20th Congress of the European Anthropological Association

European Anthropology in a Changing World: From Culture to Global Biology

Zagreb, Croatia
24th – 28th August 2016

ABSTRACT BOOK

Institute for Anthropological Research, Zagreb, Croatia

HAD 1977 Croatian Anthropological Society

European Anthropological Association

Table of Contents

PLENARY LECTURES

CULTURAL CUES FOR RESEARCH PRIORITIES IN ANTHROPOLOGY

Cameron Noël

School of Sport, Exercise and Health Sciences, Loughborough University, UK

N.Cameron@lboro.ac.uk

Culture may be defined as the ideas, customs, and social behaviour of a society including our beliefs, values and the symbols which we use to give meaning to our lives both individually and collectively. The scientific community that includes anthropologists and human biologists holds a special place within modern societies because more than any other groups its remit is to question the nature of the diverse environments in which we live and how we, *Homo sapiens*, succeed in maintaining our species. It could be argued that the culture of any society that includes a scientific community dictates their research agenda. Recognising that any society is unique but also part of a global community acknowledges that the research agenda must be both parochial and global – it must address questions of direct relevance to societies separated by their specific beliefs and values but also it must address questions of direct relevance to the global society.

The identification of our national research priorities comes from a variety of sources; government funding bodies (Research Councils), private philanthropy (Gates Foundation), charitable funding bodies (Cancer Research), educational and research institutions (Universities). Each source has its own research agenda arrived at by teams of advisors and consultants whose goal is the appropriate disbursement of available funds in pursuit of their research goals within a national and at times and international context. But where do the ideas come from, who dictates them, and how much are these research priorities and their timeframes dictated by governments with short term agendas as opposed to long term goals?

This presentation will review current global and declared European priorities in research and how Europe is dealing with the challenge of responding to cultural cues for research priorities in the 21st Century.

GWAS ONLY FINDS SIGNALS; 3D GENOMICS FINDS THE GENES

Grant Struan

University of Pennsylvania School of Medicine / Divisions of Human Genetics and Endocrinology Children's Hospital of Philadelphia Research Institute, USA

grants@email.chop.edu

Genome wide association studies (GWAS) have revolutionized the study of complex disease genetics in recent years. However, GWAS only reports genomic signals associated with a given trait and not necessarily the precise localization of culprit genes. Therefore, the past ten years of GWAS has not strictly represented a decade of gene discovery, but rather it has simply been a decade of signal discovery. A recent and powerful example of this is the obesity GWAS signal within FTO locus, considered the strongest reported to date, which has led to a large focus of research on the role of the FTO gene in metabolic disease. However, a pair of recent high impact papers revealed that the genes actually targeted by this variant are IRX3 and IRX5, via the long-range activity of a polymorphic enhancer residing within the FTO gene. We are now leveraging comparable genomic technologies to specifically assign such GWAS hits to genes

causally linked to disease phenotypes i.e. 'variant to gene mapping'. We predict that we are just now entering the 'Golden Age' of gene discovery in complex disease and that such approaches will be crucial to fully understand the genetic etiology of common traits. Once 'variant-to-gene mapping' is achieved, development can take place for therapeutic and diagnostic purposes with greater confidence that the correct target is being pursued and can better serve precision medicine going forward.

OF NEANDERTALS, DENISOVANS AND MODERN HUMANS

Pääbo Svante

Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

paabo@eva.mpg.de

Over 30 years, our laboratory has worked on methods to study the tiny amounts of DNA that can sometimes be found in ancient bone from extinct organisms. In particular, we have focused on reconstructing DNA sequences from Neandertals, the closest extinct relative of present-day humans and on Denisovans, a hitherto unknown group of Asian hominins distantly related to Neandertals.

Analyses of genomes from Neandertals in Croatia and elsewhere show that Neandertals contributed about 2.0% of the genomes of people today living outside Africa while Denisovans contributed about 4.8% of the genomes of people living in Oceania as well as small amounts to people elsewhere in Asia. Together, these finding suggest a 'leaky replacement' scenario of human origins in which anatomically modern humans emerged out of Africa and received some degree of gene flow from archaic human populations. Work from several laboratories has shown that these genetic contributions have consequences today for the immune system, for lipid metabolism, for adaptation to life at high altitudes in the Himalayas, and for susceptibility for diseases such as diabetes.

The Neandertal and Denisova genomes also allow the identification of novel genomic features that appeared in modern humans since their divergence from a common ancestor with their closest extinct relatives. We speculate that among these features may be some that allowed modern humans to develop complex culture, technology and art.

SPECIAL LECTURES

AS TALL AS MY PEERS – THE COMMUNITY EFFECT ON HEIGHT

Hermanussen Michael[1], Aßmann Christian[2], Groth Detlef[3]

[1]Aschauhof, Altenhof, Germany
[2]Otto-Friedrich-Universität Bamberg Feldkirchenstraße, Bamberg, Germany
[3]University of Potsdam, Institute of Biochemistry and Biology Bioinformatics Group, Potsdam-Golm, Germany

michael.hermanussen@gmail.com

Social identity theory considers "social identity" as that portion of an individual's self-concept that is derived from perceived membership in a relevant social group. "Group identification" and "identity signalling" facilitate in-group favoritism and out-group derogation, and shape common goals and social norms. Social identity theory originally considers human behaviour, but also biological characteristics such as physical growth and child and adolescent maturation can be subject to social pressure. In view of the biological concept of phenotypic plasticity which allows individuals to 'fit' their phenotype to different environments within their lifespan, and the importance of identity in human social networks, and the observation of significant clustering of final adult stature within groups of people who have a high likelihood of being members of the same social network, we formulated our hypothesis for a community effect on height.

We tested the hypothesis for a community effect on height in an agent-based computer modelling technique (Monte Carlo simulation) and compared simulated height in a spatial network with characteristics of the observed geographic height distribution of three historic cohorts of Swiss military conscripts (conscripted in 1884–1891; 1908–1910; and 2004–2009).

Monte Carlo simulation is able to generate natural characteristics of conscript height distributions, in particular: (1) overdispersion, (2) association between inter-district road connectedness and height, (3) lack of autocorrelation of height clustering between districts over time, (4) dependence of district height on number of connecting roads and number of conscripts per district.

Spatial connectedness can affect height clustering in an artificial society, similar to that seen in natural cohorts of military conscripts, and strengthen the concept of connectedness being involved in the regulation of human height.

AGE-RELATED CHANGES IN THE IgG GLYCOME: BIOMARKERS OR DRIVERS OF HEALTH DETERIORATION

Lauc Gordan

Faculty of Pharmacy and Biochemistry, University of Zagreb, Genos Ltd., Croatia

glauc@genos.hr

Glycans attached to the Fc part of immunoglobulin G are important modulators of IgG effector functions. Slight modifications in the composition of the IgG glycome significantly tune IgG towards binding to different Fc receptors and can convert IgG from a pro-inflammatory effector into an anti-inflammatory agent. By analyzing IgG glycome composition in over 30,000 individuals we revealed very strong association of several features of the IgG glycome with ageing, different diseases, and mortality risk. Variation in IgG glycome explained up to 60% of

variance in chronological age, while the remaining variance associated with known biomarkers of unhealthy life. IgG glycome composition changes in different disease reflected accelerated ageing and decreased immunosuppressive potential of IgG. Since low grade inflammation is considered to be one of molecular mechanisms leading to tissue damage in ageing, the loss of immunosuppressive role of IgG might be not only a biomarker, but one of the drivers of health deterioration associated with aging.

CHALLENGES IN THE MOLECULAR-GENETICS IDENTIFICATION OF THE HUMAN REMAINS

Marjanović Damir[1,2], Čakar Jasmina[3], Džehverović Mirela[3], Pilav Amela[3], Primorac Dragan[4,5,6,7]

[1]Institute for Anthropological Research, Zagreb, Croatia
[2]International Burch University, Sarajevo, Bosnia and Herzegovina
[3] Institute for Genetic Engineering and Biotechnology, Sarajevo, Bosnia and Herzegovina
[4]Osijek University, School of Medicine, Osijek, Croatia
[5]Split University, School of Medicine, Split, Croatia
[6]Eberly College of Science, PennState University, University Park, Pa, USA
[7]St. Catherine Specialty Hospital, Zabok, Croatia

damir.marjanovic@inantro.hr

The identification of human remains employs different methods: identification by a living person, fingerprint analysis, dentition analysis, identification of special features, recognition of clothing and belongings, autopsy findings, the analysis by forensic anthropologists to estimate the species of the remains, sex, age, race, and reconstruction of facial features from skulls, hair comparisons and finally molecular genetic approach. DNA typing for human identification purposes is based on the same techniques that are routinely employed in a wide variety of medical and genetic situations, such as population genetic studies, diagnosis and gene mapping. These molecular techniques are rooted in the analysis of essential characteristics of all leaving beings – universal molecular diversity. The latest war conflict in Bosnia and Croatia resulted in tens of thousands missing persons. Therefore, significant efforts were taken to identify missing individuals discovered in hundreds of mass graves situated throughout these two countries. One of the most important objectives of this complex process was development and operation of different scientific procedures and optimization of DNA laboratories for processing of skeletal remains. During the last ten years we solved a multitude of completely unforeseen difficulties in this field. Our achievements in this preliminary phase, where we have introduced the newest method and completely different approach to DNA identification, and they were used as a successful model for future activities in many other scientific aspects of forensic genetic and DNA identification of human victims, such as DNA identification of the skeletal remains from the two WWII mass graves or from relocated graves and/or whole cemeteries that were placed at hillsides.

MEASURING IDEAS: THE CHNRI METHOD

Rudan Igor

Centre for Global Health Research and WHO Collaborating Centre for Population Health Research and Training, The Usher Institute, The University of Edinburgh, Scotland, UK

Igor.Rudan@ed.ac.uk

Child Health and Nutrition Research initiative (CHNRI) started as an initiative of the Global Forum for Health Research in Geneva, Switzerland. Its aim was to develop a method that could assist decision making, consensus development and priority setting in research investments using human collective opinion - "the wisdom of crowds", or "crowdsourcing". It aimed to develop a method that could address support for different instruments of research, in order to achieve better balance between fundamental research, translation research and implementation research.

The initial application of the CHNRI method was envisaged in the field of child health and nutrition, where it was aiming to maximize the potential of new research ideas to reduce disease burden and inequities that exist between support the health problems of the rich and the poor. However, the method quickly spread to many other fields since it was originally proposed in 2007. It is now widely used in many international organisations for collective decision-making. Its main advantage is that it transparently defines the key criteria that make an idea better than the other when the context is clearly defined, and then it uses collective knowledge to "measure" human ideas and rank them according to their inherent value to address the problem.

ANTHROPOLOGICAL ARCHAEOLOGY

RECONSTRUCTION OF THE MOBILITY OF SOME ENEOLITHIC AND NEOLITHIC POPULATIONS FROM CENTRAL AND SOUTHERN ITALY

Anzivino Laura[1], Brilli Mauro[2], De Angelis Flavio[1], Giustini Francesca[2], Martìnez-Labarga Cristina[1], Scorrano Gabriele[1], Angle Micaela[3], Anzidei Anna Paola[4], Catalano Paola[4], Ceccaroni Emanuela[5], Pacciani Elsa[6], Radina Francesca[7], Rolfo Mario[8], Silvestrini Mara[9], Volante Nicoletta[10], Sarti Lucia[10], Rickards Olga[1]

[1] Centro di Antropologia Molecolare per lo Studio del DNA Antico, Dipartimento di Biologia, Università degli Studi di Roma Tor Vergata, Roma
[2] Istituto di Geologia Ambientale e Geoingegneria, CNR
[3] Soprintendenza Archeologia del Lazio e dell'Etruria meridionale
[4] Soprintendenza Speciale per il Colosseo, il Museo Nazionale Romano e l'Area Archeologica di Roma
[5] Soprintendenza Archeologia dell'Abruzzo
[6] Soprintendenza Archeologia della Toscana
[7] Soprintendenza Archeologia della Puglia
[8] Università degli studi di Roma Tor Vergata, Dipartimento di Storia, Patrimonio culturale, Formazione e Società
[9] Soprintendenza Archeologia delle Marche
[10] Università degli Studi di Siena, Dipartimento di Scienze storiche e dei Beni culturali, Unità di Preistoria

laura.anzivino@yahoo.it

The Neolithic farming transition, which gave rise to agricultural and breeding systems, had powerful demographic and social effects in Europe. Subsequently, the Eneolithic (3500-2300 BCE) was featured by important cultural and economic changes such as an intensive agriculture, due to the introduction of animal-drawn plow, and by the onset of specialized handicrafts related to the exploitation of flint and copper. The human groups become more and more complex and the emergence of the copper processing involves a significant increase of the trade, both for the retrieval of the raw material and the manufactured objects. Even though it is possible to distinguish both short and long distance trades, of course they led, at least, to cultural relationships among communities.

The aim of the present study was to reconstruct the mobility of several Eneolithic and Neolithic communities scattered throughout Central and Southern Italy applying to tooth enamel a biomolecular approach based on oxygen stable isotopes analysis. Through this evaluation it will be possible to trace the horizontal mobility of people, that should have played a key role in the cultural evolution of these populations.

THE ENAMEL HYPOPLASIA DURING THE BRONZE AGE IN ITALY

Arena Fabiola, Masotti Sabrina, Zedda Nicoletta, Gualdi-Russo Emanuela

University of Ferrara, Department of Biomedical Sciences and Surgical Specialties, Ferrara, Italy

fabiola.arena@unife.it

The hypoplasia is a defect recognizable on tooth enamel in form of pits or linear grooves. It depends on an interruption of the enamel development during the childhood (0-6/7 years old in

permanent teeth), caused by malnutrition or long-lasting pathologies. Therefore, hypoplasia is an important marker to evaluate the state of health of ancient populations. The samples analyzed in this study belong to three Bronze Age Italian sites, placed in different environments: Ballabio (Ancient Bronze Age) and Castello del Tartaro (Late Bronze Age), are located in the North of Italy, while Grotta della Monaca (Middle Bronze Age) in the South of Italy. The results demonstrate a high frequency of hypoplastic defects in the samples, especially in the sample of Castello del Tartaro. The general prevalence of hypoplasia has been estimated at between 44-60%. There was no difference in the prevalence of hypoplasia by gender. The analysis allowed to date the onset of defects in the third year of life, probably during the weaning. The variation of prevalence among samples will be discussed with reference to environmental differences. Hypoplasia of tooth enamel could be affected by several factors acting in combination or separately. In particular, food habits (connected to subsistence strategies as well as the environment) could have an important influence on it. During the Bronze Age agricultural development facilitated the spread of a vegetarian diet based on cereals and vegetables, probably not eating enough nutrients to cover their needs. The presence of cribra on the skeleton of several individuals may be indicative of metabolic disorders, chronic diseases, infections and confirms food shortages. The spread of diseases (also worsened by an inadequate diet) contributed to create stressful moments, especially during the weaning that was a critical period for the transition to a different diet.

A CASE STUDY OF ANKYLOSING SPONDYLITIS FROM KILIÇLI CHURCH (SINOPE, NORTHERN ANATOLIA)

Atamturk Derya, Duyar Izzet, Ozener Baris

Department of Anthropology, Istanbul University, Turkey

derya_atm@yahoo.com

Ankylosing spondylitis (AS) is a chronic inflammatory rheumatic disease includes a group of spondyloarthritis (SpA). The etiology and pathogenesis of AS is mostly unknown. However, 90-95% of these patients with the HLA-B27 antigen subtype, it is thought to work that the process of genetic factors. AS does not affect a single organ or part of the body. It is most commonly alter sacroiliac joints, spine joints and costovertebral joints, and also shoulders and hips. Today, the prevalence of AS varies between 0.25% and 4.5%, but the incidence of the disease among past populations could not be determined. AS diagnosis is easier than other spondyloarthritis when an individual's skeleton recovered almost complete. However, when an individual's skeleton unearthed incomplete, AS disease can be confused with a variety of diseases such as DISH, rheumatoid arthritis, inflammatory arthritis, etc. Although there are some cases of AS among various ancient Anatolian populations, they are not investigated thoroughly and well-defined. This study describes first well-defined case of AS unearthed from a small village church and nearby cemetery excavation in Kılıçlı (Sinope, Northern Turkey) and dated to the 18-19th centuries AD. This middle adult male skeleton highly well-preserved and indicates almost all symptoms of SA. Both sacroiliac joints of the individual has been become symmetrically fused. It was observed that no vertebrae interspersed between those that was all fused. It was detected "bamboo spine" image in the X-ray of the spine. Also costovertebral joint fusion and kyphosis can be seen that occurred in the most advanced stages of the disease. These characteristics symptoms become the first skeleton of well-diagnosed of AS in Anatolian history. In addition, it is one of the rare finds that well-diagnosed of AS in the paleopathology literature until now.

BALEY NECROPOLIS (NORTHEAST BULGARIA): SUMMARY OF ANTHROPOLOGICAL STUDIES 2010 – 2015

Atanassova-Timeva Donchova Nadezhda[1], Galabova Vasileva Borislava[2]

[1]Bulgarian Academy of Sciences, Institute of Experimental Morphology, Pathology and Anthropology with Museum, Department of Anthropology and Anatomy, Sofia, Bulgaria

[2]Laboratory of Human Bioarchaeology, Sofia, Bulgaria

naditimeva@gmail.com

Archaeological excavations of the necropolis near village of Baley, Northeastern Bulgaria began in 2010. Cremation was the burial practice in the necropolis. The bones had been placed in the ceramic vessels. Bone remains of 69 individuals were identified in 53 structures. They are distributed chronologically as follows: 12 individuals from six structures (12th-11th century BC - Vârtop culture); 29 individuals from 25 structures (13th -11th century BC); 9 individuals from 7 structures (13th -12th century BC – Bistreţ culture) and 14 individuals from 13 structures (Middle Bronze Age - Verbicioara III culture). The human bone material is highly fragmented as a result of combustion. Bone fragments are very small, small and medium - sized. Some large fragments were also found. Bone remains of more than one individual were discovered in 12 structures. Double burials were typical for all periods of the existence of Baley necropolis; the triple ones for Middle Bronze Age and quadruple appeared in 12th-11th century BC. The analysis indicates that subadult individuals were buried together with adults in the majority of structures. Only in some isolated cases, such as two children or two grown ups were placed in the urns. The studies reveal the trend of high early childhood mortality rate (up to 7 - year - olds) for all chronological periods. It decreases during the late childhood and adolescence, and rises sharply in the age group of adults in which one the highest mortality is registered. This tendency is most clearly expressed in the studied burials of 12th-11th century BC. Up to now there had not been found out elderly individuals. The results of anthropological analysis show that even with a slight difference, females prevailed over males. At this stage of the research there is no identified male from 12th-11th century BC and the Late Bronze Age.

GÜRGÜRBABA HILL: PLEISTOCENE HUMAN COLONIZATION OF VAN, EAST ANATOLIA

Baykara İsmail

Yüzüncü Yıl Üniversity, Faculty of Letter, Van, Turkey

ibaykara@yyu.edu.tr

Although scientists agree that humans originated in Africa and dispersed from there into the rest of the world, there is growing disagreement about the route or routes and the time they migrated out of Africa. At the geographical nexus between continents, Anatolia (Asian Turkey) plays an important role in ideas about hominin dispersals and migrations. Turkey is the geographic connection between Europe, the Middle East, and Africa. Reconstructions of dispersal routes of Pleistocene hominins almost invariably show migratory paths across the Anatolian landmass. Moreover, the earliest site outside Africa, Dmanisi, is situated close to Eastern Anatolia (Van Province), suggesting early routes of dispersal must have crossed through the region. In this paper examines Paleolithic archaeological occurrences in Van Province (eastern Turkey) in order to assess the timing and geographic origins of Pleistocene human colonization(s) of eastern Anatolia. Technological and typological characteristics of stone tools will be examined in order to determine 1) whether there is cultural continuity or discontinuity over time in Eastern Anatolia, and 2) the possible cultural connections between the Paleolithic of Eastern Anatolia, and that of Armenia, Georgia, the Levant, and other neighboring areas. After two years of survey, we identified a number of well- preserved and insitu Lower and Middle Paleolithic sites in nearby Ulupamir village Ercis/Van. The Lower and Middle Paleolithic record

of Gürgürbaba Tepesi was based exclusively on open-air artifact scatters situated directly on, or in close proximity to, obsidian outcrops.

TWO SKULLS WITH EVIDENCE OF TREPANNING FROM LATE MEDIEVAL AND MODERN AGE SITES IN NORTH DALMATIA, CROATIA

Bedić Željka[1], Vyroubal Vlasta[1], Gusar Karla[2], Šućur Jure[2], Uglešić Ante[2], Adamić Anita[1], Šlaus Mario[1]

[1]Croatian Academy of Sciences and Arts, Anthropological Centre, Zagreb, Croatia
[2]University of Zadar, Department of Archaeology, Zadar, Croatia

zbedic@hazu.hr

Trepanation is one of the most spectacular traumas observed on human skeletal remains. Although the procedure was first mentioned and described by Hippocrates, the first osteological evidence of trephining goes back to at least the Neolithic. In the procedure the skull is drilled or scraped by a sharp instrument thus exposing the intracranial contents either to treat health problems or for mystical purposes. So far, only two cases of trepanation were reported from Croatian skeletal series: one from the prehistoric Bezdanjača site, and the other from Ludbreg dated to the Migration period. In the osteological collection of the Croatian Academy of Sciences and Arts two additional cases from North Dalmatia have recently been acquired. One from the Late Medieval and Early Modern Age archaeological site Škabrnja - St. Mary investigated in 2009 by Archaeological Museum in Zadar. The site yielded 12 graves. The skull was found in grave No 5 which contained one female skeleton and an abundance of dislocated bones. A minimum number of five individuals (four adults and one subadult) was present. An oval shaped defect is located on the right side of the frontal bone of a male skull. It is completely healed indicating that the person survived the surgical procedure and lived for some time. The other case was found during archaeological excavations in Pakoštane - Crkvina conducted by Department of Archaeology, University of Zadar. During systemic archaeological excavations from 2006 to 2015 the remnants of the Church of St. Mary and a medieval cemetery were uncovered. Mass grave 76B contained nine individuals (eight adults and one subadult). One of the male skulls showed a massive lytic defect on the right side of the cranium that was in the process of healing suggesting that the afflicted individual died shortly after the surgical procedure was performed.

HIDDEN HETEROGENITY IN MORTALITY – PERHAPS NOT SO HIDDEN

Boldsen Jesper

University of Southern Denmark, Odense S, Denmark

jboldsen@health.sdu.dk

The two most important osteological papers of the late 20th century, Farewell to Paleodemography (Bocquet-Appel and Masset, 1982) and The Osteological Paradox (Wood et al., 1992) have pointed at serious methodological problems in the reconstruction of life in the past based on observations on skeletal remains. The first message was about our inability to estimate age at death accurately and without bias. This problem is more or less solved (Boldsen et al,. 2002 and Milner and Boldsen, 2012). The issue of selective mortality and hidden heterogeneity – raised by Wood et al. – is also in the process of being at least partly solved. As a by-product of an ongoing project aimed at generation highly accurate and unbiased skeletal age estimates it has been observed at several age related osteological characters showed evidence for selective mortality in a sample of modern Americans. Analyses of the occurrence of these characters in medieval Danish skeletons clearly show that these characters also were subject to selective mortality in the past. This research is part of a National Institute of Justice (USA) funded project

lead by George Milner, Steve Ousley and the author with the assistance from Svenja Weise, Peter Tarp and Sara Getz.

NEW RESULTS FROM ZAGAJCI NEAR BELIŠĆE (CROATIA) RELATED TO THE MIDDLE AGES: RADIOCARBON DATING PLACES A SINGLE HUMAN CRANIUM IN THE 11TH CENTURY AD

Boljunčić Jadranka[1], Barešić Jadranka[2], Krajcar Bronić Ines[2]

[1]Institute of Archaeology, Zagreb, Croatia
[2]Ruđer Bošković Institute, Laboratory for Measurement of Low-level Radioactivity, Division of Experimental Physics, Zagreb, Croatia

boljuncicj@gmail.com

We present the results of radiocarbon dating a random find of a partial human cranium discovered in Zagajci near Belišće (Eastern Slavonia, Croatia) in the vicinity of the Prehistoric/Medieval Belišće-Zagajci I-II burial site. The cranial remains of an adult female, apparently from a destroyed skeletal burial lacking grave goods, were discovered in 1996, around hundred metres away from the findspot of a prehistoric (Early Iron Age) female discovered in 1992, likewise from a destroyed skeletal grave. The cranium was dated by using the radiocarbon method applying the accelerator mass spectrometry (14C-AMS) technique. The procedure included collagen extraction from bone taken from the skull vault, combustion to CO2 and conversion to graphite by zinc reduction. ^{14}C activity of prepared graphite targets was measured using a compact Pelletron AMS unit at the AMS facility of the University of Georgia (Atlanta, USA). The conventional radiocarbon age was 1000 ± 25 BP resulting in a narrow calibrated age interval of 995 – 1035 cal AD within 1 sigma confidence interval and median 1023 cal AD (OxCal 4.2.4 on-line software, by using IntCal13 atmospheric curve). Although this is about the only 11th century AD dated skeletal remains – stemming from the vicinity of the Belišće-Zagajci I-II cemetery, this new 14C evidence supplements the previous knowledge of burials in that area in light of the (early) part of the Middle Ages, not recorded so far. In conclusion, this study broadens the time span of burials found at Belišće-Zagajci in both overall and historical context: from the prehistory – the Late Bronze Age/Early Iron Age, i.e. Early Iron Age through the Early Middle Ages of the 7th-8th century (burials dated chronologically) to the Early Middle Ages of the 11th century (skeletal burial remains dated by radiocarbon analysis).

TOGETHER FOREVER: COLLECTIVE FIND OF THE NEOLITHIC HUMAN AND ANIMAL CREMATED BONES (BAPSKA, E CROATIA)

Burić Marcel[1], Špoljarić Igor[2], Mršić Gordan[2], Mihelić Damir[3], Hincak Zdravka[1]

[1]Faculty of Humanities and Social Sciences, University of Zagreb, Croatia
[2]Forensic Science Centre „Ivan Vučetić“, Zagreb, Croatia
[3]Faculty of Veterinary Medicine, University of Zagreb, Zagreb, Croatia

mburic@ffzg.hr

A goup of human and animal burned bones were discovered on excavations of the Late Neolithic Tell site Bapska, E Croatia. They belong to a closed context discovered with collapsed wall on a wooden feature (floor or furniture) within a house, showing an unusual artificial articulation. The find was not deposited as a grave considering a fact that it is consisted of a fist-full of osteological material designedly surrounded by cattle horns. In order to shed more light on this case of interpretative challenging find, several analysis were performed. The macromorphometric analysis revealed that one part of the remains belong to a young individual

of a small ruminant, not older than three months. Burned osteological remains are predominantly fragmented, more than 70%. Due to a problem of high fragmentation of long bone remains, hystological method has been introduced. Using the histological appearance of cortical bone it was possible to distinguish human from nonhuman remains. Five fragments of human bone remains were identified. Further analysis of plexiform and Haversian bone tissue helped to distinguish samples of a pig, small ruminants and cattle tracing the general microstructural appearance and measurements of histological structures. With application of the light microscopic analysis and the scanning electron microscopy (Scanning Electron Microscopy/Energy Dispersive Spectroscopy method SEM/EDX) morphological 2D and 3D characterization of the samples were obtained. The analysis has also provided a detailed description of the nature of cremated bone present, and estimation of sex and age at death for human samples.

LIFE AND DEATH IN MEDIEVAL (XI – XV c.) BYCZYNA (POLAND, OPOLE PROVINCE) FROM PALEOPATHOLOGICAL POINT OF VIEW

Cieslik Izabela Agata[1], Przysiezna-Pizarska Magdalena[2]

[1]Polish Academy of Sciences, Unit of Anthropology in Wroclaw, Wroclaw, Poland
[2]University of Opole, Institute of History, Opole, Poland

agata.cieslik@antropologia.pan.pl

The aim of our study was preliminary assessment of the biological condition and health status of the inhabitants of medieval Byczyna and its relationship with environmental conditions. Byczyna, which is a small town, located in the North of the Opole Province, has very rich history. One of the most important events was battle of Byczyna, which took place in 1588. In this battle hetman Jan Zamojski defeated the army of Archduke Maximilian von Habsburg, who aspired to the throne of Poland. Byczyna is a historically unique place, also because of defensive walls preserved almost entirely around the city. Rescue archaeological excavations in Byczyna was carried out at the historical cemetery located near the St. Nicholas church, in the center of the town. The excavations in Byczyna have a long history, dating back to the 70s of the last century, but this presentation is focused on skeletal material that had been unearthed between 2009 and 2010. During this phase of archeological research more than 600 skeletons were excavated. Hitherto 400 individuals have undergo anthropological analysis and they are the subject of this report. Both physical stress indicators and the structure of diseases were taken into consideration. The identification of abnormal bone conditions was mainly performed by macroscopic examination. The structure of illnesses which were possible to assess in examined material was various and dependent on gender and age of the individuals. One of the most common pathological lesions was spinal osteoarthritis. The incidence of trauma was also quite high. There were also traces of inflammatory processes, developmental disorders and metabolic diseases. We believe that the structure of diseases observed in the skeletal material is a reflection of a variety of environmental factors that affected the biological condition and health status of the inhabitants of the medieval Byczyna.

POSSIBLE CASES OF CONGENITAL SYPHILIS IN SKELETONS EXCAVATED FROM EARLY MODERN CEMETERY (XVI – XVIII c.) AT CZYSTY SQUARE IN WROCŁAW (POLAND)

Cieslik Izabela Agata

Polish Academy of Sciences in Wroclaw, Unit of Anthropology, Wroclaw, Poland
agata.cieslik@antropologia.pan.pl

Syphilis is a sexually transmitted disease, but it can be also transferred during pregnancy from mother to a child, because the causative agent of the disease, Treponema pallidum bacterium, has the ability to penetrate through the placental barrier. Once bacteria infect fetus, it can result in serious developmental anomalies and congenital malformations of skull (frontal bossing, saddle nose, hard palate defect, abnormalities in development of maxilla and mandible), dentition (mulberry molars and crescent-shaped incisors) and postcranial skeleton (signs of specific periosteal reaction, especially within epiphysis regions of long bones and shafts of the shin bones - sabre shins). Because of the characteristic clinical picture, late (revealing itself after the second year of life) congenital syphilis may also be identified in the historical skeletal material.

This presentation focuses on the dental, cranial and skeletal abnormalities observed in skeletons from osteological series excavated from early – modern (XVI – XVIII c.) archaeological site at Czysty Square, Wrocław (Poland). Six skeletons unearthed from this cemetery displayed pathological changes, that could be linked to congenital syphilis. One of the individuals (No 693) displays changes of naso-frontal region (significantly elongated nasal part of the frontal bone) and dental development abnormalities. Distinctive dental deformations were also observed in three other individuals (numbers 405, 601, 683). In individuals excavated from graves 7, 616 and 729 pathological changes of curvature of the shin bones were observed. Morphology based observations are still most common method of syphilis diagnosis in paleopathology, but the effectiveness of the analysis depends on many external factors, from which the most important is the preservation state of skeletal material, thus careful differentiating is necessary. Each case of syphilis verified by paleopathologist increases knowledge about the disease, which took its toll in Europe from the 15th to 17th century and is still a serious returning medical issue.

COLUMBELLA RUSTICA – PREFERRED PERSONAL ORNAMENT ON THE EASTERN ADRIATIC COAST DURING MESOLITHIC

Cvitkušić Barbara

Institute for Anthropological Research, Zagreb, Croatia
barbara.cvitkusic@inantro.hr

In an attempt to understand the culture and social behaviour of Mesolithic populations findings of personal ornaments are of particular importance. Columbella rustica (dove shell) is small marine gastropod present throughout the Mediterranean in the infralittoral zone on the rocky surface just below sea level. Perforated Columbella rustica were regularly used as beads by hunter-gatherer from beginning of Upper Palaeolithic to the Mesolithic with the wide spatial distribution. This small marine gastropod is still in use as an ornament by some post hunter-gatherer economies. So far, on the Eastern Adriatic coast 988 personal ornaments from the 8 prehistoric sites (Abri Šebrn, Lim 001, Nugljanska cave, Pupićina cave, Vela spilja, Vlakno cave, Vela spila and Zala cave) with Mesolithic horizons have been discovered. On all these sites, except Zala cave, Columbella rustica is preferred type of raw material used for making beads (84,72%), while other types of marine gastropods and bivalves, river gastropods and animal teeth are represented in smaller amounts. The biggest number of beads has been discovered in Vlakno cave (N=447), one of the richest prehistorical sites of personal ornaments on Eastern

Adriatic coast, and most of these beads are made of Columbella rustica (78,75%). There are numerous other marine gastropods and bivalves that can also be easily collected and perforated, but Mesolithic groups always selected same species. The selectivity in the raw materials choice can be interpreted in the context of a uniform non-verbal visual communication, and the existence and expression of not only local but also regional identity. The establishment of such visible "social links" called by Whallon "safety net", is considered as an important part of the survival strategies of that time, especially in a period of major climatic oscillations that have caused major changes in the environment in relation to the availability of food sources.

ISOTOPE INVESTIGATION OF COPPER AGE COMMUNITIES FROM CENTRAL-SOUTHERN ITALY

De Angelis Flavio[1], Cianfanelli Alessandro[1], Gaspari Luca[1], Lelli Roberta[1], Martínez-Labarga Cristina[1], Scorrano Gabriele[1], Angle Micaela[2], Rubini Mauro[2], Zaio Paola[2], Anzidei Anna Paola[3], Catalano Paola[3], Di Giannantonio Stefania[3], Aurino Paola[4], Biondi Gianfranco[5], Brilli Mauro[6], Giustini Francesca[6], Carboni Giovanni[7], Martini Fabio[8], Negroni Nuccia[9], Pacciani Elsa[10], Radina Francesca[11], Rolfo Mario Federico[12], Silvestrini Mara[13], Volante Nicoletta[14], Sarti Lucia[14], Rickards Olga[1]

[1]Centro di Antropologia Molecolare per lo Studio del DNA Antico, Dipartimento di Biologia, Università degli Studi di Roma Tor Vergata, Roma, Italy
[2]Soprintendenza Archeologia Lazio e Etruria Meridionale, Italy
[3]Soprintendenza Speciale per il Colosseo, il Museo Nazionale Romano e l'area archeologica di Roma, Italy
[4]Soprintendenza per i Beni Archeologi del Piemonte, Italy
[5]Università dell'Aquila, Dipartimento di Scienze Ambientali, Italy
[6]Istituto di Geologia Ambientale e Geoingegneria, CNR, Italy
[7]Sapienza, Università di Roma, Dipartimento Scienze dell'Antichità, Italy
[8]Università degli Studi di Firenze, Dipartimento di Storia, Archeologia, Geografia, Arte e Spettacolo, Italy
[9]Università degli Studi di Milano e Centro Studi di Preistoria e Archeologia, Italy
[10]Soprintendenza Archeologia della Toscana, Italy
[11]Soprintendenza per i Beni Archeologici della Puglia, Italy
[12]Università degli studi di Roma Tor Vergata, Dipartimento di Beni Culturali, Musica e Spettacolo, Italy
[13]Soprintendenza per i Beni Archeologici delle Marche, Italy
[14]Università degli Studi di Siena, Dipartimento di Scienze storiche e dei Beni culturali, Unità di Preistoria, Italy

flavio.de.angelis@uniroma2.it

The Copper Age is a key period roughly dating 4000-2050 cal BCE, where several innovations had led to a better land exploitation and demographic increase. This period marked a tipping point for the technological innovations driving the changes in human groups that became more and more complex. New productive activities should be required for facing the increasing demographics: livestock breeding places raised, resulting in to what has been called the Secondary Products Revolution.

