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SINCE 1959

“THE PURPOSE
OF *Anthropology*
IS TO MAKE THE WORLD
SAFE FOR
HUMAN DIFFERENCES.”

RUTH BENEDICT

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PLENARY LECTURES



PLENARNA PREDAVANJA

APPLICATION OF NEW MULTIPLEX STR SYSTEMS IN FORENSIC DNA ANALYSIS OF SKELETAL REMAINS IN CASES OF HUMAN IDENTIFICATION

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Forensic application of the latest DNA technologies plays a crucial role in solving cases of missing persons and unidentified skeletal remains, and a critical success factor is the ability to obtain nuclear and/or mitochondrial DNA profiles. The DNA laboratory of the Institute of Forensic Medicine, CC Vojvodina, as the only DNA laboratory in Vojvodina, since its foundation in 2003, performs DNA analyzes for human identification when it comes to the identification of the remains of autopsied persons, whose condition did not allow the application of other methods. At the beginning of our work, the analysis of 16 autosomal STR and 17 Y-STR markers (locus) is applied in routine forensic analysis during human identifications. Following the standardization process in Europe and the recommendations of the European forensic profession for the acceptance of new genetic markers in the analysis of degraded DNA samples, the application of the new STR multiplex systems, GlobalFiler and Investigator 24plex (with 24 loci), and YfilerPlus (with 27 loci), significantly improves forensic human identification. Additionally, in order to improve our laboratory success in working with skeletal remains and ensure a place in the forensic community involved in the identification of these remains, we retrospectively examined the DNA profiling ability of our work over the past 20 years, from 2003 to 2023. We have described the approximate age and condition of the samples, as well as the type of remains, the exposure of the skeletal remains to external environmental influences (burnt bodies, remains from water or fields).

PRIMENA NOVIH MULTIPLEKSNIH STR SISTEMA U FORENZIČKOJ DNK ANALIZI SKELETNIH OSTATAKA U SLUČAJEVIMA HUMANIH IDENTIFIKACIJA

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Forenzička primena najnovijih DNK tehnologija ključna je za rešavanje slučajeva nestalih osoba i neidentifikovanih skeletnih ostataka, a kritični faktor uspešnosti je mogućnost dobijanja profila jedarne i/ili mitohondrijalne DNK. DNK laboratorija Centra za sudsku medicinu KC Vojvodine, kao jedina DNK laboratorija u Vojvodini, od svog osnivanja 2003. godine, izvodi DNK analize pri humanoj identifikaciji, kada se radi o identifikaciji posmrtnih ostataka obdukovanih osoba, čije stanje nije omogućavalo primenu drugih metoda. U početku našeg rada u rutinskoj forenzičkoj analizi prilikom humanih identifikacija primenjuje se analiza 16 autozomalnih STR i 17 Y-STR markera (lokusa). Praćenjem procesa standardizacije u Evropi i preporuka evropske forenzičke struke za prihvatanje novih genskih markera u analizi degradiranih uzoraka DNK, primenom novih STR multipleksnih sistema, GlobalFiler i Investigator 24plex (sa 24 lokusa), te YfilerPlus (sa 27 lokusa), značajno se unapređuju forenzičke humane identifikacije. Dodatno, radi poboljšanja uspešnosti naše laboratorije u radu sa skeletnim ostacima i obezbeđivanja mesta u forenzičkoj zajednici koja je uključena u identifikaciju ovih ostataka, retrospektivno smo ispitali sposobnost za dobijanje DNK profila našeg rada u poslednjih 20 godina, od 2003. do 2023. Opisali smo približnu starost i stanje uzoraka, kao i vrstu ostataka, izloženost skeletnih ostataka spoljnim uticajima okoline (spaljena tela, ostaci iz vode ili polja)

THE CHALLENGES OF ESTABLISHMENT AND MANAGEMENT OF OSTEOLOGICAL ANTHROPOLOGY LABORATORIES

Tarek Mghirbi

Forensic Center - Ministry of the Interior – Qatar

Osteological anthropology can be a useful tool to identify human remains particularly in situations where genetic methods cannot be used. The osteological anthropology methods need special laboratories and units provided with samples and data banks. The establishment and management of those laboratories and units require trained personnel including doctors and technicians. Special skills such as the knowledge of x-ray interpretation and statistics are also highly appreciated. The human groups have to approve the osteological anthropological methods prior to their application. An international cooperation is also required to maximize the efficiency of those technics

