).

Results. Changes were observed regarding the shift of the time of sleep - more pronounced for the time of falling asleep, which affected 51% of the respondents. In most of them (88%) these were changes towards later hours. The hours of onset of activity changed in 47% of respondents, mostly also to later hours (59.4%). It was noted that the mean jump in the time of falling asleep was significantly greater than the mean jump in the time of waking up ($p=0.000458$). It was also observed that the shift in sleep and wake times affected the chronotype changes of the women studied (36.1%). The majority (85.4%) were related to a "delayed" chronotype. The intermediate type was significantly less frequent ($p=0.0027$) after pandemic, and the owl chronotype was significantly more frequent ($p<0.0001$).

Conclusions. SARS-CoV-2 virus infection significantly affected the quality and timing of the subjects' sleep, and thus also their circadian rhythms and chronotype. After infection, the subjects fell asleep and woke up later.

Keywords: sleep-wake rhythm, insomnia, coronavirus, biological clock

DETECTION AND CHARACTERISTICS OF SOME ANTHROPOMETRIC MEASUREMENTS OF HUMAN BODIES ON THE VIRTUAL DISSECTION TABLE

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Background and Aim. Nowadays exist different technological devices and resources that allow using these digital systems, applications, software and platforms for medical education. This study aimed to detect some transversal anthropometrical measurements on the skeletal system of a few virtual human bodies and the advantages/disadvantages of detection of these measurements, using the Anatomage Table.

Material and Methods. The virtual dissection table (version 6.0.3.) was integrated as an additional tool for learning/teaching Human Anatomy at the Department of Morphology of Rīga Stradiņš University. Four digitalized full human bodies (an Asian woman and man; a Caucasian woman and man) were reconstructed from frozen cadavers and were loaded on the Anatomage Table (Anatomage Inc., San Jose, CA, USA). Each human body was processed in thin slices (0.60 – 0.80 – 1.00 mm), photographed at high resolution and digitally reconstructed for examination at multiple angles. In the skeletal system easily identifiable, reliable bilateral three landmarks (acromiale, iliospinale anterius, iliocristale) were chosen and their locations were detected in frontal and sagittal planes. Bi-acromial, bi-iliospinal and bi-iliocristal widths were measured with a distance measurement tool.

Results. Bilateral frontal 24 landmarks (8 acromiale, 8 iliospinale anterius, 8 iliocristale) and bilateral sagittal 24 landmarks (8 acromiale, 8 iliospinale anterius, 8 iliocristale) were determined after several of practice and accuracy. 36 direct measurements (12 widths with 3 times of repeating) were taken on frontal views. Detection of virtual measurements was not the same as in the reality but despite this, calculated values (means, minimal, maximal) of widths showed expected differences between genders and ethnicities.

Conclusions. The findings showed several advantages and limitations in comparison with the traditional anthropometry field. Further studies are suggested to create methods to identify and detect standardized measurements of virtual bodies, using the Anatomage Table.

Keywords: Anatomage Table, anthropometry, distances, landmarks, virtual body

COVID-19 COURSE RISK FACTORS AMONG ELDERLY PATIENTS HOSPITALIZED IN THE UNIVERSITY MEDICAL CENTER, LITHUANIA

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Background and Aim. Age and comorbidities are key determinants of COVID-19 severity and outcomes. The aim of this study - to determine main risk factors associated with severe disease and mortality from COVID-19 in elderly people.

Material and Methods. COVID-19 positive elderly (≥65 years old) patients hospitalized in Vilnius University Hospital Santaros Klinikos, Lithuania, were included in the cohort study between March 2020 and December 2021. Severe COVID-19 was defined as pneumonia with objective respiratory failure symptoms. p-value <0.05 was considered significant.

Results. Among 131 participants, 52.7% were women, 25.2% required nursing care, 89.3% had comorbidities, the most common – hypertension (84.7%), heart disease (48.9%), diabetes (18.3%), oncological (15.4%), hematological (15.4%) diseases. Severe COVID-19 was diagnosed for 93 (71.0%) participants, 15 (11.5%) participants died. Patients who developed severe COVID-19 more frequently complained of fever (30.1% vs 13.2%, p=0.043), tachypnoea (29.0% vs 5.3%, p=0.003), dyspnea (56.0% vs 23.5%, p=0.001) compared to those with non-severe COVID-19. Patients who died more frequently had tachypnoea (53.3% vs 18.1%, p=0.002), dyspnea (56.0% vs 23.5%, p=0.001), confusion (28.6% vs 6.2%, p=0.005), hematological (40.0% vs 12.1%, p=0.005), oncological diseases (46.7% vs 11.3%, p=0.002) and required nursing care (53.3% vs 21.6%, p=0.008) compared with those who recovered. Lactate dehydrogenase (LDH) and C-reactive protein (CRP) demonstrated the best prognostic features for severe COVID-19 (AUC 0.886, p=0.008 and 0.873, p=0.010, respectively) with optimal cut-off values for LDH≥172 U/L and CRP≥50.45 mg/L. Multivariable regression indicated that the need of nursing care (OR 4.59; 95%CI 1.35-15.64, p=0.015), having hematological (OR 4.21; 95%CI 1.11-16.03, p=0.035), oncological diseases (OR 4.88; 95%CI 1.37-17.41, p=0.015) increased odds of dying from COVID-19.

Conclusions. Elevated LDH and CRP levels predicted development of severe COVID-19 in elderly patients. The need of nursing care, hematological and oncological diseases were the main risk factors for in-hospital mortality from COVID-19 in elderly patients.

Keywords: COVID-19, elderly, risk factors

CASE FATALITY RATE OF DIFFERENT AGE PATIENTS WITH COVID-19 HOSPITALIZED IN THE UNIVERSITY MEDICAL CENTER, LITHUANIA

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Background and Aim. Overwhelming evidence from around the world suggests that age itself is the most significant risk factor for severe COVID-19 and its adverse outcomes. The objective of the study was to analyze case fatality rate (CFR) of patients with COVID-19 in groups by age.

Material and Methods. Retrospective observational cohort study took place in Vilnius University Hospital Santaros Klinikos (VUH SK), Lithuania. Inclusion criteria were adult patients hospitalized to VUH SK with confirmed COVID-19 infection between March 2020 and May 2021. Depersonalized data were retrieved from electronic medical records. p-value <0.05 was considered significant.

Results. Among 2844 hospitalized adults, the median age was 59 years. Half of patients (49.5%) had at least one comorbidity, among which hypertension (36.46%) and diabetes (13.54%) were the most common. The proportion of patients with comorbidities increased with age reaching 74.2% of patients in group of 80 years and above (p<0.001). Overall, 359 patients died. CFRs variated from 1.5% in patients in their 20s and younger, 1.6% among those in their 30s, 3.8% in their 40s, 7.0% in their 50s, 11.8% in their 60s, 23.7% in their 70s, to 37.1% in group of their 80s and above. The overall CFR was 12.6%. Odds ratio for in-hospital mortality for patients in their 30s, 40s and 50s adjusted to underlying conditions did not differ significantly from patients in their 20s and younger group. Odds ratio for in-hospital mortality of patients in their 60s was 5.01 (95%CI 1.20 – 20.88, p=0.027), for patients in their 70s – 10.80 (95%CI 2.59-450.1, p=0.001), and for patients in their 80s and above – 20.07 (95%CI 4.81-83.85, p<0.001) compared to patients in their 20s and younger.

Conclusions. Case fatality rate of hospitalized patients with COVID-19 increased with age, odds ratio for in-hospital mortality increased fivefold and more at age of 60 and above.

Keywords: age, case fatality rate, COVID-19

CARDIOPULMONARY EXERCISE TESTING IN CHILDREN WITH STRUCTURALLY NORMAL HEART AND PREMATURE VENTRICULAR COMPLEXES: THE FIRST RESULTS OF THE PILOT STUDY

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Background and Aim. Premature ventricular complexes (PVCs) are quite frequent in the paediatric age group. Although PVCs are usually considered benign, frequent PVCs can cause ventricular dysfunction and might be the first sign of cardiomyopathy. The aim of the study: to evaluate the role of cardiopulmonary exercise testing factors as a prognostic tool in children with structurally normal hearts and various amounts of PVCs.

Material and Methods. This is a prospective analysis of 20 children with structurally normal heart and ventricular PVCs. Patients underwent 24 hours electrocardiogram (24ECG) and cardiopulmonary exercise testing (CPET) on treadmill (BTL Cardiopoint CPET) using modified ramp protocol. Peak oxygen uptake per kilogram (VO2/kg), carbon dioxide elimination (VCO2), anaerobic threshold (AT), respiratory exchange rate (RER), VE/VO2 were measured during the CPET. The exercise test was terminated if patients get exhausted, develop symptoms or have abnormal blood pressure results during exercise. According to the amount of PVCs in 24ECG, we divided patients into two groups ≤10% and >10% PVCs per 24 hours. Statistical analysis performed with R. Nominal variables tested for normal distribution with Shapiro-Francia test. Nominal values were presented with minimum, maximum and median. Welch test used to compare means between normally distributed nominal variables. Fisher exact test used to compare categorical variables. The p value <0.05 was considered statistically significant.

Results. 10 boys and 10 girls 6-17 (median 15) years old with 5-32.77 (median 9,9) % of PVC per 24 hours. CPET duration was 5.5-11 (median 8) minutes. Patients reached VO2 peak 20.4 - 53 (median 31.3) ml/kg/min; VCO2 1233-4627 (median 1608) ml/min, AT 504-1634 (median 1079) ml/min, VE/VO2 30.9-100 (median 40.85), RER 0.93 – 4.9 (median 1.07). We did not find statistically significant differences between CPET factors and ≤10% and >10% PVCs per 24 hours groups.

Conclusions. To clarify the results we need more patients to evaluate.

Keywords: children, CPET, PVC

INFLUENCE OF VITAMIN D CONCENTRATION ON DETOXIFICATION AND QUALITY OF LIFE IN PRESCRIPTION OPIOID-DEPENDENT PATIENTS

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Background and Aim. To confirm or refute the hypothesis that serum vitamin D levels in prescription opioid-dependent patients affect detoxification, its outcomes, opioid use patterns, and quality of life before and after detoxification.

Material and Methods. This 2019–2022 study included 33 patients who underwent detoxification from prescription opioids at the Toxicology Center of the Republican Vilnius University Hospital in Lithuania. 23 patients completed the study. Serum vitamin D levels were tested on an outpatient basis prior to detoxification. During detoxification vitamin D supplements were used, but vitamin D levels were not re-measured afterwards. Quality of life was assessed with SF-36v2 ™ questionnaires in person before detox, in the day of discharge and remotely at least 6 months after detoxification.

Results. Detoxification duration for patients with normal vitamin D levels was on average 2.5 days shorter than for patients with vitamin D deficiency or insufficiency. No statistically significant difference found between groups with different vitamin D concentrations and the prescription opioid dose used, duration of opioid use, detoxification outcome, and the SF-36v2™ questionnaire scores. Patients with vitamin D insufficiency or deficiency showed statistically significant positive dynamics in quality of life after detoxification, whereas patients with normal vitamin D levels did not.

Conclusions. Measurement of vitamin D levels before detoxification from prescription opioids identifies patients with vitamin D deficiency or insufficiency for whom correction of vitamin D levels during detoxification is appropriate and may lead to an improvement in quality of life after detoxification.

Keywords: detoxification, opioids, vitamin D

RELATIONSHIP BETWEEN RETINAL PARAMETERS AND FEMALE BODY SIZE, SHAPE, AND PROPORTIONS

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Background and Aim. There is a lack of data on how eye structures can be related to body size, shape and proportions. The aim of this study was to evaluate the relationship between retina parameters and anthropometric measurements.