An isotopic approach has been carried out in order to dissect this complex period: the diet analysis through carbon and nitrogen stable isotopes in bone collagen could be a very fascinating proxy to deepen the knowledge about the subsistence changes.

Despite that several archaeological researches have been developed about Italian Copper Age communities, very few studies aimed to broaden the knowledge about how the communities

used their alimentary resources. SIA (Stable Isotope Analysis) of bone collagen was carried out in almost 150 human bone remains coming from 19 central Italian areas. In order to reconstruct the environmental condition of each site, several faunal remains were also isotopically typed. The obtained data are consistent with a local foodstuff exploitation with very few trade impact among differential topographic contexts. The seashore closeness often represented a major clue in determining the subsistence strategy but sometimes the food production plan was mainly based on agricultural and/or breeding activities.

Whenever it was possible, the individual biological profiles have been evaluated in relation to the isotopic features to better define the lifestyle and health condition of these past communities.

This multidisciplinary assessment represents, to date, one of the leading survey about these past communities and it could aid in clarifying the everyday life in one of the most significant period of human prehistory.

Grant sponsor: MIUR-PRIN: 2010EL8TXP

A DWARF SKELETON FROM DATCA-BURGAZ BELONGING TO THE ROMAN PERIOD

Dinçarslan Simge, Akbaba Ali, Dinçarslan İsmail, Güleç Erksin

Ankara University, Anthropology, Ankara, Turkey

simgegokkoyun@gmail.com

Excavations lead by Prof. Numan Tuna in the West of Turkey, provided a total of 47 skeletons from 3 different areas on the Datça Peninsula: Sariliman Temple, Burgaz, and Resadiye. The skeleton which is the subject of this study, was found in a burial chamber and dated to the Roman period, during the 1994 excavation season. From the chamber a total of 32 individual skeletons were obtained. Skeletons provided data on the state of health and nutrition,and have very many pathological cases. Among these, a skeleton shows dwarfism. Dwarfism is the term used to describe abnormally short stature and may result from a number of conditions. Four most common causes of dwarfism are: achondroplasia, Turner's syndrome, lack of growth hormone and inadequate nutrition. Our specimen includes the skull, the left femur, and both tibiae.The skull base is short but on the contrary, the basioccipital length is relatively in normal size. The middle of the face displays a slight depression. The frontal processes of the maxilla are broad with a narrow nasal bone. All epiphyses and cranial sutures are fused and all permanent teeth have already erupted, including third molars. According to the tooth wear and the cranial suture closure, the skeleton belongs to a middle aged adult. The long bones are very short with the maximum lengths; left femur 300 millimeters, the left tibia 326 millimeters and the right tibia 320 millimeters. On the contrary, the diaphyses of all long bones are close to normal diameters. Most of the bones are severely infected.

THREE-ROOTED MANDIBULAR FIRST PERMANENT MOLAR MORPHOLOGICAL VARIATION IN HISTORY OF TURKEY POPULATIONS

Erkman Cem

Ahi Evran University, Turkey

acerkman@ahievran.edu.tr

The most frequent dental root anomaly is the occurrence of three-rooted mandibular first permanent molar. 3RM1 have a high genetic penetrance and are observed in Asian and Asian derived populations at a higher frequency. Studies in the literature have revealed that this

morphological feature is more stable than the other similar variations and has a high genetic component. This feature including root numbers shows differences according to the population size and its spreading time. It is observed at the rate of 2.77% in Karagunduz Mound, 1.05% in Dilkaya Mound and 2.22% in Van Castle population, and all of them are from Middle Age archaeological sites in Eastern Anatolia, with the migration wave from Asia to west during Middle Ages. These features were not observed in Dilkaya Early Iron Age populations.

PALEOPATHOLOGICAL DATA FOR BURIED INDIVIDUALS REVEALED DURING RESCUE ARCHAEOLOGICAL EXCAVATIONS ON SITE NO. 2 OF SOFIA NORTH SPEED TANGENT, DISTRICT OF BENKOVSKI, SECTOR "NECROPOLIS"

Galabova Vasileva Borislava[1], Atanassova-Timeva Donchova Nadezhda[2]

[1]Laboratory of Human Bioarchaeology, Sofia, Bulgaria
[2]Bulgarian Academy of Sciences, Institute of Experimental Morphology, Pathology and Anthropology with Museum, Department of Anthropology and Anatomy, Sofia, Bulgaria
galabovab@gmail.com

Rescue archaeological investigations were carried out during the construction of the new road in town of Sofia in 2015 under the direction of Prof. Ventzislav Dintchev, PhD and Assoc. Prof. Anelia Bozhkova, PhD at National Archaeological Institute with Museum - Bulgarian Academy of Sciences. The site (No. 2) is located in quarter of Benkovski in the northern outskirts of Sofia. In the Eastern sector were identified fifty three pits from the Iron Age and the Middle Ages, 12 semi-sunken medieval dwellings, and 6 accumulations of clay wall plastering and pottery fragments. In the Northern sector a Late Antique necropolis was investigated. The necropolis is dated in 5 century AD according to the occasional grave goods. The bone remains of 72 individuals were identified in 71 graves. The practice of burying was inhumation. All buried individual were placed in supine position with different placement of the upper limbs. Jaw bones and dentition have been preserved partly or entirely at 62 skeletons. What is noteworthy here is the high percentage of established dental and maxillofacial pathology registered in 26 skeletons (41.94%). Some traces of healing dental practice on the mandible (trephination) was identified in a juvenile individual from grave 38. The healing effect is observed in the area on dental root cyst around lower right first molar. No inflammation was found on the lower jaw, but signs of healing process are observed in this area. On that basis we could suppose that the juvenile had experienced this kind of treatment, and most likely the place was treated by antiseptic herbs. This find is unique at this stage of anthropological and archaeological studies in Bulgaria.

THE MEDIEVAL BURIALS IN CONTRACTED AND SEMI-CONTRACTED POSITIONS ON THE ARCHAEOLOGICAL SITE OUR LADY OF THE MOUNTAIN (LOBOR, CROATIA)

Hincak Zdravka[1,7], Filipec Krešimir[1,7], Merkaš Siniša[2,7], Seiwerth Sven[3,7], Potočki Kristina[4], Špoljarić Igor[2,7], Đapić Tomislav[5], Rožić Sara[2,7], Sukser Viktorija[2,7], Popović Maja[6,7], Mršić Gordan[2,7], Mihelić Damir[6,7]

[1]Department of Archaeology, Faculty of Humanities and Social Sciences, University of Zagreb, Croatia
[2]Forensic Science Centre „Ivan Vučetić“, Zagreb, Croatia
[3]Institute of Pathology, School of Medicine, University of Zagreb, Croatia
[4]Clinical Department for Diagnostic and Interventional Radiology, Clinical Hospital Centre Zagreb, Croatia
[5]School of Medicine, University of Zagreb, Croatia
[6]Faculty of Veterinary Medicine, University of Zagreb, Croatia

[7]The Office of Forensic Sciences University of Zagreb, Croatia

zhincak@ffzg.hr

During the archaeological research in Lobor in 2011, three different time phases of the cemetery burials were defined at the east, outer part of the shrine of Our Lady of the Mountain. The third, youngest and most intriguing burial phase includes individual burials, the graves of five persons which were dug over an earlier stage. The bodies were placed in contracted or semi-contracted position of the arms and legs into the burial pits, with orientation east-west. Similar rituals have not been previously recorded at that site. Datation of this homogenous group is the second half of the 11th century. The anthropological analysis has been performed for each skeleton: determination of sex, age at death, body height and description of musculo-skeletal stress markers. Pathological changes visible in bones were both radiologically and histologically analysed. Skeletal and dental material from each grave was sampled for ancient DNA analysis, which was made to gain information of the possible kinship. DNA based kinship analysis within family group, chromosome DNA (STR DNA), was extracted using the standard forensic DNA extraction kit, 24plex qs.

INTO THE FLAME: THE CREMATED BONES OF EARLY ROMAN PERIOD AT GRADINJE SITE (SLOVENIA)

Hincak Zdravka[1,6], Novšak Matjaž[2], Špoljarić Igor[3,6], Bačić Ivana[3,6], Mršić Gordan[3,6], Mikulka Ana[1,6], Polak Tanja[4], Mihelić Damir[5,6]

[1]Faculty of Humanities and Social Sciences, University of Zagreb, Croatia
[2]"Arhej d.o.o.", Archaeological Research, Sevnica, Slovenia
[3]Forensic Science Centre „Ivan Vučetić", Zagreb, Croatia
[4]Zagreb Zoo, Zagreb, Croatia
[5]Faculty of Veterinary Medicine, University of Zagreb, Croatia
[6]The Office of Forensic Sciences University of Zagreb, Croatia

zhincak@ffzg.hr

Analysis and interpretation of human cremated remains in the archaeological record still presents a real challenge to the bioarchaeologists. The standard osteological procedures for unburned skeletal remains often fail to identify those fragments transformed by fire. By examining thermal destruction patterns visible on bone and tooth remains, it is possible to interpret how the cremation happened. Analysis which includes diagenesis and nature of the cremated bones gives an opportunity of problem observation on different levels. The aim of this study is to present possibilities in the identification of human cremated remains using both macromorphological and histological methods. The histological methods applied were helpful in determining age at death. With application of the light microscopic analysis and the scanning electron microscopy (Scanning Electron Microscopy/Energy Dispersive Spectroscopy method SEM/EDX) morphological 2D and 3D characterization of the samples were obtained. This study is a reconstruction and an interpretation of the human cremated remains from six cremation urns of the Early Roman period from Gradinje in Slovenia.

ELEMENTAL ANALYSIS OF SKELETAL SAMPLES FROM THE CSENGER-JÁNOSI SITE (HUNGARY) DATED TO THE 16TH-17TH CENTURY

János István[1], Szathmáry László[2]

[1]Institute of Environmental Science, University of Nyíregyháza, Hungary
[2]Department of Evolutionary Zoology and Human Biology, University of Debrecen, Hungary
ijanos82@gmail.com

In the present work, elemental analysis of ancient bone samples, which derived from the 16th-17th-century cemetery of Csenger-Jánosi (Hungary), was carried out. Bone samples from femur belonging to 50 individuals were analysed by using flame atomic absorption spectrometry (FAAS) and graphite furnace atomic absorption spectrometry (GFAAS). The following chemical elements were determined in the samples: Ca, P, Zn, Sr, Mn and Fe. We were inquisitive about how the past life (predominantly the nutrition) affected the elemental concentration values in skeletal samples. Furthermore, we wanted to get information about the effects of the burial environment on the bone elemental composition. It is known that the Zn and Sr detected in bones are good indicator of the consumed food during ancient life. The bone Zn concentration is increasing in case of consumption of meat, whereas Sr content can be higher in samples belonging to persons maintaining nutrition predominantly by plants. Bone Mn and Fe is thought to be of external origin. These two elements mainly derive from the burial environment (soil). The results indicated post mortem mineral exchanges (Ca-Mn and Ca-Fe) between the burial environment and bone samples. It is quite feasible that the Mn (II), Fe(II) and Fe(III) ions have parallel mobility towards the bone tissue according to their concentrations replacing the Ca. However, Zn and Sr seemed to be accumulated in the bones during the past life. The enhanced Zn levels might be in connection with the notable meat consumption of individuals in the past. It seems to be quite probable, that the population had mixed diet rich in animal protein.

CURRENT RESEARCH ON THE LATE PLEISTOCENE AND EARLY HOLOCENE IN THE LIM CHANNEL, ISTRIA, CROATIA

Janković Ivor

Institute for Anthropological Research, Zagreb, Croatia
ivor@inantro.hr

In 2014 a project entitled „Archaeological investigations into the Late Pleistocene and early Holocene of the Lim Channel Istria“(ARCHAEOLIM), started. The main aims of this 3 year project financed by the Croatian Science Foundation are to provide data for better understanding of a number of important issues regarding behavioral and possibly biological aspects of human groups during a time when Late Glacial hunter gatherers were forced to change and adapt to a changing environmental and other pressures. Project concentrates on the archaeological fieldwork on four sites where preliminary survey or small scale excavations yielded evidence of human occupation: Romualdova cave (Middle and Upper Paleolithic sequence), Pećina kod Rovinjskog sela 1 (Late Upper Paleolithic and Mesolithic), Abri Kontija (Late Upper Paleolithic) and Lim 001 (Late Mesolithic), all in the Lim Channel. Here we provide a summary of the project and preliminary results of the first two excavation seasons.

THE LIVING CONDITIONS AND MORTALITY IN SUBADULT MEDIAEVAL AND POST-MEDIAEVAL POPULATIONS. THE CASE STUDY OF CRKVARI - ST. LAWRENCE CHURCH (NORTHERN CROATIA)

Jokić Mirna[1], Tkalčec Tatjana[2]

[1]Doctoral Student in Bioarchaeology, Croatia
[2]Institute of archaeology, Zagreb, Croatia

miajokic@yahoo.com

A consolidation of archaeological and anthropological analyses yields an insight into the frequency of subadult burials in the excavated part of the cemetery in Crkvari near Orahovica. Out of the total of 599 excavated graves, 227 are belonging to children: 67 were buried during the Medieval Period from the late 11th to the early 16th century (29.52 %) and 160 were buried during the Early Modern Period from the early 16th to the 19th century (70.48%). This research comments on distinct differences in the distribution of mortality while considering historical conditions and developmental stages of a child, according to which age groups were formed. The distribution of the subadult graves in the cemetery (especially newborns) gives an insight into the burial customs and beliefs of the population, which were different in the Medieval and the Early Modern Period. In order to gain insight into the health of the subadult population of Crkvari and understand the relationship between observed mortality and frequencies of certain pathologies within different age groups, certain parameters were extracted from gathered osteological data for further analysis. For this purpose, *cribra orbitalia* (CO) served as an indicator of childhood anemia which, combined with other possible indicators (periostitis, enamel hypoplasia), suggests poor living conditions. The entire sample consisting of 137 preserved orbital bones contained 52 observed cases of CO. Differences in frequencies of CO between the two periods are analyzed, as well as the relationship with periostitis as an indicator of non-specific diseases. Results suggest periods of severe stress subadult population were subjected to at certain age, which was most likely caused by inappropriate nutrition and susceptibility to parasitism and infectious diseases.

AUDITORY OSSICLES IN HUMAN SKELETAL REMAINS: PATHOLOGY OR TAPHONOMY?

Krenz-Niedbała Marta, Łukasik Sylwia

Adam Mickiewicz University in Poznan, Faculty of Biology, Institute of Anthropology, Department of Human Evolutionary Biology, Poznan, Poland

martak@amu.edu.pl

The most important elements in the paleopathological analysis are accurate description and diagnosis of abnormal changes encountered in human skeletal remains. Those include the question whether a given bone change is the result of disease or postmortem taphonomic process. In understanding this issue knowledge from modern clinical studies on how disease affects the body as well as the ability to distinguish between antemortem and postmortem bone changes are of critical importance. The paleopathological diagnosis can be a challenging task particularly with regard to such tiny bones as the human auditory ossicles. In this study we present the cases of bone destruction resulting from middle ear inflammation, and pseudopathologies of 168 ear bones retrieved from 99 subadult skeletons excavated at a medieval and a post-medieval site located on the territory of Poland. In our analysis we used knowledge from anatomical studies about the morphometrical variations of human ear ossicles and clinical data on ossicular damage in chronic middle ear inflammation. In order to evaluate whether a bone abnormality is the result of an antemortem or postmortem process we used paleopathological guidelines, such as the observation of the edges of the destructive changes. The ossicles were inspected under the binocular microscope under 16-40x magnification.

Pathological changes were documented by recording forms and photographs. In accordance with other studies, the most variable ossicle was the stapes, displaying different neck and head morphologies, and the least variable was the incus. Overall 33.9% (N=168, n=57) of the ossicles had evidence of disease process. The majority of the remaining bones displayed some form of postmortem destruction. In our opinion, high reliance on anatomical and clinical data, clearly stated methods of paleopathological diagnosis, detailed descriptions and precise photographs of the observed pathologies are fundamental for reliable interpretation and interpopulation comparisons of diseases affecting past human populations.

HUMAN BONES FOUND WITHOUT ANATOMICAL CONTEXT – METHOD, COSTS AND NEW KNOWLEDGE

Kristensen Rytoft Vicki

University of Southern Denmark, ADBOU, Odense, Denmark

frkvicki@hotmail.com

The aim of this research is to produce a more efficient procedure in the analysis of loose found human bones – found with no anatomical order. Archaeological excavations of cemeteries are demanding both in time and effort; and the treatment of loose found bones is a particular challenge both for the anthropologist and archaeologist. The correct practice when working with loose fund bones is controversial. So is it possible to simplify the handling of these bones and what is the cost-benefit relation between time used and knowledge gained from loose found bones. Archaeologists tend discussion whether these bones should be collected and if so in which way. Anthropologists spend variable amounts of time analysing and reporting on the commingled bones. They are only mentioned but rarely analysed in the osteological reports. The lack of consistencies in the handling and analysis of commingled bones makes a comparison between different reports almost impossible. These problems are disused in the light of three cemeteries from medieval Denmark. Differences in preservation and grave density in these three cemeteries contributes to the solution of the problem. It has been reported that distribution of age and sex differs between individuals found in undisturbed graves and individuals only known from undisturbed bones. The presentation will give guidelines for cemetery excavation planning.

BLACK SEA STEPPE WARRIORS: BIODEMOGRAPHY OF THE SCYTHIANS FROM MOLDOVA (4TH-2ND c. BC)

Łukasik Sylwia[1], Liczbińska Grażyna[2], Krenz-Niedbała Marta[1], Sinika Vitaly[3], Piontek Janusz[1]

[1]Adam Mickiewicz University in Poznań, Faculty of Biology, Department of Human Evolutionary Biology, Poznań, Poland

[2]Adam Mickiewicz University in Poznań, Faculty of Biology, Department of Human Evolutionary Ecology, Poznań, Poland

[3]Taras Shevchenko University in Tiraspol, Archaeological Research Laboratory, Tiraspol, Moldova

lukasik@amu.edu.pl

The term Scythians refers to the warrior nomads who inhabited the Black Sea region in the Early Iron Age, the territory of the present-day Romania, Moldova, Ukraine, and Russia. They appear in ancient historical sources as remarkably vivid nomadic groups who embraced a powerful domination over neighbouring populations in Early Iron Age Eurasia. Even though the

main driving force of this supremacy was cultural factors they had to differ from other human groups also in terms of biological and demographic structures (e.g. health status, mortality and life expectancy). The aim of the present study was to assess the biological state and dynamics of the Scythian population from the Black Sea region. We assume that Scythians, due to their lifestyle and remarkable position, were characterized by relatively low fertility, low mortality and higher life expectancy compared with other populations of similar chronology. The osteological material representing 220 individuals comes from Glinoe (Moldova) and dates to the 4th-2nd c. B.C. The human remains were examined for an assessment of fertility and biological status based on life table parameters and basic indicators of the reproductive potential. The Scythians differed from other human groups from the Early Iron Age in high probability of dying in early adulthood (q20). Fertility in the examined sample was rather low (TFR=3.89; MFS=2.53; A=81.62), which corresponds to the results of the studies on contemporary nomads. These results suggest that the demographic structure of Scythians could depend to some extent on their lifestyle, characterized by conflicts and wars, significantly contributing to high mortality of young adults.

ENCHONDROMAS IN THE ARCHAEOLOGICAL RECORD: THE CASE OF SANT PERE, SPAIN

McGlynn Hannah[1], Montanes-Gonzalvo Miriam[1], Malgosa Assumpció[1], Isidro Albert[2]

[1]Unit of Biological Anthropology, Universitat Autònoma de Barcelona, Spain
[2]Hospital Universitari Sagrat Cor, Barcelona, Spain

hkmmcglynn@gmail.com

Enchondromas are frequently occurring clinically and account for approximately 15 – 20% of all cases of benign bone tumours. Despite their contemporary prevalence in clinical literature and medicine they are scarcely reported in archaeological literature. The aim of this paper is to present a possible case of enchondroma and the methods and tests undertaken to confirm our diagnosis including X-rays and CT scans. In addition we aim to reflect upon how the case of Sant Pere impacts the existing cases of proposed enchondromas and the consequences of this discovery on the archaeological records of benign bone tumours. The case of Sant Pere takes the form of a macroscopic mottled ossified mass in the right femur, that within the X-ray and CT scan appears dense and in contact with the posterior intermedullary wall. We also established criteria by which we can ascertain confidently the existence of proposed enchondromas in existing literature. It is our belief that the results of our testing confirm our case of Sant Pere's enchondroma with confidence. The implications of this result, and an extensive review of the previously published cases, enable us to conclude consequentially that based upon our established criteria presented in the paper, the records reflect that the case of Sant Pere is only one of the few concretely confirmed case of enchondroma in the archaeological record and the first femoral case.

NECROPOLIS IN AMPHITHEATRE AT VIMINACIUM – PALEODEMOGRAHIC RESEARCH

Mikić Ilija[1], Goncharova Natalia Nikolaevna[2]

[1]Institute of Archaeology, Belgrade, Serbia
[2]Moscow state University Lomonosov, Faculty of Biology

mikicilija82@gmail.com

Archaeological excavations at the location of the Amphitheatre in Viminacium, Serbia started in 2007 and are still ongoing. During this period, ending with year of 2013, 60 skeletons were recovered. Paleodemographic research focusing on the analysis of fertility and mortality curves

for both sexes suggests that this group of people on which the study was carried cannot be categorized as stationary paleopopulation. This group is characterized by a small number of women, a large percentage of children and high infant mortality. This profile may belong to a type of population with special (military or defense) functions. The analysis of child mortality data in the studied group from Viminacium shows evidence that the conditions of existence of said children were extremely uncomfortable. Even more so, very high infant mortality rate leads to a decrease in the proportion of the young population, which changes the shape of the pyramid of life, and would probably result in a reduction of the population. The disproportion of sex-ratio can only be explained by a breach of the stationary population, a constant influx of the male population, which is likely related to military activities. More than visualizing a two-fold excess of the number of men over the number of women, it eloquently speaks of the social orientation of the society. It is logical to assume that the study group is a militarized society. A relatively small number of women and high infant mortality in this assumption seem logical, since the conditions for a military camp life cannot be considered suitable for women, and especially infants. These assumptions are proposed in the nature of hypotheses, but only in this fashion can the particular groups of the population that have been identified be logically explained. Further investigation on the territory of Viminacium can refine the hypothesis put forward.

PULL, PUSH, JUMP AND RUN: MUSCULOSKELETAL STRESS MARKERS IN THE PART OF LATE MEDIEVAL POPULATION FROM LOBOR (CROATIA)

Mikulka Ana[1,3], Filipec Krešimir[1,3], Mihelić Damir[2,3], Hincak Zdravka[1,3]

[1]Faculty of Humanities and Social Sciences, University of Zagreb, Croatia
[2]Faculty of Veterinary Medicine, University of Zagreb, Croatia
[3]The Office of Forensic Sciences, University of Zagreb, Croatia

mikulka.ana@gmail.com

The main goal of this research is to detect a biological status of individuals and the part of population, by analysing physical activities on the human skeletal remains from the Late Medieval period. The research included musculoskeletal stress markers on one hundred skeletons of male and female individuals, all with well preserved appendicular skeletal elements. Reconstruction of daily activity patterns, lifestyle and possible diseases in broader sense were analysed through musculoskeletal stress markers on the anatomical elements of upper and lower extremities and teeth. Described changes on the skeleton occur in the interaction of the musculoskeletal system, muscles and connective tissue. These are called entheseal changes or stress markers. The difficulties involved determining correct identification markers and degrees of expression. Therefore four scales were used: the Coimbra method, Mariotti´s method, Robb´s method and Hawkey and Merbs´ method. The data, specific modification of osseous or dental tissue obtained for each individual, offered a wide range of habitual behaviors and in some way, cultural practice of a population. After this extensive anthropological analysis, we hope that we will be able to bring bio cultural conclusions for part of this population.

RESULTS OF THE ANTHROPOLOGICAL ANALYSIS OF THE CAROLINGIAN POPULATION FROM THE NECROPOLIS OF SANT PERE, SPAIN

Montanes-Gonzalvo Miriam[1], McGlynn Hannah[1], Malgosa Assumpció[1], Jordana Xavier[1], Isidro Albert[1,2]

[1]Unitat d'Antropologia Biològica, Department BABVE, Facultat de Biociències, Universitat Autònoma de Barcelona, Spain
[2]Hospital Universitari Sagrat Cor de Barcelona, Spain

miriam1_1991@hotmail.com

The archaeological site of Sant Pere is located in the city of Terrassa, 20 km North-West of Barcelona. It consists of three Romanic churches: Santa Maria, Sant Miquel and Sant Pere. The complex comprises a large necropolis with regard to its physical size, chronology and the number of burials. The subject of this presentation is to present the results of the completed osteological analysis of the entirety of the Carolingian population buried in this necropolis. Documented at the site are more than one hundred burials from the Early Middle Ages, excavated between 1982 and 2007. These burials are typically de cubito supine, in a Southwest-Northeast orientation and are simple graves of antrophomorphic form. Consequentially the vast size of information obtained in this archaeological site, it could perhaps be one of the biggest Carolingian records from a documented necropolis. To introduce this population we will present the biological profile of the individuals and their pathologies followed then by a comparison to some contemporaneous archaeological sites in Spain. The results of the study show evidence of the biological impact harsh living conditions and physical hardships which characterize medieval times. These include infections, fractures and degenerative pathologies. Due to the amount of information Sant Pere has provided, it is one of the most important necropolis of the Iberian Peninsula.

INVESTIGATING HEALTH STATUS OF THE LATE MEDIEVAL INHABITANTS OF ILOK, EASTERN CROATIA – SOME PRELIMINARY RESULTS

Novak Mario[1], Rimpf Andrea[2], Krznar Sinisa[3], Turkalj Kristina[3], Jankovic Ivor[1]

[1]Institute for Anthropological Research, Zagreb, Croatia
[2]Ilok Municipal Museum, Ilok, Croatia
[3]Institute of Archaeology, Zagreb, Croatia

mario.novak@inantro.hr

During the test excavations at the Ilok - Ađanski kraj/Krstbajer site in September 2015 a late medieval cemetery was discovered. The excavations were carried out by the Ilok Municipal Museum in cooperation with the Institute of Archaeology in Zagreb. The site is located in the eastern part of the town, about 200 meters from the border crossing between Ilok (Croatia) and Bačka Palanka (Serbia). The area excavated so far is quite small (approximately 52 m2), but excavations at the site are planned for near future. The archaeological context and artifacts date the use of the cemetery between the 13th and the 16th century CE, i.e. to the period before the Ottoman conquest of Ilok. It is very likely that the site is a medieval parish cemetery where Ilok's middle class population was buried, as supported by historic documents for the Ilok Lower Town. In total, 30 inhumation burials (all single) have been excavated so far yielding the remains of 29 individuals: eight adult males, six adult females, 11 subadults and four individuals whose sex and age at death could not be estimated with certainty due to bad preservation. Most of the adults are of younger/middle age, and only two individuals reached the age of 50. The frequency and patterning of the long-bone and rib trauma point to accidents as a major cause for the occurrence of these injuries. Most of the subadult skeletons show pathological changes associated with infectious diseases such as tuberculosis, metabolic disorders, and/or anemia. In

order to get a better picture on the health status of the studied population, comparisons will be made with contemporaneous samples from this part of Croatia, but also southern Hungary and northern Serbia (Vojvodina). In addition, written historical sources on everyday life of the medieval inhabitants of Ilok will be consulted.

THE HEALTH AND LIFESPAN DURING THE SPANISH INDEPENDENCE WAR: THE ROYAL MILITARY HOSPITAL OF OLIVENZA, BADAJOZ, SPAIN

Ortega-Ruiz Ricardo

Instituto de Formación Profesional en Ciencias Forenses

ricardo.ortega@institutoforense.es

During the first twenty years of the nineteenth century, the city of Olivenza, Spain (nowadays located on the border with Portugal), suffered two important wars. The first was the so-called "War of the Oranges" in 1801, where a coalition of Spanish and French troops fought against Portugal because Portugal had refused to accept Napoleon's demands to cede much of its territory to Spain. The second war came between 1802 and 1814, known as the Peninsular War or the Spanish War of Independence, and was the allied forces of Portugal, Great Britain and Spain fighting against France for control of the Iberian Peninsula. The French Army was finally expelled from the country after a long period of influence. As a result of these two conflicts, the poverty of some towns was inevitable. In the particular case of Olivenza, initially they belonged to Portugal but their administration was transferred to Spain after the War of the Oranges. During the Independence War Olivenza was conquered by France, recovered by Britain and finally, it was returned to Spain. During these long battles the city suffered great damage, not only in the defensive structures and other facilities but also in the way of life - the lack of food, the overcrowding, the lack of sanitary measures, etc. This ultimately had an affect on the health status and, as a consequence, on the lifespan of the people of Olivenza. Our participation aims to discuss how these factors could have affected the population of the town through analysis of the bodies recovered from the patio of the Royal Military Hospital of Olivenza during this period.

ANALYSIS OF DENTAL PATHOLOGICAL OF HUMAN SKELETAL REMAINS FROM HAVUZDERE MEDIEVAL PERIOD GRAVES, TURKEY

Özer İsmail[1], Sağır Mehmet[1], Karatufan Ayça[1], Şahin Serkan[2]

[1]Ankara University, Faculty of Languages, History and Geography, Department of Anthropology, Ankara, Turkey

[2]Ahi Evran University, Faculty of Science and Letters, Department of Anthropology, Kırşehir, Turkey

ishiozer@gmail.com

Human skeletal remains provide important information to understand body morphology, diet, health and living conditions of the past populations. Analysing skeletal biology of the ancient Anatolian populations can explain more about the paleodemographic structure and public health status. The aim of the present study is to evaluate dental pathological examination of recently excavated human skeletal remains from Havuzdere graves from Yalova province, Turkey. The archaeological site located in the North-West coast of the country -Marmara region- dated to Medieval Period. During excavations 305 graves found and 352 skeletons (121 sub-adult, 135 males and 95 females) were unearthed. The mean age of the adult skeletons was found to be 35.27 years (35.67 years for males and 34.71 years for females). Results showed the presence of the dental lesions including; caries, premortem tooth loss, and both various and severe lesions of jaws and teeth. Advanced caries that went down to the roots of the teeth were

prominent. Moreover, nasal tooth were discovered from two different individuals. These discovered cases are the first known female and child individuals from ancient Anatolian populations. Present results contribute additional information towards understanding the state of health conditions associated with Medieval Period of North-Western Anatolian inhabitants.

PALEOANTHROPOLOGICAL ANALYSIS OF HUMAN SKELETAL REMAINS FROM HAVUZDERE MEDIEVAL PERIOD GRAVES

Özer İsmail[1], Sağır Mehmet[1], Koca Özer Başak[1], Karatufan Ayça[1], Şahin Serkan[2]

[1]Ankara University, Faculty of Languages, History and Geography, Department of Anthropology, Ankara, Turkey

[2]Ahi Evran University, Faculty of Science and Letters, Department of Anthropology, Kırşehir, Turkey

ishiozer@gmail.com

Studies on human skeletal remains provide important information to understand the demographic and health structure, and living conditions of the past populations. The aim of the present study is to conduct paleoanthropological examination of human skeletal remains from Havuzdere graves in Yalova, Turkey. The archaeological site located in the North-West coast of the country and dated to Medieval Period, 15th century. During excavations 305 graves found and 352 skeletons (121 sub-adult, 135 males and 95 females) were unearthed. Age estimated using dental analyses, epiphyseal closure and symphysis pubis, sex determined using macroscopic and metric analyses, height estimated using Trotter and Gleser (1958) and Sagir (2000) formulas. Results showed that Havuzdere site contains dominantly young people remains. The mean age of the adult skeletons was found to be 35.27 years, which is lower than the mean Anatolian Medieval longevity. Furthermore, various pathological lesions from cranial and post cranial remains were diagnosed. Present results contribute additional information towards understanding the state of longevity, child mortality and health conditions associated with Medieval Period of Havuzdere inhabitants.

PALEOPATHOLOGICAL ANALYSIS OF HUMAN CREMATED REMAINS FROM THE LATE BRONZE AGE SITE OF POLJANA KRIŽEVAČKA, CROATIA

Premužić Zrinka[1], Rajić Šikanjić Petra[1], Ložnjak Dizdar Daria[2]

[1]Institute for Anthropological Research, Zagreb, Croatia

[2]Institute of Archaeology, Zagreb, Croatia

zpremuzic@inantro.hr

The Late Bronze Age cemetery of Poljana Križevačka 2, dated to the 13th century BC, is situated in northern Croatia. It contains cremated remains of 43 individuals. Anthropological analysis was carried out in order to determine sex and age distribution of the sample, as well as identify observed pathological changes. They were present in 22 individuals: 18 adults and 4 juveniles. These include ectocranial porosity, endocranial lesions, cribra orbitalia, periostitis, degenerative and entheseal changes, as well as dental pathologies. The majority of the pathological changes are associated with prolonged periods of inadequate diet, vitamin deficiencies, unsanitary conditions and presence of nonspecific and specific infectious diseases. This indicates low life quality for some members of the community from Poljana. Degenerative and entheseal changes, related to advanced age and mechanical stress, suggest that some individuals participated in physically demanding activities. Dental pathologies indicate low level of dental hygiene. Even though the analysed sample is relatively small, the obtained data makes

a significant contribution to our knowledge about health and lifestyle of Late Bronze Age communities from northern Croatia.

ANALYSIS OF TWO MEDIEVAL MUMMIES FROM VODNJAN, CROATIA

Rajić Šikanjić Petra[1], Škarić Ksenija[2], Premužić Zrinka[1]

[1]Institute for Anthropological Research, Zagreb, Croatia
[2]Croatian Conservation Institute, Zagreb, Croatia

petra@inantro.hr

We present results of the analysis of two medieval mummified bodies housed in the sanctuary of the parish church of St. Blaise in Vodnjan, Istria, Croatia. They belong to Saint Giovanni Olini (1215–1300) and Saint Nicolosa Borsa (1447–1512) whose bodies were brought as a part of collection from Venice in 1818. The goal of this examination was to gather information on the physical condition of the bodies and their present state of preservation. Chemical examinations on skin samples confirmed that it was treated with a mix of olive oil and saccharide-based resin. Similarities in the appearance and composition of coating indicate that both bodies were treated, not during the mummification process, but after they had entered the same collection in the first half of 19th century. Detailed visual inspection showed that on both bodies parts related to sexuality were missing. We offer two possible explanations: a medieval post-mortem ritual or removal of these parts as relics at a later period.