IZAZOVI OSNIVANJA I UPRAVLJANJA LABORATORIJAMA ZA OSTEOLOŠKU ANTROPOLOGIJU

Tarek Mghirbi

Forenzički centar, Ministarstvo unutrašnjih poslova, Katar

Osteološka antropologija može biti korisno sredstvo za identifikovanje ljudskih ostataka posebno u situacijama kada se ne mogu koristiti genetske metode. Osteološke metode zahtevaju specijalizovane laboratorije i jedinice snabdevene uzorcima i bankama podataka. Osnivanje i upravljanje laboratorijama i jedinicama zahteva obučeni kadar uključujući doktore i tehničare. Neke od posebnih veština kao što je čitanje rendgenskih snimaka i poznavanje statistike, veoma su cenjene. Osteološko antropološke metode moraju biti odobrene od grupe ljudi gde se sprovode. Neophodna je i međunarodna saradnje kako bi se maksimalno povećala efikasnost navedenih tehnika.

A STUDY OF DEGRADED SKELETAL SAMPLES USING FORENSEQ DNA SIGNATURE™ KIT

Eida Almohammed

Ministry of Interior of Qatar, Doha, Qatar;

Recent advance in massively parallel sequencing (MPS) has become a very promising technology for massive genetic sequencing [1]. In this study, Illumina ForenSeq™ DNA Signature Prep Kit was tested to determine if MPS offers a more comprehensive evaluation of degraded samples than the traditional fragment analysis by capillary electrophoresis method. The Illumina® ForenSeq™ DNA Signature MPS Kit, includes 200 genetic loci [2]. The use of NGS would therefore reduce the time required for the analysis and augment the identification of human remains. In this context, we aimed to analyze the hard tissue degraded samples using Illumina® ForenSeq™ DNA Signature MPS Kit. These samples had given partial profiles with dropout at several loci with GlobalFiler™ kit previously. The MPS kit showed that it is highly sensitive, aids in higher allele recovery for STR loci and provides valuable information about biogeographic ancestry, identity and phenotypic features from a single analysis. The work resulted in highly successful amplification and sequencing of 30 degraded bone/teeth samples using MPS method.

STUDIJA ANALIZE DEGRADIRANIH SKELETNIH UZORAKA UPOTREBOM FORENSEQ DNA SIGNATURE™ OPREME

Eida Almohammed

Ministarstvo unutrašnjih poslova Katara, Doha, Katar

Nedavni napredak u masovnom paralelnom sekvenciranju (MPS) postao je veoma obećavajuća tehnologija za masovno genetsko sekvenciranje [1]. U ovoj studiji testirali smo Illumina ForenSeq™ DNA Signature Prep opremu kako bismo utvrdili da li MPS nudi detaljniju analizu degradiranih uzoraka od tradicionalne metode analize fragmenata koja se zasniva na elektroforezi. Illumina® ForenSeq™ DNA Signature MPS oprema uključuje 200 genetskih lokusa. Upotreba NGS tehnologija smanjila bi vreme trajanja analize i poboljšala identifikaciju ljudskih ostataka. U tom kontekstu, imalo smo za cilj da analiziramo degradirane uzorke tvrdog tkiva koristeći Illumina® ForenSeq™ DNA Signature MPS opremu. Isti uzorci prethodno su analizirani GlobalFiler™ opremom i dobijeni su delimični profili sa ispadanjem na nekoliko lokusa. MPS komplet pokazao se kao veoma osetljiv, pomaže u većem oporavku alela STR lokusa i pruža vredne informacije o biogeografskom poreklu, identitetu i fenotipskim karakteristikama prilikom jedne analize. Rad je rezultirao veoma uspešnom amplifikacijom i sekvenciranjem 30 degradiranih uzoraka kostiju i zuba upotrebom MPS metode.