Material and Methods. A total of 50 women (100 eyes) older than 50 years (M=64 years; min-max=51-86 years) were investigated. Height, weight, transverse and longitudinal measurements, circumferences, skinfolds were measured using standard methods. Body mass index (BMI), Skelic, and centrality indices were calculated. Optical coherence tomography (OCT) was used to examine the retina: average retinal nerve fiber layer (avRNFL), average ganglion cell-inner plexiform layer (avGC-IPL) and average inner limiting membrane-retinal pigment epithelium (avILM-RPE) thickness. Pearson's correlation coefficient was calculated using IBM SPSS 23.0.

Results. No significant correlation was found between OCT parameters and BMI ($p>0.05$). AvRNFL thickness was negatively correlated with forearm and calf length ($r=-0.35$-0.36; $p<0.05$). Significant correlations between avGC-IPL thickness and sitting height, neck, chest skinfold, shoulder width ($r=0.38$-0.42), wrist diameter and second finger length ($r=-0.37$-0.42) were observed ($p<0.05$). Negative correlations were found between avRNFL and avGC-IPL thickness and Skelic idex ($r=-0.36$-0.4; $p<0.05$). AvILM-RPE thickness positively correlated with weight, height, sitting height, neck, chest, arm circumferences, subscapular, triceps, thigh skinfolds, centrality index ($r=0.34$-0.41; $p<0.05$).

Conclusions. In subjects with longer forearms, calves and higher Skelic index, the avRNFL was thinner. Shorter second finger, smaller wrist and Skelic index were associated with thinner avGC-IPL, while individuals with larger sitting height, larger shoulders, and larger neck, also thoracic skinfolds had thicker avGC-IPL. Subjects with higher weight, height, sitting height, upper body circumferences, skinfolds and centrality index had thicker avILM-RPE. Consequently, we can assume that body size and shape can change during the growth process, as well as later in life according to the needs of the body to support the most vital organs.

Keywords: body measurements, ganglion cell-inner plexiform layer thickness, inner limiting membrane-retinal pigment epithelium thickness, optical coherence tomography, retinal nerve fiber layer thickness.

THROMBUS PERMEABILITY ASSOCIATION WITH TECHNICAL SUCCESS AND FUNCTIONAL OUTCOME IN ACUTE STROKE PATIENTS TREATED WITH MECHANICAL THROMBECTOMY: SYSTEMATIC REVIEW

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Background and Aim. Mechanical thrombectomy in recent years have become the standard treatment for large vessel occlusion acute ischemic stroke. The success of this method depends on thrombus characteristics, one being studied is permeability of the thrombus on computed tomography angiography (CTA) imaging.

The aim of this systematic review is to analyze current literature data on association between thrombus permeability and mechanical thrombectomy success and/or functional outcome of the acute stroke patients.

Material and Methods. The systematic review has been performed according to PRISMA guideline. Search keywords included "permeability", "perviousness", "attenuation increase", "thrombus", "embolus", "stroke", "outcome". Search has been conducted in the Medline database, additionally references of the selected articles have been screened. Each article has been reviewed by two reviewers, inclusion into the review has been decided by the consensus.

Results. From 3820 articles 268 have been selected for abstract screening. Of these articles 34 were selected for full text review. In total, 16 articles have been included into the final analysis and data extraction. There was substantial heterogeneity between studies in terms of permeability calculation methodologies and study population. We identified 7 papers analyzing first-pass effect in relation to thrombus permeability, of these 3 papers found significant relation between first-pass effect and thrombus permeability, while remaining 4 did not confirm such association.

Conclusions. There is significant heterogeneity in studies assessing association between thrombus permeability and mechanical thrombectomy success and functional outcome of the acute stroke patients, and further studies are needed.

Keywords: CTA, permeability, perviousness, stroke, thrombus

PLATELET AND WHITE BLOOD CELL COUNTS ARE ASSOCIATED WITH DIFFERENT DEPRESSIVE SYMPTOM DIMENSIONS IN PATIENTS WITH BIPOLAR DISORDER

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Background and Aim. It is thought that inflammation is associated with depression. However, recent studies have revealed a marked heterogeneity regarding both inflammatory markers and measured depressive symptoms. The present study used the blood formula to see whether different cell counts are associated with different symptom dimensions in patients with bipolar disorder.

Material and Methods. N = 3482 patients with the DSM-5 diagnosis of bipolar disorder were assessed for sociodemographic and clinical factors, including The Quick Inventory of Depressive Symptomatology (16-Item, Self-Report) (QIDS-SR16), in Bipolar Disorder Expert Centres in France, and their blood samples were taken.

Results. Both platelet and white blood cell (WBC) z scores were associated with QIDS-SR16 total score in models without covariates (B = .411 [.176 - .645], p<.001, and B = .552 [.324 - .781], p<.001, respectively), but they differed in symptoms they were associated to. In multivariate regression models corrected for age, sex, bipolar disorder type, psychiatric and somatic comorbidities, and BMI, z scores were no longer significantly associated with QIDS-SR16 total score. Meanwhile, WBC z score remained significantly associated with sickness behaviours composite score (B .213 (95% CI .135 - .292)), while platelet count z score remained significantly associated with sleep impairment and self-directed thoughts composite score (B .231 (95% CI .110 - .352)).

Conclusions. Platelet and white blood cell counts are associated with different symptom dimensions rather than depression in general, suggesting their involvement in different biological pathways of depression in bipolar disorder.

Keywords: bipolar disorder, depression, inflammation

PREVALENCE OF DIFFERENT ANATOMICAL VARIATIONS OF CEREBRAL ARTERIAL CIRCLE IN ACUTE STROKE

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Background and Aim. We studied the prevalence of complete circle of Willis (CoW) and different anatomical variations in order to define the cerebral arterial circle as important pathway for collateral circulation in the brain, particularly in acute stroke.

Material and Methods. 133 patients (female 53.8%, male 46.2%, mean age 70.52 ±14.17) with acute ischemic stroke, who underwent investigation and treament according to approved stroke center's protocol, were enrolled in the study. Anatomical variations of cerebral arterial circle were evaluated according to computed tomography angiography results. The cardiovascular risk factors, preventive treatment, National Institute of Health Stroke Scale (NIHSS) score (T.Brott, H.P. Adams Jr. et al., 1989), Modified Rankin Scale (MRS) (J. Rankin, 1957) score before and 3 months after treatment were estimated.

Results. Reperfusion therapy was performed in 55 (41.4%) cases, basic treatment - in 78 (58.6%) cases. Complete CoW was detected in 38 (28.6%), variations – in 95 (71.4%) patients. Incomplete CoW (aplasia in any part of circle) – in 46 (48.4%) of all 95 variations. The most common variations (any type): posterior communicating artery (74.7%), posterior cerebral artery proximal (P1) segment (31.6%), anterior cerebral artery proximal (A1) segment (17%). Multiple variations were detected in 60% of cases. Variations directly associated with stroke territory (the same side, bilateral posterior changes) were detected in 77.9% of all CoW variations (55.6% of all cases). There was a tendency that patients with poor integrity of the CoW had higher initial NIHSS score (8.93 vs 6.95) and less improvement in NIHSS score after 3 months (5.25 vs 8.33) (p=0.059).

Conclusions. The prevalence of CoW variations in tested Lithuanian patients is similar to other populations and data provided by other authors in previous studies. Patients with complete CoW were more likely to have better improvement after stroke.

Keywords: acute stroke, the circle of Willis, variations

IMPACT OF PHYSICAL ACTIVITIES ON POSTURE TYPE AMONG YOUNG CHILDREN

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Background and Aim. Physical activities have a positive impact to the development of musculoskeletal, cardiovascular, neural systems among young children. At the five years of age the physical activities must be at least 60 minutes a day. Sedentary behavior increases the risk of posture disorders.

The aim was to identify the type of posture according to the load of physical activity among preschool children.

Material and Methods. In research 959 children were included of age 4 to 7 years. The questionnaire was filled up by parents. The classical anthropometrical measurements were performed. The data of physical activity and posture type were analysed.

Results. In study 53,5% (n=511) girls and 46,7%(n=488) boys were included. 98,0% (n=976) of children engaged in physical activity, 1,7% of children did not engaged in physical activity. 59,1%(n=565) of children engaged in physical activity outside the preschool educational institution (PEI), 40,9% (n=391) did not engaged in physical activity outside PEI.

The standard posture according to the type of posture was identified to 41,3% (n=396) children, posture disorders were identified to 58,7% (n=562) children (p=0,001). The standard posture was identified 0,8 percentage points (pp) more frequently in the group of children who did not engaged in physical activity outside PEI (41,9%, n=164). Lordotic posture was identified 1,9 pp and kyphotic-lordotic posture 1,4 pp more frequently in the group of children who engaged in physical activity outside PEI. Kyphotic posture was identified 3,5 pp more frequently in the group where children did not engaged in physical activity outside PEI (p=0,464).

Conclusions. There is no statistically significant correlation between the enlarged load of physical activity and posture disorders. Children who were physically active only in PEI had kyphotic posture more frequently.

Keywords: physical activity, posture type, preschool age

GYNECOMASTIA SYMPTOMS PREVALENCE AND THEIR ASSOCIATION WITH MEN'S LIFESTYLE AND SELF-ESTEEM

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Background and Aim. The purpose of this article was to assess gynecomastia prevalence and the associations between gynecomastia signs, men's lifestyle and self-esteem.

Material and Methods. Anonymous voluntary survey was conducted online in 2020-2021. 675 male respondents self-assessed gynecomastia signs, presence of thickened glandular tissue beneath the nipple, diameter of the thickened tissue and breast appearance by Simon's visual gynecomastia scale. Respondents answered Brief Tripartite Questionnaire – Gynecomastia (BTQ-G) and Chest Satisfaction Questionnaire (CSQ), questionnaire about harmful habits, lifestyle. Mean age of respondents was 30.14±10.15 years.

Results. Majority of the respondents (44.3%) indicated that their chest matches image 0, which corresponds to a normal chest. More than a third (35.7%) chose an image, that on Simon's gynecomastia scale indicates a slight breast enlargement. On average older respondents chose images with higher breast enlargement degrees ($p<0.001$, $r=0.22$). Tobacco smoking, alcohol abuse, use of medications and food supplements were statistically significant related to higher breast enlargement grade ($p<0.001$). Respondents with higher breast enlargement grade statistically significant more often tend to use cardiovascular medications ($p<0.001$). Also, breast enlargement grade was on average higher among less physically active participants ($p<0.001$). Bigger breast enlargement statistically significant correlated with poorer self-esteem according to CSQ and BTQ-G questionnaires (respectively $r=-0.526$ and $r=-0.209$; $p<0.001$).

Conclusions. Approximately 20 percent of males have noticeable enlargement of breasts (2A, 2B and 3). Factors that have major influence on manifestation of gynecomastia signs are older age, lack of physical activity, alcohol abuse, tobacco smoking, use of medications and food supplements. Bigger breast enlargement is linked to poorer self-esteem.

Keywords: gynecomastia, lifestyle, prevalence, self-esteem, tobacco and alcohol abuse

LONGITUDINAL DOPPLER VELOCIMETRY IN FETAL TIBIAL, UMBILICAL, MIDDLE CEREBRAL ARTERIES AND THE CEREBRAL PLACENTAL RATIO IN LATE GROWTH-RESTRICTED FETUSES

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Background and Aim. The purpose of this study was to examine the condition of late intrauterine growth restricted (IUGR) fetuses, by measuring velocimetry in fetal tibial (TA), umbilical (UA), middle cerebral arteries (MCA) and the cerebral placental ratio (CPR).

Material and Methods. This was a prospective observational study conducted at the Center of Obstetrics and Gynecology of Vilnius University Hospital Santaros Clinics, Vilnius, Lithuania. The patients were recruited during consultations or treatment from 2019 to 2022. The study population included 53 pregnant women with singleton pregnancy at the gestational age from 33+0 to 40+0 weeks diagnosed with IUGR. The ultrasound scan was performed weekly in TA, UA, MCA and CPR.