GEOMETRIC MORPHOMETRIC ANALYSIS OF THE MORPHOLOGICAL VARIABILITY OF THE MATURE *ACETABULUM* AND *ACETABULAR FOSSA* RELATED TO SEX AND AGE

Rissech Carme[1], San Millán Marta[2], Turbón Daniel[2]

[1]University of Girona, Faculty of Medicine, Unit of Medical Science, Girona, Spain
[2]University of Barcelona, Faculty of Biology, Unit of Anthropology, Barcelona, Spain

carme.rissech@gmail.com

Detailed knowledge of human acetabular anatomy can be widely applicable to both physical anthropology and clinical anatomy. This study aims to examine morphological variability in the adult *acetabulum*, in relation to sex and age. To carry out this study, 682 documented individuals (327 ♀, 355 ♂) aged between 15 to 101 years old, from three different documented skeletal collections from the Iberian Peninsula, were analysed. In each os coxa, two landmarks and thirty-two sliding semi-landmarks were digitised and geometric morphometric methods were applied to quantify size and shape variation of the acetabulum in relation to sex and age. Results indicated that size, sex and age significantly influence *acetabular* shape variation. Sex differences were significant in individuals younger than 65 years old. They were characterised by males exhibiting relatively narrower *acetabular* notches, extended acetabular rim profiles posteriorly and reduced *acetabular fossae*. Additionally, three main age-related modifications occurred to the *acetabular* shape in both sexes: *acetabular* notch narrowing, outer *acetabular* profile modification, with extension into the postero-superior direction and reduction in the inferior direction, and *acetabular fossa* reduction. Interestingly, age-related changes are shared by males and females and seem to be related to bone production associated with age along the whole border of the lunate surface. Specifically, age appears to affect both *acetabular* horns, the acetabular rim and the outer edge of the *acetabular fossa*. Furthermore, morphometric data demonstrated the clover-leaf shape of the outer edge of the acetabular fossa in both males and females. These results enhance our understanding of the *acetabular* shape, and assist in refining age-estimation methods and improving surgical and prosthetic procedures.

CHANGES IN BONE MINERAL DENSITY IN WOMEN FROM HISTORICAL POPULATIONS INHABITING THE REGION OF KUJAWY (NORTH-CENTRAL POLAND) OVER 6000 YEARS

Spinek Elżbieta Anna[1], Żądzińska Elżbieta[2]

[1]Polish Academy of Sciences, Unit of Anthropology, Wroclaw, Poland
[2]University of Lodz, Department of Anthropology, Lodz, Poland

a.spinek@wp.pl

The aim of the study is to compare the prevalence of bone mineral disorders (osteopenia and osteoporosis) among women from seven historical populations which inhabited the region of Kujawy in north-central Poland from the Neolithic to early modern times. The study involved 276 skeletons of adult females, whose estimated age at death ranged from 20 - 75 years. They came from seven chronologically divergent skeletal series: Osłonki, BK4 (Neolithic series: 4600-4000 BC), Kolonia, BK5 (XI-XIII centuries AD), SBK4 (XII-XVI centuries AD), Fara (XIV-XVII centuries AD) and Holy Spirit (XVI-XIX centuries AD). The suitability of skeletal material for mineral density evaluation was verified for selected samples using Fourier transform infrared spectrometry (FTIR). After positive verification, bone mineral density (BMD) was measured in the proximal femur using dual-energy X-ray absorptiometry (DXA). In the present study bone mineral density was measured in the region of the femoral neck, greater trochanter, and Ward's triangle. Analysis also used total bone mineral density measurements. The femur robusticity index was also calculated. The undertaken analysis showed that there is a significant difference in bone mineral density between the Neolithic women and those from other historical populations (mediaeval and modern). Neolithic women were characterized by a higher average values of bone mineral density than women from all other groups. Cases of osteopenia and osteoporosis were not found in the Neolithic populations. In mediaeval and modern populations BMD was found to significantly decrease with age in all studied regions of the proximal femur. This kind of dependence in Neolithic population was observed only in the area of Ward's triangle. No differences were observed between the values of intravital body height and skeletal robustness, and belonging to the group with normal or reduced bone density within the analyzed historical series.

NEW WEANING FOOD FOR PREHISTORIC BABIES AND ORIGIN OF CARIES

Stefanović Sofija, Jovanović Jelena, Penezić Kristina, Blagojević Tamara

University of Belgrade, Faculty of Philosophy, Laboratory for Bioarchaeology, Belgrade, Serbia

tamara.blagojevic@f.bg.ac.rs

Increase in caries is described in many Neolithic populations and often interpreted as a consequence of diet based more on carbohydrates. However, we suggest that intensification of caries is probably more connected to new way of food preparation with Neolithic, than with the new type of food. Special threat for deciduous teeth was new weaning food for babies, probably kind of porridge based on grinned cereals and milk which form a sticky paste around the teeth causing dental caries. We combine different lines of archaeological and bioarchaeological evidences from the territory of the Central Balkans. which suggest appearance of new weaning food and increase of caries on deciduous teeth with Neolithic. First, we present our results of microscopic study of 40 Early Neolithic bone spoons from the sites Starčevo and Donja Branjevina, on which we have found evidences of deciduous teeth bite-marks, suggesting their usage for feeding the babies with porridge. Secondly, we present appearance of caries on children with stable isotope information on diet from the site of Ajmana, on which we had found correlation between diet and caries presence. Our results indicate that in further understanding

of origin of caries more attention should be paid on new way of food preparation in Neolithic, rather than on food itself.

POSSIBLE CASES OF TUBERCULOSIS FROM KÖLKED-FEKETEKAPU „A" EARLY AVAR PERIOD CEMETERY (EASTERN TRANSDANUBIA, HUNGARY)

Szeniczey Tamás[1], Marcsik Antónia[2], Sirak Kendra[3], FernandesDaniel[4], Pinhasi Ron[4], Hajdu Tamás[1]

[1]Eötvös Loránd University, Deparment of Biological Anthropology, Budapest, Hungary
[2]University of Szeged, Department of Biological Anthropology, Szeged, Hungary
[3]Emory University, Department of Anthropology, Atlanta, United States of America
[4]University College Dublin, School of Archaeology, Dublin, Ireland

szeniczeyt@caesar.elte.hu

During the early Avar Period (late 6th – early 7th century), the East Transdanubian region was characterized by cultural and ethnic heterogeneity formed by the local Germanic, late antique and newly arrived Avar populations. This heterogeneity can also be observed at the early phase of the Kölked-Feketekapu-A site, which is one of the largest cemeteries in this region. We have examined 182 individuals so far, 53 of whom were buried in the early Avar Period. In the case of an adult male, skeletal tuberculosis (TB) is suggested based on morphological alterations that are characteristic of the disease. Active diffuse periostitis with moderate new bone formation was observed on the visceral surface of the ribs. Furthermore, endocranial lesions were present as isolated plaques. Ancient DNA analysis is currently being performed to confirm the presence of TB on a biomolecular level. Another case of an adult male showed osteolytic lesions involving the middle thoracic and upper lumbar part of the spine. Based on the belt buckles, burial context and the results of the physical anthropological examination, these individuals were members of the local population. So far, skeletal TB has been diagnosed in four Avar Period cemeteries in this region. Based on the associated grave goods, the Kölked-Feketekapu-A cases are the earliest of them, dating back to the end of the 6th and the first half of the 7th century. The project was supported by the Hungarian National Scientific Research Fund (OTKA NN-113157) and the Eötvös Loránd University Talent Management Council. Daniel Fernandes was supported by an Irish Research Council Post-Graduate grant (GOIPG/2013/36). Tamás Hajdu was supported by the János Bolyai Research Fellowship of the Hungarian Academy of Sciences.

PALEORADIOLOGICAL ANALYSIS OF THE MUMMY SHEPENUN FROM ARCHEOLOGICAL MUSEUM IN ZAGREB, CROATIA

Štivić Domagoj[1], Rajić Šikanjić Petra[2], Janković Ivor[2], Petaros Anja[3], Čavka Mislav[4]

[1]Community Health Centre, Zagreb County, Croatia
[2]Institute for Anthropological Research, Zagreb, Croatia
[3]University of Rijeka, School of Medicine, Rijeka, Croatia
[4]University of Zagreb, School of Medicine, University of Zagreb, Department of Diagnostic and Interventional Radiology

mislav.cavka@yahoo.com

Mummy Shepenun is dated to Ptolomaic period and it is part of permanent exhibition in Archeological Museum in Zagreb. Methods and Materials: Specimen was scanned at Dubrava University Hospital, University Department of Diagnostic and Interventional Radiology Zagreb, Croatia. X ray of the mummy was done in two directions. CT scan was done using 16x0.75 collimation using a MDCT unit with 16 rows of detectors. A three dimensional MRI scan, spoiled

gradient echo based ultra-short echo time sequence was performed on a 1.5 Tesla scanner. The echo time was set to 0.07 ms, repetition time to 15 ms and the flip angle to 45^0. 40000 radial projections were used for reconstruction of 256 slices of 1.3x1.3x1.3mm3 isotropic resolution. Results Mummy was a female person who was at least 40 years at time of death. No metal findings were found and abundant linen wrappings are found beneath the mask. Remnants of meningeal membranes are clearly observed on CT and MR in continuation to dorsal orbital walls. In oral cavity hyperdensities are observed on CT images and on MR images only one hyperintense structure can be seen. Abundant mediastinal and abdominal remnants were observed. Discussion and conclusion CT investigation has given additional information as in previous X ray findings metal was described. MR used only several times in scientific analysis of mummies, has provided additional information as contrast resolution is superior and difference between organic and linen material was observed. Evisceration of mummy was only done partially, possibly through anal cavity, which was common in later periods and the suggested datation should be correct.

RELIABILITY OF THE ASSESSMENT OF PERIODONTAL DISEASE IN HISTORICAL POPULATIONS

Tomczyk Jacek[1], Turska-Szybka Anna[2], Zalewska Marta[3], Olczak-Kowalczyk Dorota[2]

[1]Cardinal Stefan Wyszynski University, Warsaw, Poland
[2]Department of Pediatric Dentistry, Medical University of Warsaw, Poland
[3]Department of Environmental Hazard Prevention and Allergology, Medical University of Warsaw, Poland

jaktom@post.pl

Periodontal disease is the destruction of all portions of periodontium. However, only periodontitis, based on whether attachment loss has occurred, can be detected in archaeological material. Therefore, several methods have been used to assess the frequency of periodontitis in past populations. The main scope of this study is to determine whether diagnoses of periodontitis through various methods are consistent with diagnoses obtained using the radiographic method. The samples (35 individuals, 576 teeth) were selected from Radom Cemetery's collection (in use between 1790 and 1811). For each individual, a periodontal status assessment was made using the following parameters: (i) measuring the distance between the cement–enamel junction (CEJ) and the crest of the alveolar bone (AC), (ii) the degree of root exposure, (iii) presence of the inter-dental septum, (iv) dental calculus, (v) scoring system on the texture of the alveolar bone (Kerr's method) and (vi) radiography. In the studies, a correlation was found between the radiographic images and Kerr's method (r=0.92) and root furcation (r=0.96). Increasing degree of change on the alveolar bone is connected with increases in the CEJ–AC distance. A relationship between the frequency of the prevalence of dental calculus and changes on the alveolar bone was found. It means that the radiographic method, which is not always possible to use in archaeological collections, can be replaced by the presented macroscopic methods.

FEEDING IN IMPERIAL ROME (I-III CENTURIES CE): ISOTOPE VARIATION IN SEVERAL COMMUNITIES OF THE ROMAN SUBURBIUM

Varano Sara[1], Battistini Andrea[2], Caldarini Carla[2], De Angelis Flavio[1], Di Giannantonio Stefania[2], Mosticone Romina[2], Pantano Walter[2], Scorrano Gabriele[1], Zavaroni Federica[2], Catalano Paola[2], Rickards Olga[1]

[1]Centre of Molecular Anthropology for Ancient DNA Studies, Department of Biology, University of Rome "Tor Vergata", Rome, Italy
[2]Soprintendenza Speciale per il Colosseo, il Museo Nazionale Romano e l'area archeologica di Roma, Rome, Italy

saravarano89@gmail.com

In the last decades, thousands of burials have been discovered in the Roman Suburbium dated back to the Imperial Age (I-III centuries CE), in particular to the second century, when the city of Rome reached its greatest demographic and urban expansion. Notwithstanding the huge amount of literary sources about Romans, to date very few biomolecular data have been published about the leading fraction of population and molecular characterization of ancient Roman diet could represent a valuable proxy in the reconstruction of the lifestyle of the greatest city of the Ancient World. The aim of the present study is the evaluation of a wide sample of human skeletal remains (more than 150 individuals) provided by "Soprintendenza Speciale per il Colosseo, il Museo Nazionale Romano e l'area archeologica di Roma" and pertaining to several Imperial necropoleis scattered throughout the Roman Suburbium, where faunal remains are also available. Stable isotopes analysis -in particular carbon and nitrogen stable isotopes analysis- from bone collagen has been used in order to dissect ancient diet: its reconstruction could provide information about subsistence economy and social organization, since dietary patterns could be hypothesized as one of the most retained markers of the cultural identity of a population. The isotopic signatures of the individuals have been also contextualized in accordance to the archaeological, anthropological and historical features of the necropoleis. In conclusion, the molecular analysis of these ancient people should contribute to a holistic characterization of the diet of ordinary people in Imperial Rome, providing helpful information in the depiction of this ancient population.

EPIGRAVETTIAN TRADITIONS IN THE EARLY HOLOCENE LEVELS OF VLAKNO CAVE (CROATIA)

Vujević Dario[1], Cvitkušić Barbara[2], Radović Siniša[3]

[1]Department of Archaeology, University of Zadar, Croatia
[2]Institute for Anthropological Research, Zagreb, Croatia
[3]Institute for Quaternary Paleontology and Geology, Croatian Academy of Sciences and Arts, Zagreb, Croatia

barbara.cvitkusic@inantro.hr

Dugi otok is one of the largest islands on Croatian coast. In the karst environment there are numerous speleological objects which represent enormous potential for exploring the prehistoric period. Vlakno cave, on the inner side of Dugi Otok, half way between the settlements of Luka and Savar is one of the most prominent Epigravettian and Mesolithic sites discovered recently. Small inner cave space (40 m2) served as an ideal place for stay of small communities of hunter-gatherers during the Late Pleistocene and Early Holocene. Vlakno cave is currently the only site in northern Dalmatia available for studying Palaeolithic/Mesolithic transition. Mesolithic layers basically start from the surface itself, but most layers belong to the Pleistocene period. Preliminary results of Early Holocene assemblage show changes in subsistence strategies due to accommodation to new climate conditions (within the context of sea level rise

during Last Glacial Maximum), but patterns evident on the lithic finds, ornaments and faunal remains indicate strongly pronounced Epigravettian tradition.

CRANIAL DEFORMATIONS IN A OSTHROGOTH CEMETERY FROM CROATIA

Vyroubal Vlasta[1], Bedić Željka[1], Balen Jacqueline[2], Adamić Anita[1], Šlaus Mario[1]

[1]Croatian Academy of Sciences and Arts, Anthropological Centre, Zagreb, Croatia
[2]Archaeological Museum, Prehistoric Department, Zagreb, Croatia
vlasta.vyroubal@gmail.com

Archaeological excavation of the Novi Čeminac – Jauhov salaš (JASA) site was conducted in 2014/2015. The excavation revealed numerous archaeological structures that are dated from prehistoric to late medieval times. Eleven graves were also discovered on the site. Based on grave finds all of the graves were dated to the 5th century AD and the Ostrogoth culture. The skeletal sample consisted of 4 females, 5 males and 2 subadults. Of interest is the fact that 6 of the 11 skeletons had artificially deformed crania. Individuals with artificially deformed crania included 3 adult females, 2 adult males and a single subadult. The females were aged 15-40 years, both males were aged 30-40, while the subadult (the first subadult with artificially deformed crania recovered in Croatia) was 6-7 years old at time of death. The crania were deformed by at least two different methods – circular oblique deformation and tabular erect deformation. The practice of artificially deforming crania has been present from the beginning of human history and was spread across the world. Archaeological cultures that practised this habit in Croatia include the Ostrogoths, Huns, Gepids and Avars. So far, artificially deformed skulls have been discovered in Croatia only as single finds.

SEX, SURVIVAL AND SUBSISTENCE - MORTALITY CHANGES DURING THE HOLOCENE PERIOD

Weise Svenja

ADBOU, Institute of Forensic Medicine, University of Southern Denmark
sweise@health.sdu.dk

For most ancient populations there is a clear difference between male and female mortality regimes. Mortality data derived from human skeletons can help to reconstruct these sex-specific survival patterns. The observed differential mortality between the sexes might be shaped by a combination of biological and cultural factors. Therefore, the shape of sex-specific mortality might be influenced by the level of social and economic development of a community. To test this hypothesis, mortality patterns are contrasted for populations with four different subsistence forms: Intense foraging, horticulture and foraging, partly market integrated agriculture and urban (fully) market integrated agriculture. The data set comprises 10152 individuals from five countries around the Baltic Sea (Denmark, Germany, Latvia, Lithuania, Sweden), and the United States (Illinois, Kentucky, and California), buried between ~7000 BC and 1850 AD. Throughout the Holocene period two major changes in mortality regimes can be recognized. The first was a shift from nearly equal risk of dying for both sexes in the Mesolithic Period to an increased female mortality during the reproductive years in the rural populations of the Iron and Middle Ages. The second change, starting in the urban centers of the Mediaeval Period, resulted in a surplus mortality of males in all age classes. The observed transitions run parallel to the important changes in subsistence patterns between the analyzed communities: from intense foraging via horticulture and foraging to an urban life and fully market integrated

agriculture. The data analyzed here support the hypothesis that the level of social and economic development of a community influences the shape of sex-specific mortality.

A NEW APPROACH TO PATHOLOGICAL CHANGES OF THE HUMAN SPINE IN PHYSICAL ANTHROPOLOGY

Schuster Snježana[1], László Orsolya[2], Paja László[3], Racz Aleksandar[4]

[1]University of Applied Health Sciences, Department of Physiotherapy, Zagreb, Croatia
[2]Hungarian National Museum, Budapest, Hungary
[3]University of Szeged, Department of Anthropology, Szeged, Hungary
[4]University of Applied Health Sciences, Department of Public Health, Zagreb, Croatia
snjezana.schuster@zvu.hr

Etiology of pathological changes on the vertebral bodies such as Schmorl's nodes is still unclear. Many causes, such as developmental factors, degenerative mechanisms, infection, neoplasia and trauma, have been proposed but none critically evaluated. Number of theories addressing their pathogenesis has been suggested, but no consensus currently exists. In the paleopathological literature, these lesions are strongly related to lifestyle, mostly with hard physical labor; therefore they are often used as indicators of physical stress in archaeological populations. Our research goal is to define typology of Schmorl's nodes in order to understand and explain their possible etiology as a new approach to pathological changes of the human spine in physical anthropology and physical therapy. A long-term anthropological and statistical analysis started in February 2015, on the osteological material of the medieval cemetery of Perkáta-Nyúli dűlő site, curated at the Hungarian National Museum, Budapest. The cemetery of Perkáta involves 99 burials of a 16-17th c. South-Slavic population. South-Slavics involve all ethnicities coming from the Balkan Peninsula like Serbs, Croats and Bosnians during Turkish Rule in Hungary. We have systematically recorded and analyzed Schmorl's nodes with macro- and microscopic visual methods on 1196 vertebras in 50 human spines (14-59 year-old). Based on their morphology, Schmorl's nodes were divided into four types (A to D). Preliminary analysis showed, at different frequencies, these morphological categories. The most frequent were B and D. It seems that some of South-Slavic populations of Perkáta were under heavy mechanical loads. The underlying causes are probably related to specific life events or occupation, which can be further investigated with the interpretation of the archaeological and funerary background. Our observations, pointed at those new approaches in the analysis of pathological changes of the human spine in archaeological samples, can help in predicting and preventing potential pathological changes in modern populations.

APPLIED ANTHROPOLOGY

MUTUAL OBESITY – CULTURAL DISEASE OF HUMAN - ANIMAL RELATIONS

Beljak Bruno

MedUniWien, Public Health, Medical Anthropology, Vienna, Austria

bbeljak@icloud.com

Animals have an important social role in wellbeing and health of humans. A „cultural“ disease, obesity is contagiously moving worldwide, a leading public health problem caused by rapid life style change and industrial revolution. It is a diffuse ill-health change involving all layers of population but also spreading a cross species, raising moral and ethical questions. Animals are not immune to this „human-bourne“ disease. On an example of human - dog relationship, I will try to show this “mirroring” effect. Obesity and obesity related diseases in dogs such as diabetes are increasing proportionally with human obesity. Approximately every 5th dog has obesity. Our mutual food relationship transformed from existential to emotional. Dogs have culturally and emotionally connected with humans many years ago helping find and catch food, with domestication dog accepted and “fell” for our food “participating and observing” in human leadership and life style. The aim of this paper is not just showing that humans make animals obese, but giving potential applied role to dogs, and that is in the reduction of obesity. Dogs can be a successful pet therapy tool in treatment of overweight and obesity related diseases sharing the same healthy ingredients with humans and changing them to a healthier, more active life style. After all, accepting obese dogs and other pets as normal, we accept obesity as normal.

COMPARISON OF BODY COMPOSITION AND PHYSICAL PERFORMANCE BETWEEN ICE HOCKEY PLAYERS WITH AN INDIVIDUAL APPROACH AND A COLLECTIVE TRAINING DURING PRE-SEASON PREPARATION

Čerňanová Veronika[1], Danková Zuzana[2], Sováková Daniela[1]

[1]Comenius Universty in Bratislava, Faculty of Natural Sciences, Department of Anthropology, Bratislava, Slovakia

[2]Comenius University in Bratislava, Biomedical Center Martin JFM CU, Division of Oncology, Slovakia

vcernanova@gmail.com

The purpose of this study was point out to potential differences in the body composition and physical performance between ice hockey players with an individual training approach and a collective training during pre-season preparation and players with individual training, training process (individual vs. collective), player’s position (forward, defender and goaltender) and the phase of pre-season preparation (beginning, middle and end) may influence sport performance of players. The studied sample included 11 ice hockey players with collective training (mean age 15.18±0.75 years) and 7 ice hockey players with individual training (mean age 17.71±1.11 years). Body composition was measured by bioimpedance analyzer BIA 101 (Akern, S.R.L.) and Myotest PRO was used to determine physical performance (power, force and speed) of players. After adjustment for age, the admission test showed significant differences between the two training groups in force of upper ($p=0.004$) and lower ($p=0.011$) limbs, intracellular ($p=0.005$) and extracellular ($p=0.005$) water. The players with individual approach achieved better results. At the end of pre-season preparation, individually trained players attained significantly better results in following parameters: power of upper ($p=0.016$) and lower ($p=0.029$) limbs, force of

upper (p<0.001) and lower (p=0.001) limbs, resistance (p=0.029), intracellular water (p=0.022), phase angle (p=0.043) and basal metabolic rate (p=0.040), respectively, than those collectively trained. Stepwise linear regression showed significant relationship between power of upper limbs, resistance and fat mass. Force of upper limbs was associated with intracellular and extracellular water, BCMI, basal metabolic rate and training approach. Power of lower limbs was significantly associated with total body water, training approach and phase of pre-season preparation. Training approach, phase of preparation, player's position and fat free mass were significantly associated with force of lower limbs. Our results indicate the importance of training approach and body composition to achievement of higher physical performance.

APPLICATION OF ANALYTICAL CHEMISTRY IN ANTHROPOLOGY

Čoklo Miran

Institute for Anthropological Research, Zagreb, Croatia

miran.coklo@inantro.hr

Possibilities of application of analytical chemistry in anthropological research will be discussed. Analytical chemistry is a study of the chemical composition of natural and artificial materials. As such, it takes advantage of the vast array of instrumental methods of chemical analysis (organic, inorganic, as well as isotope analysis) to provide additional information to enrich anthropological knowledge on a variety of subjects – for example, nutritional and other habits, environmental exposure to various chemical compounds or elements, analysis of disease and skeletal trauma on archeological skeletal remains, population studies, proteomic and metabolomics analyses etc. One recent and simple example of such a possibility is an international multicentric study on fish intake in pregnancy and child growth, which proved that high maternal fish intake during pregnancy, is associated with an increased risk of rapid growth in infancy and childhood obesity. Knowing that fish is considered an integral part of a healthy Mediterranean diet, such results would be considered surprising from "classical" anthropological point of view. However, engaging analytical chemistry, contamination by environmental pollutants in fish was offered as an explanation for the observed association, because in humans, fish consumption is one of the major sources of exposure to endocrine-disrupting chemicals, such is mercury.

COMPARISON OF SELF-REPORTED AND MEASURED HEIGHT, WEIGHT AND BMI IN TURKISH UNIVERSITY STUDENTS

Koca Ozer Basak[1], Sagir Mehmet[1], Sagir Secil[2], Onal Sibel[1], Ozdemir Aysegul[1], Acar Sercan[3], Akca Duygu Hilal[2], Mese Cansev[1]

[1]Ankara University, Department of Anthropology, Ankara, Turkey
[2]Ahi Evran University, Department of Anthropology, Kirsehir, Turkey
[3]Cumhuriyet University, Department of Anthropology, Sivas, Turkey

bkozer@ankara.edu.tr

Accuracy and validity of self-reported height and weight, and body image satisfaction have not been evaluated particularly among young population in Turkey. The aim of this study is to evaluate the accuracy of self-reported height and weight. As in some other studies, it shows the tendency to overestimate height and underestimate weight, which is stronger in females. Heights and weights of 881 university students (401 males and 480 females) aged 17-30 years were measured and a questionnaire completed. From both measured and self-reported values for accuracy absolute differences were calculated, and body mass index (BMI) evaluated using WHO cut-offs. Results showed that subjects' self-reported BMI bigger than 25 were 33.9% for

males, and 15.8% for females, while measured BMI bigger than 25 were 39.4 % and 24.8%, respectively. Mean accuracy for the overestimated height was +1.05 cm for males and +1.54 cm for females, and the underestimated weight was -0.39 kg and -1.15 kg, respectively. Body image satisfaction was significantly different between sexes, males were more satisfied with their body weight. In conclusion, study group tended to overestimate height but underestimate weight, therefore for Turkish population the self-reported weight and height studies should be used more cautiously, and direct measurements or correction equations for adjustment are needed for reliable results.

OLFACTORY FUNCTIONS – ASSOCIATIONS WITH NUTRITIONAL STATUS AND DIETARY INTAKE

Łukasik Sylwia[1], Górna Krystyna[2], Wieczorowska-Tobis Katarzyna[3], Pałys Wiktor[4], Jaracz Krystyna[5], Czajkowska Alina[6], Łojko Dorota[7], Tobis Sławomir[8], Suwalska Julia[9], Liczbińska Grażyna[1], Suwalska Aleksandra[4]

[1]Adam Mickiewicz University in Poznan, Faculty of Biology, Department of Human Evolutionary Biology, Poznan, Poland

[2]Poznan University of Medical Sciences, Department of Neurological and Psychiatric Nursing, Poznan, Poland

[3]Poznan University of Medical Sciences, Laboratory of Geriatrics, Department of Palliative Medicine, Poznan, Poland

[4]Poznan University of Medical Sciences, Laboratory of Neuropsychobiology, Poznan, Poland

[5]Poznan University of Medical Sciences, Department of Neurological and Psychiatric Nursing, Poznan, Poland

[6]Family Physician Practice AR-MED, Sokolniki, Poland

[7]Poznan University of Medical Sciences, Department of Adult Psychiatry, Poznan, Poland

[8]Poznan University of Medical Sciences, Department of Geriatric Medicine and Gerontology, Poznan, Poland

[9]Poznan University of Medical Sciences, Students' Scientific Research Group Neuroscience, Poznan, Poland

lukasik@amu.edu.pl

Results of studies on the association of chemosensory perception and nutritional status are inconsistent. Aim of the study was to evaluate the putative associations between olfactory functions and anthropological measures as well as dietary intake. Method: A hundred and twenty four participants (mean age – 58.2±17.1, 44 males, 80 females, 53 older (≥65 years) and 71 younger people) entered the study. Body weight, height, waist and hip circumferences were measured and body mass index (BMI) and waist hip ratio (WHR) were calculated. Triceps, abdominal and subscapular skinfold measures were taken with the Harpenden Skinfold Caliper. Dietary assessment was performed by means of a food frequency questionnaire (FFQ). Olfactory function was assessed using Sniffin' Sticks – a test based on pen like odor-dispensing devices comprising of test for odor threshold, discrimination and identification. A composite TDI score – the sum of abovementioned tests was calculated. Results: Older participants had significantly worse olfactory function and higher BMI measures than the younger ones, but WHR was similar in both groups. In the whole group odor threshold correlated with BMI and WHR, and odor identification with WHR. In younger group a negative correlation between odor threshold and BMI and in older participants odor identification and TDI correlated inversely with WHR and odor discrimination was associated with abdominal skinfold measure. The associations between smell function and dietary intake (including dairy products, sweets, vegetable oil, fish and alcoholic drinks) were observed. Conclusions: The results of our study point to the association of olfactory function and anthropological measures as well as dietary intake, this relationship is

age- and sex dependent. Smell dysfunctions may interfere with maintaining a healthy diet therefore should be monitored in the elderly persons.

EARLY LIFE CYCLE CONDITIONS AND HEALTHY AGING

Montero López Pilar, Mora Urda Ana Isabel, Acevedo Cantero Paula, Baena Raquel, Martínez Irene, Higuero Antonio

[1]Universidad Autónoma de Madrid, Departamento de Biología, CD Antropología Física, Spain
pilar.montero@uam.es

Investigate what factors of the past influence the way people age allows designing health strategies at a historic moment for the human species characterized by a great longevity and the increase in the proportion of people over 65 years for the coming decades. The aim of this study is to identify indicators of living conditions of the past that influence on the quality of aging. A sample of 254 people (176 women and 78 men) aged 60 or older, living in Madrid was analyzed. A quality index of aging (QAI) was created, keeping the individual scores for factor 1 of a Multiple Correspondence Analysis, performed with diagnosed diseases, perceived health and life satisfaction. QAI was used as the dependent variable in linear regression models and gender, age, length of the tibia and years of schooling as independent variables. All analyzes were performed separately for men and women.In the regression model performed with the QAI as the dependent variable and years of education and length of the tibia as independent, years of schooling was the only variable that remained in the model for both men ($\beta = 0.070$; $p = 0.002$) and women ($\beta = 0.0036$; $p = 0.029$). In the regression model performed with QAI corrected by years of schooling as the dependent variable and the length of the tibia corrected for age and height, as independent, a positive and significant effect of the length of the tibia on the quality of aging was observed, but only in women ($\beta = 0.08$ $p = 0.001$). The years of schooling and the length of the tibia, indicators of conditions in which elderly people lived their adolescence, are good predictors of the quality of aging. These results support the importance of promoting healthy aging in earlier stages of life.

EVALUATION OF FACTORS OF SENIOR FRAGILITY AND THEIR RELATIONSHIPS IN SENIOR WOMEN FROM THE OLOMOUC REGION

Podzimková Tereza, Přidalová Miroslava, Zbořilová Vendula

Department of Natural Sciences in Kinanthropology, Faculty of Physical Culture, Palacký University, Olomouc, Czech Republic
tereza.podzimkova@upol.cz

Ageing has a significant impact on the functional status and capacity in physical, cognitive, sensory and nutritional areas. In the context of changes in body composition a loss of total body water, fat-free mass and increase fat mass and changing of its distribution can be observed. Age-related changes in the musculoskeletal system mainly include the significant loss of muscle mass and demineralization of bone. Decrease in bone density can lead to osteopenia or osteoporosis. Sarcopenia can lead to hypomobility, falls and loss of self-sufficiency. The aim of this study was to evaluate the relationship between selected parameters of senior frailty in older women from the Olomouc Region. The research group consisted of 225 women (60–81 years) attending U3A FTK UP and women from senior clubs in Olomouc. Body composition was assessed by multifrequency bioelectrical impedance with use of device InBody 720. Muscle strength in the arm, forearm and hand flexors was evaluated using a digital pinch grip firm MIE Medical Research. Information on bone density was obtained through local densitometer (EXA 3000). To verify the strength of relation between variables Pearson correlation coefficients were

calculated, statistical significance was determined at a value * p <0.05; ** P <0.01; *** P <0.001. Relationship between body composition, muscle strength and bone density proved to be statistically significant. Moderate positive corellation was found between the strengths of both hands, bone density of right and left calcaneus and the amount of fat-free mass, muscle mass, cell mass and the size of the basal metabolism. The relationship between muscle strength and bone density was weak but statistically significant. These results confirm the relationship between aspects of the fragility of seniors, especially the relationship between muscle strength, bone density and selected parameters of body composition.

THE UNKNOWN BODY OF THE PO RIVER: THE FORENSIC ANTHROPOLOGY CONTRIBUTION TO IDENTIFICATION

Rinaldo Natascia[1], Gaudio Rosa Maria[2], Frisoni Paolo[2], Tomasi Stefano[2], Esposito Valentina[1], Gualdi-Russo Emanuela[1]

[1]University of Ferrara, Department of Biomedical Sciences and Surgical Specialties, Ferrara, Italy

[2]University of Ferrara, Department of Medical Sciences, Ferrara, Italy

natascia.rinaldo@unife.it

Forensic anthropology is the discipline that applies the scientific knowledge of physical anthropology to the recovery and analysis of legal evidences. The work of a forensic anthropologist comprises recovery, description and identification of human skeletal remains resulted from an unexplained death. In law enforcement forensic anthropology is utilized to determine the person's identity, throughout its biological profile, and/or the cause of death. In September 2014, an unidentified dead body was discovered along the Po river, in Emilia Romagna region (northern Italy). After autopsy, the causes of death were unknown but downing could not be excluded. Because of the particular condition of the body, that was partially skeletonized and saponified, a multidisciplinary approach has been used, integrating forensic analysis (autopsy, DNA and toxicological analysis, CT) with additional anthropological methods. The body was complete, with exception of the mandible, several hands' bones and many maxillary teeth lost post-mortem. Skull and pelvis were brought to the Laboratory of Archaeo-Anthropology and Forensic Anthropology of Ferrara University for the anthropological examination. The aim of the anthropological analysis was to assess biological characteristics (sex, age and ethnicity), pathologies and peculiarities of the unknown body in order to facilitate the identification. Anthropological examination showed the remains were those of an adult individual of male sex, and pathological analysis resulted in evidences of ante mortem traumatic condition of the pelvis. Moreover, a 3D model of the skull was developed for further morphometric analysis. The results obtained from the anthropological examination, integrated with the analysis conducted by the Laboratory of Forensic Medicine of the University of Ferrara, gave important details useful for the identification of the body.