THE DESIGN AND DEVELOPMENT OF NOVEL SINGLE MULTIPLEX SYSTEM INCORPORATING 26 RAPIDLY MUTATING Y-STRs; 26 RM YPLEX

Rashed Alghafri

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STR markers are extensively used in sexual assault cases where high female DNA background disturbance can be removed. Apart from forensic cases, Y-chromosome short tandem repeats (Y-STRs) can contain information of the ethnic origin of the male donor, as the Y chromosome can only be inherited from the paternal lineage. Y-STRs provides a robust tool for solving many forensic cases. Many commercial Y-STRs multiplex systems were developed and mostly incorporate 16–27 markers, such as the Yfiler Plus PCR Amplification Kit (Applied Biosystems, USA), the PowerPlex Y23 System (Promega, USA), and STRtyper-27Y (Health Gene Technologies, China), which have all been validated. In the current work, we present the development of a new 6-dye single assay incorporating all 26 RM Y-STR; 26 RM Yplex. The aim of this novel system is to create a tool that possesses the highest discrimination power between closely related male individuals through the use of 26 RM Y-STRs. This kit has been validated according to the references on forensic analysis as recommended by the International Society of Forensic Genetics (ISFG) and Scientific Working Group on DNA Analysis Methods (SWGDAM). To be specific, the group evaluated the kit's performance from the following aspects: PCR conditions, sensitivity, reproducibility, species specificity, effects of DNA mixtures, and stability.

DIZAJN I RAZVOJ NOVOG MULTIPLEKS SISTEMA KOJI UKLJUČIJE 26 BRZO MUTIRAJUĆIH Y- STR ALELA; 26 RM YPLEX

Rashed Alghafri

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STR markeri koriste se u velikoj meri u slučajevima seksualnog napada gde se može ukolniti visok nivo DNK materijala žene. Osim forenzičkih slučajeva, kratka tandemska ponavljanja Y hromozoma (Y-STR) mogu sadržati informacije o etničkom poreklu donora, pošto se Y hromozom nasleđuje samo od očeve loze. Y-STR predstavlja korisno sredstvo za rešavanje mnogih slučajeva u forenzici. Mnogi komercijalni Y-STR multipleks sistemi koji su razvijeni sadrže uglavnom 6–27 markera, kao što su the Yfiler Plus PCR Amplification Kit (Applied Biosystems, USD), the PowerPlex Y23 System (Promega, USD) i STRtyper-27Y (Health Gene Technologies, Kina), svi su validirani. U ovom radu, predstavljamo razvoj novog testa sa 6 boja koji uključuje svih 26 26 RM Y-STR; 26 RM Yplex. Cilj ovog novog sistema je stvaranje alata koji poseduje najveću moć diskriminacije između blisko povezanih muških pojedinaca kroz upotrebu 26 RM Y-STR. Ovaj komplet validiran je u skladu sa referencama za forenzičku analizu prema preporukama Međunarodnog društva za forenzičku genetiku (ISFG) i Naučne radne grupe za metode DNK analiza (SWGDAM). Da budemo precizni, grupa je procenila performanse kompleta sa sledećih aspekata: PCR uslovi, osetljivost, reproduktivnost, specifičnost vreste, efekti mešavina DNK i stabilnost.

BODY SIZE AND SHAPE AND THE RISK OF BREAST CANCER

Biljana Srdić Galić

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Breast cancer represents the most common malign disease and one of the leading causes of death in women. Besides well-known risk factors for the development of breast cancer (age, genetical predisposition, reproductive history, hormonal status, exposure to radiation), a specific phenotype is being mentioned frequently, determined primarily by mass and the distribution of adipose tissue, body height and body proportions. Obesity is recognized as a risk factor for the development of postmenopausal breast cancer, while in the premenopausal period it has no influence or even plays a protective role. An increase in fat mass accompanied by adipose tissue dysfunction is considered an important factor in the development and further progression of cancer. Specific distribution of fat tissue, especially visceral obesity, with consequent systemic metabolic and inflammatory disorders plays an important role as well. Apart from body mass, body height is considered to be a significant risk factor, especially in postmenopausal breast cancer. Its essential determinant is insulin-like growth factor-1, which is considered one of the key factors in the regulation of tumor growth. Body height reflects different aspects of maturation, including the role of genetic, nutritive and environmental factors, which could contribute to the development of breast cancer. Monitoring anthropometric indicators of body size and shape contributes to the understanding of the biological mechanisms of breast cancer development, as well as to the development of preventive and therapeutic strategies.