Results. The longitudinal changes in doppler velocimetry in TA, UA, MCA and CPR were observed. The Z-score shows that the tibial artery doppler was an earlier predictor of adverse outcomes of late IUGR.

TA Doppler values >95 percentile have been detected earlier than UA (>95 percentile), MCA (<5 percentile), and abnormal CPR in late IUGR.

Conclusions The fetal peripheral tibial artery Doppler velocimetry was the first sign of the aggravating state of the fetus. The parameters of other arteries became abnormal later in weeks which allows concluding that the inclusion of the tibial artery doppler examination plays a crucial role in detecting the deteriorating signs of the fetus in late pregnancy.

Keywords: doppler, IUGR, pregnancy

VIRTUAL ANTHROPOMETRY OF THE HYOID BONE (OS HYOIDEUM) IN MODERN HUMANS (*HOMO SAPIENS*)

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Background and Aim. Virtual anthropometry is a modern research method widely used in both medicine and biology. The method of virtual anthropometry, unlike classical methods, does not use an invasive approach. Therefore, it causes no discomfort to the patient. Because of that, an attempt to assess the accuracy and reliability of the virtual hyoid bone measurement method was made. The attempt also aimed to determine the possibility of using the virtual anthropometry method to produce medical objects with dimensions and sizes close to reality.

Material and Methods. 32 hyoid bones obtained during the amputation processes, and a computed tomography scans of these bones taken by the patients prior to surgery were selected for the research. Among the bones studied, 17 belonged to males and 15 to females. The analyzed bones were part of a project approved by the Bioethics Committee, following the principles of the Helsinki Declaration. The anthropometric measurements were conducted in four ways, including traditional methods, such as direct ex-situ bone measurements and virtual methods. The ANOVA variance analysis method was used for bone measurement methods comparison.

Results. The results showed that there was no statistically significant difference between traditional and virtual method measurements. It was proved that virtual anthropometry of the modern human hyoid bone could be a useful research method.

Conclusions. The use of modern measurement techniques in the anatomical and medical examination of the hyoid bone may contribute to a more efficient diagnosis among patients. These tests are also an important step in the use of the above-mentioned measurement methods for the reconstruction of selected organs, e.g. using 3D printing.

Keywords: anthropometry, hyoid bone, medicine, 3D

CHOLESTEROL AND ALZHEIMER'S DISEASE: IS THERE A LINK?

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Background and Aim. Amyloid β (Aβ) and hyperphosphorylated tau (P-tau) abundance in the brain is core pathological feature of Alzheimer's disease (AD). The purpose of this review is to elucidate the relationship between brain cholesterol metabolism and Aβ as well as tau accumulation.

Material and Methods. We searched PubMed database using keywords: *Alzheimer's disease, cerebrospinal fluid biomarkers, brain cholesterol metabolism, tau, phosphorylated tau, amyloid beta* separately and in combination with each other. We analysed twenty-one article of appraised quality.

Results. Firstly, there are growing evidence that cholesterol affects Aβ production. Amyloidogenic cleavage of amyloid precursor protein (APP) takes place in membrane lipid rafts. Lipid structure of these domains affects the activity of APP proteolytic enzymes. Depletion of cholesterol may reduce APP distribution to lipid rafts and result in decreased Aβ load. On the contrary, Aβ-degrading enzymes may be downregulated by cholesterol-enhanced oxidative damage.

The occurrence of tau fibrils in neurons may be explained by few mechanisms. One of them is prion-like tau spread between cells. Depletion of the cholesterol transporter receptor or extraction of membrane cholesterol make neurons highly permissive to tau entry and enhance tau accumulation.

Cholesterol cannot cross blood-brain-barrier although its hydroxylated metabolites can. Therefore, oxysterols are considered to be a link between peripheral and brain cholesterol metabolism. Increased body cholesterol may lead to an increased production of these metabolites. Alterations of main oxysterols levels may correlate with increased Aß production in the brain. Two main oxysterols (24-hydroxycholesterol and 27-hydroxycholesterol) appear to be candidate biomarkers for the evaluation of mild cognitive impairment and AD.

Conclusions. Cholesterol and its metabolites have diverse effect on pathological accumulation of amyloid β and tau. Certain cholesterol metabolites may serve as diagnostic AD biomarkers. Understanding of the cholesterol involvement in AD pathogenesis leads to the new therapeutic targets and diagnostic biomarkers research.

Keywords: Amyloid beta, Alzheimer's disease, biomarkers, brain cholesterol metabolism, Tau protein

NOT ONLY MEDICATIONS MATTER FOR THE OPTIMAL TREATMENT OF CHRONICALLY ILL PATIENTS: SPECIALIZED REHABILITATION PROGRAM FOR PATIENTS WITH PULMONARY HYPERTENSION AND HEART FAILURE

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Background and Aim. Increased left ventricular filling pressure is the hallmark of left heart failure, which determines symptoms of dyspnea, impairs exercise capacity, and may lead to secondary pulmonary hypertension (PH). There is an increased incidence of PH associated with left heart disease and in particular with heart failure with preserved ejection fraction (HFpEF). Exercise–based rehabilitation programs have been shown to improve exercise capacity and quality of life of HF and PH patients. However, no study focused on exercise training in the population of PH-HFpEF. We aimed to create a protocol for RCT of rehabilitation program for PH-HFpEF and to start this program at Vilnius University.

Material and Methods. PH rehabilitation protocol from Heidelberg was adapted to the local conditions and to PH-HFpEF. During 07.2019 – 03.2020 period, the diagnosis of PH-HFpEF was approved in eight patients.

Results. Four patients agreed to participate. Two were randomized to the control group firstly (after 15 weeks they were trained), the other two - to the training group. After in-hospital phase, all four trained participants improved 6-minute walking distance (6 MWD); an increase was > 30 meters in three cases. 3 of 4 patients continued exercising for 15 weeks and showed further increase in 6 MWD: + 43 meters, + 83 meters, + 42 meters. After 15 weeks of training VO_2peak increased in all three patients by + 0.8 ml/kg/min, + 2.5 ml/kg/min, and + 3.4 ml/kg/min. However, VO_2peak increased in both control group patients by 1 ml/kg/min, and 6 MWD did not change markedly (- 2 meters) in one, but improved by 57 meters in another control patient.

Conclusions. The initial positive impression encourages resuming the study in the future.

Keywords: exercise training, heart failure with preserved ejection fraction, pulmonary hypertension, study protocol

MOLECULAR INVESTIGATION OF A DNA VARIANT'S PATHOGENICITY: A SPLICE SITE VARIANT IN *DYNC1H1*

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Background and Aim. *DYNC1H1* (MIM#600112) – a gene encoding a heavy chain 1 of a cells' essential, evolutionarily conserved protein called cytoplasmic dynein 1. This dynein is an ATP fueled motor complex that facilitates the movement of various cell cargos and organelles necessary for the cell to function. It also plays roles in neurons, such as executing a retrograde transporting in axons. Several neuromuscular (MIM#158600, MIM#614228) and neurodevelopmental (MIM#614563) conditions are known to be caused by heterozygous variants in *DYNC1H1*. In this case, we aimed to determine pathogenicity of a novel intron variant in *DYNC1H1*.

Material and Methods. A genetic assessment was performed for a 14-year-old male with an abnormality of the cerebral cortex and intellectual disability. Exome sequencing of the triad was applied. Healthy brother's DNA was also sequenced by Sanger method. The variant's impact on mRNA structure was analyzed by Sanger sequencing the proband's cDNA (synthesized using mRNA from blood). The DYNC1H1 protein level in the proband's fibroblasts was examined by Western blotting.

Results. *De novo* donor splice site variant NC_000014.9(NM_001376.5):c.6405+1G>C in *DYNC1H1* was identified in the proband's DNA at a heterozygous state. After performing PCR on the proband's cDNA, two different length fragments were observed. Retention of the intron 31 was revealed in one of the fragments, which, *in silico*, leads to a truncation of the DYNC1H1 (NP_001367.2:p.(Ile2136LeufsTer20)). A decreased level of the wild-type protein was observed in the affected fibroblasts.

Conclusions. The molecular investigation of the intron variant in *DYNC1H1* at the mRNA level revealed a disturbed splicing process. This presumably causes the formation of the truncated and dysfunctional protein, ultimately leading to the reduction of the wild-type DYNC1H1 and the development of the proband's neurological condition. Using immunofluorescence microscopy, a dysfunction of the transporting by cytoplasmic dynein could be revealed in the proband's cells.

Keywords: *DYNC1H1*, pathogenicity, sequencing, splice site, Western blot

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THE MUMMY MUSEUM OF FERENTILLO, UMBRIA (CENTRAL ITALY): A RESEARCH PLAN

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Naturally mummified historic individuals represent a unique opportunity to assess soft tissue anomalies and to employ biomedical technologies in order to investigate past lifestyles, pathological conditions, and mortuary practices. In this respect, the crypt of the church of Santo Stefano in Ferentillo, Umbria, is particularly interesting, as it holds a large number of preserved individuals and skeletonized commingled human remains spanning the 16th - 19th centuries AD. These are permanently exhibited, with the museum attracting a large number of visitors each year. In 2018, during an international field mission, the commingled bone elements were organized, and 10 previously unknown mummies were discovered, taking the total number of preserved subjects to 34. Additionally, a minimum number of individuals was calculated as 518 based on the number of left femurs discovered. The femurs were also used to calculate the average stature of this population. Interesting lesions, such as nonspecific infections, stressors, and trauma were carefully recorded, and comprised cases of skull trepanation. This paper aims at evaluating the mummy/bone exhibition from an ethical viewpoint, suggesting new strategies for the conservation of these extraordinary bioarchaeological artifacts. Future research activities focused on the mummified individuals via a non-destructive or minimally invasive approach are also considered.

Keywords: bioarchaeology, mummies, human remains, museums, Italy

EFFECT OF HIGH PHYSICAL LOAD EXERCISES TO BODY COMPOSITION CHARACTERISTICS

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Background and Aim. Training of military personnel in field condition is essential process. Combat training course (CTC) has duration of ten days and includes various physical, tactical, psychological activities in military conditions that are a compulsory part of study process. Participants faced to challenges and trained skills in physical fitness and endurance, psychological approach to tactical situation. They have dietary and sleeping deprivation during the CTC. Aim of the study is assessment of anthropometric characteristics of participants, analysis of body composition characteristics as total body fat (%), muscle mass (kg), water composition (%) in body, that allow evaluate adaptation of participants to high physical load in field condition during combat training course.

Material and Methods. Study group included 87 participants of both genders (71 males and 16 females) in aged 21 to 33 years. Assessment of body composition characteristics provided by using Tanita equipment, anthropometric parameters as height was fixed by anthropometry and body mass was fixed by scale.

Results. During the training process in extreme military environment take place changes of body composition of participants. We fixed weigh loss for all participants. We established diminish of body mass till 3 kg in 67.9% of participants, weight loss till 5 kg have fixed in 27,1 % of participants, but weight loss till 7 kg was find for 4,9% participants. Assessment of body composition before the CTC and after it revealed diminish of total body fat from 2% till 6% in 78,9% of participants, the total water volume increased for3-7% in 76,5% of participants, as well increased body muscle mass in 86,5% of participants.

Conclusions. Analysis of body composition characteristics revealed increasing the muscle mass, that related to physical fitness and endurance and shown that goals of military training during CTC reached.

Keywords: anthropometric parameters, body composition, physical load

ASSOCIATION BETWEEN MATERNAL TRAITS DURING PREGNANCY AND 2D:4D DIGIT RATIO IN POLISH CHILDREN

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Background and Aim. The length of the second and fourth finger calculated as a ratio (2D:4D) is a marker of prenatal exposure to sex hormones. Higher exposition to testosterone is related with lower 2D:4D digit ratio and inversely, higher exposition to oestrogene is related with higher 2D:4D. There is known that 2D:4D is associated with many human phenotypes: somatic, cognitive, and behavioral traits. In this study we examined whether maternal traits during pregnancy are associated with 2D:4D among their children.