EVALUATION OF DIETARY PATTERNS AND HEALTH STATUS OF YOUNG ADULTS FROM TURKEY: UNIVERSITY STUDENTS FROM URBAN AND RURAL PROVINCES

Sagir Secil[1], Koca Ozer Basak[2], Sagir Mehmet[3], Akca Duygu Hilal[1], Acar Sercan[3], Ozdemir Aysegul[2], Onal Sibel[2], Mese Cansev[2]

[1]Ahi Evran University, Department of Anthropology, Kirsehir, Turkey
[2]Ankara University, Department of Anthropology, Ankara, Turkey
[3]Cumhuriyet University, Department of Anthropology, Sivas, Turkey

secilgung@gmail.com

The composition of the traditional Turkish diet has been shifted towards a more westernised style during the last decades and young adults' lifestyle dramatically changes during the university education. Present study aimed to evaluate dietary patterns and health status of university students from both urban and rural areas. Study group consisted of 881 (401 males and 480 females) university students (aged 17-30 years) from Ankara, Kırsehir and Sivas provinces representing both urban and rural environments. A self-reported questionnaire was administered to evaluate daily nutritious intake, lifestyle and physical activity levels, and weight and height were measured according to the standard protocols, underweight, overweight and obesity prevalence were calculated using BMI. Our results showed that the 5.0% of subjects were underweight BMI< 18.5 (1.2% males and 8.1% females) while the prevalence of obese BMI>30 were 7.4% (9.7% males and 5.4% females). According to the Dietary Pattern Index (DPI) risk levels were found to be 38.9% at high risk group and 2% very high risk group for males, and 37.7% and 1.9% for females, respectively. DPI and risk levels were highly correlated with many factors BMI, cigarette consumption, skipping breakfast and sedentary life markers ($p<0.001$). Subjects tend to skip main meals (29.4% males and 36.7% females), and significant sexual difference was prominent in terms of physical activities ($p<0.001$). We can suggest that dietary patterns can be affected from various factors, and highly related with health status. *This work was supported by the Ahi Evran University scientific research projects coordination unit. Project Number: FEF.E2.16.009

GENDER DIFFERENCES IN MORPHOLOGICAL CHARACTERISTICS AND COGNITIVE PREPAREDNESS FOR SCHOOL AT PRESCHOOL CHILDREN

Sindik Joško[1], Horvat Vatroslav[2], Pribačić Ambrožić Vanda[1]

[1]Institute for Anthropological Research, Zagreb, Croatia
[2]University of Zagreb, Faculty of Teacher Education, Zagreb, Croatia

jsindik@inantro.hr

Gender differences in cognitive preparedness for school and morphological characteristics of preschool children 6-7 years old were examined. The sample of participants included 227 children from the Croatian kindergartens (106 boys and 121 girls). The study used Test of the Readiness for School (TRS) with five subtests and fourteen anthropological measures of morphological characteristics of children. Significant differences between boys and girls in five variables of morphological characteristics were found. These variables are: weight of the body (body mass), the body height, the length of the arm, shoulder width and extent of the forearm. In all these variables, higher means are found in boys. The results confirmed that this set of manifest variables (aimed to assess motor skills) relatively well differentiates between boys and girls. Moreover, it was shown that there were no gender differences in cognitive preparedness for school in preschool children, what is in line with the initial hypotheses, derived from previous studies. The explanations of the results obtained are given in terms of sexual (gender) dimorphism.

SELF-PERCEIVED HEALTH IN OLDEST OLD PEOPLE LIVING IN INSTITUTIONS: ASSOCIATED FACTORS

Smolej Narančić Nina[1], Tomas Željka[1], Zajc Petranović Matea[1], Škarić-Jurić Tatjana[1], Peričić Salihović Marijana[1], Janićijević Branka[1], Tomek-Roksandić Spomenka[2]

[1]Institute for Anthropological Research, Zagreb, Croatia
[2]Andrija Štampar Teaching Institute of Public Health, Department of Gerontology, Zagreb, Croatia

nina@inantro.hr

Self-perceived health (SPH) is a powerful indicator of the general health status of older people that has been widely investigated in community dwelling populations. Its determinants have rarely been studied in institutional settings. The objective of this study was to identify the main factors that have an impact on SPH among the oldest old residents of old people's homes. In the extensive anthropological study, face-to-face interviews were carried out with 330 individuals aged 85-101 years in 13 public and private old peoples' homes in Zagreb (Croatia) and its surroundings. SRH was assessed by a single-item health measure with five options. It was analyzed as a dichotomous variable (fair/poor versus excellent/very good/good) using logistic regression. Independent variables in the models included sociodemographic and health characteristics. A total of 51% of subjects rated their health as excellent or very good. There was no association with sex or age nor with marital status, education or pension status. The adjusted odds ratio (95% confidence interval) for worse health perception was 1.36 (1.19-1.55) for each additional chronic condition, 1.42 (1.01-1.86) for each additional assistive device, and 1.67 (1.05-2.71) when comparing functionally dependent residents and those functionally independent. Feeling of loneliness and poor social relations were also strongly associated with worse health perception. Bad nutritional status and cognitive impairment showed significant independent effects. This study found a positive association between subjective and objective health in the oldest age. Chronic conditions, functional status and social interaction were the main determinants of self-perceived health among Croatian institutionalized elderly persons. Thus, the study revealed that, with the exception of socioeconomic factors, the same determinants of health perception in the community are also relevant in institutions among persons of very advanced age.

DIETARY HABITS AS AN INDICATOR OF ISOLATION; NUTRITIONAL STATUS AS A MEASURE OF HEALTH

Vidovič Maruška

National Institute of Public Health, Ljubljana, Slovenia

Maruska.Vidovic@nijz.si

In the framework of holistic anthropological researches of isolated populations, based on the model of Selška valley, we have researched the nutrition of the population in the upper part of Selška valley, in villages below Ratitovec, which have preserved the most of their authenticity. Anthropological body measurements have placed the population of Selška valley in the category of average obesity. The results of research on dietary habits of villagers below Ratitovec, have shown an interesting “dietary model”. International questionnaires were used in the research. The Sorica core gave us a very homogeneous picture. The research also included ethno-geographical particularities of the nutrition in the mountainous area of the valley. We made an age nutritional stratification and researched the dynamics of nutritional cultural diversification and gradual modernization. Based on the so-far collected and processed data, we can conclude that Selška valley population has quality dietary habits and that the research so far did not show

any dietary shortages. The dietary patterns show many elements of traditional diet. Nutritional composition does not lack any substances, which are the most important indicators of poor nutrition (proteins, iron, vitamins and, among other, iodine – extreme goitre was not evident). The research will be presented in the framework of the isolation of population, self-sufficient of households, hygienic and socio-cultural habits, health and ageing.

THE USE OF SOMATIC CHARACTERISTICS TO ASSESSMENT OF OPTIMUM BODY WEIGHT OF CHILDREN FROM MORAVIAN REGION IN THE CZECH REPUBLIC

Zbořilová Vendula, Přidalová Miroslava, Podzimková Tereza, Cinařová Monika

Department of Natural Sciences in Kinanthropology, Faculty of physical culture, Palacký University Olomouc, Czech republic

venda.zborilova@seznam.cz

Overweight, obesity and underweight can be assessed through the body weight, BMI, circuit parameters and the amount of body fat (Bláha&Vignerová, 2002; Bláha,Susanne&Rebato, 2013; Cameron&Bogin, 2012; Hermanussen, 2013; Malina,Bouchard,&Bar-Or, 2004; Pařízková&Hills, 2005; Pařízková, 2010; Pastucha et al., 2014; Riegerová,Přidalová&Ulbrichová, 2006; Wells, 2010). The objective is to assess the somatic condition of the child population on the basis of selected anthropometric indicators related to the evaluation of an optimum body weight and height from Moravian region in the Czech Republic. The research sample consists of 1628 early school-age children (boys, n= 757; girls, n= 871). The measurement was carried out at the elementary schools. We measured selected somatic parameters through anthropometric examination. The percent body fat (%BF) was analysed through bioelectrical impedance method (InBody 720). The probands were classified into the individual centile channels of BMI and body height, which they were determined on the basis of results of Nation-wide Anthropological Survey of children and adolescents 2001 Czech republic (Vignerová et al., 2006). Within individual age categories of boys and girls, the children with the optimum body weight and the medium body height were the most strongly represented. We recorded 7 % obese girls and 8,2 % obese boys. Except for the youngest age categories (6, 7 years-old) boys have bigger circuit parameters. The more fluent increase of percent body fat (%BF) during early school-age was recorded in boys. The increasing percent body fat (%BF) was in accordance with development of waist circumference. In conclusion the increase of overweight and obesity according to circuit parameters and amount of body fat were more pronounced in boys.

GROWTH AND DEVELOPMENT

BIOIMPEDANCE STUDIES OF BODY MASS COMPOSITION IN MOSCOW SCHOOLCHILDREN: COMPARISON WITH HEALTH CENTERS DATA

Anisimova Anna[1], Rudnev Sergey[2], Svistunova Nadegda[1], Godina Elena[1]

[1]Lomonosov Moscow State University, Research Institute and Museum of Anthropology, Moscow, Russia

[2]Institute of Numerical Mathematics of the Russian Academy of Sciences, Moscow, Russia

aniat83@gmail.com

Studying body mass composition is a good way for population health screening and monitoring in children and adolescents. Mass population survey in Russian Health Centers was launched in 2010. The program of the survey included bioimpedance assessment of body mass composition. After the publication of the data of physical development of Moscow children and adolescents (n = 48300) collected by the Health Centers we had the possibility to compare it with our cross-sectional bioimpedance data of Moscow schoolchildren aged 7-17 years (n = 2000) measured by the Research Institute of Anthropology. Bioimpedance was performed in both cases by ABC-01 "Medas" analyzer. Body mass index, fat mass, fat-free mass, fat mass index and fat-free mass index were analyzed. The observed data were in good agreement with a slight shift towards overweight in the second group. We also noticed differences in fat mass and fat-free mass between different schools. The pronounced intra- and inter-group differences in relative abundance of fat and lean mass were observed due to variation of physical activity level and nutritional state. The study was supported by RFBR grants N 16-36-00227, 16-06-00480-a.

THE HIGHER THE DIGIT RATIO, THE MORE FEMININE THE FEET: POSSIBLE EVIDENCE OF THE ORGANIZATIONAL EFFECT OF PRENATAL STEROID LEVEL ON THE RELATIVE FOOT LENGTH

Barış Özener[1], Derya Atamtürk[1], Berna Ertuğrul[2], İzzet Duyar[1]

[1]İstanbul University, Department of Anthropology, İstanbul

[2]Cumhuriyet University, Department of Anthropology, Sivas

barisozener@gmail.com

Sex hormones in the adolescence and adulthood are the main factor in the becoming evident of sexually dimorphic characteristics. Recent studies suggest that not only postnatal steroid levels, but prenatal levels also affect sex-specific characteristics. Aim: This study analyzed the relationship between second-to-fourth digit ratio which are indirectly reflecting prenatal steroid levels and sexually dimorphic feet sizes in humans. Material and Methods: This study was conducted with 240 students (120 males and 120 females) at Sivas Cumhuriyet University. As well as the students' weight, height, feet length and feet width, the length of their second and fourth digits in both hands were measured using a Vernier caliper of 0.01 mm sensitivity. Partial correlation analysis was used to analyze the relationship between the feet sizes and digit ratios. Results: A negative relationship was found between the digit ratios of both hands and feet length in males (β=-0.281 and P=0.009 for the right hand, β=-0.280 and P=0.015 for the left hand), and between the digit ratio of the left hand and feet length in females (β=-0.389, P=0.014). Conclusion: These findings showed that the males and females who have small (feminine) feet have higher (feminine) digit ratios, and those who have big (masculine) feet have lower

(masculine) digit ratios. This result suggests that prenatal sex hormones may also affect sex-specific feet sizes as well as the sex hormones in adolescence and adulthood.

THE EFFECT OF MATERNAL UNDERNUTRITION ON THE OFFSPRING GROWTH TRAJECTORY AND ADIPOCYTE PROFILE

Bartuškienė Violeta, Čepulienė Ramunė, Šimkūnaitė-Rizgelienė Renata, Žalgevičienė Violeta, Tutkuvienė Janina

Department of Anatomy, histology and anthropology, Faculty of Medicine, Vilnius University, Lithuania

violeta.ara@gmail.com

Maternal undernutrition during pregnancy is known to affect offspring's physical status and various health parameters. However, the pre-pregnancy environment is often overlooked. The aim of this study was to explore the effects of food restriction prior to pregnancy and throughout pregnancy on physical status of the first generation rat offspring. We investigated the physical status of the first generation rat offspring born to mothers that were fed normally (Control group) or were 50% food restricted either prior to pregnancy only (EG 1) or prior to pregnancy and throughout pregnancy (EG 2). All offspring rats were fed normally. We assessed offspring's body weight weekly, while body length and circumferences (neck, thoracic, abdominal) were measured at 12, 18 and 24 months of age. At the 20th month of age randomly selected rats were sacrificed for the histomorphological comparison. Offspring rats from EG 2 exhibited lower birth weight than the other groups ($p<0.05$). However, later EG 2 males were heavier than the control group until the 7th month of age and those from EG 1 – until the 13th month of age ($p<0.05$). The EG 2 offspring have also demonstrated differences in the other biometric parameters compared to the other groups at 12 months of age ($p<0.05$). The weight of EG 1 female rats was bigger than control group's at 4 to 6 months of age ($p<0.05$). It also differed significantly comparing to the EG 2 females ($p<0.05$). Although there were no significant differences in the offspring relative visceral white adipose tissue weight at the 20 months of age, the adipocytes from the EG 1 and EG 2 males were hypertrophied with a larger surface area and diameters ($p<0.05$). Maternal caloric restriction might result in the alteration in the offspring growth and adipocyte development. The effect is sex specific.

EFFECTIVENESS OF A SCHOOL-BASED INTERVENTION TO REDUCE THE PREVALENCE OF OVERWEIGHT AND OBESITY IN CHILDREN AGED 7-11 YEARS FROM POZNAŃ (POLAND)

Bilińska Inez[1], Kryst Łukasz[2]

[1]Mieszko I College of Education and Administration, Faculty of Public Health, Poznań, Poland
[2]University of Physical Education, Faculty of Physical Education, Department of Anthropology, Kraków, Poland

lkryst@poczta.onet.pl

The epidemic of obesity, which is one of the most important public health's problems, appeared paradoxically as a result of improving living conditions in highly developed countries. Limited physical activity and high caloric diet, lead to excessive weight gain, which brings to disturbances in the functioning of the majority of anatomical systems. The aim of this study was to determine the effects on overweight/obesity prevalence of the primary-school-based intervention programme. The research material consisted of 5,293 children (2,679 girls and

2,614 boys) aged 7 - 11 years. Basic measurements (height and weight) were taken twice: in March 2010 (baseline) and after 1-year follow-up. The group of children was divided into two subgroups: experimental and control one. The research group were participating in extra physical activities. The estimations of the prevalence of overweight/obesity were based on the cut-off points of the IOTF values. To estimate the risk - the odds ratio (OR) were calculated. There were no differences in BMI for both boys and girls. Differences (non-significant) were observed in prevalence of overweight and obesity. The incidence of boys with excessive body weight in the control group has increased. The prevalence of overweight/obesity in experimental group, for both boys and girls, have decreased. In control group of boys there was a greater risk of overweight/obesity [OR=1.13(0.89, 1.43)]. In experimental group the risk was reduced [OR=0.93(0.80, 1.08)]. Similar results were observed in groups of girls: in control group [OR=1.01(0.78, 1.30)] and in intervention one [OR=0.88(0.76, 1.03)]. The risk of overweight/obesity decreased after one year of extra physical activities. Early diagnostic of excessive body weight and implementation of prevention programs might be the best way to eliminate overweight among children, limited diseases correlated with obesity, and reduce the cost of healthcare.

RECENT CHANGES IN BODY PROPORTIONS AND PATTERNS OF FAT DISTRIBUTION IN MOSCOW CHILDREN AND ADOLESCENTS

Godina Z. Elena, Khomyakova A. Irina, Ghilyarova A. Olga

Lomonosov Moscow State University, Institute and Museum of Anthropology, Moscow, Russia

egodina@rambler.ru

The trend towards overweight and obesity is one of the most discussed topics in modern auxology. However changes in the distribution of subcutaneous fat were much less studied. The aim of the paper is to follow recent secular changes in body measurements and fat patterning in Moscow children. 1200 boys and girls from 7 to 17 were investigated cross-sectionally in several Moscow city areas in 2012-14. The children were mostly of Russian ethnicity, born in Moscow. The program included about 50 measurements taken according to standard techniques and bioethics procedure. Developmental age was assessed according to the stages of secondary sexual characteristics; age at menarche was evaluated by status quo method. Statistical analysis was performed with the Statistica software. Obtained data were compared with those of the 1996-99 survey of Moscow children (2300 children of both sexes of the same age) measured by the same authors and the same technique. It was shown that modern children surpass their counterparts of the previous survey in height, weight and BMI. Thus, weight and BMI of modern 17-year-old girls was 60.3 kg and 22.1, while in the previous survey - 56,4 kg and 20,8 correspondingly ($p < .05$.) There were distinct changes in body proportions expressed in increase of trunk length and shortening of leg length in modern children. All of the body circumferences and skinfolds were bigger in modern children. The most distinctive feature was an increase of fat layer on the trunk (e.g., mean values of the abdominal skinfold were in modern 17-year-old girls and boys 17.5 and 11.7 mm, while in the 1990's – 10.3 and 8.0 mm correspondingly; $p < .001$). The trend towards earlier sexual maturation was also detected. As similar changes have been already described for some other populations (Godina et al., 2016), it might be concluded that secular trend is continuing in Russia in a specific form.

SECULAR CHANGES AND SOCIO-ECONOMIC GRADIENTS OF AGE AT MENARCHE IN POLAND BETWEEN 1966 AND 2012

Gomula Aleksandra, Kozieł Sławomir

Polish Academy of Sciences, Unit of Anthropology in Wroclaw, Wroclaw, Poland
aleksandra.gomula@gmail.com

The aim of this study was to describe what were, on the national scale i.e. taking into account all levels of urbanization in several regions of Poland at the same time, the biological results of the political and economic transformation that took place in Poland between 1966 and 2012, based on the analysis of the secular changes of the age at menarche and to determine the changes in the social gradients of that biological feature in the analyzed period. The analyses were based on data that was collected during the Polish Anthropological Surveys, conducted in the years 1966, 1978, 1988 and 2012. With the exception of the 1966 survey, which was conducted in the contemporary 98 counties, the other surveys involved all levels of urbanization in the 7 regions of the country. The research was conducted using the status quo method. Into the study 34 940 girls aged 7-18,5 years were qualified. The Chi-square test, probit analysis or logit analysis were used. The socio-economic status (SES) was defined based on 4 factors: urbanization level, mother and father education and family size. In addition, using the Principal Component Analysis there was specified one variable that determines the general SES. The socio-economic changes significantly affected the age at menarche: when the political and economic situation in Poland improved a decrease in its value was observed, whereas in years of crisis – it increased. The social differentiation of the age at menarche that was observed before the political transformation was also present in 2012. This implies that inequalities in living conditions are continuously present in Poland.

PREVALENCE OF OVERWEIGHT AND OBESITY AMONG SCHOOLCHILDREN FROM THE POLISH-CZECH CROSS-BORDER AREAS

Gomula Aleksandra[1], Ziomkiewicz Anna[1], Danel Dariusz[1], Nowak-Szczepanska Natalia[1], Kopecký Miroslav[2], Charamza Jiří[2], Kikalová Kateřina[3], Tomanová Jitka[4], Zemánek Petr[4]

[1]Polish Academy of Sciences, Unit of Anthropology in Wroclaw, Wroclaw, Poland
[2]Palacký University, Faculty of Health Sciences, Olomouc, Czech Republic
[3]Palacký University, Faculty of Medicine and Dentistry, Olomouc, Czech Republic
[4]Palacký University, Faculty of Education, Olomouc, Czech Republic
aleksandra.gomula@gmail.com

During recent years prevalence of overweight and obesity among children and adolescents has doubled or even tripled in many European countries. This obesity epidemic was also observed in Poland and Czech Republic. The border areas of both countries create excellent opportunity to investigate both differences and commonalities in obesity epidemic. Therefore, the aim of this study was to determine the prevalence of overweight and obesity among children and adolescents from the Polish-Czech cross-border areas. Data included schoolchildren of both sexes examined in 2012 and 2013 in the areas of Olomouc (Czech Republic) and Bystrzyca Kłodzka (Poland), a total of about 2800 children and adolescents. Results of the analysis demonstrated higher prevalence of child overweight and obesity in Poland when compared to Czech Republic, regardless of sex and developmental periods. Furthermore, they revealed sex-dependent differences in pattern of overweight and obesity during the consecutive developmental periods in these two countries. These findings indicate that despite the geographical proximity, there are fundamental environmental differences that influence overweight and obesity prevalence in Poland and Czech Republic. The study was co-funded by

the European Regional Development Fund (ERDF), under the Operational Program "Poland-Czech Republic Cross-border Cooperation Programme 2007-2013".

THE PHYSICAL DEVELOPMENT OF NEWBORNS IN VITEBSK REGION, BELARUS

Hurbo Tatyana

Institute of history of National Academy of sciences of Belarus, Minsk, Belarus
hurbo@mail.ru

The purpose of this scientific work is to characterize physical development of newborns born in 2013 in Vitebsk region in the aspect of regional and interethnic changeability taking into consideration additional biosocial factors. From 2299 deliveries in Vitebsk Regional maternity hospital 48,5% took place by primiparas and 40,3% of women who had the second delivery. 1689 of deliveries were vaginal deliveries, in 26,5% cases there was a need in cesarean section. Most of deliveries fell on the age of 25-29 years which took 34,7%. The majority of children were born full-time and only 127 were premature children (5,5%). In 15,4% of the newborn diseases of varying severity were found, further 9,8% of all the newborn were transferred to other hospitals. In Vitebsk region 6,5% of children were born with significant body mass deficiency (not exceeding 2500 g), 9,7% was with weight over 4000 g. The significant influence of the numerical order of the birth on the physical development of newborns has been discovered: girls from the first delivery have lower body mass and head circumference values in comparison with the girls born from the second delivery. The gender differences have also been found out: boys have greater genital characters' values than girls. For the children born during the first deliveries the differences are valid for the length and mass of the body, head and chest circumferences. For the children born during the first deliveries the differences reach significant level concerning the body length and chest circumference. There have been discovered regional differences in physical development state and health of newborns as well as the influence of ecological factors: children from rural area show better results of physical development and health state than newborns from cities.

SOCIOSEXUALITY CORRELATES WITH BODY AND HAND MEASUREMENTS

Ingrová Pavlína[1], Králík Miroslav[1], Hupková Adéla[1], Bártová Věra[2], Čuta Martin[1]

[1]Masaryk University, Faculty of Science, Department of Anthropology, Laboratory of Morphology and Forensic Anthropology (LaMorFA), Brno, Czech Republic
[2]Masaryk University, Faculty of Science, Department of Anthropology, Brno, Czech Republic
verabartovaa@seznam.cz

Sociosexuality represents a variable willingness of people to engage in casual uncommitted sex without emotional ties to the partner. If a particular level of sociosexuality represents an executive component of an evolutionary/reproductive strategy then variations in sociosexuality should be correlated to respective cognitive and physical properties of the human body. For instance, previous studies found out that a predisposition to a given level of sociosexuality is developed in utero under the influence of prenatal steroid hormones (as measured by digit ratios) in congruence with other sexuality related features. The goal of this study was to determine relationships between human sociosexuality and human body measurements, with special emphasis to body size and hand measurements. In a sample of young adults (in total 218 males, 261 females, Czech and Slovak nationality) sociosexuality was assessed by means of the original Sociosexuality Orientation Inventory (SOI) and its revisited version (SOI-R) including separate assessment of the sociosexual behavior (BEH), attitudes (ATT) and desire (DES). Correlations were calculated and tested between scores of sociosexuality and body size (weight,

height, body mass index), as well as between sociosexuality and hand measurements acquired from 2D scans taken from palmar view. Sex differences were recorded in SOI and SOI-R with higher average values in males which were attributable mainly to the DES and slightly to ATT but not to BEH. Significant positive correlations between DES and body size were found in females. In females, highest number of hand measurements correlated positively with DES, only several measurements correlated with ATT and no measurement correlated with BEH. In males, these relationships were weaker and mostly statistically insignificant. The obtained results show that DES component of sociosexuality might be related to some physical properties of the human body. Social and evolutionary contexts of these findings are discussed.

CHANGES IN LITHUANIAN NEWBORNS' CHARACTERISTICS DURING 1995-2013: SHORTENING OF THE GESTATIONAL AGE

Jakimaviciene Egle Marija[1], Tutkuviene Janina[1], Isakova Jelena[2], Drazdiene Nijole[3], Basys Vytautas[4]

[1]Faculty of Medicine, Vilnius University, Department of Anatomy, Histology and Anthropology, Vilnius, Lithuania

[2]Institute of Hygiene, Health information Centre; Vilnius, Lithuania

[3]Faculty of Medicine, Vilnius University, Clinic of Childrens' Diseases, Vilnius, Lithuania

[4] Faculty of Medicine, Vilnius University, Department of Pathology, Forensic Medicine and Pharmacology; Vilnius, Lithuania

egle.jakimaviciene@mf.vu.lt

Some recent studies revealed shortening of the gestational age (GA). The aim of this study was to analyze the changes in GA of singleton, live, naturally born, term newborns born in Lithuania during the last two decades. Material and methods. Medical birth registers' data (1995, 2003, 2013) were analyzed. GA was calculated from the date of the last menstrual period (reported in complete weeks). Cases with the history of premature rupture of membranes, Caesarean section and induced delivery were excluded. Results. Data of 60 756 newborns were analyzed (50,61 % boys). Decrease of the mean GA was observed (1,4 days in boys and 1,05 days in girls). The distribution of births in different GA weeks showed the significant shift to the left (the frequencies of births at 37 week increased by 1,7/0,5% in boys/girls respectively, at 38 week – by 2,3/1,7%, at 39 week – by 9,6/9,4 %. However, the frequencies of births at 40 week decreased by 12,6/11,5% in boys/girls, at 41 week – did not change, at 42 week – decreased about 1% in both sexes. One way ANOVA showed significant decrease of boys' and girls' GA in different maternal age groups (except younger than 17 y.o. and older than 40 y.o.) and in different parity groups. Besides, one way ANOVA revealed significant increase of mean birth weight and length of boys'/girls' born at 38th, 39th, 40th / 39th, 40th, 41 weeks of gestation respectively. During the 1995-2013 in Lithuania, mean GA of singleton, naturally born, term newborns decreased by 1,4 days in boys and 1,05 days – in girls. This decrease resulted from the left shift in the distributions of births according to GA. These findings were in parallel to increased weight and length of babies born at different gestational ages.

HRQoL IMPACT OF STRESSFUL LIFE EVENTS IN CHILDREN BEGINNING PRIMARY SCHOOL: RESULTS OF PROSPECTIVE STUDY IN POLAND

Kaczmarek Maria, Trambacz–Oleszak Sylwia

Department of Human Biological Development, Institute of Anthropology, Faculty of Biology, Adam Mickiewicz University in Poznań, Poland

makac@amu.edu.pl

It is well documented that childhood exposure to certain potentially stressful life events (SLEs) put children at higher risk of distress (negative stress) which then may increase the risk of adverse growth and health outcomes and poor quality of life. This study aims to evaluate the causal relationship between SLEs, stress-related symptoms (SRSs) and health-related quality of life (HRQoL) in children beginning primary school. A community-based sample of 6- to 8-year-old children (175 boys and 176 girls) participated in a prospective longitudinal study with three waves of data collection and one year interval between subsequent surveys in Wielkopolska province, Poland. Main exposures included nine recent SLEs and psychosomatic and behavioural symptoms related to stress (SRSs), both self-reported by children. The outcome was total HRQoL assessed by a Polish version of the PedsQL™ 4.0 (Pediatric Quality of Life Inventory) Generic Core Scales questionnaire, 5- to 7-year-old version. To evaluate the association of total HRQoL and predictor variables, a latent growth curve (LGC) model was applied. An unconditional multi-group LGC model revealed that the total HRQoL changed over time in a linear trajectory. After incorporating to the model SLEs and SRSs, the first predictor for HRQoL was only significant at the last wave in girls and at two subsequent waves except for baseline in boys. The second predictor revealed significant negative impacts on HRQoL over the entire period of time in both boys and girls suggesting that the pathway underlying the association of SLEs with HRQoL might be mediated by SRSs. The effect size of difference in HRQoL of children exposed to 4+ SLEs and 4+ SRSs and those not exposed, ranged from medium to large throughout the entire period. This study may help to develop and implement programmes protecting school beginners from harmfull health effects of SLEs.

HEAD CIRCUMFERENCE GROWTH CURVES FOR TURKISH PRESCHOOL CHILDREN FROM 3 TO 6 YEARS OF AGE

Koca Ozer Basak[1], Ozdemir Aysegul[1], Onal Sibel[1], Mese Cansev[1], Yildiz Bicakci Mudriye[2], Aral Neriman[2], Ozdogan Ozbal Ece[3], Aydos Sebahat[2]

[1]Ankara University, Department of Anthropology, Ankara, Turkey
[2]Ankara University, Department of Child Development, Ankara, Turkey
[3]Ankara University, Department of Elementary Education, Ankara, Turkey

bkozer@ankara.edu.tr

Growth monitoring and evaluation of reference values are important issues in many disciplines like auxology and paediatric healthcare where head circumference remains a valuable tool for growth screening that correlates with cognitive abilities and intracranial volume. The purpose of this study is to construct head circumference growth curves and to evaluate the relation to body height for preschool children. A combined longitudinal follow-up study from 36 months and a cross-sectional survey of preschool children aged 36 to 72 months was conducted in Ankara. Height and head circumference data was collected from 703 children (361 males and 342 girls) whose parents gave consent. LMS method was used for constructing growth curves of 3rd, 10th, 25th, 50th, 75th, 90th, and 97th percentile using cubic splines for each age and sex group, and head circumference/height ratio was calculated in terms of relative head size. The results showed sexual dimorphism for all age groups. Comparison of the results with

data from 1930s, 1970s and more recent studies revealed positive secular changes until 1980s and no prominent changes during the last three decades. Turkish children are taller today and head circumference/height ratio becoming smaller. Furthermore, due to the high degree of sexual dimorphism and socio-economic disparities there is still need for multi-disciplinary and contemporary growth monitoring for Turkish children population.

REVERSE EFFECT OF POST-MIGRATION ADAPTATION ON HEIGHT AND RELATIVE LOWER LEG LENGTH IN POLISH BOYS AND GIRLS

Koziel Slawomir, Aleksandra Gomula

Polish Academy of Sciences, Anthropology Unit in Wroclaw, Poland

skoziel@antropologia.pan.pl

It was shown that growth of tibia may be more sensitive to environmental stress than whole leg length or its upper segment. Post-migration adaptation to new environmental seems to be a stressful process. All migrants have to confront problems related to coping with various difficulties and anxieties that result from settling down in a new environment. Therefore, the aim of the study was to investigate the relationship between parental migration status and the height and relative length of tibia in second generation, i.e. migrants' children. Data was collected during the 2nd Polish Anthropological Nationwide Field Investigation carried out in 1966-1969. The information on demographic and social characteristics was collected by the use of a questionnaire. The present study clearly demonstrates that parental migration in past significantly affected relative tibial length in boys and girls, irrespective of the socioeconomic status (SES). However, the effect was inversed, depending on sex. The sons of migrants had longer relative tibia length than non-migrants' sons, whereas daughters of migrants had significantly shorter relative tibia length than non-migrants' daughters. This pattern was consequently repeated in three SES levels. Nonetheless, with respect to developmental periods, in girls this inverse pattern persisted only in the oldest groups (above the age of 15): sons on migrants had significantly higher relative tibia length, but in girls no differences in relative tibia length was noticed till 14-18 years of age.. Results are discussed within the context of different male-female responses for migration-related outcomes.

ADOLESCENTS ANSWERS ABOUT ASSESSMENT OF THEIR BODY WEIGHT BEFORE AND AFTER EDUCATION ON NUTRITION

Martinis Olgica

Education and Teacher Training Agency, Zagreb, Croatia

olgica.martinis69@gmail.com

Croatian adolescents differ in their body mass index, according to their gender and age. The first aim of the study was to determine differences in the independent assessment of bodyweight girls and boys before and after education about nutrition in questionnaire in two Croatian regions. The second aim was to compare adolescents' answers about assessment of their bodyweight according to measured data of body weight and height. From this data, were calculated the body mass index. These values were compared with the responses of adolescents on the assessment of their own body weight. Longitudinal study is conducted from January 2011 to October in 2012. The adolescents are examined in their school settings, in two Croatian regions (island Hvar and Beli Manastir). Adolescents filled out questionnaire about dietary habits and are measured according to the basic anthropometric parameters: body weight, height, waist and hip circumferences, skinfold thickness and blood pressure. In the introduction

of the questionnaire, adolescents were asked about their general health status including the assessment of their own body weight. The randomized sample of adolescents included a total of 165 female students (N=110 (Hvar) and N=55 (Beli Manastir)) and 47 male students (N=37 (Hvar) and N=10 (Beli Manastir). The assessment of their own body weight was measured by specially designed questionnaire. There were no statistically significant differences in the responses on the assessment of body mass in girls and boys before and after education on nutrition. There are no statistical significant differences in the assessment of body weight before and after training on nutrition comparison by gender. Also there were no statistically significant difference obtained by comparing adolescents' answers about assessment of their bodyweight according to measured data of body weight and height. Although limited by sample size, the study pointed out that education on nutrition did not significantly influence the answers on the assessment of body weight adolescents. Further, comparing the same answers with data on body weight can be concluded that adolescents are estimated well their own body weight in relation to age.

PHYSICAL ACTIVITY IN WOMEN WHO UNDERTAKEN WEIGHT LOSS COURSE

Přidalová Miroslava[1], Sofková Tereza[2]

[1]Department of Natural Sciences in Kinanthropology, Faculty of Physical Culture
[2]Department of Anthropology and Health Education, Faculty of Education
miroslava.pridalova@upol.cz

Accelerated pace of life, consumerism, hypokinesia and excessive energy intake are causing high prevalence of overweight, obesity and other non-communicable diseases. Important component in programs to reduce overweight and obesity is regular physical activity (PA), which plays vital role in the comprehensive approach to the treatment of obesity. Primary objective of our study was to assess changes in somatic characteristics following eleven weeks of PA in overweight and obese women aged 30 to 60 years. Our research sample consisted of 221 women who were classified according to the level of PA carried out, namely 1st, 2nd and 3rd category. STOB course participants underwent PA monitoring and diagnosis of the body composition, which is a modern multifaceted cognitive behavioural method. Younger highly active women (PA_3) achieved higher average differences in body fat than women with the typical daily activity (PA_1), however significant differences had not been found. Statistically significant differences in visceral fat between the 1st (PA_1) and 3rd PA category (PA_3) had been observed in older women. Given the significantly higher increase of fat-free mass percentage in older highly active women (PA_3), we may assess the course results positively. Our research results showed that meeting the recommendations relating to the number of steps per day is proving to be an effective means to reduce the risk of overweight and obesity, especially positive influence on the body composition's health risk indicators.

THE RUSSIAN BIOIMPEDANCE MEGABASE: CURRENT STATE AND RESULTS ON THE ASSESSMENT OF BODY COMPOSITION AND PHYSIQUE

Rudnev Sergey[1], Nikolaev Dmitry[2], Korostylev Konstantin[1], Starodubov Vladimir[1]

[1]Federal Research Institute for Health Organization and Informatics, Department of Innovative Technologies for Diseases Prevention, Moscow, Russian Federation
[2]Scientific Research Centre MEDAS, Moscow, Russia
sergey.rudnev@gmail.com

Due to its simplicity, easy to use, non-invasiveness and relatively low cost, bioelectrical impedance analysis (BIA) represents a most widely used technique for the assessment of body

composition both at the individual and population levels. Previously, we have reported the results of bioimpedance study of 819,808 Russian males and females aged 5-97 years, who were assessed cross-sectionally in 2010-2012 within the Russian network of Health Centers (HCs) by the same type of bioimpedance meter, ABC-01 'Medas'. Here, we describe an updated 2010-2015 HCs' bioimpedance measurements database consisting of more than 1.5 mln records. The database represents a significant part (1.2%) of the Russian population and shows fairly good coverage (62 out of 85) of the Russian regions. We provide an updated growth reference curves for anthropometric and body composition parameters as well as estimates of malnutrition prevalences and epidemiological risks depending on age and sex. In addition, geographical distributions of BIA estimates of the Heath-Carter somatotype in children and adolescents are analyzed.