VELIČINA I OBLIK TELA I RIZIK OD RAZVOJA KARCINOMA DOJKE

Biljana Srđić Galić

Univerzitet u Novom Sadu, Medicinski fakultet Novi Sad

Karcinom dojke predstavlja najučestalije maligno oboljenje i jedan od najčešćih uzroka smrti kod žena. Pored opštepoznatih faktora rizika za razvoj karcinoma dojke (starost, genetska predispozicija, reproduktivna istorija, hormonski status, izloženost zračenju), sve češće se pominje i specifičan fenotip, uslovljen u prvom redu masom i distribucijom masnog tkiva, telesnom visinom i proporcijama tela. Gojaznost je prepoznata kao faktor rizika za razvoj postmenopauzalnog karcinoma dojke, dok u premenopauzalnom periodu nema uticaj ili čak ispoljava protektivnu ulogu. Uvećanje masne mase praćeno disfunkcijom masnog tkiva smatra se važnim faktorom inicijacije i progresije karcinoma. Ne manje važnu ulogu u razvoju karcinoma dojke ima i specifična distribucija masnog tkiva, posebno visceralna gojaznost, sa sledstvenim sistemskim metaboličkim i inflamatornim poremećajima. Pored telesne mase, značajnim faktorom rizika, naročito za razvoj postmenopauzalnog karcinoma dojke, smatra se i telesna visina. Njena bitna determinanta je insulinu sličan faktor rasta-1, koji se smatra jednim od ključnih faktora regulacije rasta tumora. Telesna visina reflektuje različite aspekte sazrevanja, uključujući i ulogu genetskih, nutritivnih faktora i faktora spoljašnje sredine, koji bi mogli da doprinesu razvoju karcinoma dojke. Praćenje antropometrijskih pokazatelja veličine i oblika tela doprinosi razumevanju bioloških mehanizama razvoja karcinoma dojke, kao i razvoju preventivnih i terapijskih strategija

WOMEN REPRODUCTIVE HEALTH: ANTHROPOLOGICAL GENETICS CONSIDERATIONS

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Women's reproductive health is a multifaceted domain influenced by biological, cultural, and genetic factors. Anthropological genetics offers a unique perspective by integrating evolutionary biology, population genetics, and sociocultural contexts to explore reproductive health disparities, fertility patterns, and genetic susceptibilities. This review examines key topics such as the genetic determinants of menstrual cycles, fertility, pregnancy and menopause outcomes alongside the role of genetic adaptations to environmental pressures. It also investigates the intersection of genetic diversity and sociocultural practices, highlighting their impact on reproductive health inequities globally. By bridging genetics and anthropology together, this study emphasizes the importance of a holistic, interdisciplinary approach to addressing challenges in women's reproductive health.

REPRODUKTIVNO ZDRAVLJE ŽENA: RAZMATRANJA ANTROPOLOŠKE GENETIKE

Arup Ratan Bandyopadhyay

Univerzitet u Kalkuti, Departman za antropologiju, Indija

Reproduktivno zdravlje žena složena je oblast na koju utiču biološki, kulturni i genetski faktori. Antropološka genetika nudi jedinstvenu perspektivu integracijom evolutivne biologije, populacione genetike i sociokulturnog konteksta kako bi se istražile razlike u reproduktivnom zdravlju, obrasci plodnosti i genetske podložnosti. Ova studija ispituje ključne teme kao što su genetske osnove menstrualnog ciklusa, plodnost, ishodi trudnoće i menopauze zajedno sa ulogom genetskog prilagođavanja pritiscima sredine. Takođe, istražuje ukrštanje genetskog diverziteta i sociokulturnih praksi, naglašavajući njihov uticaj na nejednakost u reproduktivnom zdravlju na globalnom nivou. Povezujući genetiku i antropologiju studija naglašava značaj holističkog, interdisciplinarnog pristupa u rešavanju izazova reproduktivnog zdravlja kod žena.