Material and Methods. The material consisted of fingers length measurements (second and fourth) for both hands for over the 1000 children aged 6–13 years investigated in Poland and questionnaire included questions about maternal traits during pregnancy such as: illnesses, active and passive smoking, work activity, psychological trauma (death or serious illness of a loved one, divorce, job loss) and age.

Results. The children of smoking mothers were characterized by higher 2D:4D (R) as compared to their peers whose mothers did not smoke (β=0.10, p=0.0008). In turn, the offspring of women who worked during pregnancy exhibited lower 2D:4D (R) values than the children of women who did not work (β=-0.07, p=0.0233). Maternal age was negatively correlated with 2D:4D (R) in daughters (r=0.11, p=0.0137), but not in sons (r=0.02, p=0.6908).

Conclusions. Independently on sex the right-hand digit ratio was positively correlated with maternal smoking and negatively with maternal work during pregnancy. Only among girls maternal age during pregnancy was negatively related to right hand 2D:4D.

Keywords: finger ratio, sex hormones, prenatal period

SELF-REPORTED HEALTH AND EMOTIONAL/BEHAVIOURAL DIFFICULTIES AMONG LEFT BEHIND CHILDREN DURING COVID-19 PANDEMIC IN LITHUANIA (A PILOT STUDY)

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Background and Aim. Lithuania had lost ¼ of its population due to emigration. Parents' emigration resulted in increased numbers of left behind children (LBC), living with caregivers, while their parents work abroad. The aim of this study was to evaluate the association between emotional/behavioural difficulties and self-reported health outcomes between LBC and non-LBC during the pandemic.

Material and Methods. The cross-sectional study was approved by Research Ethics Committee (No. 2021/11-1378-861). In March-April 2022, data collected from adolescents aged 12-17 years at three randomly selected schools from the migration affected regions. Parents and children provided informed consent. Following self-reported measures were collected from children: Strengths, and Difficulties Questionnaire (SDQ) (Goodman, 2005) and a questionnaire on demographics/health. Additionally, LBC SDQ scores were compared to pre-pandemic from Leskauskas D. et. al. (2019). Chi^2, t tests, logistic regression were performed by using Stata (version 15.1) and OpenEpi.

Results. The sample consisted of 127 children (54 boys; mean age 15.2±1.27) including 39 (30.7%) LBC. Logistic regression showed that LBC are more likely evaluate their health as 'poor, 'bad', or 'very bad' compared to non-LBC (OR 2.33; p=0.04). In contrast, there was no difference for self-reported emotional/behavioural difficulties (LBC: 46.2%, non-LBC: 40%; p=0.52). However, the comparison of emotional/behavioural total difficulties scores revealed that LBC mean scores were higher than non-LBC (11.9 vs 10.0; p=0.04). The comparison of LBC SDQ scores with pre-pandemic data revealed that emotional symptoms subscale scores were lower during the pandemic (2.5 vs 1.23; p=0.01). On the other hand, peer problems subscale scores were lower before the pandemic (2.3 vs 3.53, p<0.001). Total SDQ scores showed no difference (mean 11.4 vs 11.88; p>0.99).

Conclusions. This study found negative associations between parental migration and children's self-reported emotional/behavioural difficulties and self-reported health. During pandemic LBC experienced less emotional symptoms, however, reports more peer related issues.

Keywords: children, left-behind, migration, parent

PRESENCE OF CIRCULATING PLASMA CELLS IS RELATED TO ADHESION MOLECULE EXPRESSION

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Background and Aim. Multiple myeloma (MM) is a proliferation of clonal plasma cells (MMPCs) in the bone marrow (BM). Detecting circulating plasma cells (CPCs) in peripheral blood (PB) is a progressive disease marker and possible minimal residual disease (MRD) surrogate. We investigated if adhesion molecule (ADM) expression in MMPCs contributes to presence of detectable CPCs. ADM are PC surface proteins that ensure BM anchoring, their decrease may be seen in some MMPCs.

Material and Methods. Relapsed/refractory multiple myeloma (RRMM) patients (n=41) were investigated and divided into CPC detectable (+) (n=30) and undetectable (–) (n=11) subgroups to investigate ADM expression. ADM were assessed on MMPCs and CPCs, as well as healthy donor (HD) (n=14) PCs, identified by CD38/CD138/CD19/CD56. ADM were integrins – CD11a, CD18, CD49d, CD49e; hyaluronic acid receptors – CD44, CD168; chemokine receptor CD184; surface proteins CD56, CD58, CD38 and CD138. Analysis was done using FACSCantoII flow cytometer. ADM positive expression percentage and mean fluorescence intensity were calculated.

Results. When comparing MMPCs of CPC-/CPC+ patients there was significant ADM loss (CD49d, CD49e, CD56, CD138), with decrease trends in others (CD38, CD58, CD18, CD168). Further ADM decrease was shown in CPCs themselves (CD49d, CD49e, CD56, CD138, CD58). There was also upregulation of some adhesion molecules on BM MMPCs when compared to HD BM PCs (CD49e, CD56, CD44, CD11a), suggesting possible migration markers.

Conclusions. Loss of ADM enables MMPCs to leave the BM milieu and enter the PB as CPCs. These changes can be seen in both the CPC+ patient MMPCs, and the CPCs themselves, where the loss is' even more prominent. This shows that CPC formation may be a clonal evolution towards more progressive disease, and CPC detection could be used in addition to BM MRD assays in monitoring RRMM patients.

Keywords: adhesion molecules, circulating plasma cells, flow cytometry, minimal residual disease, multiple myeloma

MORPHOLOGICAL PARAMETERS OF 31-40-YEAR-OLD MEN TESTES

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Background and Aim. According to the scientific literature data, the right testis is larger than the left in young men. This ratio can change with age. In older men, the left testis can be larger than the right under the influence of impaired blood circulation of the right testis. The aim of this study was to compare morphological parameters (length, width, height, volume and weight) of the right and left testes in 31-40-year-old men.

Material and Methods. This work was approved by the Kaunas Region Biomedical Research Ethics Committee (No. P2-BE-2-1/2015, 2022-05-06). Pairs of testes from 20 men aged 31-40 years were obtained from Kaunas Division of State Forensic Medicine Service after autopsy in the 10% formaldehyde solution. The testes were weighted, and the length, width and height of each testis were measured using the sliding calliper. The volume of each testis was measured by water displacement. The Statistica program (Statistica Version 5, StatSoft Inc.) was used for statistical analysis of results. Data were expressed as mean ± standard deviation (SD), and $p < 0.05$ was taken as significant.

Results. The both testes in 31-40-year-old men are an ovoid shape with the mean length, width and height 4.39±0.53 cm, 2.92±0.29 cm and 2.58±0.28 cm respectively. The mean volume and weight of both testes were 20.85±4.98 ml and 21.41±5.0 g respectively. The length of the right and left testes was 4.38±0.55 cm and 4.4±0.52 cm respectively ($p > 0.5$). The width of the right testes was 2.94±0.28 cm and of the left 2.9±0.3 cm ($p > 0.5$). The height of the right and left testes was 2.57±0.31 cm and 2.59±0.26 cm respectively ($p > 0.5$). The volume of the right and left testes differed non-significantly (21.15±5.14 ml and 20.55±4.93 ml, $p > 0.5$). The weight of the right and left testes was similar too (21.79±5.13 g and 21.03±4.96 g, $p > 0.5$).

Conclusions. The length, width, height, volume and weight of the right and left testes were similar in 31-40-year-old men.

Keywords: men testes, morphology, volume, weight

PHYSICAL COMPLAINTS OF STUDENTS OF INSTITUTE OF DENTISTRY, VILNIUS UNIVERSITY

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Background and Aim. According to research data 54-93% of dentists complain of work-related pain. Health problems start as early as the years of study so assessment of physical health is important in order to avoid musculoskeletal disorders. Aim: to investigate the physical health complaints related to dental practice of 3–5-year dentistry students.

Material and Methods. A questionnaire survey was conducted among 3–5-year students. Analysed: students' gender, year of studies, physical health before and during their studies. Statistical analysis of the data was performed using SPSS v25.0. Descriptive statistics, frequency tables and a chi - square test was performed.

Results. The study involved 107 respondents (response rate 87.7%): 73.8% women, 26.2% men. The mean age was 22.8 years (±1.6). 3rd year students accounted for 35.5%, 4th year –32.7%, 5th year – 31.8%. It was found that 23.4% of the respondents assessed their general health as "Satisfactory" and "Bad", 14% of respondents in the last 6 months experienced frequent or persistent back and neck pain. Muscle pain was statistically more common in women than in men (p=0.036). 3rd year dentistry students were statistically more likely to complain of headaches than 4th and 5th year students (p=0.017). 65.4% of the study participants solved physical health problems through sports and exercise, 54.2% – took medication, 15.8% – did not solve health problems at all. 24.3% of the students indicated that they had no physical complaints before their studies, but during the last 6 months all respondents indicated at least one physical complaint. Physical health status was assessed the worst by 5th year students, then 4th and 3rd year students (p=0.035).

Conclusions. All 3–5-year dentistry students of VU complain of physical health problems during their studies. Greater attention needs to be paid to maintaining occupational health.

Keywords: dentistry, education, physical health, students

ANTHROPOMETRIC EVIDENCE OF BRACHYDACTYLY TYPE D IN A FAMILY WITH UNUSUAL THUMBS

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Background and Aim. Brachydactyly type D affects the distal phalanx of the thumb, making it shorter and its base wider than usual. The trait occurs isolated and is considered autosomal dominant with variable expressivity, incomplete penetrance and a prevalence of 0.41-4.0%. It is not yet clear which genes cause this trait, but the TWIST, HOXA1-A13 cluster and HOXD13 are considered strong candidates. Thumbs with brachydactyly are also less prone to joint wear. The aim of this study was to measure the parameters of thumbs in one family members with brachydactyly and control group respondents who do not have the trait.

Material and Methods. With a caliper and a measuring tape, the thumbs' length, width, and girth were measured for 3 family members with brachydactyly and a control group of 21 men and 21 women. Other people with brachydactyly were approached through the internet to measure their thumbs' parameters.

Results. Daughter R. (19 years old) and her father A. (57 years old) has brachydactyly in their left hand. The father's sister's daughter D. (26 years old) has the trait in both hands.

The length of the distal phalanges of left and right thumbs for daughter R. are 22 and 32mm, for father A. 33 and 43mm and for cousin D. 24 and 22mm respectively. In the control group, the average lengths of distal phalanges of thumbs for women are 29.7±0.1mm for the right, 29.0±0.1mm for the left thumb and for men - 31.2±0.2mm for the right and 31.8±0.1mm for the left thumb.

Conclusions. Anthropometric measurements confirm brachydactyly type D in this family. For the control group, we observed no significant difference between the right and left thumb parameters, but compared to the family members, the difference in the measurements is up to 10mm.

Keywords: brachydactyly type D, thumb measurements, family, genes

THE INFLUENCE OF QUERCETIN ON BIOCHEMICAL CHANGES IN RAT LIVER TISSUE ON THE BACKGROUND OF CENTAL DEPRIVATION OF LUTEINIZING HORMONE SYNTHESIS

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Background and Aim. Testosterone synthesis inhibition can cause various effects on liver tissue, including changes in macrophageal activity and in diversity of their subpopulations. The aim of our study is to find out those changes by investigating arginase and NOsynthases activities.