A GROWTH RELATIONSHIP BETWEEN BODY PROPORTION AND BODY BUILD IN JAPANESE CHILD

Satake Takashi[1], Hirohara Toshie[2], Hattori Komei[2]

[1]Nihonn University School of Dentistry at Matsudo, Chiba, Japan
[2]Ibaraki University, Department of Education, Ibaraki, Japan

satake.takashi@nihon-u.ne.jp

This study evaluates the relationships of the child growth between body proportion and body build in both average and individual aspect. A longitudinal data set for stature, sitting height and weight spanning the 1st grade of elementary school through the 3rd grade of high school was extracted from serial annual health examination surveys. Leg length was estimated as stature minus sitting height. This study focused on a relationship between LUR and BMI. LUR was calculated as leg length /sitting height * 100 as a parameter of the body proportion and the BMI or weight/stature2 was calculated as a parameter of the body build. The ages at the maximum yearly increment of the growth in LUR and BMI were estimated and arranged chronologically (sequence) for the average and also each individual. In average growth, the mean values of the LUR at every age group increased from 6.5 years of age and reached peak value and then decreased to the terminal age. Ages at the peak LUR were 13.5 years of age in boys and 12.5 years of age in girls, respectively. On the other hand, the mean values of the BMI at every age group constantly increased from 6.5 years of age to the terminal age. Ages at the peak BMI were 17.5 years of age in boys and 16.5 years of age in girls, respectively. LUR have a peak value at the adolescence. However, BMI continues to increase from the first age to the terminal age. The coefficient of variation of the LUR at every age group are lower than the coefficient of variation of BMI at every age group and the sequence in the average was LUR at first and next BMI in both sexes. The sequence has a wide individual variation.

ANTHROPOMETRIC MEASUREMENT OF FAT – WHAT DOES IT TELL?

Scheffler Christiane[1], Dammhahn Melanie[2]

[1]University of Potsdam, Human Biology, Potsdam, Germany
[2]University of Potsdam, Animal Ecology, Potsdam, Germany

scheffle@uni-potsdam.de

In the human body fat can accumulate as visceral and as subcutaneous fat. The individual kind of fat accumulation depends on age, sex and environmental influences. Anthropometric measurements especially in field studies only permit indirect information about fat mostly calculated out of different anthropometric parameters. Beside more modern fat analyzing methods like BIA or measurement with infrared the percentage of body fat can calculated with

formulas using data of different skinfold measurements. Calculating ratios of different skinfold measurement allows prediction about fat distribution patterning of individuals. By means of presented data of skinfold ratio (SR=skinfold triceps : skinfold subscapular) about 60 000 boys and girls between 7 and 18 years old measured from 1982 to 2012 we show the influence of age, sex and environment change of fat distribution patterning. During children and adolescent SR get lower associated with accumulating relative more fat on trunk than on extremities over age. Furthermore males have especially after puberty relative more fat on trunk than on extremities comparing to females; correspond to the sex-specific android and gynoid fat distribution pattern. The environmental influence of misbalanced physical activity and nutrition level leads to the global problem of obesity and denotes relative more fat accumulation on trunk associated with lower values of SR compared to non-obese children and adolescents. Based on environmental pollution with endocrine disrupting chemicals (EDC´s) the values of SR of all subgroups switched to higher levels corresponding accumulation of relative more fat on extremities than on trunk; a more female fat distribution pattern.

ANTHROPOLOGY MEETS MICROBIOLOGY: A DEVELOPMENTAL ECOLOGY OF THE INFANT MICROBIOME

Sheets Mandel-Maíz Gabriela

Emory University, Department of Anthropology, Atlanta, GA, United States
gabriela.m.sheets@gmail.com

Investigating the co-adapted relationships between humans and their resident gut microbiota offers an extraordinary opportunity to explore human adaptation in a novel multi-species, ecologically grounded framework. Human behavior and ecology play central roles in shaping the constitution and function of the intestinal microbiome. These dynamics are manifested in ontogeny, from early intestinal colonization through the life course, thus each human exhibits a unique microbiome. Such variation among individuals is adaptively significant: intestinal microbiota play roles in many biological systems including energetics (nutrient extraction and use), immune regulation, pathogen defense, and even cognition. Extensive human-microbe coevolution informs these roles, and the acquisition of ecologically tailored, adaptive microbial profiles should be strongly selected. Successional communities across the life course and particularly during early development should reflect life history adaptations in humans and their associated microbiota. This paper combines life history theory, microbiology, and developmental ecology to derive an ecological adaptationist model of the intestinal microbiome that integrates host-microbe interests and trade-offs. First I map the early months of microbial development, chronologize the distribution of key selective pressures for host and microbes, and identify features of human ecology that moderate those selective pressures. Reciprocally, I show how the infants are active agents who shape their developmental niches, thereby influencing microbial exposures and development. To fill in this framework, I draw from my dissertation research of infant microbial development in a semi-rural Salvadoran population, as well as other relevant research in other populations. I then delineate implications for life history and inheritance, and propose areas for future comparative research. Human cultural ecology emerges as comprising not only external conditions, but also the body's coevolved microbes. These perspectives contribute an expanded host--microbe developmental ecology and a deeper understanding of the intergenerational transmission of human--associated microbes.

A NEW METHOD OF SKELETAL DEVELOPMENT ESTIMATION BASED ON ANTHROPOMETRIC DIMENSIONS

Utzcas Katinka[1], Zsakai Annamaria[2], Bodzsar Eva[2]

[1]Performance and Exercise Physiology Laboratory, University of Physical Education, Budapest, Hungary and Department of Biological Anthropology, Eotvos Lorand University, Budapest, Hungary

[2]Department of Biological Anthropology, Eotvos Lorand University, Budapest, Hungary

zsakaia@elte.hu

In the paediatric practice skeletal development estimation is a useful tool to examine the level of growth abnormality in the diagnosis and the analysis of the medical treatment effectiveness of children with constitutional delay of growth, growth hormone deficiency, hypothyroidism and other severe chronic illnesses that have significant influence on bone development. However, the radiologic and ultrasonic methods used in the paediatric practice are not available and useful in the screening of childhood skeletal abnormalities. Therefore the aim of the study was to construct a new method for for bone age estimation based only on anthropometric body dimensions. Bone age of healthy children (n: 1648, chronological age: 7-17 ys) was estimated by a quantitative ultrasonic Sunlight BoneAge device. In addition, radiographic bone ages were estimated in a randomly selected subsample (n: 47) of subjects to evaluate the reliability of the ultrasonic method in the studied population. The anthropometric measurements were performed by using standardized techniques and methods. The linear regression method was performed to identify the most important anthropometric predictors of bone development. The radiologic, ultrasonic bone age estimates and anthropometric dimensions showed very strong correlations. According to the result of the analysis, the ultrasonic bone age estimation is suggested to use between the chronological ages 8.5–16 years in the boys and 7.5–15 years in the girls. Therefore the new equations for bone age estimation were constructed for these intervals. The new anthropometric method of skeletal development estimation gives us the possibility to assess skeletal maturity in children in epidemiological surveys without the use of ionizing radiation or ultrasonic estimation.

GENETIC EFFECTS ON FACIAL FLUCTUATING ASYMMETRY: INSIGHTS FROM SINGLE NUCLEOTIDE POLYMORPHISMS

Windhager Sonja

University of Vienna, Department of Anthropology, Vienna, Austria

sonja.windhager@univie.ac.at

Fluctuating asymmetry (FA) is composed of small, random deviations from perfect bilateral symmetry. It is assumed to reflect an organism's inability to cope with genetic and environmental stressors during ontogeny. The generalizability of findings on genetic effects in humans has often been limited by sample characteristics (island populations, endogamy) and indirect genetic assessment (inference from pedigrees). In this study, we exemplify how the use of open data from genome-wide association studies can provide novel insights. Single-nucleotide polymorphisms (SNPs) and published three-dimensional coordinates of nine mid-facial landmarks for 3215 adult humans of European ancestry (Rotterdam Study) were entered into the analysis. From the 102 SNPs related with mid-facial shape and development in the original study, none significantly predicted facial FA in our study, nor did the degree of heterozygosity at these markers. In line with the literature, men were more asymmetric than women, and FA increased with age. The prevalent assumption that homozygosity is reflected in higher FA scores could not be supported. At the moment, it cannot be ruled out that this result is affected by sample characteristics of the Rotterdam study (relatively small degree of inbreeding, rather

stable environment, advanced age). To remedy this, we will conclude by introducing our current projects focusing on measurements of the whole face, genome-wide heterozygosity, and the direct comparison with island populations. This and further large-scale genetic studies will be necessary to validate the genetic and developmental origin of facial asymmetries in modern humans.

REAL MORPHOLOGICAL CHARACTERISTICS AND TENDENCIES OF THEIR DELIBERATE MODIFICATIONS IN MODERN RUSSIAN ADOLESCENTS: CONTRIBUTION OF FACTOR OF SELF-ESTEEM

Zadorozhnaya Liudmila, Godina Elena

Moscow State University, Research Institute and Museum of Anthropology, Moscow, Russia
mumla@rambler.ru

The study used cross-sectional data of 462 girls and 372 boys of Russian ethnicity 12-17-year-olds in Arkhangelsk city in 2010. 114 boys and 172 girls among the total number of studied subjects filled in the questionnaires. All of the observations have been performed in agreement with bioethical procedures; protocols of consent were filled either by the subject (elder children) or by his/her parent(s). Standing height, weight, some circumferences and skinfold thickness were taken on each individual according to the standard technique. Body Mass index (BMI), Waist To Height Ratio (WHR) and average skinfold thickness was calculated. Respondents were asked to evaluate of one's physical appearance, height, weight, body shape / figure and to choose the "best" male and female figures on the proposed figure. Data sets were divided according to sex, age and somatotypes. The results of the present study show significant correlations between somatotypes of the subjects, their BMI, WHR and self-estimation of their physical appearance, and also estimation of physical appearance others. The strategies chosen by adolescents of both sexes for modifications of their bodies in their quest for "ideal" figures were in favor of dieting versus physical activity.

AGE AT MENARCHE IN ZAGREB, CROATIA, FROM 1964 TO 2010: DOWNWARD SECULAR TREND REFLECTS NUTRITIONAL STATUS AND SOCIOECONOMIC CHANGES

Zajc Petranović Matea[1], Tomas Željka[1], Škarić-Jurić Tatjana[1], Veček Andrea[2], Miličić Jasna[1], Smolej Narančić Nina[1]

[1]Institute for Anthropological Research, Zagreb, Croatia
[2]Institute of Public Health Dr Andrija Štampar, Department of School and Adolescent Medicine, Zagreb, Croatia

matea@inantro.hr

The onset of menstruation, which is a crucial step in female reproductive maturation, is influenced by both genetic and environmental factors. From 19th century on, a trend of decrease in mean age at menarche (AAM) has been detected in many industrialized countries, and one of the postulated prime factors contributing to earlier menarche are the increasing rates of childhood obesity. In this study we analyzed the secular trend of menarche in adolescents in correspondence to their weight and body mass index (BMI) through a 46-year-period (1964-2010). Sample consisted of 15-19-year-olds from six surveys conducted in Zagreb, Croatia: in 1964, 1973, 1982, 1990/91, 1997 and in 2010. Weight and BMI values were converted to Z-scores and percentiles based on CDC references. In addition, the correlation of secular trend in menarche and body size parameters was examined in relation with real Gross Domestic Product (GDP). Both weight and BMI associated (≥85th and >95th percentiles) got their menarche earlier than their peers whose body size parameters indicated malnourishment (<5th percentile) or

normal nutritional status (5th-85th percentile). Throughout the whole 46-year-period, the secular trend in AAM inversely correlated with mean BMI values (and weight), and all the three investigated variables mirror positive economic trends interrupted by the Croatian War of Independence (1991-1995). National GDP, which showed to be a sensitive marker of socioeconomic conditions, positively correlated with weight and BMI trends, and negatively with trends in AAM in the adolescents. Impact of the War left its visible traces on both the short-term effects (later AAM, decrease in weight and BMI of children at the beginning of the growth spurt) and long-term effects (earlier menarche, increased weight and BMI in children born during the War).

HUMAN DIVERSITY

THE INCIDENCE OF MYLOHYOID BRIDGING IN KARAGÜNDÜZ POPULATIONS

Alkan Yalçin Yarenkür

Ahi Evran University, Faculty of Science and Letters, Department of Anthropology, Kırşehir, Turkey

alkanyaren@gmail.com

The mylohyoid groove is a narrow, sharply demarcated structure that commences at the postero-interior circumference of the mandibular foramen and runs in a straight line downward and forward. This groove is sometimes closed to form a canal for some part of its length and the groove may be partially or completely bridged. Mylohyoid bridging is a non-metrical trait of the human mandible. In this study the skeletal remains belonging to the Middle Age Mound of Karagündüz, located in eastern Turkey's Van province, were examined. A bridge was recorded as being absent or present, and both left and right mylohyoid grooves of each mandible were observed. The incidence of bilateral expression and side preference were noted. The material of this study comprised 122 adult skeletons. In these Karagündüz samples a total of 6 bridges were observed from 112 sides studied (5,35%). In known males there were 5 bridges in 60 sides (8,33%), whereas in females, only 1 bridge in 52 sides (1,92%) was observed. No significant differences was found between the sexes (Right X2: 0,600, df:1, P:0,439; Left X2:0,248, df:1, P:0,618). Of the 6 bridges observed in the total samples of 112 sides, 3 were on the left side (5,35%), 3 on the right (5,35%). Of the 5 bridges seen in the males, 2 were on the left (6,66%), 3 on the right (10,0%), while among the females, the 1 bridge was on the left side (3,84%). No significant differences were found among populations in terms of the frequency of this variant in both sides of the skull (X2:1,728, df:1, P:0,189).In males, 1 of the 60 mandibles exhibiting a bridge showed bilateral bridging (1,66%).

PSYCHOSOMATIC RELATIONS AS ADDITIONAL CHARACTERISTICS OF THE GROUP

Bakholdina Varvara[1], Movsesian Alla[1], Titova Elena[2], Blagova Ksenya[1], Samorodova Margarita[1], Shimanovskaya Anna[1]

[1]Moscow State University, Department of Anthropology, Moscow, Russia
[2]People's Friendship University of Russia, Moscow, Russia

vbaholdina@mail.ru

The study of the age profile of the individual stages of human ontogenesis is a traditional subject in anthropological research. Modern realities compel researchers to access additional features to characterize the individual age stages. This problem is the most relevant to adolescence and youth, when the overall physical health and psychological well-being is highly dependent on external and internal factors. One of the most significant factors influencing the general well-being of adolescents and youth, is the level of self-esteem. Self-esteem is the complex psychological phenomenon, and is formed in close connection with the common self-perception of adolescents and young people. Communication between self-esteem and individual morphological features of adolescents and young people is the main subject of our research, which seeks to identify the age and gender differences of this trait and to assess the extent to which it can be considered as the additional characteristic of the different age stages. Our study was conducted among adolescents from 11 to 17 years of age who attended extra classes at educational centres in Moscow, Russia; young adults from 18 to 27, the students of the

Moscow State University, and young adults from 17 to 31, the students of the RUDN University in Moscow, Russia. The total sample consists of 524 males and 475 females. For all subjects' height, weight, girth of the body and limbs, fat folds and BMI were measured. We also used the questionnaire of self-esteem, presented in the form of the visual scale. The results of the study allow us to consider psychosomatic relations as additional characteristics in the complex investigations of different groups, samples and age stages.

YOUNG PEOPLE'S PERSPECTIVES ON ONLINE AND OFFLINE EXPERIENCES OF INTERPERSONAL VIOLENCE AND ABUSE (IPVA): INSIDER AND OUTSIDER VIEWS FROM AN ANTHROPOLOGICALLY INFORMED STUDY

Barter Christine

University of Cental Lancashire, Preston, UK

barterchristine@gmail.com

The overall aim of study was to provide an in-depth understanding of the impact of new technologies in instigating and maintaining violence and control in young people's intimate relationships addressing insider and outsider views. Method: The study involved conducting 20 in-depth semi-structured interviews with young people aged 14-18 in five European countries: England, Norway, Bulgaria, Cyprus and Italy. A semi-interview schedule was developed with the young people's advisory groups from the five countries to explore the issues from their own perspectives and understandings as well as to examine diversity across contexts and spaces. Data were analysed using a thematic framework which is a matrix based method that classifies and organises data according to key themes and concepts introduced in the topic guide as well as the emerging categories. Results: The qualitative analyses offered an in-depth exploration of the themes that emerged from the data. These included experiences of sexual, physical and emotional forms of IPVA; control and surveillance; sending and receiving sexually explicit images via text, email or through social networking sites; impact of these experiences and suggestions for prevention and intervention. Conclusion: The in-depth qualitative findings showed that some young women experienced extensive offline sexual pressure and young women were substantially more negatively affected by IPVA than young men. The discussions revealed that online space has created new mechanisms of control and surveillance that sometimes intensify the impact of offline abuse. Analysing the data in the light of existing theories of diversity, cultural violence and coercive control, we explored both the normalising influence of prevailing heteronormative models of femininity and masculinity as well as young people's agency to fight back such normalisation. Reflections for further anthropologically informed studies will be addressed.

ATTRACTIVENESS OF THE WHOLE FEMALE FACE AND DIFFERENT FACIAL FEATURES: RATINGS PERFORMED BY YOUNG MALES

Bračkutė Lina, Bulzgytė Romena, Tutkuvienė Janina

Vilnius University, Faculty of Medicine, Department of Anatomy, Histology and Anthropology, Vilnius, Lithuania

lina.brackute@gmail.com

The aim of the present study was to find out how young males evaluated attractiveness of the whole female face, different facial features in the face and isolated (separately) ones. In 2016, 36 young males (19-26 y.) evaluated standardized 2D pictures of 100 girls (18-21 y.): 600

facial images of the whole face in frontal and side views, and pictures of isolated features (eyes, nose, lips) of the same girls were evaluated using a 7 points Likert scale. Paired student's t-test was applied to compare attractiveness of individual features in the whole face with attractiveness of isolated features (SPSS 22.0 was used). Female facial attractiveness of the whole face (frontal and side views) and isolated features (all together) were evaluated on average by 2,92 (SD=1,4) points (min-max=1,7-4,3). In the frontal view, the whole face was evaluated on average by 2,83 (SD=1,4), the eyes – on average by 3,35(SD=1,5), lips – 2,99 (SD=1,5), nose – 2,83 (SD=1,4). The whole face in frontal view was evaluated significantly worse than isolated eyes and lips ($p<0,001$). The average evaluations for the majority of isolated facial features were higher than at the whole face ($p<0,05$): for eyes – 3,29 (SD=1,5), for nose in frontal view – 2,61(SD=1,2), for nose in side view – 2,64(SD=1,3). However, the isolated lips were evaluated on average by 3,17(SD=1,5) – better than lips in frontal view of the whole face ($p<0,001$). In conclusion, isolated eyes and lips in frontal view were evaluated better than the whole face in frontal images. The isolated eyes were evaluated as the most attractive, and the isolated nose, also nose at the whole face – as the least attractive feature. Isolated lips were evaluated better than the same feature at the whole face.

EVALUATION OF FEMALE FACIAL ATTRACTIVENESS IN RELATION TO ANTHROPOMETRIC PARAMETERS

Bulzgytė Romena, Bračkutė Lina, Tutkuvienė Janina

Vilnius University, Faculty of Medicine, Department of Anatomy, Histology and Anthropology, Vilnius, Lithuania

romena.bulzgyte@gmail.com

The aim of present study, conducted in 2015-16, was to determine, if morphological facial parameters (both males and females) were related to evaluations of female facial attractiveness performed by young males. Standardized 2D pictures and anthropometric craniofacial features of 100 girls (18-21 y.) were analyzed. In total, 66 males (19-26 y.) evaluated 100 photographs of the whole face in frontal view using a 7 points Likert scale. With respect to the average craniofacial parameters of Lithuanian population, females and males were divided into three sub-groups: "micro" (facial parameters less than average), "norm" and "macro" (parameters more than average). One-way Analysis of Variance and Student's t-tests (for separate sub-groups) were applied to establish statistically significant differences. Results: Female facial attractiveness averaged 2,78 (SD=1,4; min-max=1,53-4,56). Average ratings (performed by boys) for facial attractiveness with respect to girls sub-groups were: for "micro" girls (n=30) – 2,89 points (SD=1,4); for "norm" girls (n=40) 2,85 (SD=1,4); for "macro" girls (n=30) 2,58 (SD=1,4). "Micro" and "norm" sub-groups were evaluated significantly better than "macro" ($p<0,001$). The average evaluations of girls facial attractiveness by different sub-groups of boys were: "micro" boys (n=15) for all girls (n=100) gave 2,97 points (SD=1,5), "norm" boys (n=36) – 2,68 (SD=1,3), "macro" boys (n=15) 2,83 (SD=1,5) (statistically significant differences were found between all sub-groups; $p<0,001$). However, significant differences were found between evaluations of attractiveness in different boys and girls sub-groups with respect to craniofacial features ($p<0,001$): all different sub-groups of boys evaluated "micro" girls as the most attractive, and "macro" girls as the least attractive. The attractiveness of "norm" girls was evaluated more highly than "macro" girls. In conclusion, the most attractive girls were with "micro" craniofacial parameters. All males (despite of their craniofacial parameters) evaluated as the least attractive girls from "macro" sub-group.

INBREEDING IN SOUTHEASTERN SPAIN. THE IMPACT OF GEOGRAPHY AND DEMOGRAPHY ON THE MAGNITUDE OF MARITAL MOBILITY AND MARITAL DISTANCE PATTERNS (1900-1970)

Calderón Rosario[1], Hernández Candela L.[1], García-Varela Giselle[1], Mascarelli Daniel[1], Cuesta Pedro[2]

[1]Universidad Complutense de Madrid, Departamento de Zoología y Antropología Física, Facultad de Biología, Madrid, Spain
[2]Universidad Complutense de Madrid, Centro de Proceso de Datos, Madrid, Spain
rcalfer@bio.ucm.es

The study of human populations at a demographic and genetic level is becoming very relevant because it is providing not only a rich information on population structure but also a refined understanding on the relationships between structure and diseases, many of which show particular geographic patterns. Many factors such as demographic size, population movements, migration rates, and mating systems influence population structure. In this work, we present the first data, to our knowledge, on consanguinity in a rural area (comprising 49 parishes) of the Pre-Betic Mountain Ranges of southeastern Spain. We analyze consanguinity rates (CR), underlying structure, and inbreeding levels as well as the temporal variations between 1900-1970 by Ecclesiastical Dispensations. A sustained stability in the incidence of consanguineous marriages is observed until the end of 1950s just when industrialization emerges in Spain. The incidence of first cousin and second cousin marriages for all the studied period was 38% and 45%, respectively and the ratio (0.84) significantly deviates from Hardy-Weinberg expectations (0.25). The estimated overall mean inbreeding coefficient, F was 0.00185 (CR, 7.28%) and localities at altitude lower than 1000 m register the lowest levels of consanguineous marriages. Birthplace and residence endogamy was high (84-86% as average), showing even higher levels when increasing mean marital radio. Birthplace distributions of the spouses are significantly leptokurtic, and curiously, endogamy from 1900 until 1970 reveal a great stability. First cousin mattings are mostly exogamous and they marry later than second cousins in the studied population. This marriage behavior seems to be highly influenced by socioeconomic factors. Our data are also compared to other populations from western, central and northern Spain from the literature where the population genetics of consanguinity has been analyzed for similar periods.

VARIATION IN CARDIOVASCULAR AND RESPIRATORY BIOMARKERS IN RELATION TO SOCIAL CLASS, EDUCATION, REGION AND INTERGENERATIONAL MOBILITY

Krzyzanowska Monika[1], Mascie-Taylor CG Nicholas[2]

[1]Department of Human Biology, University of Wrocław, Poland
[2]Department of Archaeology and Anthropology, University of Cambridge, UK
monika.krzyzanowska@uwr.edu.pl

To determine the associations between social class, education, region as well as social and educational mobility and regional migration in relation to some cardiovascular and respiratory biomarkers. Data on 4354 members of the British National Child Development Study (NCDS) were used to examine these associations. All biomarkers showed a significant sex difference with higher male means for BMI, waist circumference, systolic and diastolic blood pressures, FEV1 and PEF but lower pulse rate mean. Female cohort members' BMI and waist circumference tended to decrease from social class I to IV+V. In both sexes, higher social class was positively associated with FEV1. Better-educated cohort members tended to have lower BMI, waist circumference, and higher values of FEV1 and PEF. Women from Scotland and Wales had the

highest mean BMI and waist circumference, while Wales had the lowest mean FEV1 and PEF. For men the only significant regional variation was for PEF with Scotland having the highest mean. Upwardly socially mobile men tended to have a higher mean BMI and waist circumference and lower mean pulse rate than those non-mobile, whereas women tended to show the reverse relationship for BMI and waist circumference. BMI, waist circumference, FEV1 and PEF all showed significant associations with social class, educational attainment and region although directionality varied between men and women. The main findings for mobility were of an association of BMI and waist circumference with social mobility.

BIOLOGICAL DIVERSITY OF MIDDLE HOLOCENE HUNTER-GATHERERS FROM THE CIS-BAIKAL REGION OF SIBERIA

Movsesian Alla[1], Bakholdina Varvara[1], Pezhemsky Denis[2]

[1]Lomonosov State University, Department of Anthropology, Moscow, Russian Federation
[2]Anuchin Research Institute and Museum of Anthropology, Lomonosov State University, Moscow, Russian Federation

amovsessyan@gmail.com

In the past decades, prehistoric hunter-gatherers of the Cis-Baikal region have been the subject of multidisciplinary research. The analysis of ancient DNA derived from different Cis-Baikal burials revealed genetic discontinuity between the Early and Late Neolithic stages. However, the detailed DNA-based analysis of spatio-temporal diversity is limited by the lack of osteological material with well-preserved DNA. In this study, we used nonmetric cranial traits to assess the genetic relationships between various spatial and temporal groups of Cis-Baikal Middle Holocene hunter-gatherers and to reveal genetic continuity between the Cis-Baikal Neolithic-Bronze Age population and modern native Siberians. Cranial series belonging to the bearers of Early Neolithic Kitoi (N=72), Late Neolithic Serovo (N=54) and Early Bronze Glazkovo (N=98) cultures were studied. Phenotypic differentiation was analyzed by the mean measure of divergence (MMD) and Nei's genetic distances. Our results revealed several patterns of spatio-temporal biodiversity among the Cis-Baikal Middle Holocene populations, including biological similarity between the Early and Late Neolithic-Bronze Age populations, which suggests that the temporal hiatus between the Early and Late Neolithic does not necessarily imply genetic discontinuity in the region. The following possible scenarios of population history in the Cis-Baikal region are proposed: 1) continuous occupation with outside invasion of new migrant groups in the Late Neolithic and Bronze Age, and 2) migration of the Early Neolithic groups to the nearby regions and subsequent return of their descendants to the ancestral territory. A comparison of Cis-Baikal Neolithic populations with modern Siberian natives suggests that the Cis-Baikal region could have been a source area for population expansions into different parts of Siberia in the Neolithic and Bronze Age times.

THE SETTLEMENT IN THE BASIN OF THE ODER AND VISTULA RIVERS BETWEEN LATE ANTIQUITY AND THE EARLY MIDDLE AGES - A CONTINUITY OR DISCONTINUITY?

Myszka Anna, Trzciński Dawid, Piontek Janusz

Department of Human Evolutionary Anthropology, Institute of Anthropology, Faculty of Biology, Adam Mickiewicz University in Poznań, Poland

myszanka@amu.edu.pl

Knowledge about the biological characteristics of the population living in the basin of the Oder and Vistula rivers in the late antiquity period, due to the crematory funeral rites, was very

limited. The breakthrough came after the start of motorway constructions and other investments. As a result several archaeological sites from the late antiquity period, including bi-ritual cemeteries, have been discovered. The resulting skeletal material has been used for verification of the hypothesis posed by some archaeologists of the discontinuity of settlements in the basin of the Oder and Vistula rivers between late antiquity and the early Middle Ages (e.g. Parczewski et al. 2012). Bone material used in this study derives from the bi-ritual cemetery of Wielbark culture population located at Kowalewko (Poland). The burial ground is dated to a period from the middle of the first to the beginning of the third century CE (Skorupka 2001). In this cemetery, 496 graves of Wielbark culture were discovered (297 skeletons, 199 crematory graves). Due to fairly significant damage to bone material, in order to achieve the objectives of this study, analysis was conducted on 42 skeletons. Recommended methods were applied to estimate the age and sex of individuals (Buikstra and Ubelaker 1994). Selected measurements were taken of the skull and bones of the postcranial skeleton The measurement data for individuals from Kowalewko were referred to the data for other populations of the Wielbark and Przeworsk cultures as well as data for selected populations from the early Middle Ages. The comparative data include the populations of the basin of the Oder and Vistula. The results (using multivariate analysis methods) do not indicate a discontinuity settlement but rather population exchange between the late antiquity period and the early Middle Ages, in this region.

LOCAL DEMOGRAPHIC PATTERNS BURIED IN THE PRESENT-DAY mtDNA POOL: FINLAND AS AN EXAMPLE

Översti Sanni[1], Onkamo Päivi[1], Sajantila Antti[2], Palo Jukka[2,3]

[1]University of Helsinki, Department of Biosciences, Helsinki, Finland
[2]University of Helsinki, Department of Forensic Medicine, Hjelt Institute, Helsinki, Finland
[3]National Institute for Health and Welfare, Forensic Genetics unit, Helsinki, Finland
sanni.oversti@helsinki.fi

By utilizing mitochondrial DNA (mtDNA) we are able to trace maternal lineages back in time. A wealth of population genetics studies has shown that the mitochondrial gene pool in modern Europeans is a mixture of Mesolithic hunter-gatherer associated haplogroups (U and V) and Neolithic associated farmer haplogroups (H, J, K and T). Also the demographic histories deduced from mtDNA data seem relatively homologous for many European populations. However, a lot of this population level research has utilized only the control region, containing only a fraction of the information of the mitochondrial genome. Here we have reassessed the Finnish population history using complete mtDNA sequences. When solely the control region is considered, Finnish mtDNA diversity and haplogroup distribution seems like other European populations. A different picture emerges from the 843 full mitochondrial sequences from modern Finns analyzed here. Based on this fine resolution comparison significant proportion of subhaplogroups in Finland, up to one third, can be considered as Finn-characteristic, i.e. these lineages are rather common in Finland but they are virtually absent from other populations. Bayesian phylogenetic analyses (BEAST v1.8.1) suggests that most of these lineages date back around 3,000-5,000 years, which would temporally coincidence with the arrival and especially the spreading of the agriculture and Corded Ware culture in Finland. In addition, when comparing the effective population sizes for Finn-characteristic and for other haplogroups, we see two remarkable different demographic histories. Our results demonstrate the importance of utilizing the complete mtDNA sequence when evaluating the demographic past of maternal lineages.

SEXUAL DIMORPHISM IN THE FORAMEN MAGNUM: NEW INSIGHT FROM THE SARDINIA POPULATION

Pozzi Andrea, Raffone Caterina, Belcastro Maria Giovanna

University of Bologna, Department of Biological Sciences, Geological and Environmental, Bologna, Italy

caterina.raffone2@studio.unibo.it

The measurements of the foramen magnum (FM) are widely used in forensic anthropology and archaeology for sex determination. One of the first discovery of sexual dimorphism in this region was Catalina-Herrera (1987) indicating that FM' sagittal and transverse dimensions were significantly higher in men's skulls. Zaidi&Dayal (1988) classified a sample of Indian skulls according to FM' shape and dimensions, reporting differences between male and female skulls, which were similar to the findings (Henríquez-Pino et al.1995) in Brazilian's skulls. The aim of this study is to investigate the presence of some insular effect on the FM that could affect the sexual dimorphism determination through its dimensions. Using a calliper and a curved calliper, the maximum transverse and maximum antero-posterior diameters of the FM were calculated. The bioinformatics analyses have been performed using two software: MATLAB and PAST. This study has been carried out comparing an island population (Sardinia, 140 samples 70 for both male and female) and several Italians continental populations (60 pooled samples, 30 for each gender). All the samples come from the identified (for sex and age-at-death) human skeletal collections of the Museum of Anthropology, University of Bologna. The results show a greater sexual dimorphism of both FM' dimensions in all the analysed samples. We found a different degree of correlation between FM' height and width in the considered populations. The Sardinians shows a Pearson correlation of about 0,5 and the continental populations of about 0,7. This linkage reduction between the two dimensions could be the first clue of an "insular effect" on the FM. Moreover we notice a higher degree (10% more) of precision in the sex determination on the continental's females. This evidence suggest the effect a possible insular effect on the FM and in order to prove it, further analysis on other islands populations are needed.

THE PROBLEM OF HUMAN BIOLOGICAL DIVERSITY: GENE POOL FORMATION OF THE POPULATION IN NORTHERN ASIA

Sheremetyeva Valentina A.

M.V. Lomonosov Moscow State University, Biological Faculty, Department of Anthropology Russian Federation

sheremetyeva_v@mail.ru

The paper is based on the results of an integrated project combining research in the fields of humanities and biological sciences – archaeology, anthropology and genetics. Such synthesis was achieved with cartographic technique which allowed studying spatial relations of the mapping characters. The author's own and literary data based on many years' of anthropological and genetical surveys of Siberian native populations were used as the materials. Cartographic statistical analysis was based on four maps representing the 1st principal components of the following variables: 26 anthropometric and anthroposcopic characteristics; 30 polymorphic loci of blood groups, serum proteins and other genetic markers; 25 objects of material culture from two Late Palaeolithic chronological periods (12,000 - 15,000 and 16,000 – 26,000 years ago). Factor analysis of similarities between those objects was performed with the digital correlation matrix of the 1st principal components. As a result of this analysis, digital integrative images of biological independent variables of the gene pool of modern populations and cultural characteristics of ancient populations (12,000 - 15,000 and 16,000 – 26,000 years ago) were

compared. Such a comparison made it possible to evaluate ancient contribution to the present geographical structure of the gene pool of Northern Asian population. It also became possible to trace the development of genetical-anthropological structure at two stages of Upper Palaeolithic and to evaluate the preservation of antique elements in the present geographical structure of the gene pool and in the geographical structure of anthropological patterns in modern native population of Northern Asia. The study confirmed that climate change (fall of the temperature) played an important role in variations of appearances of Upper Palaeolithic people. Applied technique helps to better understanding of conditions and factors participating in the development of Northern Asia gene pool.

HUMAN EVOLUTION

THE LIFE STYLE OF MESOLITHIC-EARLY NEOLITHIC POPULATION FROM NORTH-EASTERN EUROPE BY ANTHROPOLOGICAL DATA

Buzhilova Alexandra

Research Institute of Anthropology, Moscow State University, Russia

albu_pa@mail.ru

The presentation provides reconstruction of life style of people living during various chronological periods of Mesolithic-Early Neolithic in the territory of the modern Vologda region, North of European Russia (an archaeological complex of Minino). Comparison of radio-carbon dating and palynology data shows that the population lived in the region throughout three millennia in the conditions of lack of serious changes of a natural environment. Comparison of data of archeology, an archeozoology and physical anthropology shows that population of Minino is a group of hunters for whom land mammals and lake and river fish were trade food types. According to anthropology it is possible to claim that there are no specific features distinguishing people from Minino from synchronous groups in the north of Europe. The group, most likely, represents separate elements of an unvarying anthropological substratum. According to a paleopathology data, ancient inhabitants of Minino had no chronic diseases or infections and show insignificant percent of occurrence of the markers of a physiological stress. All of that indicates overcoming of sharp feverish conditions in the childhood. The radiological analysis, as well as morphological, has provided the evidence of heavy physical activities of individuals in the overcooling conditions, that emphasizes seasonality of negative factors of the environment in daily life of hunter-gathers and fishers. Results of archaeological researches convince that population of Minino successfully owned various skills and processing methods during Mesolithic. It is visible on the example of production of difficult furniture of clothes; various bone stripes, pieces of arms and tools of hunting. Special interest is caused by dynamics of demographic parameters throughout three millennia, change of a way of life and diet correlating with. The population reflects complexity of process of social adaptation during so ancient periods. Work is performed within the project of RFBR 16-06-00420.

HEALTH, EVOLUTION AND FACE PERCEPTION – WHY MEN WITH A TERMINAL ILLNESS RELAX THEIR CRITERIA FOR FACIAL ATTRACTIVENESS?

Dariusz P. Danel[1], Agnieszka E. Siennicka[2,3], Paweł Fedurek[4], Tomasz Frąckowiak[5], Piotr Sorokowski[5], Ewa A. Jankowska[1,3,6], Bogusław Pawłowski[7]

[1]Polish Academy of Sciences, Unit of Anthropology, Wroclaw, Poland
[2]Wroclaw Medical University, Department of Physiology, Wroclaw, Poland
[3]Clinical Military Hospital, Department of Cardiology, Wroclaw, Poland
[4]University of Neuchâtel, Institute of Biology, Neuchâtel, Switzerland
[5]University of Wroclaw, Institute of Psychology, Wroclaw, Poland
[6]Wroclaw Medical University, Department of Heart Diseases, Wroclaw, Poland
[7]University of Wroclaw, Department of Human Biology, Wroclaw, Poland

dariusz.danel@gmail.com

According to the life history paradigm, in life threatening conditions sexual selection criteria may be relaxed in order to increase the probability of a last resort reproduction and therefore contribute to reproductive success. This should be reflected in loosened mating preferences and there is evidence for such process in non-human animals. Studies investigating this aspect in humans, however, are scarce. We explored the aesthetic preferences towards facial and non-facial stimuli in terminally ill patients with heart failure (HF) and their healthy, same-sex peers. Our aim was to examine if these two groups of men demonstrate different patterns of aesthetic judgements. Comparing to healthy controls, HF patients rated the pictures using significantly higher scores, but this only applied to male and female but not non-facial stimuli. We conclude that lowering the criteria regarding facial attractiveness in HF patients is linked to relaxation of mate preferences as a result of a life threatening conditions, and that this process is an adaptive mating strategy from an ultimate, evolutionary perspective.

CLUES OF THE PREHISTORIC MAN'S LIFESTYLE: SHELL BEADS FROM ÜÇAĞIZLI CAVE, HATAY, TURKEY

Güleç Erksin

Ankara University, Ankara, Turkey

erksinsavas@gmail.com

Prehistoric Man's lifestyle can be understood from the culture they left. The appearance of ornamental objects in the archaeological record gives the impression of an important expansion in both the role of material culture in human social and economic systems, and material installation of symbol systems. The early appearance and proliferation of ornament technologies appears to be contingent on variable demographic or social conditions. The well dated early upper Paleolithic record of Üçağızlı Cave I on the South-central coast of Turkey provides an opportunity for such an approach. Excavations started in 1997 and Accelerator mass spectrometry (AMS) radiocarbon dates indicate ages between 39,000 and 41,000 radiocarbon years (roughly 41,000 – 43,000 calendar years) for the oldest ornament-bearing levels in Üçağızlı Cave. Upper Paleolithic settlement layers can be found till 31.000 calendar years. In this study all stages of ornament manufacture and use has been examined. Variation in the assemblages will be tested on the relation with changes in the environment. Also two piles of shell beads has been studied if they were used as ornaments or not. Changes in the local marine environment do not explain much of the variation in the assemblages, pointing instead to behavioral causes.

AN ASSOCIATION BETWEEN ADULT STATURE AND LIFESPAN: SKELETAL ANALYSIS

Jatautis Šarūnas[1], Suchomlinov Andrej[2], Jankauskas Rimantas[2]

[1]Department of Archaeology, Faculty of History, Vilnius University, Vilnius, Lithuania
[2]Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

andrej.suchomlinov@mf.vu.lt

A relationship between stature and lifespan is still not evident and fully understood even in modern populations. Moreover, when it comes to analysis of historic and prehistoric people, it becomes even more obscure. The total sample size of the study consisted of 1713 individuals who died between 2nd AD and the beginning of the 19th AD centuries, and were discovered in 118 archaeological burial grounds located in the current territory of Lithuania. Information on adult age-at-death was obtained by studying age-related morphological changes in the auricular surface and the pubic symphysis of the ilium. Maximum length of femur was used as a proxy

indicator of maximum attained stature during lifetime. Univariate cumulative logit models were applied to model ordinal age-related changes in the auricular surface and the pubic symphysis (measures of lifespan) as a function of maximum length of femur (an indicator of maximum living stature), sex, burial site and its chronology as a proxy for residence place and epoch, respectively. The results of the study did not support the hypothesis that the relationship between final stature and lifespan, as measured by maximum length of femur and ordinal age-related stages in the pubic symphysis and the auricular surface, respectively, had existed in prehistoric and historic Lithuanian populations. The lack of significant association between these two variables was observed for both sexes, different epochs and places of residence. Heterogeneous frailty in early life and resulting selective mortality may partly explain the results.

GEOMETRIC MORPHOMETRICS: A POWERFUL LINK BETWEEN BIOLOGICAL CAUSES OF FACIAL SHAPE VARIATION AND IMPRESSION FORMATION

Schaefer Katrin

University of Vienna, Department of Anthropology, Vienna, Austria
katrin.schaefer@univie.ac.at

Physical anthropology and evolutionary psychology have been separated for too long. By combining these fields with the bracket of a rigid and elegant statistical method (Geometric morphometrics), organismal form (e.g., a human face) can be placed in the middle of a causal chain, as the mediating variable between a biological substrate and human perception. This way, one can quantify and isolate the facial shape patterns caused by any physical process of interest (e.g., age, BMI, body height etc.) and directly compare them to those facial characteristics that lead to specific aesthetic (and other) judgments. This way, a wide range of specific hypotheses can be tested. The results presented are based on standardized photographs of 130 children and young adults as well as 38 car fronts. Two-dimensional coordinates of somatometric measurement points were used instead of distances, angles and ratios. This way the relative spatial relationships among measurement points are preserved throughout the analyses. We identified the covariation of shape with physical measures and ratings using (a) regression analyses with single predictors (shape regressions) and (b) a multifactorial approach (partial least squares analysis) together with permutation tests. Thin-plate spline deformation grids and unwarped and averaged images (GM morphs) were used for visualization. Among many fascinating results was the finding that male facial shape patterns associated with prenatal testosterone exposure corresponded to those predicted by perceived dominance but not by attractiveness, and that this was even true for children (!). Significant implications for education are glaring. Our approach suggests looking at a wide range of predictions pertinent to the field of Darwinian aesthetics.

BIOLOGICAL DIVERSITY OF NON-METRICAL TRAITS IN POPULATIONS OF EARLY MEDIEVAL SLAVS COMPARED WITH POPULATIONS FROM THE ROMAN PERIOD LIVING IN CENTRAL EUROPE

Trzciński Dawid, Piontek Janusz

Department of Human Evolutionary Anthropology, Institute of Anthropology, Faculty of Biology, Adam Mickiewicz University in Poznań, Poland

dawid.trzcinski@outlook.com

The anthropological diversity of the population of the basin of the Oder and the Vistula rivers at the end of antiquity and the early middle ages is discussed in the anthropological, archaeological, historical and linguistic literature. Some historians and archaeologists believe that within this area there was a discontinuation of settlement during the period of late Antiquity. It is also considered that the population living in the basin of the Oder and the Vistula Rivers arrived in the 5th/6th century from the areas inhabited by Eastern Slavs. In this lecture we verify this hypothesis, using non-metric traits of the skull to determine biological diversity. The following comparisons were made: (a) a synchronous approach - Western and Eastern Slavs, Western Slavs and Scandinavian populations, (b) a diachronic approach – inclusion of Late Roman Period populations of the basin of the Oder and the Vistula Rivers and the Eastern Slavdom area. We used standard statistical methods in the analysis of non-metric traits.

HUMANS AND ENVIRONMENT

UPPER BODY PHYSICAL STRENGTH, AGGRESSION AND REPRODUCTIVE SUCCESS IN MEN FROM INDUSTRIAL AND TRADITIONAL SOCIETIES (RUSSIANS AND DATOGA COMPARED)

Butovskaya Marina[1], Fedenok Julia[1], Karelin Dmitry[2]

[1]Institute of Ethnology and Anthropology Russian Academy of Sciences, Moscow, Russia
[2]Moscow State University, Moscow, Russia

marina.butovskaya@gmail.com

It is suggested that physical strength is associated with reproductive success in men, besides; the men with greater upper-body strength may be more efficient in endorsement of the self-beneficial position (Gallup et al., 2007, 2010; Petersen et al., 2013; Butovskaya et al., 2013, 2015). Here we tested this hypothesis on two data samples, collected in industrial society (82 Russian young men, age range: 18-30 y), and among traditional pastoralists of Tanzania (192 Datoga men, age range: 18 – 76 y) were collected in Mangola, Northern Tanzania in 2007-2014). The data on height, hand grip strength, upper hand muscle mass, 2D:4D, self-ratings on physical aggression, based on Buss-Perry AQ, and age were collected in both samples. In addition, for Datoga men the data on the number of children born, number of wives, number of surviving children and number of cows in the household were obtained. In the Russian sample, the physical aggression was positively and significantly correlated with mean hand grip strength (p=0,001). The regression analysis with physical aggression as dependent variable and hand grip, upper hand muscle mass, 2D:4D, height as predictors, revealed that hand grip was the only significant predictor. For the Datoga sample no significant correlations between physical aggression and anthropometric parameters were found. The regression analysis demonstrated that the number of children born for Datoga men were dependent significantly on age (p=0,0001), upper hand muscle mass (p=0,0001), and the number of caws in the household (p=0,0001).The number of children alive were dependent on age (p=0,0001), 2D:4D (p=0,02), upper hand muscle mass (p=0,0001), and number of cows (p=0,0001). We conclude that while physical strength may be a good predictor of physical aggression in young men in modern societies, in traditional societies physical strength, along with wealth may be a good predictor of reproductive success. Supported by RFHR, grant # 15-36-01027.

COMPARISON OF REPRODUCTIVE HEALTH AND SOCIODEMOGRAPHIC CHARACTERISTICS IN PREGNANT WOMEN FROM THE DALMATIAN MAINLAND AND ISLANDS – PRELIMINARY RESULTS FROM THE CROATIAN CRIBS COHORT

Havaš Auguštin Dubravka[1], Zajc Petranović Matea[1], Sindik Joško[1], Novokmet Natalija[1], Perinić Lewis Ana[1], Šarac Jelena[1], Pribačić Ambrožić Vanda[1], Čoklo Miran[1], Karelović Deni[2], Škrabić Veselin[3], Pejković Lidija[4], Luetić Nives[5], Lučić Lavčević Toni[6], Deković Ana[7], Jašić Branko[8], Schell Lawrence [9], Demerath Ellen [10], Cameron Noël[11], Missoni Saša[1,12]

[1]Institute for Anthropological Research, Zagreb, Croatia
[2]Department of Gynecology and Obstetrics, Split University Hospital Center, Split, Croatia
[3]Department of Paediatrics, Split University Hospital Center, Split, Croatia
[4]Private gynecological practice Primarius Dr. med. Lidija Pejković, Solin, Croatia

[5]Health Center of Split – Dalmatia county, Specialistic gynecological practice Dr. med. Nives Luetić, Split, Croatia
[6]Private gynecological practice Dr. med. Toni Lučić Lavčević, Hvar, Croatia
[7]Private gynecological practice Dr. med. Ana Deković, Split, Croatia
[8]Private gynecological practice Dr. med. Branko Jašić, MSc, Supetar, Croatia
[9]University at Albany, State University of New York, SAD
[10]University of Minnesota, School of Public Health, SAD
[11]Loughborough University, School of Sport, Exercise and Health Sciences, UK
[12]J. J. Strossmayer University, School of Medicine, Osijek, Croatia
dubravka.havas@inantro.hr

The CRoatian Islands` Birth Cohort Study (CRIBS) is an ongoing project in Split-Dalmatia County (towns of Split and Solin, islands of Brač, Hvar and Korčula), which aims to assess the prevalence of variety of risk factors (biological, medical, epidemiological, environmental and psychosocial) for the Metabolic Syndrome (MetS) in a sample of up to 700 healthy pregnant women and their newborns. The project started in November 2015, and since February 2016 pregnant women have been enrolling in the study at several specialist gynecological practices. Here we present the preliminary results of the reproductive health characteristics (age at menarche, use of contraceptives before the pregnancy, age at primiparity) and the sociodemographic characteristics (place of residence, educational attainment, employment and financial status) of the first 50 pregnant women who agreed to participate in the CRIBS study. The mean age at menarche of the CRIBS pregnant women was 12.92±1.19 yrs, and age at primiparity ranged from 19.15 yrs to 34.51 yrs (mean 25.51±4.07 yrs, p=ns between mainland and islands). Many enrolled women (82%) reported using no contraceptives before the pregnancy. In women who already had 2 or more children (n=7), the mean age difference between the offspring was 5.25±3.93 yrs (range 2.23-13.36 yrs). 94% of women reported being married or having a partner, who was in 87% of cases older than his wife/partner. 52% of pregnant women attained high level education, 70% were employed, 60% owned a house/flat, and 90% perceived their financial status as average or better than average. These preliminary data show that pregnant women from the CRIBS study are on average younger at primiparity than the national mean, use contraceptives rarely, and, in spite of the significant percentage of unemployment, perceive that their financial status is good enough to raise a family.

PATTERNS OF UPPER LIMB TRAUMA FOUND IN MODERN CYPRIOT POPULATION

Lee Wing-sum Winsome[1], Kyriakou Xenia-Paula[2], Jaskulska Elżbieta[3], Köcher Kathryn Ginelle[4]

[1]University of Leicester, Forensic Science, United Kingdom
[2]Director and Research Manager of Odyssey Fieldschool
[3]University of Warsaw, Poland
[4]New York University, Anthropology, United States of America
winsome2989@gmail.com

Traumatic markers imprinted on a skeleton contain abundant information of the human and the environment. Among types of skeletal traumas, looking for fractures is a relatively easy task with a pair of pathological trained eyes. It is also one realm of skeletal information that investigators are always enthusiastic to learn about. This study was conducted in 2015. It examines in total of 150 skeletons from the Cyprus Research Reference Collection (CRRC) housed in Limassol, Cyprus and describes patterns of fractures recorded in urban population in Cyprus. Other than this particular upper study, there are also studies conducted with this collection and have assessed cranial and lower limbs fractures. This specific presentation, describes the patterns of fracture found in upper limbs (i.e. humerus, radius and ulna) recorded in the modern Cypriot population. By examining the found upper limbs fractures, in order to (1)

present originally collected data and recorded frequencies of trauma, (2) evaluate the rate of likelihood of fractures in males and females individuals, (3) investigate evidence of medical interference during the healing process, and possible treatment. And last but not least, (4) to investigate if the traumatic pattern is tied to particular social or interpersonal demographic scenarios.

ADAPTIVE CHANGES IN BASAL METABOLIC RATE IN HUMANS IN DIFFERENT ECO-GEOGRAPHICAL AREAS

Maximov Arkady[1], Belkin Victor[2], Kalichman Leonid[3], Kobyliansky Eugene[2]

[1]International Scientific Center »Arktika« FEB RAS, Magadan, Russia
[2]Tel-Aviv University, Sackler Faculty of Medicine,Department of Anatomy and Anthropology, Tel-Aviv, Israel
[3]University of the Negev, Faculty of Health Sciences at Ben-Gurion, Recanati School for Community Health Professions, Physical Therapy Department, Beer-Sheva, Israel
anatom14@post.tau.ac.il

We asked whether the human basal metabolic rate (BMR) shifts towards the reduction of vital functions as an adaptation response to extreme environmental conditions. Data was collected in arid and Extreme North zones and comprised Bedouins living in the Sinai Peninsula in Egypt, Turkmen students, Turkmenistan born Russians and Russian soldiers. Soldiers were divided into 3 groups according to the length of their duty in the area: 1st group: up to six months, 2nd group: up to 2 years and the 3rd group: 3-5 years. The Extreme North samples comprised Chukchi natives, 1st generation Russian immigrants born in the area and 3 groups of soldiers comparable to the soldiers from Turkmenistan. BMR values of the new recruits had the highest values of total and relative BMR (1769±16 and 28.3±0.6, correspondingly). The total and relative BMR tended to decrease within a longer adaptation period. The BMR values of officers who served >3 years in Turkmenistan were similar to the Turkmenistan born Russians (1730±14 vs. 1726±18 and 26.5±0.6 vs. 27.3±0.7, correspondingly). Similarly, in Chukotka, the highest relative BMR was found in the new recruits, serving up to 6 months (28.1±0.7) and was significantly (p3 years, compared to the middle-aged Chukchi or Chukotka-born Russians (25.8±0.5 vs. 25.6±0.5 and 25.5±0.6, correspondingly). The BMR demonstrated an association with body weight. In extreme environmental conditions, migrant populations showed a decrease in BMR, thus reducing its vital functions. The BMR reduction effect with the adequate adaptive transformation is likely to be the key strategy for developing programs to facilitate human and animal adaptation to extreme factors. This process is aimed at preserving the optimum energy balance and homeostasis while minimizing stress on the body's vital functions.

DELAYED CIRCADIAN PHASE IS ASSOCIATED WITH LATE SLEEP HABITS IN JAPANESE CHILDREN

Sang-il Lee[1], Huimin Xu[2], Kana Nishimura[2], Takuya Tsuyama[2], Shigekazu Higuchi[1]

[1]Department of Human Science, Faculty of Design, Kyushu University, Fukuoka, Japan
[2]Department of Kansei Science, Graduate School of Integrated Frontier Science, Kyushu University, Fukuoka, Japan
sangil98@gmail.com

Epidemiological studies have reported that sleep duration in Japanese children is relatively shorter compared with the children in other countries. Children's Eveningness is thought to be a factor involved in, but there is not sufficient evidence enough. The purpose of this study was to

investigate the relationship between circadian phase and sleep habits in Japanese children. Twenty-two healthy children (12 male, 10 female, 5-14 years old) and twenty of their parents (9 male, 11 female, 35-50 years old) participated in this study. Children's habitual sleep profile was evaluated by writing a week sleep diary prior to the experiment. To estimate dim light melatonin onset (DLMO, i.e. circadian phase index), salivary samples were collected every 30 minutes under dim condition (<30lx) from 8 pm to individual's habitual bedtime + 1 hour (BT+1h) at an accommodation facility in Japan. Melatonin concentration was analyzed using Radioimmunoassay (RIA) method. The bedtime and sleep duration in children (n=20) were 21:40±0:50 (ranging from 20:22 to 23:28) and 8:59±0:44 (ranging from 7:01 to 9:52), respectively. Their bedtime and sleep duration became later or shorter as their DLMO became later ($r=0.63$; $p<0.01$, $r=-0.62$; $p<0.01$, respectively). The sleep latency in children was 0:08±0:05 (ranging from 0:01 to 0:18), and children with later DLMO showed longer sleep latency ($r= 0.67$, $p<0.01$). On the other hand, there was a significant correlation in bedtime between children and their parents ($r=0.49$, $p<0.05$). Our findings in this study indicate that delayed circadian phase is related to late sleep habits in Japanese children. Given that the parents bedtime seem to affect children's bedtime, extended time of light exposure at night by their parents is regarded as a possible factor causing circadian delay in Japanese children.

PSYCHOMOTOR PERFORMANCE AS A CONSEQUENCE OF BRAIN EVOLUTION AND NUTRITIONAL HABITS

Siniarska Anna[1], Wolanski Napoleon[2], Joanna Grzelak[1]

[1]Cardinal Stefan Wyszynski University, Department of Human Biology, Warsaw, Poland
[2]Professor emeritus, Warsaw, Poland

filobiologia@gmail.com

After 600 million years of animal evolution DHA from marine food web is the predominant fatty acid in membranes of neurons and synapses. This means that the leader of DNA is DHA from the beginning of the animal evolution. It should be understood that the proteins are selected to operate in the stability of DHA. The evolution in the marine habitat led to marine mammals having a better ratio of brain size to body weight than land mammals. Evolution in the land has led to a relative reduction in the size of the brain, which can be explained by the lack of DHA in the diet. Research in Africa indicates that the evolution of Homo had to occur in close proximity to the coasts of oceans, seas, rivers and lakes. If the population has access to DHA, I, Zn and Se in the diet throughout the year, and the same is repeated for the next generations, it is therefore expected to increase the population size, improve health, intelligence and greater technological sophistication. Heart and cardiovascular system is the first complete system, which is formed in embryonic development and plays an important role in organogenesis. This is why cardiovascular diseases involve a disorder of the brain (Crawford at al., 2014). Studies that investigated the impact of diet on psychomotor performance, body build, health status (self-assessment) were conducted on 363 manual workers in Mérida and 244 fishermen in Progreso (Yucatán, México) in 1994, on 522 girls aged 9-14 years from urban and rural areas (Warsaw and close surroundings) in 2003, and on 415 girls aged 14-19-years attending high schools (Warsaw, Poland) in 2003. The results indicate that frequent consumption of fish and seafood and a greater number of daily meals are associated with a shorter reaction time and better health.

FACTORS ASSOCIATED WITH UNDERNUTRITION IN RURAL CHILDREN FROM SOUTHERN POLAND

Suder Agnieszka[1], Jagielski Paweł[2], Curyło Marta[3], Janusz Mariusz[4]

[1]University of Physical Education, Department of Anatomy, Krakow, Poland
[2]Jagiellonian University Medical College, Department of Genetic Diagnosis and Nutrigenomics, Krakow, Poland
[3]University of Physical Education, Department of Rehabilitation in Internal Diseases, Krakow, Poland
[4]University of Physical Education, Department of Kinesitherapy, Krakow, Poland
agnieszka.suder@awf.krakow.pl

The aim was to assess prevalence of body mass deficiencies and determine their risk factors in children from villages and small towns. Material and methods: The material includes a cross-sectional sample of 3067 children aged 7-12 from southern Poland district. The sample included 89% of the district departments, and maintained the proportion of rural and small towns populations, therefore it can be treated as a representative one for the region. Body mass deficiencies were determined based on criteria proposed by Cole et al. (2007). Biological, socio-demographic and lifestyle factors were analysed. Odds ratio (OR) and 95% confidence interval (CI) were calculated using a logistic regression analysis. Results: Considering the whole group, the prevalence of body mass deficiencies was 11.4 % in boys and 13.3 % in girls (p=0.1255). In the younger group (7-9y) it was similar in boys and girls at 11.0 %, whereas in the older group (10-12y) it was, respectively, 11.5 % and 14.7 % (p=0.044). Prevalence of underweight was close to prevalence of overweight and obesity in older girls (11-12y), who made a significant percentage of children with deficiency. An increased number of daily hours of physical activity (OR=0.03; CI (0.16-0.74)) was connected with lower risk of body mass deficiencies prevalence in rural boys. The result analysis did not confirm that rural environment was a more significant risk factor of body mass deficiency occurrence in children in comparison to the environment of small towns in southern Poland. Conclusions: No differences in deficiency prevalence were found between children from villages and small towns, which confirms tendency of decreasing significance of place of living urbanization on biological condition observed in Poland. Increased amount of physical activity decreased the risk of body mass deficiency occurrence in the examined boys which probably resulted from properly balanced energy expenditure and intake.

CURRENT VARIATION IN MALES AND FEMALES HEIGHT WORLDWIDE IN RELATION TO GEOGRAPHIC, CLIMATIC, SOCIO-ECONOMIC FACTORS, FOOD CONSUMPTION AND HEALTH RISKS

Tutkuviene Janina, Silove Simona

Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University, Lithuania
janina.tutkuviene@mf.vu.lt

Human height is highly variable trait, it reflects our evolutionary history, adaptation to different environmental stressors. For a long time, height was considered as one of the main indicators of general health status and favourable environmental conditions, while short stature was related to higher health risk and poor environment. Recently, several studies showed that tall stature might be a marker for cancer, cardiovascular and metabolic syndrome risk. This supports the idea that larger bodies may be more "costly“, and the price for that is specific health risk. The purpose of present study was to analyze current males and females height worldwide in relation to geographic region, climatic, socio-economic factors, food consumption and health

risks. Data on mean height was analyzed in 51 country using 47 references published since the beginning of 21st century. Healthy populations aged 18-51 years were included for present analysis. Different environmental, demographic and socio-economic indicators for those countries were drawn out from officially available websites. Principal component analysis was applied for data meta-analysis with the purpose to reveal factors that might be related to current human height. Sexual dimorphism of height was obtained (males Height = 100%). Worldwide variation in mean height ranged widely in males/females (respectively): from 160.0 (Chile) / 151.0 cm (Bolivia) to 183.8 (Netherlands) / 170.6 cm (Netherlands). The lowest sexual dimorphism of height was in Nigeria, the highest one – in Egypt. The principal component analysis showed, that during the last decade, height was still related to countries' geographic, climatic and demographic indicators (latitude, altitude, average annual temperature, sunlight hours, rainfall, population density, etc.), also to gross domestic product (per capita), inequality adjusted human development index, urbanization and food consumption indicators. The complex and ambiguous relations between height and different health risks will be discussed.

THE EFFECT OF ENVIRONMENTAL FACTORS ON HEALTH STATUS OF HUNGARIAN FEMALE UNIVERSITY STUDENTS

Vitályos Gábor Áron[1], Dancs Gábor[2], Darvay Sarolta[1]

[1]Eötvös Loránd University, Faculty of Primary and Pre-School Education, Department of Natural Sciences, Budapest, Hungary

[2]Eötvös Loránd University, Faculty of Primary and Pre-School Education, Department of Mathematics, Budapest, Hungary

vitalyos.aron@tok.elte.hu

University lifestyle may lead to negative tendencies in the health status of students. The first years are especially dangerous: environmental factors, like quantity and quality of nutrition, the change of daily habits and physical activity, stress and addictions change students' lifestyle. Our aim is making health conscious attitude part of our students' culture, so we started measuring body composition, and consultations. Physical status of first-year students in 2013 and 2014 was examined at our faculty. We had a questionnaire about their health status and free time activities. Body composition was examined by In Body 720 body composition analyser, and blood pressure by Omron M1 Compact monitor. The survey sample is 461 females between 18 and 25. Examination shows that 20% of the students had headache, 30% of them were spiritless and 22% irritable, 14% had sleeping disorder, 24 % were exhausted in weekly prevalence during the previous six months. Significant correlation were not found between psycho-somatic symptoms and blood pressure. Considering addictions, 17 % of students smokes or drinks alcohol regularly, smoking students had significantly higher pulse. Apart from compulsory PE lessons, 37 % of our students do sports. Significant difference, monitored by nonparametric tests, were found between regular sport activity and pulse rates. Those who do some regular exercise have lower pulse rates. A high proportion (47 %) of our students belong to a prehypertension blood pressure group; 9,5 % have high blood pressure. Significant difference could be found between nutrition status (BMI) and blood pressure, showing connection between abdominal fat and blood pressure. Our survey data are for the information of our students calling their attention to the importance of health consciousness, lifestyle, self-examination and possible treatments. Students, as teachers of future generations, are responsible for environment and for the improvement of health attitude of their future pupils.

MISCELLANEOUS

HUMOR AND PEACE IN KARS/TURKEY

Durukan Arzu

Yeditepe University, İstanbul, Turkey

arzudurukan65@yahoo.com

This anthropological research performed with different groups living in Kars which are known as Yerli, Azeris, Kurds, Terekemes, Molokans and Alevis and called the Turkmen in this region. Kars is an economically poor but culturally rich city which is located in eastern Turkey. The goal was to understand the social structure, culture, and common life of groups, similarities, differences in Kars. In-depth interview had been used to understand deeply the social and cultural system of this area. For this purpose, the region was visited many times in different seasons. To see and to be aware of their life-cycle like circumcision, like weddings and funeral, the communication was going with the people who participated in the research. In this study, in-depth interviews were done with 13 people between the ages of 50-80 from each group. They were people who can give detailed information and know both the old times and today life. Gender selection had not been done when choosing these people.The attention was paid to choose people who were extrovert, who had life experience and the colorful personality, talkative and who could share experiences. However, sometimes someone else besides these persons became a better source. At the end of the study, it was observed that humor was a means to emphasize the differences of different groups. It was noticed that the mutual dislike and/or superior properties were highlighted through jokes and stories that took place. Funny stories had been told during dinners at the houses, at the large dining tables, at formal dining tables of local and administrative managers. Instead of fighting with other groups, compete with the support of humor seemed a good solution for peace. Already they think the state forgot them and they received services quite late or almost never.

EFFECT OF TRAINING FREQUENCY AND HISTORY ON TIBIAL ASYMMETRY IN AMATEUR ATHLETES

Duyar Izzet, Ozener Baris, Ertugrul Berna, Atamturk Derya

Department of Anthropology, Istanbul University, Istanbul

izduyar@yahoo.com

Extreme biomechanical pressures are known to have an incremental effect on bone tissue. One method of testing the effects of mechanical loading on bone is through the analysis of bilateral asymmetries. The present study examined the relationship between tibial asymmetry and training frequency (days and hours per week) and history (years) in amateur athletes. The sample was comprised of 72 male and 54 athletes from Turkey. The subjects included football, basketball, volleyball and handball players. Bilateral percutaneous tibia lengths were measured in all participants and for asymmetry analysis, directional (DA) and relative (RA) asymmetries were used. According to results, tibia length displayed right-bias directional asymmetry in each sex. There were no significant differences between DA and RA values for each sex. Multiple regression analysis showed that there were positive association between training history (year) and tibial RA in male and female athletes; but there were no relationship between training frequency both RA and DA values. As a conclusion, it could be said that level of bilateral

asymmetry of tibia length increases in parallel to increases in training history in amateur athletes.

THE ASSESSMENT OF THE SEMICIRCULAR CANALS AND COCHLEA OF THE HUMAN BONY LABYRINTH USING IMAGING TECHNIQUES

Kováčová Veronika[1], Jungerová Jana[1], Urbanová Petra[1], Vlahová Veronika[2,3], Ryvolová Martina[2,3], Vaculovičová Markéta[2,3], Králík Miroslav[1]

[1]Masaryk University, Faculty of Science, Department of Anthropology, Brno, Czech Republic
[2]Mendel University in Brno, Department of Chemistry and Biochemistry, Brno, Czech Republic
[3]Brno University of Technology, Central European Institute of Technology, Brno, Czech Republic

jungerova.jana@seznam.cz

The human bony labyrinth is an inner ear structure located inside the pyramid of the temporal bone that encloses the organs of sound perception and balance. As one of the most resistant skeletal elements in human body, the pyramid is frequently uncovered in a good state of preservation. Until recently, research of the human bony labyrinth had been restricted exclusively to irreversibly invasive techniques. Due to this invasiveness, literature on morphological variation has been scarce and many questions regarding population, age or sex-related differences are yet to be answered. The studied sample of pyramids originated from Dětkovice - Za zahradama Site (Czech Republic) dated to 1000's and 1100's A.D. All elements were examined using an X-ray Carestream Xtreme device and a cone-beam CT unit. In digital X-ray images, linear distance of the semicircular canals and cochlear diameter were measured in ImageJ program. CT images were first processed to generate 3D digital models, which were subsequently studied using a newly established PC-aided approach employing measuring functionalities available in GOM Inspect program. Altogether 39 variables were proposed in order to describe shape and size variation in the semicircular canals. Acquired measurements were confronted and tested against individual's demographic data determined based on corresponding skeletal elements and burial attributes. The results showed small to none sex-related and body side-specific differences. Still, statistically significant differences were shown between sub-adults and adults. They were particularly evident in size variables of the lumens of the lateral and posterior semicircular canal, where larger values for adults were provided. This indicates a widening of the canals during growth by the resorption in the vicinity of the canals. The acquired results contribute to our comprehension of the development of inner ear structures and demonstrate the potential of the employment of non-invasive approaches when examining human skeletal remains.

TESTING VARIOUS IMAGING METHODS IN ASSESSMENT OF HYOID BONE FRACTURES

Kováčová Veronika, Šplíchalová Ivana, Urbanová Petra

Laboratory of Morphology and Forensic Anthropology, Department of Anthropology, Brno, Czech Republic

splichalova.ivana@seznam.cz

In the field of forensic anthropology, the hyoid bone provides important evidence on victim's biological profile (e.g., sex or age at death) and on potential foul play, because in addition to accidental (e.g., traffic accidents, medical-rescue interventions), and self-inflicted traumas (e.g.,

hanging), hyoid fractures have been vastly documented in assaulted injuries (e.g., manual or ligature strangulations). Still, an unbiased diagnosis of perimortem damage can be problematic as hyoid fractures frequently occur postmortem when a laryngeal region is being harvested and examined at autopsy. The aim of the present study was to explore characteristics of peri- and post-mortem fractures in hyoid bones by a variety of available examination techniques. The studied material consisted of selected fractured hyoid bones with documented demographic profiles and mechanisms of damage. Characteristics of the observed fractures (e.g., hyoid shape, fracture angle and surface characteristics of the fracture line) were assessed on a macroscopic level using traditional and advanced approaches (macro-photography, 3D laser scanning). Furthemore, micro-CT, RTG and SEM imaging methods were employed to examine damaged regions on a microscopic level. Special attention was given to the distinctions between peri- and post-mortem fractures by observing the cortical bone microstructure (as viewed on raw CT images, and generated 3D digital models) as the bone tissue properties are believed to reflect the mechanism of damage substantially. The acquired results provide an important insight into potentials and limitations of currently available imaging techniques employable in the course of assessing hyoid bone fractures in the framework of physical and forensic anthropology.