Material and Methods. The experiment was conducted on 30 adult male rats. Animals were divided into 3 groups: I control (10); II experimental (10) - were injected with triptorelin acetate in the dosage of 0.3 mg/kg of body weight, III experimental (10) - received triptorelin acetate in the same dosage and quercetin 100 mg/kg of body weight 3 times a week. The experiment lasted for 365 days. The nonparametric Mann ¬ Whitney test was used to determine the significant statistical differences between groups. The difference was considered statistically significant at $p<0.05$.

Results. Arginase, iNOS and cNOS levels were monitored in all groups of animals. Activity of the iNO synthase in the II group increased by 9.1 %, while the activity of the constitutive isoforms did not change significantly. Arginase activity was reduced by 33.8%. Against the background of 365 days of central deprivation of testosterone synthesis the introduction of quercetin led to a decrease in the activity of the iNOS by 61.7 %, while the activity of cNOS decreased by 36.7%. Usage of quercetin increased the activity of arginase by 3.6% in comparison with the experimental group.

Conclusions. INOS activity could be used as a marker of macrophage polarization by the M1 phenotype, while arginase activity was a clear marker of the M2 phenotype. With prolonged central deprivation of luteinizing hormone synthesis by triptorelin, the polarization of liver macrophages was shifted towards the predominance of the M1 phenotype, as the iNOS / ARG ratio increased to 0.91 versus 0.65 in the control group.

Keywords: liver, macrophages, testosterone, triptorelin acetate

MATERNAL DIETARY, PHYSICAL ACTIVITY AND UNHEALTHY BEHAVIORS CHANGES OVER THE PAST DECADE IN LITHUANIA: A MULTICENTER CLINICAL TRIAL

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Background and Aim. Unhealthy behaviors and diet, obesity and excessive weight gain are major risk factors for maternal and fetal complications. The aim of this study was to assess maternal dietary, physical activity and unhealthy behaviors changes over the past decade in Lithuania.

Material and Methods. Two multicenter trials were conducted in three different clinical centers ten years apart (in year 2010 and 2019). Women with viable first trimester pregnancy were included. Gynecologists, who were taking antenatal women care and treatment at the maternity units, filled a questionnaire regarding socioeconomic factors, physical activity, anthropometric data and obstetric history. The diet in pregnancy was examined by using the standardized WHO Nutrition Research questionnaire modified to evaluate the diet of pregnant women. Regional bioethics committee approved the study.

Results. 489 women completed the study. The demographic and anthropometric characteristics were similar. Population characteristics showed that the mean age of pregnant woman increased by 1.8 years from 28.4 to 30.3 ($p<0.001$). Data analysis showed that women tend to gain 0.84 kg more gestational weight ($p=0.034$). The percentage of women who smoke has decrease by 15.7% during past decade, but percentage of woman who consume alcohol has increased ($p<0.001$). Women more commonly reported to eat more regularly, they ate less in the evening and more times per day ($p<0.001$). A trend of lower food supplements, vitamins, iron and folic acid ($p<0.001$) intake was found. The frequency of doing sports, physical activity increased by 1.94 times ($p<0.001$).

Conclusions. The present study found that physical activity and dietary behavior improved during the last decade. Still there is quite high percentage of unhealthy habits and decreased intake of food supplements such as folic acid which is necessary for pregnant women.

Keywords: diet, nutrition, physical activity, pregnancy, unhealthy behaviours

CHANGES IN BREAST VOLUME AND SHAPE IN RELATION TO THE BREASTFEEDING DURATION ONE YEAR POSTPARTUM (A LONGITUDINAL STUDY)

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Background. There is a lack of studies about the relation between the breastfeeding duration and changes in female breast volume and shape, besides, data are controversial.

The aim of this study was to evaluate changes in breast's volume and shape based on the different duration of breastfeeding.

Material and methods. The present study enrolled 88 women aged 23 – 38 years who gave birth at Vilnius Maternity Hospital in 2013 - 2017. Based on the duration of breastfeeding, all participants were grouped: women who breastfed less than 3 months (N=21); four to nine months (N=29); or ten to twelve months (N=38). Women were examined twice: 6 and 12 months postpartum. The standard anthropometric methods and instruments were used. 17 parameters of the both breasts were measured. Volume of each breast was calculated using Kramer and Drexler equation (1981). Statistical analysis (ANOVA, t test) was performed using SAS package (version 9.2).

Results. The average volume of breasts did not differ significantly between groups neither 6 nor 12 months postpartum. Pinches of the poles of both breasts were thinner with respect to the longer breastfeeding duration 6 months postpartum (this difference lacked statistical value) and 12 months postpartum (statistically significantly). Nipple height of both breasts tended to be higher with respect to the longer breastfeeding duration both 6 and 12 months postpartum, but the difference lacked statistical power. Comparison of the relative changes in the breast measurements from the 6^{th} to 12^{th} months postpartum between the groups demonstrated a tendency towards the more pronounced decrease in the breast width in women breastfed shorter and more pronounced decrease in the pinch thickness of breast poles in women breastfed longer.

Conclusions. The longer breastfeeding duration was associated with a more pronounced reduction in the breast's adipose tissue from 6^{th} to 12^{th} months postpartum.

Keywords: breast volume, breastfeeding, one year postpartum

CHANGES IN BODY SKINFOLDS THICKNESS AND PASSIVE BODY MASS SIX AND TWELVE MONTHS POSTPARTUM IN RELATION TO BREASTFEEDING DURATION (A LONGITUDINAL STUDY)

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Background. There is a lack of studies regarding the influence of breastfeeding on the female body composition.

The aim of the present study was to evaluate postpartum changes in body skinfolds thickness and passive body mass in relation to the breastfeeding duration.

Material and methods. The study enrolled 88 women (23 – 38 y.o.) who gave birth at Vilnius Maternity Hospital in 2013 - 2017. Based on duration of breastfeeding, all participants were grouped: women who breastfed less than 3 months (N=21); 4-9 months (N=29); or 10-12 months (N=38). Participants were examined twice: 6 and 12 months postpartum. 13 skinfolds were measured using the Holtain caliper. Fat mass was calculated using equations of J.V.Durnin and J. Womerslay (1974) and W.E. Siri (1961). Statistical analysis (ANOVA, t test) was performed using SAS package (version 9.2).

Results. 6 months postpartum, only bicipital and calf skinfolds were significantly thinner in group with the longest breastfeeding. 12 months postpartum, majority of skinfolds were significantly thinner in the same group. The relative change in the skinfold thickness from 6th to 12th months postpartum did not differ significantly between groups. The decrease in the thickness of the submental, abdominal, subscapular, tricipital and calf skinfolds between 6th and 12th months postpartum was more pronounced in group with the longest breastfeeding, and some increase in bicipital and pectoral skinfolds was observed in the group with the shortest breastfeeding. Women who breastfed the longest had significantly lower body fat amount compared to women who breastfed the shortest.

Conclusions. The differences between study groups with respect to the skinfold thickness thinning increased with the longer breastfeeding duration and was more significant 12 months compared to 6 months postpartum. The longer breastfeeding duration was associated with a more pronounced and faster body fat loss from 6th to 12th months postpartum.

Keywords: breastfeeding, one year postpartum, passive body mass, skinfolds

MATERNAL MALNUTRITION AND PANCREATIC HISTOMORPHOLOGICAL CHANGES IN FIRST-GENERATION RAT OFFSPRING

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Background and Aim. Malnutrition is a serious problem in poor countries, as well as the slim body image in a well-developed world. There is a link between the mother's diet throughout and before pregnancy and certain diseases in the offspring. This study was designed to determine the pancreas histopathological changes in first-generation rats of food-restricted mothers.

Material and Methods. Experimental rats were divided into three groups: control (normal diet), first (50% restricted diet before pregnancy) and second (50% restricted diet before and throughout pregnancy). First-generation offspring were fed normally. Offspring's pancreas sections were stained with hematoxylin-eosin and microscopically examined. The percentage of vacuolization area was assessed in 20 randomly selected vision fields using 40x magnification. The surface area of Langerhans islets was measured using 20x magnification, 10 biggest islets were selected.

Results. Increased vacuolization of exocrinocytes was observed in the second experimental group of male offspring compared with control ($p<0.05$). The surface area of the Langerhans islets was increased in the first experimental male group compared with control ($p<0.05$) and the second experimental male group compared with the first group ($p<0.05$). Female groups had any statistically significant histopathological changes. The tendency of fibrosis and scattering of Langerhans islets in male offspring's pancreas was observed visually, whereas in females only scattering of islets was identified. Examination revealed an accumulation of adipocytes in the pancreatic stroma in both gender experimental groups.

Conclusions. Mothers' malnutrition can be related to the general health of the offspring not only during pregnancy but also before pregnancy: first-generation male rat offspring of mothers, which were fed a low-calorie diet before and throughout pregnancy, had increased vacuolization. Male offspring, which mothers were underfed before pregnancy, had larger Langerhans islets. Female offspring had any statistically significant changes. Mother's undernutrition promoted the accumulation of fat in first-generation offspring pancreatic stroma.

Keywords: islets of Langerhans, vacuolization, undernutrition

THE GENETIC HETEROGENEITY IN NEUROMUSCULAR DISORDERS: A STUDY OF NEXT-GENERATION SEQUENCING RESULTS

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Background and Aim. In the last years importance of genetic testing in diagnostics of neuromuscular disorders significantly increased. Next-generation sequencing (NGS) was introduced into the diagnostic routine of neuromuscular disorders and provided new information on the heterogeneous molecular etiology of these disorders. Our study aimed to determine the diagnostic outcome of NGS in patients with suspected genetic neuromuscular disorders.

Material and Methods. This single-center study included 23 patients with a suspected neuromuscular disorder that was not confirmed by previously performed other genetic testing methods in 2021. NGS results and clinical data were collected to investigate an underlying genetic cause and characterize the study cohort.

Results. 15 (65.2%) of the patients were adults. The patients' mean age was 31.63 years and it ranges from 2 to 75 years. The patients' mean age, when the first presentation of the symptoms was noticed, was 23.62 years and ranges from birth to 72 years. NGS revealed gene variants in 19 (82.6%) patients in total. 13 of these 23 (56.52%) patients had pathogenic or likely pathogenic gene variants, and 6 (26.08%) had a variant of uncertain significance. All patients had unique gene variants. 10 of these 19 (52.63%) patients had gene variants not mentioned in the literature. 2 of 19 (10.52%) patients had more than one gene variant possibly explaining disease phenotype. Also, NGS confirmed genetic diagnoses in 6 of 23 (26.08%) patients with no found data or normal results of electromyoneurography. Most diagnoses corresponded to muscular dystrophies/myopathies (69.23%).

Conclusions. NGS can unravel the genetic etiology in more than half of the cases. Although neuromuscular disorders present with similar phenotypes, NGS showed high genetic heterogeneity in these disorders. Knowledge of the exact molecular cause of the neuromuscular disorder is important to provide appropriate treatment and prognosis.

Keywords: heterogeneity, neuromuscular disorders, next-generation sequencing

EVOLUTION OF ULTRASOUND IN ASSESSING SYNOVIAL VASCULARITY OF THE SMALL JOINTS: PICTORIAL CASE SERIES

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Background and Aim. Ultrasound in rheumatology has rapidly evolved and been incorporated into routine clinical practice over the past decade. New developments in hardware and software technology have resulted in new applications, including microflow imaging of synovial vascularity. Superb microvascular imaging (SMI) is a novel Doppler technique that suppresses the noise caused by motion artefacts with an innovative filter system without removing the weak signal arising from small vessel blood flow, thus achieving a greater sensitivity than power Doppler (PD).

To demonstrate the value of SMI in detecting slow flow in inflammatory arthritis compared with conventional PD modality.

Material and Methods. We present pictorial case series of three patients diagnosed with active (DAS28>3.2) inflammatory arthritis. Patients were assessed with grey-scale, PD, and both colour and monochrome SMI modes. A diagnostic ultrasound system (CANON TUS-AI800, JAPAN) equipped with a linear transducer (24 MHz frequency) was used. PD and SMI signals observed in the synovial membrane were scored using a semi-quantitative grading system, from 0 to 3 (0=absent, 1=mild, 2=moderate, 3=severe).

Results. Case 1 24-year-old woman with rheumatoid arthritis of 3 years. The activity of the disease – was moderate (DAS28-3.24). The 2nd swollen proximal interphalangeal joint was unpainful. High-grade activity (PD-2, SMI-3) of synovial vascularity was detected. **Case 2** 62-year-old man suffering from psoriatic arthritis for 5 years, with high disease activity (DAS28-4.94). The 5th metacarpophalangeal joint was a bit painful. PD detected several dots of vascularity in the typical site of the vessel channel while SMI confirmed the formation of bone erosion with moderate synovitis. **Case 3** 61-year-old woman suffering from rheumatoid arthritis for 20 years, with moderate disease activity (DAS28-3.94). Both SMI modes confirmed mild arthritis in the 2nd asymptomatic metacarpophalangeal joint.

Conclusions. SMI increases the conspicuity of Doppler vascularity in symptomatic joints when compared to PD. This allows detection of low-grade inflammation not visualized with PD in patients with asymptomatic arthritis.

Keywords: low-grade vascularity, power Doppler, superb microvascular imaging, ultrasound

INFANT EATING BEHAVIORS ARE ASSOCIATED WITH GROWTH AND ADIPOSITY IN THE FIRST TWO YEARS OF LIFE

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Background and Aim. Infant appetitive traits have been associated with body size variation in the first years of life. Few studies have been conducted among minority populations or recruited mothers based on obesity status.

Material and Methods. The Infant Growth and Microbiome Study enrolled 368 infants of African American mothers with pre-pregnancy BMI <25 or ≥30. Infants were evaluated at birth and 3, 12, and 24 months (m). The Baby Eating Behavior Questionnaire (BEBQ) was completed at 3m and confirmatory factor analysis tested its fit to our data. Infant weight (WAZ) and BMI (BMIZ) z-scores were calculated using the WHO reference. Biceps, triceps, subscapular, and suprailiac skinfold thicknesses were summed (SSF). Spearman correlation analysis tested relationships of BEBQ measures with WAZ, BMIZ, and SSF.

Results. BEBQ constructs 'enjoyment of food,' 'slowness in eating,' and 'satiety responsiveness' fit poorly to our data. We used the 'food responsiveness' construct (Cronbach's alpha = 0.85), and two items, "My baby has a big appetite" and "My baby feeds slowly," to evaluate baby eating behavior in 219 infants (113 female) with complete data. BEBQ measures did not differ for infants of lean vs. obese mothers. Those with higher average scores on the slow feeding item had significantly ($p<0.05$) lower WAZ, BMIZ, and SSF at 3, 12, and 24m (WAZ rho = -0.16, -0.20, and -0.20; BMIZ rho = -0.16, -0.16, and -0.19; and SSF rho = -0.16, -0.18, and -0.17, respectively). General appetite correlated with BMIZ and SSF at 12 and 24m (BMIZ rho = 0.15 and 0.20, and SSF rho = 0.21 and 0.14, respectively).

Conclusions. Some infant appetitive traits appear to associate with growth and adiposity in the first 2 years of life. Further research should investigate whether appetitive constructs reflect stable traits in infants and/or parental perceptions that influence infant and childhood feeding styles.

Keywords: appetitive traits, Baby Eating Behavior Questionnaire, growth, infant

Funding: This study was supported by the Healthy Weight Program at Children's Hospital of Philadelphia and grant number 5R01DK107565

REACTIVE MORPHOLOGICAL CHANGES OF CORTICOSTEROCYTES IN THE RETICULAR ZONE OF THE CORTICAL SUBSTANCE IN THE ADRENAL GLANDS OF WHITE RATS AT THE 9TH MONTH OF CENTRAL BLOCKADE OF GONADOTROPIC HORMONES

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Background and Aim. Morphological changes of corticosterocytes in the reticular zone of the adrenal cortex of white rats during inhibition of testosterone synthesis by experimental blockade of gonadotropic hormones at 1, 3, 6 and 9 months.

Material and Methods. The adrenal glands of 50 white rats were studied. They were divided into 5 groups: the 1st – 10 intact rats; the 2nd, 3rd, 4th, 5th groups of 10 rats, which were administered the drug "Diferelin". Material was collected at the end of the: 1st month (2nd group), 3rd month (3rd group), 6th month (4th group), 9th month (5th group).

Results. Increase in cytoplasm size and unchanged nucleus size of corticosterocytes in the reticular zone at the 1st month of the experiment, compared with the indicators in 1st group. The appearance of corticosterocytes in which large lipid vacuoles displace the nucleus to the periphery.

Increase of average size of corticosterocytes (ASC) and a significant decrease in average value of the size of the nucleus (AVSN) at the 3rd month of the experiment, compared with the indicators in the 2nd group, cytoplasmic basophilia and fat inclusions.

Moderate increase in ASC of the reticular zone, a significant increase in AVSN at the 6th month of the experiment compared with the group 3, decrease in cytoplasmic basophilia, the appearance of lipid inclusions indicates a gradual return of cells to intact state.

Significant decrease of ASC in reticular zone and AVSN at the 9th month of the experiment, moderate basophilia with minor lipid inclusions confirms the return of cells to the indicators of the intact group.

Conclusions. This research proves that testosterone inhibition causes dystrophic reactive changes in corticosterocytes of the reticular zone in the first month of the study and compensatory synthetic activity in the third month.

Keywords: adrenal glands, corticosterocytes, testosterone, reticular zone

PREVALENCE OF SEXUAL VIOLENCE IN LITHUANIA BEFORE AND DURING THE COVID-19 PANDEMIC

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Background and Aim. Globally 30% of women have experienced physical or sexual violence. During the COVID-19 pandemic rising distress, frustration, and decline of social services increased the risk of domestic violence. In this study we aim to analyse and compare the prevalence of sexual violence in Lithuania before and during the pandemic.

Material and Methods. Retrospective analysis of data from the National Register of Criminal Acts on crimes against the freedom and integrity of sexual self-determination in Lithuania between 2018-2021, was conducted. Data from pre-pandemic (2018-2019) and pandemic (2020-2021) periods were compared and analysed using Microsoft Excel, IBM SPSS 23.0 and related to existing literature.

Results. Between 2018 and 2021, 736 cases of sexual violence were registered in Lithuania. The majority were rape. The number of registered cases has been decreasing since 2013 and during the pandemic the decline was more significant. Mostly sexual violence was directed against women. Comparing pre-pandemic and pandemic periods sexual violence against minors increased. 76.3% of crimes were committed by acquaintances, mostly by a stepfather (5.9% before pandemic, 9.1% during pandemic). During the pandemic the number of cases committed by minors increased. Number of crimes committed under the influence of alcohol and committed by groups of people decreased. Mostly there was no damage to physical health or victims had negligible physical health impairment. Despite increased risk of sexual violence countries like Denmark reported fewer sexual crimes, similar, to Lithuania, other countries like Peru, Spain and Italy reported an increase in crimes. Possibly such decline comprises increased unemployment, time spent with the abuser, decreased help service availability, fear of contracting COVID-19.

Conclusions. During the pandemic in Lithuania similarly to other countries, reports of sexual violence declined. Sexual violence against minors increased during the pandemic, likewise more minors were accused of sexual violence. Pandemic period caused decrease of cases with alcohol intake and group crimes.

Keywords: COVID-19, rape, sexual violence, sexual crimes

A "DECARNATION HOUSE" IN PREHISTORIC BRAZIL: AN ARCHAEOTHANATOLOGICAL APPROACH TO INTERPRET A TWO-STAGE FUNERAL CYCLE AT *TOCA DO ALTO DA SERRA DO CAPIM* (MIDDLE-LATE HOLOCENE, NORTH-EASTERN BRAZIL)

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Background and Aim. *Toca do Alto da Serra do Capim* is an archaeological site in *Serra das Confusões* National Park, *Piauí* State, North-eastern Brazil, that has evidence of funeral and ceremonial use dating to the Middle - Late Holocene, from 3,750 +/- 30 (4154 - 3960 cal BP) to 8,590 +/- 60 (9670 - 9490 cal BP) years BP. An archaeothanatological approach, allowed us to understand the mortuary deposit's formation process and to reconstruct the unusual burial cycle present in this cave.

Material and Methods. The cave presents two contrasting deposits of human remains at two stratigraphic levels: a semi-articulated skeleton in a plant funerary container surrounded by similar empty plant containers; and numerous burnt commingled human remains and ashes scattered randomly within the cave. Archaeothanatology or Funerary Taphonomy was the methodological approach used to interpret the link between the funerary practices inferred from the distinct mortuary bone deposits recovered from the cave. The reconstruction of the funerary practices was made using taphonomic data collected in field and laboratory, involving contextual analysis and articulation of bone remains, bone preservation and representation, and bone modification by natural or cultural agents, such as fracture patterns or burning.

Results. The taphonomic methodology is a key tool that allowed us to infer the sequential stages of a secondary funerary practice carried out millennia ago by the ancient occupants of this ceremonial cave, including temporary inhumation of bodies, exhumation of clean dry bones and cremation with probably consumption of ashes and redeposition of burnt remains.

Conclusions. An archaeothanatological analysis of two different types of human bone deposits allowed us to reveal an interesting funerary pattern, previously unknown for the study region, of secondary burial practices in a prehistoric cave which was used as a "decarnation house" (*sensu* Larsson 2003).

Keywords: archaeothanatology, decarnation house, mortuary formation process, temporary burials, secondary cremation

INFLUENCE OF COVID-19 ASSOCIATED MYOPATHY ON OUTCOMES IN CRITICALLY ILL PATIENTS

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Background and Aim. Identify muscle wasting for Covid-19 patients during intensive care unit (ICU) stay and how it affects ICU outcomes.

Material and methods. A single center prospective study of patients with the prolonged length of stay in ICU was conducted. Two patient groups, Covid-19 and nonCovid-19 patients have been analyzed. All the patients had the severity of medical condition according to APACHE II and SOFA, nutrition status according to NRS 2002 scales, the durations of ICU treatment and mechanical ventilation (MV) determined. The fat-free body mass was assessed by measuring the phase angle (PA) at 50-kHz frequency on the first, the fifth, the seventh and fourteenth day of ICU treatment. The thickness of biceps brachii, rectus femoris muscle and vastus intermedius was measured by ultrasound. Muscle strength was assessed with dynamometer on the day of discharge from the ICU.

Results. 143 ICU patients were included in the study: 101 nonCovid-19 and 42 Covid-19. There was no difference in age and gender in these patients' groups. Survival rate of both groups was not significantly different 65% vs 64%, $p>0.05$. Severity of illness regarding APCHE II score (18 vs 13, $p<0.0001$) and SOFA score (8 vs 3, $p<0.0001$) was worse in nonCovid-19 group of patients. LOS and duration on MV did not differ in both groups. PA difference comparing the 5^{th} and 7^{th} with the 1^{st} days was significantly worse in Covid-19 patients. In Covid-19 patients muscle thickness (biceps brachii 8.8% vs 16.5%, $p<0.05$) was significantly worse. There was no significant difference in muscle strength measurements between groups.

Conclusions. Muscle wasting in Covid-19 ICU patients is more significant than in nonCovid-19 patients and have influence on survival rate.

Keywords: Covid-19, dynamometry, Intensive care unit, phase angle, muscle ultrasound, muscle wasting

THE ASSOCIATION AMONG NUTRITION RELATED PARAMETERS AND HEPATIC STEATOSIS IN KIDNEY TRANSPLANT RECIPIENTS

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Background. Long-term post-transplantation complications such as an impairment of lipid metabolism and an increase of insulin resistance especially in the liver, have become a focus of interest in transplant medicine.