IS DIFFERENTIAL DIAGNOSIS ATTAINABLE IN NON-ARTICULATED PATHOLOGICAL BONE REMAINS? A CASE-STUDY FROM A 19TH-20TH CENTURY NECROPOLIS FROM JUNCAL (PORTO DE MÓS, PORTUGAL)

Mendes Andreia[1], Alves-Cardoso Francisca[1], Casimiro Sílvia[1,2], Henderson Charlotte[3], Soares Sónia[1], Assis Sandra[1,3]

[1]LABOH – Laboratório de Antropologia Biológica e Osteologia Humana, CRIA/FCSH, Universidade NOVA de Lisboa, Portugal; CRIA – Centre for Research in Anthropology, FCSH, Universidade NOVA de Lisboa, Portugal

[2]Instituto de Estudos Medievais, FCSH, Universidade NOVA de Lisboa, Portugal

[3]CIAS –Research Centre for Anthropology and Health, Department of Life Sciences, University of Coimbra, Portugal

andreiamendes95@gmail.com

Differential diagnosis is a fundamental step in every paleopathological study. It is a challenging exercise since many extrinsic and intrinsic factors may negatively impact the accurate interpretation of bone changes in human skeletal remains. Among them, one may stress the limited range of bone tissue response to injury and disease, as well as the possible lack of completeness and preservation of the skeletal remains. This study aims to explore the limits of differential diagnosis in the analysis of fragmentary bone pieces. The sample consists of eleven adult long-bone specimens with exuberant changes. The specimens were identified in a non-articulated skeletal assemblage from the former necropolis of Juncal (Porto de Mós, Portugal), which probably ended functions in the late 19th century/early 20th century. The bone specimens were analysed through visual inspection and conventional X-radiography, and the changes carefully described prior to differential diagnosis. Five specimens presented signs of healed bone trauma (i.e., fracture) and one showed traits of a leg amputation. Periosteal lesions were observed in three bone pieces, one of them resembling an overlying skin ulcer. Two bone specimens were identified as belonging to the same individual due to the matching bone changes. Despite the incomplete remains, a broader diagnosis was possible for most cases, aided by the type and exuberance of the lesions. However, a differential diagnosis on the etiology of the changes is unattainable since we only have access to single bones rather than complete skeletons.

TWO NEW CASES OF TREPANATION FROM THE ANCIENT ANATOLIAN POPULATIONS

Sagir Mehmet, Ozer Ismail, Gülec Erksin

Ankara University, Department of Anthropology, Ankara, Turkey

mhmtsgr@gmail.com

Trepanation is defined as the intentional perforation of the cranial vault with removal of a piece of skull bone. Skull trepanation in early times was independently practiced in many areas of the world, with the highest concentration of activity in South America. Evidence for it also is found in Europe, Asia, Africa and North America. In Europe, trepanation is known to have been practiced at least since the Neolithic. In this study it is presented in two new cases of trepanation. Trepanning both examples belong to adult males. The first case dated to Late Ottoman period, while the second case was dated to Anatolian Medieval period. The aim of this study was to analyse the lesions and to determine whether they were caused by surgical interventions. Both samples were analysed by current anthropological methods and radiological examinations were performed with a multislice CT-scanner. Two males survived after the trepanations and these results were confirmed with macroscopic and radiological analysis.

EXPLORING DENTAL AND ALVEOLAR HEALTH IN A PORTUGUESE ROMAN SAMPLE FROM QUINTA DA TORRINHA/QUINTA DE SANTO ANTÓNIO (ALMADA, 3RD-5TH AD)

Soares Sónia[1,2], Mendes Andreia[2], Alves-Cardoso Francisca[1,2], Casimiro Sílvia[1,2,3], Assis Sandra[1,2,4]

[1]LABOH – Laboratório de Antropologia Biológica e Osteologia Humana, CRIA/FCSH, Universidade NOVA de Lisboa, Portugal

[2]CRIA – Centre for Research in Anthropology, FCSH, Universidade NOVA de Lisboa, Portugal

[3]Instituto de Estudos Medievais, FCSH, Universidade NOVA de Lisboa, Portugal

[4]CIAS – Research Centre for Anthropology and Health, Department of Life Sciences, University of Coimbra, Portugal

andreiamendes95@gmail.com

Teeth preserve evidences of past populations lives. This study explores caries, dental wear, calculus, as well as signs of alveolar changes as proxy of behavior, health and environment interactions in a roman necropolis of Quinta da Torrinha/Quinta de Santo António (Almada, Portugal), dated 3rd-5th century AD. The sample is composed of 319 teeth, of 23 individuals (13 non-adults, 10 adults). Teeth were visually inspection, and changes recorded using standardized paleopathological methods. Caries (28/319; 8.8%) were recorded in eight individuals, mostly mature adults (>35 y.o.), with three adults presenting periapical voids. Calculus deposits were frequently seen in the anterior dentition, affecting 32.9% (105/319) of teeth. Dental wear was observed in 77.4% of teeth, with emphasis on the permanent upper left canine, central incisor, and the deciduae upper right and lower left central incisor. Most importantly, atypical dental wear (e.g., occlusal grooves, “cup-shaped” crown topography, and oblique wear) was observed on the dentition of two individuals, which may be related with dietary and parafunctional factors. The proximity of this necropolis with the Atlantic Sea and Tagus River may explain the results, as severe and atypical dental wear has been reported in populations with coastal subsistence strategies. Comparative studies with other coastal Roman samples could contribute to the understanding of the impact of human activity and subsistence on teeth structure and health.

MÜSÂHIPLIK: AN ANTHROPOLOGICAL ANALYSIS ON FICTIVE KINSHIP OF ALEVIS IN TURKEY

Wakamatsu Hiroki

Hitit University, Corum, Turkey

hirokiali0605@gmail.com

Müsahiplik is the tradition of fictive kinship which has long been practiced within both Turkish and Kurdish Alevi communities in Turkey. Müsahip is a special term which means blood brother used in Alevi community. The tradition of Müsahiplik may be defined as a religious fraternity between two men who are not relatives. And at the same time, if these two men marry their wives also have relation of Müsahip. The fraternity is dedicated to a religious authority called Dede. It is an institution of social characteristic that is proper for originated from nomad or semi-nomad societies and of recent urban settlement. This custom is one of the most important religious practices of Alevis in Turkey. In a ceremony in the presence of a Dede, the two couples make a life-long commitment to care for the spiritual, emotional, and physical needs of each other and their children. The ties between couples who have made this commitment are at least as strong as it is for blood relatives. So much so, that Müsahiplik is often called spiritual brotherhood (manevi kardeşlik). In this presentation, drawing on my own research data, I shall first discuss how the Müsahiplik is practiced in the field in Turkey, and provide a brief outline of their meaning in Alevi theology. I shall then present the current situation of Müsahiplik and popular beliefs and discuss the underlying motives of the religious actors involved. Finally, I shall contextualize these cases within a broader theoretical and comparative perspective on fictive kinship from the point of view of Cultural Anthropology.

DE-GROWTH AS MODE OF SUSTAINABLE DEVELOPMENT POLICY

Orlić Olga

Institute for Anthropological Research, Zagreb, Croatia

olga.orlic@inantro.hr

The term sustainable development has been “adopted” by various stakeholders in a society, including politicians, various developmental agencies, media etc., to differentiate from the development causing ecological and social damage. However, theoreticians of a de-growth, who point to the simple fact that you can not develop indefinitively, because resources available are limited and that assumed technological development in the future (often perceived as deus ex machina that will resolve whatever burning issues threatening the Globe in the future) simply will not be able to compensate the lack of resources. In a way, the sustainable development has become a concept that is directed toward a “greener”, more ecological, development, toward a smart usage of resources, and the one that is generally perceived as something positive. However, as theoreticians of de-growth stress - it still includes the concept of development, even if this development is sustainable. These theoreticians turned to the idea of abandoning the dogma of development as the only way forward, and they advocate the need to embrace quite the opposite – the de-growth. Based on differences between theoretical concepts of both de-growth and sustainable development, I will analyze the data collected in spring 2016 among small family farmers in rural Dubrovnik surroundings regarding their own ideas about their future agricultural production.

PARADOX OF INFRASTRUCTURES' INFLUENCE ON MOBILITY IN GORSKI KOTAR, CROATIA

Jarec Morana, Perinić Lewis Ana

Institute for Anthropological Research, Zagreb, Croatia

morana.jarec@inantro.hr

Central role in this paper play infrastructures in the mountainous region of Gorski kotar in Croatia, a transit corridor connecting continental Central Europe and Adriatic Sea. Different infrastructures were built in three different states (Austrian-Hungarian Empire, socialist Yugoslavia and Republic of Croatia) and within three different social-economic systems. They have shaped settlements and people's lives throughout history in the region. The changes are clearly associated with construction of the Louisiana road, constructed in the beginning of the 19th century, railway construction in 1873 and highway construction in 2004. Inevitably, one more infrastructure has to be considered, a dam from 1950's that created the accumulation lake which flooded the villages and part of the Louisiana road. The paradox of infrastructures is shown in this paper; while one brings prosperity and connection, the other does the opposite. Ethnographic research on the sense of belonging, changes in economy, seasonal migration and demographic data show the complexity of the matter, paradox, but also a projection to the future. Even though Louisiana road passes through two official counties and three culturally different regions, locals often identify with Louisiana road which shows how strongly is rooted in every local community alongside the road. Because of the Louisiana road, entire villages were created, settlements along the road flourished, different forms of economy emerged. Railway marked another step in the transformation of the region, made travel shorter and brought different forms of economy. Modern highway made seasonal migration possible, and in pair with natural beauties of the region, introduced life-style migration to the rural idyll (O'Reilly 2009), while completely destroying transit tourism. This diachronic approach complements the anthropological research in the region, employing theories of anthropology of infrastructures, space and place, collective memory, migration and power.

EUROMAIDANERS - CIVIC ACTIVITIES OF UKRAINIAN DIASPORA IN WARSAW

Walczak Gawel

University of Warsaw, Robert B. Zajonc Institute for Social Sciences, Warsaw, Poland

gawelwalczak@gmail.com

Maidan protests in 2014 and other occurrences following these demonstrations changed not only social and political scene in Ukraine, but also civic attitudes of many Ukrainians living abroad. A number of European cities experienced Euromaidans on their squares. Migrants from Ukraine organized manifestations, events and meetings, formal and informal fundraising activities and humanitarian aid transports. Polish scene was one of the most active and dynamic one. Most of the Ukrainian migrants' civic activities took place in Warsaw. As civic activities I understand actions which aim to raise public awareness about events in Ukraine, from protests in Kiev, through Crimea's annexation by Russia to war in the eastern provinces of the country. Such activities are: street protests and manifestations, cultural exhibitions, conferences and lectures, workshops, Internet campaigns etc. In this paper I will present civic actions of two Ukrainian migrants' organizations located in Warsaw. City authorities considered social engagement and cultural diversity as one of directions for urban development. Moreover, occurrences in Ukraine were strongly supported by Polish government which saw them as successors of Polish anticommunism social movement form the 80' – Solidarity. Thus, Ukrainian

migrants' activities met warm welcoming and support from local officials. Focusing on cultural and social events, Ukrainian organizations tried to impact on local audience, composed by both migrants and host society members. On the one hand, they tried to gather and consolidate Ukrainian diaspora members, who due to their negative experience in homeland, were resisted to any kind of institutional (formal) actions. On the other, they wanted to influence Poles' perception on situation in Ukraine. Therefore, in my presentation I will demonstrate how Ukrainian migrants' organizations created and executed their narrative strategies towards occurrences in Ukraine, and how their actions intersected with policies of Warsaw city hall, transforming local non-governmental organizations' landscape.

CONSTRUCTING THE RELIGIOUS IDENTITY: HAGIOGRAPHICAL NARRATIVES, SAINTS AND SACRED SITES IN BADAKHSHAN

Vasiltsov Konstantin

Museum of Anthropology and Ethnography ("Kunstkamera") Russian Academy of Science, Department of Central Asia, Saint-Petersburg, Russia

vasiltsovk@mail.ru

In this paper I will discuss the role of the foundational texts of Isma'ili community of Badakhshan (Republic of Tajikistan), historical literature and folk hagiographic narratives (oral and written) that contain accounts on the Muslim saints and holy men associated with local sacred sites as the crucial elements in the constructing of Pamiri religious identity. According to the Islamic conception of sainthood, the category of saints includes members of Holy Family, prophets, either mentioned or not in Quran, heroes of Islamic sacred history, mystics as well as righteous persons known only in local tradition. In folk religion holy men are venerated as miracle workers, bearers of divine grace and authorities in moral and spiritual knowledge. Oral hagiographical narratives strongly influenced by Shi'ite written tradition as it is represented in the literary production of the Pamiri Isma'ilis usually emphasize two or three facts or episodes connected to the deeds or miracles of saint. At the heart of these stories is the event occurred in the past: the visit of holy man to certain place, his stop for the night meal, the fight against infidels etc. Hagiographical stories explain the origin of holy object, the need of veneration of sacred sites and indicate in one way or another the structure of rituals performed during pilgrimage. They link local places with the historical events and foundational figures of Muslim world and show how the Isma'ilis of Badakhshan understand their indigenous religious tradition.

MOLECULAR ANTHROPOLOGY

GENOMIC DIVERSITY AND ADMIXTURE OF POLISH NEOLITHIC POPULATIONS

Borówka Paulina[1], Strapagiel Dominik[2], Fernandes Daniel[3], Pinhasi Ron[3], Żądzińska Elżbieta[1], Grygiel Ryszard[4], Lorkiewicz Wiesław[1]

[1]University of Lodz, Department of Anthropology, Lodz, Poland
[2]University of Lodz, Biobank Lab, Department of Molecular Biophysics, Faculty of Biology and Environmental Protection, University of Lodz, Lodz, Poland,
[3]University College Dublin, Conway Institute of Biomolecular & Biomedical Research, Dublin, Ireland
[4]Museum of Archaeology and Ethnography in Lodz, Lodz, Poland

pborowka@biol.uni.lodz.pl

The Neolithic revolution was one of the most dramatic demographic events in the peopling process of Europe. Here we have investigated new approach to obtain high quality aDNA source using the methodology developed in the laboratory of School of Archaeology and Earth Institute (University College Dublin, Ireland), which is based on petrous bone powder sampled from petrous part of temporal bone. The adopted methodology allowed to receive high score of endogenous non-clonal DNA contents. Using Next Generation Sequencing method (NGS) to obtain a large amount of sequencing data, is currently the most popular molecular method in ancient DNA studies. The NGS approach was to sequence our sample in two steps - first one was performed to assess endogenous aDNA level, determine sex of individuals and confirm their aDNA status (mapDamage 2.0) on the Illumina® MiSeq platform (UCD Conway Institute of Biomolecular and Biomedical Research, University College Dublin, Ireland); second step was performed with NextSeq platform in Biobank Lab of the Department of Molecular Biophysics (University of Lodz, Poland) to obtain shotgun DNA sequences with planned coverage - 2x of the human genome. Analysis of sequencing data was performed on CLC Genomics Workbench by Biobank Lab Team (Department of Molecular Biophysics University of Lodz, Poland). Our individuals are representatives of the Brześć Kujawski Group of the Lengyel Culture (4600-4000 BC), the Neolithic archaeological culture from Kujawy region in North-Central Poland. Aforementioned cultural unit is a crucial from a point of view of the assimilation of the indigenous Mesolithic hunter-gatherers and Near Eastern farmers in north-central Europe, which was the part of population processes that shaped the modern European populations.

THE MLXIPL GENE C771G ((His241Gln) POLYMORPHISM RELATED TO TRIGLYCERIDES LEVELS IN SLOVAK WOMEN

Danková Zuzana[1], Čerňanová Veronika[2], Vorobeľová Lenka[2], Cvíčelová Marta[2], Siváková Daniela[2]

[1]BioMed - Center for Biomedical Research, Martin, Slovakia
[2]Comenius Universty in Bratislava, Faculty of Natural Sciences, Department of Anthropology, Bratislava, Slovakia

dankova@jfmed.uniba.sk

The MLXIPL gene is one of those which showed association with triglycerides and other lipoproteins. Several SNPs had been found and analysed in this respect. This study investigate association between C771G (His241Gln) polymorphism of MLXIPL gene and triglyceride levels in two groups of Slovak women and consider also other variables related to TG levels. Sample and methods: 200 women (mean age 52.96 ± 6.01 years) with cardiovascular complications and

244 women (mean age 47.52 ± 5.34 years) as a reference sample were recruited from different localities in Slovakia. The participants were interviewed during their medical examination with respect to several aspects of their health and lifestyle. The peripheral blood was used for biochemical analyses and DNA genotyping. MLXIPL variants were determined by nested PCR-RFLP method. Results: The frequency of the rare allele (G) was equal to 0.11 among women with cardiovascular complications and 0.15 in the reference sample. The results showed significantly different genotype distribution between two groups; with triglycerides below 1.99 mmol/l and above 2.0 mmol/l, respectively. Individuals with normal values of triglycerides had higher frequency of the G allele than those with elevated TG levels ($\chi 2=6.1556$, df=2, p=0.046). We found also gene-environment association between logTG levels, fat mass (%) and genotypes. A unit increase of FM (%) in individuals with the CC genotype was associated with the mean TG levels increase by 0.0186 mmol/l. In the case of CG genotype, the mean TG levels decreased by 0.01364 mmol/l. The model detected also a possible decrease of TG level by 0.0275 in the GG genotype, but the association just tended toward the significance, due to only three observations in this category. Conclusion: This association study revealed that the MLXIPL C771G genotypes might be associated with triglycerides levels. However, due to study limitations, further analysis would be needed.

ANALYSIS OF EFFICIENCY OF THE SINGLE-NUCLEOTIDE POLYMORPHISMS (SNP`S) PREDICTION TEST ASSOCIATED WITH THE RESPONSE TO A DIET AND PHYSICAL ACTIVITY

Džehverović Mirela[1], Pilav Amela[1], Čakar Jasmina[1], Marjanović Damir[2,3]

[1]Institute for Genetic Engineering and Biotechnology, University of Sarajevo, Bosnia and Herzegovina
[2]International Burch University, Sarajevo, Bosnia and Herzegovina
[3]Institute for Anthropological Research, Zagreb, Croatia

mirela.dzehverovic@ingeb.unsa.ba

SNP`s are reliable tool in molecular genetics researches. Beside many application in different association studies, as well as for diagnosis purposes, SNP`s are lately used for prediction of metabolic process that are associated with a diet and physical activity. The aim of our study was to examine efficiency of existing prediction SNP test (GENPerform, Genos company) possibly related to obesity and physical activity within 18 healthy volunteers. Samples (buccal swabs) were collected from 18 voluntaries ans sent to the Genos company. Volunteers personally data included IBM index, dietary practice and information about daily fitness and workout routine. Molecular analysis included 13 polymorphism detection of 10 genes (APOA2, MTHFR, MCM6, PPARG, FABP2, ADRB2, ADRB3, ACTN3, ACE, FUT2) positioned on various chromosomes. This set included 6 most frequent gene variants related to high body mass index (BMI), obesity, and excessive fat tissue level, 2 most frequent gene variants related to lactose intolerance, often the cause of digestive disorders, secretor status, related to carbohydrates metabolism, gene variants related to folate metabolism (vitamin B9), gene variants related to aerobic endurance, gene variants related to strength and power of muscles and gene variants related to more extensive reduction of fat tissue level during increased aerobic physical activity (endurance training). Results of these DNA analysis was used for expert evaluation by nutritionists and physiologists for obtaining optimal regulation of nutrition and exercise. Chosen volunteers have separately followed proposed suggestions which they were personally tracked for the six months by filling in suitable study form. Achieved results suggested helped with understanding genetic predisposition for the development of efficient individual program of nutrition and exercises.

B-THALASSEMIA IN SOUTHWESTERN SPAIN: MOLECULAR PORTRAIT OF A KEY ANTHROPOLOGICAL MARKER OF THE MEDITERRANEAN BASIN

Hernández Candela L.[1], Rodríguez Juan N.[2], Dugoujon Jean-Michel[3], García-Varela Giselle[1], Ropero Paloma[4], Novelletto Andrea[5], Cuesta Pedro[6], Calderón Rosario[1]

[1]Universidad Complutense de Madrid, Departamento de Zoología y Antropología Física, Facultad de Biología, Madrid, Spain
[2]Hospital Juan Ramón Jiménez, Servicio de Hematología, Huelva, Spain
[3]Université Paul Sabatier Toulouse III, CNRS UMR 5288 Laboratoire d'Anthropologie Moléculaire et d'Imagerie de Synthèse (AMIS), Toulouse, France
[4]Hospital Clínico San Carlos, Servicio de Hematología y Hemoterapia, Madrid, Spain
[5]Università Tor Vergata, Dipartimento di Biologia, Roma, Italy
[6]Universidad Complutense de Madrid, Centro de Proceso de Datos, Madrid, Spain
clhernan@bio.ucm.es

β-Thalassemia is one of the most common autosomic recessive disease across the Mediterranean. The β-Thalassemias are caused by mutations in HBB gene (11p15.5) being highly heterogeneous at a molecular level. To date, more than 200 causative mutations have been identified and the prevalent molecular defects in human populations are regionally specific. Carriers of β-Thalassemia are assumed as genetically protected against the invasion of Plasmodium falciparum. As a result, the pathology there would have been under positive selection in malaria-endemic areas, mirroring the case of heterozygous subjects for other haemoglobin-inherited disorders. Given that the southwestern end of the Iberian Peninsula has been an important focus of endemic malaria from ancient times, in this study we aim to perform a molecular screening of β-Thalassemia genetic variants in this territory. We have analyzed 55 samples with β-Thalassemia trait in the autochthonous population from Huelva. The province of Huelva shapes one end of the southern coast of Spain (Andalusian region) and borders Portugal. β-globin gene was studied by sequencing its three exons. The same procedure was applied to a general/control sample (n=100) with family origins from the same geographic area. Twelve mutations -in relation to the reference sequence- were detected being five of them deleterious. The variant IVS-I-1 G→A was found in a frequency that doubles the mean of Spain. Interestingly, a high prevalence of this mutation is also registered in other surrounding populations originating from southern Portugal and northwestern Africa. Our data evidences the presence of a complex and particular genetic substrate of β-Thalassemias in southwestern Iberia, and it is providing more insights into the genetic relationships between populations settled in the opposite coasts of this strategic region, which contains a broad gene pool of the western human metapopulation diversity.

GENOTYPE DISTRIBUTION AND METHYLATION LEVEL OF THE POLYMORPHIC REGION IN THE SEROTONIN RECEPTOR 2A GENE PROMOTER IN GERMAN AND CROATIAN HEALTHY VOLUNTEERS

Hranilović Dubravka[1], Blažević Sofia[2], Zill Peter[3]

[1]Department of Biology, Faculty of Science, University of Zagreb, Zagreb, Croatia
[2]Department of Molecular Biology, Ruđer Bošković Institute, Zagreb, Croatia
[3]Division of Psychiatric Genetics and Neurochemistry, Department of Psychiatry and Psychotherapy, Ludwig-Maximilians University Munich, Munich, Germany
dubravka@biolo.pmf.hr

Serotonin is a biologically active amine involved in regulation of many physiological functions through a variety of membrane-bound receptors, including the serotonin 2A receptor (HTR2A). The expression level of many genes is influenced by functional polymorphisms in their

regulatory regions, but also through epigenetic mechanisms triggered by environmental factors, including DNA methylation of cytosine residues in CpG dinucleotides. HTR2A promoter region encompasses two single nucleotide polymorphisms (SNPs). SNP rs6311 (-1438 G/A) is located just next to the methylated -1439 cytosine and the presence of A, instead of G allele, results in loss of one CpG site. In SNP rs6306 (-1421 C/T), presence of T, instead of C allele, leads to the loss of another CpG site. The third, non-polymorphic, CpG site, close to the two SNPs, is located at 1522 bp upstream from the start codon. We have compared genotype distribution of the SNPs rs6311 and rs6306, as well as average methylation of three CpG sites in the polymorphic region of the HTR2A promoter between healthy volunteers from Munich, Germany and Zagreb, Croatia. Genotype distribution was very similar in German and Croatian groups for both, rs6311 (30% GG, 50% AG, 20% AA, and 31% GG 48.5% AG, 20.5% AA, respectively) and rs6306 (74% CC, 26% CT and 76% CC, 24% CT, respectively). As expected, average methylation was significantly ($p<0.001$) influenced by the number of CpG sites, reflecting different genotype combinations. In addition, average methylation was significantly ($p=0.03$) influenced by group affiliation, probably reflecting different environmental influences on Munich and Zagreb inhabitants. Bearing in mind the interaction between genetic and epigenetic events in determining the level of gene expression, our results indicate a need for consideration of DNA methylation levels when correlating genetic polymorphisms to gene expression/function in multicentric studies on populations with similar genetic background.

APPLICATION OF MITOGENOMICS TO THE STUDIES OF ANCIENT HUMAN POPULATIONS

Juras Anna, Ehler Edvard

Adam Mickiewicz University in Poznań, Institute of Anthropology, Poznań, Poland
ajuras.anthropology@gmail.com

Ancient mitochondrial DNA (mtDNA) has been used in a variety of ancient human population studies. Most of the analyses were based on amplification of short fragments of the mitochondrial HVRI region, cloning and Sanger sequencing. However, the introduction of Next Generation Sequencing (NGS) and the development of capturing methods allow obtaining well covered complete mitochondrial genomes from ancient human samples. Here we present two application approaches of ancient mitogenomics in micro- and macro- scale studies. The first approach concerns the analyses of complete mitochondrial genomes for reconstructing maternal kinship relations among five individuals from two grave clusters dated to c. 4200BC (middle Neolithic), recovered from Krusza Zamkowa archaeological site in Poland. The second approach involves application of mtDNA to trace the origin and genetic relations of an Iron Age Scythians from present day Moldova with neighboring populations (first study), and genetic relations of Roman Iron Age populations from Kowalewko and Masłomęcz from contemporary Poland with central European societies (second study). Teeth were used for DNA extraction. Mitochondrial genomes were obtained by sequencing genomic libraries on Illumina HiSeq2500 or by capture enrichment method followed by sequencing on PGM Ion Torrent. The haplotypes of each individual were determined and statistical methods such as PCA, MDS and Network were conducted. We excluded maternal kinship among the analyzed individuals from the middle Neolithic and proved that whole mtDNA is powerful in tracing direct maternal relationship in ancient sets of individuals. We obtained 19 complete mitochondrial genomes of Scythians which revealed their mixed Asian and east European origin. We recovered 24 mitogenomes from Kowalewko and Masłomęcz, all being of European origin. We confirmed that complete mitochondrial genomes could be useful not only to trace the origin of ancient populations but also to identify specific lineages which are characteristic for different geographic regions.

ASSOCIATION BETWEEN EUROPEAN Y-CHROMOSOME LINEAGES AND CORONARY ARTERY DISEASE IN THE SLOVAK POPULATION

Petrejčíková Eva, Ferenc Peter, Hubcejová Jaroslava, Fecenková Michaela, Boroňová Iveta, Mydlárová Blaščáková Marta

University of Prešov, Faculty of Humanities and Natural Sciences, Department of Biology, Presov, Slovakia

petrejci@unipo.sk

Recently, studies on the human Y chromosome have also demonstrated that genetic variation within the male-specific region of the Y chromosome (MSY) could play a part in determining cardiovascular risk in men. We hypothesized that carriers of haplogroup I might be more prone to coronary artery disease (CAD) than men with other lineages of Y chromosome. This theory could explain a sexual dimorphism and a geographical difference in prevalence of CAD in Europe. We genotyped 216 Slovak patients with CAD and 189 control samples for biallelic polymorphisms within the male-specific region of the Y chromosome (MSY) on 7500 Fast Real Time PCR instrument (Life Technologies) using TaqMan assays. We followed the traditional cardiovascular risk factors among patient with paternal lineages I. Results: Based on genetic analysis, 53 patients representing 24.53% of total and 42 control samples (22.22%) inherited the haplogroup I. We did not confirm the proportion of risk in the Slovak population (odds ratio [OR] 1.1380, 95%CI 0.7168 to 1.8067, p=0.5835). None of traditional cardiovascular risk factors, including body mass index, blood pressures, lipids, glucose, insulin resistance, was associated with haplogroup I of the Y chromosome. We didn´t confirm the hypothesis, that haplogroup I is a novel independent risk factor for CAD in the Slovak population. Paternal lineage I was not associated with significantly increased risk of coronary artery disease compared with other ancient lineages of the Y chromosome. This study is the result of the project implementation VEGA 1/0563/14.

THE Catechol-O-methyl TRANSFERASE Val158Met POLYMORPHISM AND MENOPAUSAL COMPLAINTS AMONG SLOVAK WOMEN

Siváková Daniela, Čerňanová Veronika, Danková Zuzana, Cvíčelová Marta, Vorobeľová Lenka

Comenius Universty in Bratislava, Faculty of Natural Sciences, Department of Anthropology, Bratislava, Slovakia

sivakova@fns.uniba.sk

The present study examine the possible relationship between Catechol-O-methyl transferase (COMT) Val158Met polymorphism and incidence of menopausal symptoms in a cohort of Slovak women, and evaluate feasible effect of other variables (health status, psychical and physical status) contributing to development of menopausal symptomatology. The COMT gene is involved in metabolisms of 17β-estradiol (E2), and characterized by polymorphism causing altered catalytic properties of enzyme. The COMT may alter peripheral oestrogen concentration and via this path is connected with onset of menopause and manifestation of menopausal symptoms. Sample and methods: The total sample consisted of 367 women (mean age 49.11±5.86 years). Among them there were 180 premenopausal (mean age 45.06±3.81 years), 29 perimenopausal (mean age 49.41±3.94 years) and 158 postmenopausal (mean age 53.71±4.54 years) women. Data consider anthropometric and BIA measurements, specific menopausal questionnaire, blood and saliva samples. Genotyping of Val158Met polymorphism was carried out by PCR-RFLP. Results: The prevalence of rare allele Met was 44.17 % in the whole sample; the highest frequency of Met allele was achieved in premenopausal women (46.20 %). Polymorphism Val158Met was associated with feeling of bloating (p=0.034), lack of

enjoyment (p=0.027), feeling of depression (p=0.038), need to be alone (p=0.029), feeling of fear and panic (p=0.043), intolerance of other subjects (p=0.002), anxiety when leaving home (p=0.033), feeling of tiredness and exhaustion (p=0.044) and decrease in physical strength (p=0.039). Tree analysis and logistic regression showed significant association of vasomotor, psychological and somatic symptoms, respectively, with weight gain and gastro-intestinal problems, loneliness, a work overload, depression, discontent with free time, level of education and weak physical fitness. Conclusion: The results suggested a protective effect of the Met/Met genotype against occurrence of the psychological symptoms in the pre- and postmenopausal women and a risk of this genotype in the perimenopausal period.

ISLAND OF DUGI OTOK - THE GENETIC JEWEL OF THE ZADAR ARCHIPELAGO

Šarac Jelena[1], Šarić Tena[2], Havaš Auguštin Dubravka[1], Novokmet Natalija[1], Rootsi Siiri[3], Missoni Saša[1], Rudan Pavao[1,4]

[1]Institute for Anthropological Research, Zagreb, Croatia
[2]Institute for Anthropological Research, Zagreb, Croatia (at the time of research)
[3]Estonian Biocentre, Tartu, Estonia
[4]Anthropological Centre of the Croatian Academy of Sciences and Arts, Dubrovnik, Croatia
jelena.sarac983@gmail.com

Dugi otok is the largest, the longest and the highest island of the Eastern Adriatic Zadar archipelago. Because of its position, it is explicitly an outer island in Zadar's group, with its western coast positioned toward the open sea. The analyses of its Y chromosome genetic diversity revealed an untypical dominance of R1a1a1c*-M558 NRY haplogroup (≈27%), which could possibly be explained by the island's geographic proximity to the Island of Cres. Namely, one possible scenario could be that the genetic variation on Dugi otok was influenced more by maritime migrations and gene pool sharing with Cres than by influences from Pašman, Ugljan and the mainland, in addition to its long-term isolation. The relatively modest contribution of the I2a2-M423 clade on this island also does not fit within the typical north-south gradient of this lineage and is significantly lower than the prevalence on the neighboring islands of Ugljan and Pašman. However, we must take into account that Dugi otok is an open-sea island, on a considerable distance from mainland, and that the act of evolutionary forces is therefore more pronounced. Dugi otok also harbors input from western and northern/central Europe - the western European R1b-L23 clade is relatively rare in our general sample, while its occurrence on Dugi otok is three times higher and the northern Eurasian N lineages have also been detected on the island, serving as an additional signal of long-distance migrations and placing this subpopulation in an outlying position in the PC plots. Results of mtDNA analyses have also characterized Dugi otok as being the most different from other populations, largely due to the fact that one third of the individuals carry lineages private for that island.

STRONG INFLUENCE OF LEPTIN GENES ON CHOLESTEROL RATIO IN WOMEN OF ROMA ORIGIN LIVING IN CROATIA

Škarić-Jurić Tatjana, Peričić Salihović Marijana, Tomas Željka, Zajc Petranović Matea, Janićijević Branka, Smolej Narančić Nina

Institute for Anthropological Research, Zagreb, Croatia

nina@inantro.hr

Roma (Gypsy) are transnational European disempowered minority population, and the increasing prevalence of obesity and diabetes suggests that they are undergoing the epidemiological and nutritional transition. The genetic architecture of this population is also specific, characterized by their remote origin (India) and substantial endogamy. Concluding, they are socioeconomically and genetically very different from the surrounding majority European populations. To explore the association of serum leptin and leptin (LEP) and leptin receptor (LEPR) genes with anthropometric and biochemical nutritional status biomarkers in Croatian Roma population. The associations of leptin and 12 polymorphic sites in LEP (9) and LEPR (3) genes with anthropometric and biochemical indicators of nutritional status have been analyzed in 206 men and 208 women of Roma origin. The associations have been tested using ANOVA and chi2 test (for categorical variables constructed using standard cut-offs). The results showed that leptin concentrations as well as leptin system genes are associated with investigated indicators of nutritional status in Roma. The consistent impact of leptin genes on total cholesterol/HDL and LDL/HDL ratios in women is a prominent finding of this study. This relation (quantitative and qualitative variables) was significant in 6 out of 12 SNPs in women, while none of 12 SNPs showed significance in men. Several anthropometric indicators of obesity also showed significant association with LEP and LEPR loci (upper arm circumference, waist-hip ratio, triceps-subscapular skinfold ratios). Interestingly, serum leptin showed no relation to investigated LEP and LEPR loci. This study confirmed the important role of leptin, which showed significant association with almost all anthropometric indicators of obesity as well as the relation with several indicators of lipid and glycemic status. The consistently strong association of cholesterol ratio with LEP and LEPR polymorphisms in Roma women is an unexpected and outstanding finding of this study.

PHYSIOLOGICAL ANTHROPOLOGY

EXPLORATORY DIABETES ANALYSIS

Barbieri Davide, Zaccagni Luciana

University of Ferrara, Department of Biomedical Sciences and Surgical Specialities, Italy
davide.barbieri@unife.it

Diabetes is a chronic and invalidating disease. According to the WHO, there are about 60 millions of diabetics in Europe. Worldwide, diabetes kills 3.4 millions of people every year, 80% of them in low-income countries. According to a 2004 study, its prevalence is increasing from 2.8% overall in 2000 up to a predicted 4.4% in 2030. There can be several reasons behind this trend: the increase in the population mean age (diabetes is more likely to appear with aging), food availability and lack of physical activity (diabetes is strongly associated with caloric excess). According to the International Diabetes Association, in 2015 there were 216,000 cases of diabetes in Croatia, corresponding to a prevalence of 6.8% in adults (>19 years old). It is therefore necessary to investigate this disease thoroughly. In order to understand diabetes and its epidemiology, and find new possible medical hypotheses, Exploratory Data Analysis can be adopted. The present study shows the preliminary results of such techniques and methods applied to a large sample of Croatian diabetics aged 10-97, both sexes. Data were obtained from the Croatian Diabetes Association database, and included the following: age, sex, BMI, blood pressure, hemoglobin, cholesterol, triglycerides, onset age, diabetes type and possible major invalidities (amputations, angioplasty, stroke, blindness and renal disease).