Objective. To investigate the influence of pretransplant anthropometric measurements, lipid profile and bioelectrical impedance analysis (BIA) derived fat mass on the development and progression of the fat accumulation in the liver following kidney transplantation (KT).

Methods. Anthropometric measurements, lipid profile, BIA-derived fat mass and hepatic steatosis assessed by ultrasound were evaluated at the day of KT and 12 months later. Body mass index (BMI) was calculated as the dry weight in kilograms divided by the height in meters squared.

Results. A total of 89 ESRD patients (mean age of 44 [22] years, 57.3% male, 11.2% with diabetes) underwent KT in 2018-2019 were included. Hepatic steatosis was diagnosed in 16 KT recipients before surgery and in 23 after. Fat mass (12.9 vs 23.6 kg, $p<0.05$ preKT; 15.2 vs 29.8 kg, $p<0.05$ postKT), BMI (29.1 vs 23.7 kg/m^2 preKT, $p<0.05$;30.1 vs 23.2 kg/m^2, $p<0.05$ postKT), waist (104 vs 90 cm, $p<0.05$ preKT; 108 vs 91 cm, $p<0.05$ postKT) and hip (106 vs 99 cm, $p<0.05$ preKT; 105 vs 98 cm, $p<0.05$ postKT) circumferences were significantly higher in patients with hepatic steatosis before and after KT. Patients with hepatic steatosis had higher level of serum triglycerides before and after KT (1.8 vs 2.7 mmol/l, $p<0.05$ preKT, 1.6 vs 2.4 mmol/l, $p<0.05$). Logistic regression analysis revealed that pretransplant BMI (OR 1.66, 95% CI [1.27-2.56], $p<0.05$) and fat mass (OR1.25, 95% CI [1.09-1.55], $p< 0.05$) could predict hepatic steatosis after KT.

Conclusions. BMI, fat mass, waist and hip circumferences, serum triglycerides are associated with hepatic steatosis in ESRD patients. Patients with higher BMI and fat mass before KT had higher risk for hepatic steatosis after KT.

Keywords: bioelectrical impedance analysis, hepatic steatosis, kidney transplantation, nutritional status

MOVEMENT ESTIMATION TASK IN EARLY ALZHEIMER'S DISEASE

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Background and Aim. Many studies have demonstrated that Alzheimer's disease (AD) patients exhibit impaired motion processing. There are implications, that complex motion processing is more vulnerable to decline in early stages of AD than complex form processing. The purpose of our research was to explore the changes of movement estimation in early stages of AD: mild cognitive impairment (MCI) and mild AD.

Material and methods. We recruited 22 AD patients (Mini-mental state examination (MMSE) median 22), 17 amnestic-MCI patients (MMSE median 25) and 10 normal controls (CG, MMSE median 29) matched by age, education, gender in this prospective, cross-sectional, case-control study. We used computerised Timewall task (20 trials, each lasts between 2 and 10 seconds) from The Psychology Experiment Building Language (PEBL) test battery. It is a time/movement estimation task, in which a moving object disappears behind a wall, and the participant must judge when it would reach a gap if speed is constant in that trial. Accuracy of each response was calculated by dividing difference between response time (RT) and target time (TT) by TT.

Results. Subjects in the AD group performed worse (less accurate responses, median 0.2250), than MCI (median 0.1943), and CG (median 0.1220), Kruskal-Wallis chi-squared=14.528, df=2, p=0.0007. In MCI and AD groups there where more delayed responses than in CG, when RT was longer than TT (Kruskal-Wallis chi-squared=5.9774, df=2, p=0.0504). Correlation between movement estimation accuracy and cognitive tests results was statistically significant (MMSE -negative moderate correlation, Spearman correlation coefficient -0.4898, p=0.0004; ADAS-Cog13 –positive moderate correlation, Spearman correlation coefficient 0.4820, p=0.0005).

Conclusions. The results show that movement estimation is impaired since the early phase of cognitive decline, with the worst performance in AD group, and is moderately correlated with other cognitive tests results. This task might be used to detect motion processing deficit of early AD patients.

Keywords: Alzheimer's disease, mild cognitive impairment, motion processing, movement estimation

PROGNATHISM IN HUMAN POPULATIONS FROM DIFFERENT CLIMATIC CONDITIONS

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Background and Aim. The term prognathism is used to describe the natural frontal protrusion of facial bones. The objective of this study was to investigate the degree of total and alveolar prognathism and maxillary index in populations originating from areas with different climatic conditions.

Material and Methods. The material consisted of 403 skulls: 37 skulls from South Australia (24 male, 13 female) from the warm steppe climate (Bsh in Köppen-Geiger classification), 74 skulls (42 male skulls and 32 female skulls) from North Australia tropical monsoon climate (Am type), 14 skulls from Melanesia (4 male, 10 female) (tropical rainforest climate – Af type). A population from Uganda was also studied (52 males and 38 females) (tropical savanna climate (A type). In addition, 101 skulls from a contemporary population from eastern Australia were analysed (52 male and 49 female) (warm temperate climate – C type) and 87 skulls from the Tasmanian population (43 male and 42 female) (oceanic climate – Cfb type) from Howells' Craniometric Data Set. The degree of total prognathism (angle α), alveolar prognathism (angle α1) and maxillary index were examined. Student t- test and ANOVA with NIR post-hoc tests have been conducted.

Results. Populations from South Australia and Tasmania had the highest prognathism (maxillary index >103, while the least prognathism was characteristic of the Melanesian population, which had an orthognathic profile (maxillary index < 98) ($p<0.05$). A clear gradient of increase in maxillary index values (and thus increase in degree of prognathism) was observed with increasing southern latitude. The values of angles α and α1 showed similar relationships.

Conclusions. The study of prognathism in various populations can illustrate the rate of evolutionary processes. It can also be useful for comparative purposes and for analysing genetic distances between populations and their variation according to environmental factors such as climate or diet. The fact that there is a relatively small number of studies on prognathism makes comparative analysis difficult.

Keywords: prognathism, maxillary index, climatic conditions

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CORRELATION OF CIRCULATING LYMPHOCYTES AND PANCREATIC CANCER ADVANCEMENT

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Background and Aim. Despite improved management, pancreatic cancer remains one of the most threatening and fatal. Pancreatic adenocarcinoma is considered immunologically cold because abundant stroma and cancer-associated fibroblasts prevent immune system cells from breaking into the tumor environment. Nevertheless, the systemic response of the immune system is monitored and investigated. At higher stages of the disease, a lower total lymphocyte count is observed, but which particular lymphocyte subset determines such tendency is still an object of research.

Material and Methods. We included 192 patients who presented with PDAC between 2018 and 2021 in the Vilnius University Hospital Santaros Klinikos and were treated with surgery alone or received adjuvant chemotherapy for the early-stage disease or underwent chemotherapy alone for the advanced or metastatic disease in this analysis. The Vilnius regional bioethics committee approved the study before its initiation in 2017. Peripheral blood samples were collected before any treatment. Patient samples were analyzed using the eight-color cytometric technique. Subsets, including lymphocyte count, CD19, CD3+ CD56+, CD8+ CD57+, CD3+ CD57+, CD3, CD3+ CD4+, CD3+ CD8+, CD3+ CD4- CD8, CD3- CD56+ CD16+, CD3- CD56+ CD16-, CD4+ CD25+ CD127+/-, CD4+ FOXP3+, CD8+ CD25+ CD127+/-, CD8+ FOXP3+ T cells were evaluated. One-way ANOVA was used to analyze differences in means between groups according to the stage, sex, and age of patients (IBM SPSS Statistics, v. 23.0).

Results. In our cohort absolute lymphocyte count (p=0.009), all CD3+ lymphocytes (p=0.012) and CD3+CD4+ (p=0.018), CD3+CD4-CD8- (p=0.005) subsets correlated with stage of the disease at diagnosis and CD4+CD25+CD127+/- was significantly decreasing through age groups (p=0.035).

Conclusions. Our results confirm the correlation between stage and lymphocyte count and the impact of aging on Treg cells reported by previous authors. Lower values of subsets of CD3+, T helpers CD3+CD4+ and CD3+CD4-CD8- cells were also found in later stages, assuming a worse prognosis.

Keywords: cancer, immune, lymphocytes, pancreatic

ARE THE SOCIOECONOMIC AND LIFESTYLE FACTORS OF THE FATHER RELATED TO THE BIRTH WEIGHT OF HIS FUTURE CHILD?

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Background and Aim. It is well known that the biological factors of the father are interrelated with the physical status of his newborn, but little is known about the father's socioeconomic and lifestyle factors that may be related to his future newborn body size. The aim of this study was to assess the relationship between father's socioeconomic as well as lifestyle factors and the weight of his newborn.

Material and Methods. The survey was conducted in 2021 using an anonymous online questionnaire. Data from 604 participants were included in this study. Newborn weight and father's lifestyle in the last few years before the birth of the child were analysed: education, type of work, work-related stress, physical activity, sleep duration. Newborns were divided into four groups according to their birth weight (g): <2500; 2500–2999; 3000–4000; >4000. Statistical analysis was performed using Microsoft Excel and JASP programs.

Results. Normal birth weight (3000-4000) was more frequently observed in neonates whose fathers had higher education (68.5% versus 56.7%; $p<0.05$; on average – 3465.2/3368.0, respectively) and intellectual work (69.5% versus 57.5%; $p<0.01$) compared to others. The mean newborn weight in the group of fathers with higher work-related stress was 3424.6, with lower – 3447.7 ($p>0.05$); in the group of fathers with different physical activity it ranged from 3420.9 to 3472.0 ($p>0.05$). Fathers who slept more than 10 hours/day had significantly larger newborns (3837.3; $p<0.01$) than fathers from other sleep-duration groups (here it ranged from 3420.4 to 3464.1).

Conclusions. Normal birth weight was more frequently observed in newborns whose fathers had higher education and intellectual work, whereas fathers who slept more than 10 hours a day had evidently larger newborns. Although there was no statistically significant difference, fathers who were physically active and experienced less work-related stress were more likely to have slightly larger newborns.

Keywords: father, lifestyle, newborn weight, socio-economic factors

INTERGENERATIONAL CHANGES IN SELECTED CRANIAL MEASUREMENTS OF ADOLESCENTS FROM POLAND FROM 1938 TO 2020

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Background and Aim. Changes in the environment in which a particular population develops, including socio-economic factors, can influence craniofacial dimensions over time. The study aimed to investigate intergenerational changes in selected cranial measurements of adolescents (16-18 years of age) from Kraków, Poland.

Material and Methods. The analysis was based on the anthropometric measurements of four cohorts (years 1938, 1950, 2007 and 2020) of adolescents aged 16-18. Analysed characteristics included head breadth, length and head breadth-to-length ratio. The normality of each characteristic's distribution was assessed using Shapiro-Wilk's test, and the statistical significance of the differences between the cohorts was calculated using the two-way ANOVA or Kruskal-Wallis test. The pace of the secular changes of the analysed characteristics was also calculated.

Results. There was a secular increase in the head length from 1938 to 2020. The breadth of the head decreased between 1938 and 2007, but an increase was noted from 2007 to 2020. Changes analogous to head breadth were noted for the breadth-to-length ratio. The secular changes occurred the fastest between 2007 and 2020 for the length (18-year-olds), breadth (16-year old boys and 18-year-old girls) and the main indicator of the head (16-year old boys and 17-year-old girls).

Conclusions. There was a tendency toward debrachycephalisation in the more contemporary cohorts. Observed changes may be associated with more favourable overall developmental conditions as well as possible changes in the growth tempo of the Polish population.

Keywords: head anthropometry, cephalometry, Poland, secular trend

SECULAR CHANGES IN BODY WEIGHT AND LENGTH IN NEWBORNS FROM SOFIA, BULGARIA

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Background and Aim. The physical development of a newborn and its basic body measurements are closely related to the general health of the child and affect the health of the individual throughout life. The comparison of anthropological data of newborns from different cohorts helps assessing the influence of continuous changes in living conditions on growth and development. The aim of this work is to evaluate the intensity of possible secular trends in body weight and length of Bulgarian newborns for a 30-year period (1980-2010).

Material and Methods. The analysis includes estimation of intensity and direction of secular changes during the observed period. The data used are gathered from the birth registry of II Obstetrics and Gynecology Hospital "Sheinovo" Sofia, Bulgaria. The birth weight and length are measured immediately after birth by professional obstetrics. The significance of the trend is assessed by the t-test of Student ($p \leq 0.05$).

Results. In both sexes positive secular changes in birth length and decrement in birth weight are observed from 1980 to 2000 (from 50,2 to 50,9 cm and from 3,435 to 3,323 kg in boys; from 49,7 to 50,2 cm and from 3,309 to 3,208 kg in girls). Changes are more pronounced and statistically significant during the first decade (1980-1990). In the last decade (2000-2010) there is a slight tendency for decreasing birth length (by 0,2 cm in both sexes) and a stabilization in birth weight with a slight increase only in boys.

Conclusions. The observed secular changes are similar to those in other European countries - the positive trend in body length combined with negative changes in body weight till 2000 followed by insignificant negative trend in birth length combined with insignificant or negligible changes in birth weight during the next decade.

Keywords: birth length, birth weight, secular changes

Funding: National Science Fund of Bulgaria (Financial support for basic research project – 2021; contract №: КП-06-Н51/7 - 11.11.2021 г.).

CORRELATIONS OF CHILDREN'S BMI WITH PARENTAL BACKGROUND

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Background and Aim. Children's physical development is affected by several factors: genetic and social background, environmental factors. We know that physical parameters are related to parents' educational level, determining their social status, financial means, and correct knowledge about the upbringing and nutrition of their children. Therefore, it is worth comparing the data of children's body composition and BMI with the BMI of their parents and examining whether there is a correlation with other parental factors.

Material and Methods. We examined the physical condition of 51 children years 3 - 14 who participate in a special movement development program. Their BMI was examined with InBody 720 and manual anthropometric methods. Parental data like parents' current body weight and height, educational attainment and some lifestyle habits were collected using questionnaires. We also asked parents about their children's eating habits. Statistical analysis was made with SPSS v.20.0 software.

Results. Parental BMI were compared with those of children. The BMI of father and child showed no correlation. However, mother and child's BMI did. There was little variance in parents' educational attainment, and there were no parents below secondary education. The results show that BMI is lower with higher education. Educational level of father and mother were practically the same, so we did not examined the father separately. The mother's education showed correlation with eating habits, the child consumes less cooked pasta and more vegetables with a higher education.

Conclusions. Based on the results, it can be stated that the mother's influence on the child's physical condition and eating habits is more decisive than that of the father. Parents' health behavior are strongly influenced by their educational attainment. It affects their children's lifestyle in terms of both nutrition and physical activity.

Keywords: BMI, InBody, education, health behavior, parental background

GENOMIC POSITIVE SELECTION SIGNATURE ANALYSIS IN THE COHORT OF THE LITHUANIAN CHERNOBYL CATASTROPHE CLEAN-UP WORKERS

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Background and Aim. During cataclysmic events, natural selection pressures can change the characteristics and genetic architecture of a population in a relatively short period of time, as the population must adapt quickly to the threat posed. For this reason, populations that have survived ecological disasters are particularly suitable for the studies of adaptation. Lithuanian population is unique because it has experienced the consequences of the Chernobyl nuclear power plant disaster and participated in its' clean-up. Among the surviving Lithuanian clean-up workers of the Chernobyl nuclear disaster there are individuals who are aging relatively healthy. They are valuable as an object of research because they survived extreme conditions and adapted to the lifelong effects of ionizing radiation. Potentially, their survival and adaptation may depend on unique genome variation. This study aimed to characterise this unique genome variation, evaluated the adaptive effects of the identified statistically significant genome variants and their loci in the cohort of 93 Lithuanian clean-up workers of the Chernobyl nuclear disaster.

Material and Methods. Genome data were collected by genome-wide genotyping. A novel approach using analysis of positive selection sweep signatures in potentially protective genomic loci was used in order to justify their protective effect.

Results. Analysis showed that *LOXL1* gene and its' variant rs3825942 plays a potential protective role in the etiopathogenesis of the exfoliation syndrome. Also, whole-genome sequencing was performed for 40 Lithuanian clean-up workers of the Chernobyl nuclear disaster for the first time. This data was used and helped to identify top 22 genomic loci under positive selection.

Conclusions. Identified loci potentially determine clean-up workers survival and adaptive qualities to extreme conditions as well as the lifelong effects of ionizing radiation and Chernobyl nuclear power plant disaster itself.

Keywords: adaptation, Chernobyl nuclear disaster, genome variation, positive selection

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PROGRAMME AT A GLANCE

*The **numbers** of the podium presentations correspond to the numbers of the abstracts' submission system; ICEM (EvolMed) is an interdisciplinary scientific event intended for PhD students and other young researchers.*
Pre-recorded audio e-posters will be available on the EAA-ISGA–ICEM Meeting website (with a password only).

The 24th of August			
8:00-17:30	*Registration*		
9:30-11:00	**Opening Ceremony** (Aula Parva) *Music* **Plenary Session I** (Aula Parva) / Chairperson: Janina Tutkuviene EAA keynote lecture: NOËL CAMERON		
11:00-11:30	*Coffee break*		
11:30-13:00	**Plenary Session II** (Aula Parva) / Chairperson: Noël Cameron ISGA keynote lecture: BABETTE ZEMEL ICEM keynote lecture: MARTIN BRÜNE		
13:00-14:00	*LUNCH (ISGA Executive Committee Meeting, Room 238)*		
14:00-15:30	**EAA Session 1** (Aula Parva) Chairperson: Maria Kaczmarek *Humans and Environment* Podium presentations (10, 15, 37, 40, 127); *Applied Anthropology* Podium presentation (27)	**ISGA Session 1** (Room 238) *First 1000 Days* Chairpersons: Noël Cameron and Jelena Šarac Keynote lecture: JANINA TUTKUVIENE Podium presentations (8, 122, 183)	**ICEM Session 1** (Room 239) Chairperson: Martin Brüne Keynote lecture: NICHOLAS MASCIE – TAYLOR Podium presentations (55, 85, 140, 159)
15:30-16:00	*Coffee break*		
16:00-17:30	**EAA Session 2** (Aula Parva) Chairperson: Noël Cameron *Growth, Development and Aging* Podium presentations (41, 44, 50, 84, 87, 117); *Applied Anthropology* Podium presentation (89)	**ISGA Session 2** (Room 238) *First 1000 Days* Chairperson: Jelena Šarac Keynote lecture: MERCEDES CHECHETA LOPEZ DE BLANCO Podium presentations (23, 31, 32, 49)	**ICEM Session 2** (Room 239) Chairperson: Zuzana Obertova Keynote lecture: SLAWOMIR KOZIEL Podium presentations (88, 95, 148, 156)
19:00-22:00	***Welcome Reception*** *(Time: 19:00; Venue: Town Hall of Vilnius Address: Didžioji str. 31, Vilnius)*		
The 25th of August			
8:00-17:30	*Registration*		
9:00-11:00	**Plenary Session III** (Aula Parva) / Chairperson: Christopher Kuzawa EAA keynote lecture: CHARLOTTE ROBERTS EAA keynote lecture: WULF SCHIEFENHÖVEL ISGA keynote lecture: LAWRENCE SCHELL		
11:00-11:30	*Coffee break*		
11:30-13:00	**EAA Session 3** (Aula Parva) *Bioarchaeology* Chairperson: Albert Zink Podium presentations (4, 13, 22, 48, 54, 56, 189)	**ISGA Session 3** (Room 238) *Nutrition and body composition* Chairperson: Babette Zemel Keynote lectures: NICOLA HAWLEY JONATHAN WELLS Podium presentation (74)	**ICEM Session 3** (Room 239) Chairperson: Sylvia Kirchengast Keynote lecture: MARIA KACZMAREK Podium presentations (96, 112, 141, 164)
13:00-14:00	*LUNCH (ISGA Business Meeting, Room 238)*		
14:00-15:30	**EAA Session 4** (Aula Parva) Chairperson: Dario Piombino Mascali *Bioarchaeology* Podium presentations (63, 70, 109, 124); *Human Evolution* Podium presentations (52, 65)	**ISGA Session 4** (Room 238) *Environmental effects on human growth* Chairperson: Lawrence Schell Keynote lectures: JELENA ŠARAC PETUR BENEDIKT JULIUSSON SLAWOMIR KOZIEL	**ICEM Session 4** (Room 239) Chairperson: Saša Missoni Keynote lecture: MARIAN VANHAEREN Podium presentations (29, 102, 131, 162)
15:30-16:00	*Coffee break*		
16:00-17:30	**EAA Session 5** (Aula Parva) *Applied Anthropology* Chairperson: Annamaria Zsakai Podium presentations (3, 9, 47, 59, 72, 97)	**ISGA Session 5** (Room 238) *Environmental effects on human growth* Chairperson: Lawrence Schell Podium presentations (18, 58, 126, 174)	**ICEM Session 5** (Room 239) Chairperson: Marian Vanhaeren Keynote lecture: ALBERT ZINK Podium presentations (110, 139, 142, 157)
The 26th of August			
8:00-17:30	*Registration*		
9:00-11:00	**Plenary Session IV** (Aula Parva) / Chairperson: Wulf Schiefenhövel EAA keynote lecture: SYLVIA KIRCHENGAST EAA keynote lecture: CHRISTOPHER KUZAWA ISGA keynote lecture: TIM COLE		
11:00-11:30	*Coffee break*		
11:30-13:00	**EAA Session 6** (Aula Parva) *Biopsychosocial Studies* Chairperson: Nicholas Mascie – Taylor Podium presentations (51, 67, 75, 77, 166, 180)	**ISGA Session 6** (Room 238) *Nutrition and body composition* Chairperson: Babette Zemel STRUAN GRANT *Recent advances in growth data analysis* Chairperson: Tim Cole Keynote lectures: WILL JOHNSON STEF VAN BUUREN	**ICEM Session 6** (Room 239) Chairperson: Slawomir Koziel Keynote lecture: SAŠA MISSONI Podium presentations (6, 145, 147, 154)
13:00-14:00	*LUNCH (EAA Council Meeting, Aula Parva)*		
14:00-15:30	**EAA Session 7** (Aula Parva) *Biopsychosocial Studies* Chairperson: Leslie Lieberman Podium presentations (25, 38, 45, 66, 81)	**ISGA Session 7** (Room 238) *Recent advances in growth data analysis* Chairperson: William Johnson Keynote lecture: JOSEPH FREER Podium presentations (43, 114)	**ICEM Session 7** (Room 239) Chairperson: Renata Simkunaite-Rizgeliene Keynote lecture: ZUZANA OBERTOVA Podium presentations (5, 119, 184, 188)
15:30-16:00	*Coffee break*		
16:00-17:30	**Plenary Session V** (Aula Parva) / Chairpersons: Noël Cameron and Janina Tutkuviene ICEM keynote lecture: FRANK RÜHLI General discussion, closing remarks, future plans		
19:00-23:00	***Joint EAA-ISGA-ICEM Meeting Dinner*** *(Time: 19:00; Venue: Palace of the Grand Dukes; Address: Katedros sq. 4, Vilnius)*		
The 27th of August			
9:00-14:00	*Trakai tour: Lake resort with a gothic insular castle* (optional)		
	Meetings of the Working Groups (according to the need)		