THE ROLE OF PHYSICAL ACTIVITY IN PREVENTION AND TREATMENT OF DIABETES

Cigrovski Berković Maja

University Clinical Hospital Center "Sestre Milosrdnice", University of Zagreb, Croatia
maja.cigrovskiberkovic@gmail.com

In the early 2000 diabetes was recognized as one of the greatest world catastrophes. The estimations however gloom and pessimistic then could not comprehend the pandemic of diabetes we are seeing today. As many as 90-95% of the world population has type 2 diabetes, in which genetic background as well as exogenous factors primarily sedentary life, aging and lack of physical activity play crucial role. Interventions into one's lifestyle are therefore in addition to drug therapy important in both prevention and treatment of diabetes. Targets of good glycemic control are set individually and depend upon disease duration, comorbidities, chronic complications of diabetes and estimated life expectancy. Moreover, patients' habits, psychophysical status and motivation have to be taken into account when tailoring therapeutic goals. Physical activity is a cornerstone of both prevention and treatment of diabetes. In the prediabetes stage, regular physical activity has even more pronounced role, being more efficacious than drugs in prevention of progression to diabetes. Hence, even minimal engagements in physical activity (20 minutes of low to intermediate intensity, 10 minutes of higher intensity or 5 minutes spent in vigorous intensity physical activity 1-2x daily) decrease the risk of contracting type 2 diabetes for 46%. Although greatest benefit of physical activity is seen during early phases of disease, patients can have important improvements in glucoregulation during whole spectrum of disease, including latter stages where insulin is used to control the disease. As diabetes is equivalent of cardiovascular disease, physical activity has additional beneficial effects on prevention of atherosclerosis which is a common denominator of

chronic macrovascular complications of diabetes (myocardial infarction, cardial decompensation, cerebrovascular disease and peripheral vascular disease). Structured programs of physical activity should be a basis of type 2 diabetes treatment, and must receive high priority in treatment prescription. Similar effects are recorded in treatment of gestational diabetes (diabetes first recognized during pregnancy). The role of physical activity in type 1 diabetes is not so straight forward, but it is still very important in reduction of complications as well as in insulin sensitivity. Physical activity reduces insulin resistance and enhances the effect of either own or exogenously applied insulin, which, from clinical perspective, leads to less insulin required in achievement of optimal blood glucose levels. Mentioned effects can last from few hours up to 72 hours post physical activity. When physical activity is undertaken regularly and in a structured way, its benefits include reduction of blood glucose levels, reduction of body weight and direct positive effects on numerous cardiovascular risk factors, regardless of disease type.

THE ANTHROPOMETRIC SOMATOTYPE DIFFERENCES BETWEEN MALE AND FEMALE TENNIS PLAYERS 10 TO 16 YEARS OF AGE IN CROATIA

Čalogović Tea, Šitić Karla, Marinović Mladen

University of Split, Kinesiology, Split, Croatia

tcalogovic@gmail.com

This study was designed to identify the major differences in the Heath Carter anthropometric somatotype of male and female ranked tennis players in Croatia between the ages of 10 to 16 years. Subjects (N = 108) were 49 male and 58 female volunteer junior tennis players of different teams in Dalmatia, Croatia. The Heath Carter Anthropometric Somatotype Method was used in obtaining the somatotype ratings. Total of 12 anthropometric measurements were taken. For a better evaluation subjects were set in three groups depending on their age. First group from the age of 10 to 12 years, second from 12 to 14 years and third from 14 to 16. They were also devided by gender. The evaluation through groups was done to see how the somatotypes is changing through the years. In the further text when representing somatotypes first number describes endomorphy, second mesomorphy and third ectomorphy. For first group (24 males and 16 females) somatotype for males was 2.58 4.33 3.68, and for females was 2.36 3.57 4.29. Significant difference was found in mesomorphy, which is represented by $F=5.62$ and $p<0.02$. Second group (19 males and 24 females) somatotype for males was 2.67 3.77 3.93, and for females was 3.03 2.87 4.14. Significant difference was found in mesomorphy, which is represented by $F=6.84$, and $p<0.01$. Third group (6 males and 18 females) somatotype for males was 2.04 3.22 4.17, and for females was 3.51 3.26 3.50. Significant difference was found in endomorphy, which is represented by $F=10.31$, and $p=0.005$. For females significant differences through all of the groups was found in endomorphy, which is represented by $F=4.72$ and $p<0.01$. For males there was no significant differences through all groups in all segments of somatotypes.

DENTAL AGE ESTIMATION IN ADULTS: EAST-CENTRAL EUROPE REGION

Dvorak Daniel

Institute of Criminalistics, Prague, Czech Republic

dvorak.dd@seznam.cz

The main objective of this study is to create method for the age estimation from ground sectioned teeth, which is supposed to underpin contemporary population of East-Central Europe better than currently widely used ones, predominantly based on modifications of Gustafson´s aging method. Additional objective is elimination of subjective evaluation. One hundred twenty five mono-radicular teeth, unaffected by pathological processes or dental treatments, were analysed. The samples were taken from 70 subjects, whose age at death was between 18 and 89 years. Extracted and cleaned teeth were mounted in epoxy resin, and subsequently ground by Grinder-Polisher in the bucco-lingual plane. The ground sections were evaluated using the reflected light microscope. Length measurements were performed in a medial plane, width measurements were perpendicular to this plane. All the statistical analyses were performed using Statistica 12 program. The Pearson correlation coefficient between length of root transparency (T) and age was 0.81, and between that of secondary dentin deposit (SD) and age 0.75. Other dimensions or their different combinations were correlated rather weakly. Two equations for age estimation were derived using linear and nonlinear regression. The mean absolute error of estimation was 4.12, and 3.99. In cases where more than one tooth was evaluated, the mean absolute intra-individual difference was 3.62 y. The teeth used for this study were collected from dead persons coming from East-Central Europe. The strongest correlation with age shows length of root transparency and length of secondary dentin deposit. For this reason, these marks were utilized for regression equations calculations. As compared with methods based on modifications of Gustafson´s method, subjective evaluation is reduced and new calculated equations should reflect the current population more precisely.

PUPILLARY LIGHT REFLEX DURING SUCCESSIVE IRRADIATION OF EXTREMELY SHORT BLUE- AND GREEN-PULSED LIGHTS

Katsuura Tetsuo[1], Lee Soomin[2], Muto Naoko[1], Shimomura Yoshihiro[1]

[1]Graduate School of Engineering, Chiba University, Chiba, Japan
[2]Center for Environment, Health and Field Sciences, Chiba University, Chiba, Japan

katsu@faculty.chiba-u.jp

The light has various influences on every creature including humans. Recently, quite a few studies have focused on the non-image-forming (NIF) effects of illumination on humans have been done in the field of physiological anthropology. The intrinsically photosensitive retinal ganglion cells (ipRGCs) play important roles in NIF response, including the suppression of pineal melatonin synthesis, pupil constriction. Recently, it was pointed out a possibility that the input from cones and rods affected ipRGC response. Hence, we conducted an experiment using extremely short (1 ms) blue- and green-pulsed light to examine the pupillary light reflex, and to know the effects of green-pulsed light which successively irradiated just after (250 - 1000 ms) blue-pulsed light. Nine healthy female subjects participated in this study. After 30 min of dark adaptation, the subject was exposed to eight pulsed-light conditions (pulse width; 1 ms) as follows: blue-pulsed light of 20 μW/cm2 (B), green-pulsed light of 20 μW/cm2 (G), double intensity of blue-pulsed light (2B), simultaneous exposure to blue- and green-pulsed light (B+G0), and successive irradiations of blue- and green-pulsed light at the following intervals; 250 ms (B+G250), 500 ms (B+G500), 750 ms (B+G750), and 1000ms (B+G1000). We recorded the pupil diameter by a infrared camera system. The pupil constrictions after B, G, 2B, B+G0 and

B+G250 were around 1.7 mm. The pupil constrictions during B+G500, B+G750, and B+G1000 were remarkable, and the actual pupil constriction of those conditions were over 2.0 mm. The waveforms of pupil constriction during B+G750 and B+G1000 were bimodal. Pupil constriction in B+G250 and B+G500 showed a single waveform, even though the pulsed light was irradiated twice. We supposed that the intracellular electrical activity in the retina accounted for these results.

EFFECTS OF FLICKER- AND NON-FLICKER-LIGHT ON MELATONIN SECRETION AT NIGHT

Kozoaki Tomoaki, Yuki Hidaka, Kenshin Katami, Jun'ya Takakura

Kyushu University, Faculty of Design, Japan

kozaki@design.kyushu-u.ac.jp

Light is well known to have most powerful effect on our circadian system. Bright light at night suppresses melatonin secretion and delays circadian phase. The effects of the light at night might induce health risk such as insomnia and cancer. Novel photoreceptors, melanopsin-containig retinal ganglion cells (mRGCs), might involve the physiological effects of the light. Some research implied that the response of mRGCs to the light sustain after the end of the light exposure. In this study, we evaluate light-induced melatonin suppression on non-flicker light and flicker light conditions. Twenty male subjects (mean age; 22.3 ± 1.0) gave informed consent to participate in this study. The experiment was started at 0:00 h under the control light (<10 lx). The subjects were exposed to the light conditions for 1.5 h from 1:00 h. The light conditions were dim (< 10 lx) light, non-flicker light, flicker light. The duty rate of flicker light was 70 %; the light turn on 70 % and turn off 30 % on a light pulse. To adjust the irradiance (energy per unit time) of flicker- and non-flicker-light conditions to same level (0.3 μW/cm2), the light intensity of the flicker light during lighting was 30 % higher than that of non-flicker light. Saliva sample were taken before the light exposure (0:55 h) and every 30 minutes during the light exposure. Decrements of melatonin level, subtraction pre-light exposure from post-light exposure, on flicker light condition were larger than that of non-flicker light conditions. These finding suggest that flicker light might have strong impact on melatonin secretion compared to non-flicker light. The reason may be that mRGC responded to the flicker light as 30 % high intensity non-flicker light

IMPACT OF JUMPING DISCIPLINES ON THE DISTRIBUTION OF BODY MASS IN LOWER LIMBS OF ATHLETES

Kutac Petr

Human Motion Diagnostics Center, University of Ostrava, Czech Republic

petr.kutac@osu.cz

Long and high jumps are among disciplines in which performance of one of the lower limbs affects the overall sports performance. In both of these disciplines this concerns a lower limb (the take-off limb) that performs the take-off. The prerequisite for an adequate take-off, and therefore the best possible performance, is the strength of the take-off limb. So, the question is whether this fact is also reflected in different body composition values of the lower limb that performs the take-off and the one that is free. The objective of the study is to assess the impact of a long-term specific load on the take-off lower limb based on a segmental body composition analysis of lower limbs of athletes. The sample team included 19 probands (10 males, 9 females); their average age was 18.1±2.8 years. The condition for inclusion into the research was

participation in specialised training in the given discipline for at least 2 years. The segmental analysis of the body composition parameters of lower limbs was conducted through the DXA method. Measured parameters included body fat (BF), fat free mass (LEAN), bone mineral content (BMC), bone density (BMD). To assess statistical significance of differences between the take-off lower limb and the free one a paired t-test was used. When evaluating the segmental analysis of representation of individual fractions of body composition, we found statistically significant differences between the take-off and free limb only in bone mass ($p<0.001$). The take-off limb contained a higher ratio of BMC and BMD. These parameters also demonstrated practical significance. Its value was on the level of mean modification (Cohen´s $d = 0.5$). This increased value of the bone mass share is likely to be the consequence of aftershocks that have an effect on it at the moment the take-off step is performed.

EATING BEHAVIOUR AND BODY COMPOSITION IN JAPANESE SCHOOL CHILDREN

Nakamura Harunobu[1], Ohara Kumiko[1], Kouda Katsuysu[2], Fujita Yuki[2], Momoi Katsumasa[3], Fujitani Tomoko[1], Miyawaki Chiemi[4], Mase Tomoki[5]

[1]Graduate School of Human Development and Environment, Kobe University, Kobe, Japan
[2]Department of Public Health, Kindai University, Faculty of Medicine
[3]Faculty of Health and Welfare, Tokushima Bunri University
[4]Department of Early Childhood Education, Heian Jogakuin (St. Agnes') College
[5]Faculty of Human Development and Education, Kyoto Women's University
hal@kobe-u.ac.jp

Recent studies reported that eating behaviour has an association with a desire for thinness or perception of body shape. It is supposed that eating behaviour has also association with anthropometry or body composition, however, their associations have not been fully studied. In the present study, we investigated the relationship between eating behaviour and body composition in Japanese school children. We performed a cross-sectional design study. The subjects were 401 school children (198 boys and 203 girls) in 4 elementary schools and 2 junior high schools in Hyogo Prefecture in Japan. We conducted questionnaire on eating behaviour and measured anthropometry and body composition. Eating behaviour was assessed by the Japanese version of the Dutch Eating Behaviour Questionnaire for children (DEBQ-C). The DEBQ-C is a 21-item self-rated questionnaire and is divided into three subscales: restrained eating (7 items), emotional eating (7 items), and external eating (7 items). Body composition was measured using a single dual-energy X-ray absorptiometry scanner. This study was approved by the internal review board. Body composition and DEBQ-C scores were significantly different between boys and girls. DEBQ-C positive relationship with anthropometry and body composition in both boys and girls, and more relationships were observed in girls than in boys. From these results, gender differences were shown in relationship between eating behaviour and anthropometry or body composition. Disclosure: The authors have no conflicts of interest to disclose. The fragment of the research study presented in the article was supported by Grant-in-Aid for Scientific Research (#22370092, #24370101, and #25650156) from the Japan Society for the Promotion of Science.

INFLUENCE OF A PERSISTENT METOPIC SUTURE ON THE FRONTAL SINUS DEVELOPMENT

Nikolova Yanakieva Silviya[1], Toneva Hristova Diana[1], Georgiev Georgiev Ivan[2]

[1]Bulgarian Academy of Sciences, Institute of Experimental Morphology, Pathology and Anthropology with Museum, Department of Anthropology and Anatomy, Sofia, Bulgaria
[2]Bulgarian Academy of Sciences, Institute of Information and Communication Technologies, Department of Scientific Computations, Sofia, Bulgaria; Bulgarian Academy of Sciences, Institute of Mathematics and Informatics, Mathematical Modeling and Numerical Analysis, Sofia, Bulgaria

nikolova.sil@gmail.com

The metopic suture runs between the halves of the fetal frontal bone and is the first one to close physiologically, commonly during the first year of life. Sometimes the metopic suture persists in adults, a condition known as metopism. The relation between metopism and underdevelopment of the frontal sinus is controversial. This study aimed to evaluate the influence of the metopic suture retention on the frontal sinus development. A series of contemporary adult male skulls from the Military Mausoleum with Ossuary, National Museum of Military History (Bulgaria) was investigated. The skulls belonged to soldiers died in the wars at the beginning of the 20th century. The total number of the sample included 82 skulls grouped into two series: a control one consisted of 42 skulls without traces from a metopic suture, and a second series of 40 skulls with an entirely preserved metopic suture. Visualization of the frontal sinus was performed via digital radiography. The statistical significance of the differences between both series was assessed using chi-square test. The incidences of the uni- and bilateral aplasia of the frontal sinus were more frequent in the series with a persistent metopic suture (27.5%) compared to the control one (4.8%). The cases of uni- and bilateral hypoplasia were commensurable in both series (22.5% metopic suture; 28.6% control). A frontal sinus hyperplasia was observed only in the control series (11.9%). The differences between both series were statistically significant at $p<0.01$. It is worth noting that the frontal sinus underdevelopment in the metopic suture series was exclusively expressed on the right side. The metopic suture retention is often related to a frontal sinus aplasia and/or hypoplasia i.e. exerts a repressive influence. Metopism is not a certain indicator but is a prerequisite for presence of an underdeveloped frontal sinus.

USING DIFFUSE IDIOPATHIC SKELETAL HYPEROSTOSIS AS AN AGE INDICATOR

Tarp Peter, Boldsen Lier Jasper, Olsen Bottos Trine

University of Southern Denmark, Department of Forensic Medicine, Odense, Denmark
trine.bottos@gmail.com

Age estimation is a cornerstone in physical anthropology, but the methods used are continually being changed due to progress in the field. Age estimation methods are still under development and become more precise, especially for old age individuals. Since age estimation of skeletons involves changes in the morphology of the bones, estimating the age of older individuals can be challenging. This is due to the fact that the morphological changes in the adult skeleton are all a consequence of the deterioration of the bones which varies among individuals. Therefore, at this time, age determination of adult skeletons must involve many age indicators to narrow down the age interval enough to be useful. Diffuse Idiopathic Skeletal Hyperostosis (DISH) is a condition found in the vertebral column. It causes stiffness of the spine, due to calcification of the ligaments running along it. DISH is mostly found in older individuals, which

indicates that it could be very useful in age estimation, since many of the known age indicators are not confined to the elderly. This study looks at the presence of DISH in a modern Danish population with the goal of using the condition as an age indicator in physical and forensic anthropology. CT-scans are used to determine the presence of DISH from 3D-images of the vertebral column. Since DISH has also been connected to metabolic diseases like diabetes, this will be taken into account as possible confounding factors. From this, we hope to find and describe the connection between DISH and age, in order for the condition to be used as an age indicator.

ACCURACY OF LINEAR MEASUREMENTS OBTAINED BY THREE-DIMENSIONAL COMPUTED TOMOGRAPHY MODELS ON DRY MANDIBLES

Toneva Hristova Diana[1], Nikolova Yanakieva Silviya[1], Georgiev Georgiev Ivan[2]

[1]Bulgarian Academy of Sciences, Institute of Experimental Morphology, Pathology and Anthropology with Museum, Departmen of Anthropology and Anatomy, Sofia, Bulgaria
[2]Bulgarian Academy of Sciences, Institute of Information and Communication Technologies, Department of Scientific Computations, Sofia, Bulgaria; Bulgarian Academy of Sciences, Institute of Mathematics and Informatics, Mathematical Modeling and Numerical Analysis
ditoneva@gmail.com

The aim of this study was to establish the reliability of linear measurements taken on 3D models of human mandibles created by computed tomography and to compare these measurements with corresponding conventional ones taken directly on the dry mandibles. Ten mandibles from the Military Mausoleum with Ossuary, National Museum of Military History, Bulgaria were scanned through computed tomography. The CT scanning was performed on a Nikon XT H 225 system. The STL format of the 3D models was generated using VG Studio Max 2.2 software. Ten linear measurements between definite anatomical points were taken on both dry mandibles and 3D models. The conventional measurements of the mandibles were taken with a digital caliper and the digital measurements were accomplished on the 3D models using the free software Geomagic Verify Viewer (3D Systems, Inc). All parameters were measured twice by two examiners. The intra- and inter-examiner reliability was estimated using intraclass correlation coefficient. The intra-examiner measurement error for the digital measurements of both examiners was also calculated using Dahlberg's formula. The comparison between digital and conventional measurements was performed using analysis of variance with repeated measures. According to the results, intraclass correlation coefficients showed almost perfect intra- and inter-examiner reliability for all digitally and directly taken measurements. The measurement error for digital measurements ranged from 0.26 mm to 0.60 mm for both examiners. The repeated measure ANOVA did not establish statistically significant differences between both measuring methods for any of the metric parameters. The overall mean difference between both measuring methods was 0.37 mm, as most of the distances tended to give lower values on 3D models.

C-LINE POLYMORPHISM IN HUMAN POPULATIONS

Floris Giovanni

University of Cagliari, Natural Sciences, Cagliari (Italy)

giofloris@alice.it

In 1970, Plato classified the terminations of the C-line (the main line departing from the c triradius at the base of the ring finger) into four modal types: ulnar, radial, proximal and absence. The proximal type can be combined with absence and the radial type/ulnar type ratio can be calculated to determine if this ratio is less than 1 or greater than 1. The four modal types and the radial type/ulnar type ratio are reported for various male populations from the five continents. The examined populations are heterogeneous and can be divided between those with a radial type/ulnar type ratio less than 1 (Africa, America, South Asia, Oceania) and those with a ratio greater than 1 (Europe, West-Central Asia). The results suggest that dermatoglyphics can still be useful in characterizing poplations together to other methods such as analysis of DNA and its polymorphisms.

SEXING THE HUMAN CRANIA USING 3D MESH-TO-MESH COMPARISON TOOLS: A REVIEW OF ALTERNATIVE COMPARISON ALGORITHMS

Jurda Mikoláš, Urbanová Petra, Jandová Marie

Masaryk University, Department of Anthropology, Brno, Czech Republic

mikolasju@gmail.com

Assessment of a biological profile is the primary task when unknown skeletal remains are submitted for anthropological examination. In order to increase reliability and accuracy rates novel techniques and state-of-the-art technologies are being constantly invented and tested. Attention has increasingly focused on methods that exploit biological information encoded in the studied morphology by means of three-dimensional digital models. Recently, mesh-to-mesh comparison approach showed promises in sex and ancestry assessment. In the present study, the mesh-to-mesh approach has been tested on the basis of sample of 80 human crania, which originated in two documented Brazilian collections (University of São Paulo and Federal University of São Paulo, Brazil). 3D digital models of the crania were produced using photogrammetry and laser scanning and morphology of selected regions (supraorbital region, middle face and mastoid process) was quantified by computing inter-mesh dissimilarity measures utilizing in-house freeware FIDENTIS Analyst (www.fidentis.com). Two automated algorithms incorporated into the program were tested – one based on calculating point-to-point distances, the other comparing curvature of the polygonal meshes. The predictive models were evaluated in terms of yielded accuracy rates and confronted with those provided by 3D-ID software (www.3d-id.org), which estimates sex and ancestry by processing Cartesian coordinates of craniometrics points. The results showed that both algorithms were capable of depicting sexually dimorphic shape and size variations encoded in the three-dimensional cranial models. Furthermore, both tested measures of dissimilarity outperformed the landmark-based diagnosis as the observed accuracy rates approached 90%. Alternative demarcations of the analyzed regions and comparison algorithms, however, provided highly variable accuracy rates. Further effort should focus on automation of the model preparation, which would facilitate standardization of the diagnostic process and is essential for development of an autonomous diagnostic software.

POSTURAL EFFECT ON DYNAMIC CEREBROVASCULAR RESPONSES TO SINUSOIDAL LOWER BODY NEGATIVE PRESSURE

Keita Ishibashi, Oyama Fuyuki, Yoshida Hisao, Iwanaga Koichi

Chiba University, Chiba, Japan

ishibasi@faculty.chiba-u.jp

With respect to bipedalism in humans, orthostatic cardiovascular regulation plays an important role in coping with the gravitational stress on earth. The physiological functions of this regulation against static orthostatic load have been investigated in many previous papers. However, the dynamic characteristics of cerebrovascular regulation, which maintains the brain blood flow under the transient changes of orthostatic stress, have not yet been fully elucidated. In this study, we focused on the interaction between static and dynamic orthostatic loads on cerebrovascular responses. Responses to a static load were investigated using two different postures (supine and seated), and those to a dynamic load were investigated using sinusoidal lower body negative pressure (SLBNP). Dynamic cerebrovascular response (DCR) was evaluated by middle cerebral artery blood flow velocity (MCAv) responsiveness to fluctuations in arterial pressure and central venous pressure. MCAv, mean arterial pressure (MAP), and thoracic impedance (Z0) were measured in ten male subjects. Two different frequencies of SLBNP (0.011-Hz and 0.056-Hz) were examined in supine and seated postures. The transfer functions of gains from MAP to MCAv (Gain-MCAv/MAP), and from Z0 to MCAv (Gain-MCAv/Z0) were calculated at the point of the target frequency of SLBNP. Our results for Gain-MVAv/MAP showed a low-pass filter characteristic (a lower frequency input drives higher gain); however, those for Gain-MCAv/Z0 showed a high-pass filter characteristic (a higher frequency input drives higher gain). Postural effect was significant in Gain-MCAv/Z0, but not in Gain-MCAv/MAP. Under the seated-posture condition, Gain-MCAv/Z0 was found to be increased and the high-pass filter characteristic was also enhanced. The high-pass filter characteristic of Gain-MCAv/Z0 is considered to represent cerebrovascular regulation of prompt adjustment against a rapid reduction of venous return.

INDIVIDUAL VARIATION IN THERMOGENESIS DURING COLD EXPOSURE

Maeda Takafumi[1], Hayashi Masanobu[2]

[1]Kyushu University, Faculty of Design, Fukuoka, Japan
[2]Kyushu University, Graduate School of Design, Fukuoka, Japan

maeda@design.kyushu-u.ac.jp

Thermoregulatory responses to cold exposure are mainly peripheral vasoconstriction and thermogenesis. There were previously demonstrated that cold-induced vasoconstriction was occurring rapidly and strongly in young adult compared with older one and was enhanced by aerobic exercise training, resulting in individual variation. Cold-induced thermogenesis divide into shivering and non-shivering thermogenesis (NST). It is clearly that muscle mass is influence factor of individual variation in shivering thermogenesis, because shivering is occurring at skeletal muscle during cold exposure. However, it is unclear the other influence factors to cold-induced thermogenesis and its individual variation. The purpose of this study are to reveal the effects of peripheral vasoconstriction and basal metabolic rate on cold-induced thermogenesis, and to clarify the individual pattern of cold-induced shivering and NST. According to experiment 1 which ten young adult males were exposed to cold (10°C) for 90 min, there was positive correlation between changing in cutaneous blood flow and oxygen consumption during cold exposure. Furthermore, there was negative correlation between basal metabolic rate and cold-induced change in oxygen consumption. These results suggested that cold-induced

thermogenesis was affected by not only peripheral vasoconstriction response to cold but also basal metabolic rate. According to experiment 2 which 38 young adult males were exposed to cold by decreasing room temperature from 28°C to 5°C for 90 min, three types of thermogenesis were observed. First type was no change in thermogenesis that their basal metabolic rate was comparatively high (High BMR type). Second showed increase in NST prior to shivering. Third showed increase in thermogenesis coincided with only shivering (Shivering type). Moreover, we observed the increase in NST prior to shivering in BAT-negative person in other experiment. These evidences indicate that the cold-induced NST is occurred by not only BAT (NST-BAT type) but also viscera and/or skeletal muscle (NST-nonBAT type).

DIABETES – THE DISEASE OF THE NEW AGE

Rahelić Dario

Clinical Hospital Dubrava, Zagreb, Croatia

dario.rahelic@gmail.com

The relevance of diabetes, obesity and hypertension, as important public health challenges, is increasing worldwide. The growing prevalence of obesity is increasingly recognized as one of the most important risk factors for the development of hypertension. This epidemic of obesity and obesity-related hypertension is paralleled by an alarming increase in the incidence of diabetes mellitus and chronic kidney disease. Patient compliance and attitudes towards their disease are extremely important in management of such patients. Medical anthropology or "applied anthropology in medicine" developed as a distinct subfield of anthropology aiming at studying human health and disease, healthcare systems, and biocultural adaptation. It tends to focus on the interaction of social, environmental and biological factors which influence health and illness both in the individual and the community as a whole. Integrative, interdisciplinary and holistic approach, enables medical anthropology to have a wider scope and understand that healthcare system can only be effective in a population if it reflects specific cultural values and norms. Such an approach increases patient compliance and influences attitudes towards their disease, thus enabling more cost-effective disease prevention, preventive measures specific from population to an individual (personalized), early disease prevention that may start even before a person is born. Medical anthropology based interventions in healthcare system organization can optimize its usage and increase its availability, patient compliance and consequentially treatment effectiveness. This is of the utmost importance today, when healthcare systems face many problems, with increased costs, limited resources and its effectiveness constantly being questioned.

CIRCADIAN PREFERENCE AND PHOTOPERIOD AT BIRTH IN ASIAN POPULATION

Takao Motoharu

Tokai University, Hiratsuka, Japan

takao@keyaki.cc.u-tokai.ac.jp

Circadian rhythm governs many biological and cognitive functions in humans. In most cases, this rhythm displays interindividual differences. The diurnal preference, designated as morningness-eveningness is one of the most important such difference. The morningness-eveningness does not only include the sleep wake cycle, but also covers phase position of body temperature, alertness, and performance. However, the determinant factors for morningness-eveningness are still largely unknown. Some research groups conducted a series of studies in Caucasian adult populations and reported that photoperiod at birth was associated with

morningness-eveningness. Individuals born during autumn or winter, short photoperiodic seasons, are prone to be morning-types, whereas individuals born during spring or summer, long photoperiodic seasons, tend to be evening-types. Currently, no studies have investigated the association between photoperiod and morningness-eveningness in other ethnic populations. We examined the effect of the photoperiod at birth on morningness-eveningness in Japanese individuals in metropolitan Tokyo and its suburban area (the Greater Tokyo Area), where 27% of the entire Japanese population resides. The Japanese are primarily descendents of native Asian populations. Our results demonstrated that neither photoperiod nor season of birth modulated morningness-eveningness in the Japanese population. Two biological differences are reported to exist between Caucasians and Asians: polymorphisms of circadian clock genes and difference in ocular photosensitivity. These ethnic differences might characterize the circadian photosensitivity in infancy.

THE EFFECTS OF MORNING AND NIGHT LIGHTS ON PHASE SHIFT OF CIRCADIAN RHYTHM AND MELATONIN SUPPRESSION AMONG YOUNG ADULTS WITH WIDE RANGE-SCORE OF MEQ

Yasukouchi Akira[1], Higuchi Shigekazu[1], Kudo Susumu[2], Oota Hiroki[3], Tanaka Saki[1]

[1]Department of Physiological Anthropology, Kyushu University, Fukuoka, Japan
[2]Faculty of Technology, Kyushu University, Fukuoka, Japan
[3]School of Medicine, Kitasato University, Sagamihara, Japan
yasukouc@design.kyushu-u.ac.jp

It has been known that morning and night lights respectively advance and delay the phase of circadian rhythm. Especially, morning light makes a role of resetting the cycle to 24 hours in persons with the cycle longer than 24 hours, which is important biological adaptation molded during long term of hunter-gatherer age. On the other hand, artificially bright light at night in modern society did not exist in such an old age, which resulted in no necessity of adaptation to night light. Furthermore, artificial light causes chronologically various behavioral types such as morningness and eveningness in human circadian rhythms (CR). The purposes in this study were to examine how the differences in score of MEQ (morningness-eveningness questionnaire) of the subjects affect the phase shift of CR and nocturnal light induced melatonin suppression (NLML) when the subjects with wide range of MEQ-score were exposed to morning and night lights under the time of day adjusted by individual CR. Totally 49 subjects of young male adults with MEQ score ranging from 36 to 67 were employed. The subjects were divided into two groups, one was exposed to morning light with 2000 lx for 3 hours and another was exposed to night light with 1000 lx for 2 hours. The phase shift of CR was evaluated by dim light melatonin onset (DLMO) which was determined in advance and defined as 0h. The time of light exposure in the morning was from +10h to +13h and from +2h to +4h at night. It was suggested that subjects with smaller MEQ score (direction to an eveningness type) tended to show longer cycle of CR, however, who showed greater advance of CR-phase caused by morning light and smaller delay of CR-phase by night light. It was implied that individual phase of CR tended to be kept constant independent of differences in MEQ score and cycle period of CR when they were exposed to biologically adjusted morning and night lights.

IS OXIDATIVE STRESS A UNIVERSAL COST OF REPRODUCTION IN WOMEN?

Ziomkiewicz Anna[1], Frumkin Amara[2], Sancilio Amelia[2], Bribiescas Richard G.[2]

[1]Polish Academy of Sciences, Wroclaw, Poland
[2]Yale University, Department of Anthropology, USA

annaziomkiewicz@gmail.com

Life history theory predicts a trade-off between female energetic investment in reproduction and somatic maintenance, which can result in accelerated senescence. Oxidative stress, the imbalance between the production of reactive oxygen species and antioxidant defenses, is postulated as physiological mechanism to underlie it. Our recent study evidenced this trade-off – postmenopausal, rural women from Poland with high reproductive effort had a higher level of oxidative stress than women with low reproductive effort. It is however, unclear if such an effect is consistent across other human populations and environments. Here we presents results of a study conducted in women from Connecticut, US. Serum samples were collected from 65 pre- and postmenopausal women. Samples were analyzed for levels of biomarkers of oxidative damage (8-OHdG) and antioxidative defense (CuZnSOD). Questionnaire data were obtained to assess the reproductive effort – number of pregnancies and children, their sex, time spent pregnant and lactating. In contrast to our previous results no association between reproductive effort and oxidative stress was found in postmenopausal women. However, in premenopausal women oxidative damage was negatively associated with reproductive effort. Women with a higher number of children and pregnancies had a lower level of 8-OHdG. Interestingly, 8-OHdG level was also negatively associated with the number of sons. The association remained significant when confounding factors such as age, BMI, physical activity and sleep time were introduced to the models. These results show that oxidative stress as a cost of reproduction may not occur in energy-abundant environments. In these environments, somatic correlations rather than reproduction-maintenance trade-offs might be observed instead.

AGEING OF BONE STRUCTURE AND THE RISK OF OSTEOPOROSIS IN THE MENOPAUSAL TRANSITION

Zsakai Annamaria, Feher Virag Piroska, Bodzsar Eva

Eotvos Lorand University, Department of Biological Anthropology, Budapest, Hungary
zsakaia@elte.hu

The purpose of the research was to study the relationship between menopausal status and the bone structure in the menopausal transition. A random sample of 1932 Hungarian women (aged 35+ years) was to be enrolled in the study between 2012 and 2015. Bone mass was estimated by the Drinkwater-Ross anthropometric four-component method. Bone structure parameters were assessed by a quantitative ultrasound (QUS) device (DTU-one device). Subjects were divided into premenopausal, perimenopausal and postmenopausal subgroups on the basis of their menstrual history. High and very high risk of osteoporosis were identified by using the thresholds of QUS parameters recommended for the DTU-one device. The reference quantitative ultrasound data in the studied age-group for the DTU-one sonometer were determined. By considering the changes in QUS parameters and the bone mass by ageing and reproductive ageing an intensive, menopause-related change from the late 40s and then another significant change from the early 70s were observed in bone structure. The bone mass decreased while the porosity of bones decreased by age and by menopausal status. According to the international QUS parameters thresholds for osteoporosis, on average 15-17% of women are at very high risk for osteoporosis in the premenopausal status and after the menopausal transition the decreased

level of female sex hormone production doubles this risk of osteoporosis for the beginning of the postreproductive period, and triplicates this risk for the 70s of women. The national and global prevalence of diagnosed osteoporosis patients and osteoporotic fractures confirms this exponential increase in the risk of osteoporosis in females. The premature menopause was found to be accompanied by the increased risk of osteoporosis during the whole studied age interval. The present results emphasize the importance of menopausal status assessment in the screening for the age-related increase of osteoporotic risk.

20th Congress of the European Anthropological Association

European Anthropology in a Changing World: From Culture to Global Biology

Zagreb, Croatia 24th – 28th August 2016