THE INFLUENCE OF MEDICINE ON IDEALS OF BEAUTY OF MODERN MAN

Irena Janković

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The ideal of beauty has changed over time along with society. Throughout history, different civilizations have had specific ideals which have been determined by social, political and economic circumstances. In this context, medicine played a key role in realizing those ideals, providing people with the ability to adapt and improve their physical appearance. With the development of modern society and medical science, it is noticeable that medicine not only affects the fulfillment of existing ideals of beauty, but also defines new ones. Modern medicine strongly emphasizes individuality and personalized approaches, which leads to the creation of new norms of beauty that often reflect personal preferences and lifestyles. Despite progress, boundaries between different correction methods – such as injectable treatments and surgical procedures – still exist. While injectable treatments provide quick and less invasive changes, surgery often provides more permanent and drastic results. These methods are increasingly intertwined, making it difficult to distinguish between them in terms of safety, effectiveness and long-term results. Accordingly, it is necessary to develop clear guidelines that define the indications for the use of these methods, taking into account both medical aspects and ethical and psychological consequences.

IDEALI LEPOTE SAVREMENOG ČOVEKA I UTICAJ MEDICINE NA NJIH

Irena Janković

Medicinski fakultet Univerziteta u Nišu, Univerzitetski klinički centar Niš, Klinika
za plastičnu i rekonstruktivnu hirurgiju

Ideal lepote menjao se kroz vreme zajedno sa društvom. Tokom istorije, različite civilizacije su imale svoje specifične ideale, koje su određivale društvene, političke i ekonomske okolnosti. U tom kontekstu, medicina je imala ključnu ulogu u ostvarivanju tih ideala, pružajući ljudima mogućnost da se prilagode i unaprede svoj fizički izgled. S razvojem savremenog društva i medicinske nauke, primetno je da medicina ne samo da utiče na ispunjavanje postojećih ideala lepote, već i definiše nove. Moderna medicina sve više potencira individualnost i personalizovane pristupe, što dovodi do stvaranja novih normi lepote koje često odražavaju lične preferencije i životne stilove. Uprkos napretku, granice između različitih metoda korekcije – kao što su injekcioni tretmani i hirurške procedure – još uvek postoje. Dok injekcioni tretmani omogućavaju brze i manje invazivne promene, hirurgija često pruža trajnije i drastičnije rezultate. Ove metode se sve više prepliću, otežavajući njihovo razlikovanje u pogledu bezbednosti, efikasnosti i dugotrajnosti rezultata. Shodno tome, neophodno je razviti jasne smernice koje definišu indikacije za korišćenje ovih metoda, uzimajući u obzir kako medicinske aspekte, tako i etičke i psihološke posledice.

TAUNG DISCOVERY ONE HUNDRED YEARS LATER: WHY WAS RAYMOND DART RIGHT?

Goran Štrkalj

University of New South Wales

The discovery of the fossil known as Taung Child (*Australopithecus africanus*), reported by Raymond Dart one hundred years ago remains one of the most important events in the history of paleoanthropology. Numerous historical accounts about the discovery have been published since, focusing mainly on the reasons why the scientific community originally rejected Dart's interpretation of the fossil as significant in hominid evolution. Many reasons for this rejection were proposed including clashes with the then current theories of human evolution, Dart's scientific personality and Western prejudice against Africa. Bearing these reasons in mind it is not surprising that Dart's claims were originally dismissed, and the real historical question is why Dart interpreted the remains in a way now seen to be correct. It is argued here that there are several reasons for this. Importantly, Dart at the time did not have much interest in anthropology and was not bounded by the theoretical assumptions of the day. He also seemed to be emmeshed by the notion of finding the 'missing link' and the hypothesized ancestor that represented evolutionary transition from the ape ancestors to modern humans as this guaranteed scientific immortality. It is also important that in promoting the view of *Australopithecus* as the 'missing' Dart had strong institutional support from his university, which experienced international promotion due to the discovery and indeed, for the same reason, the South African anthropological community and even political figures.

OTKRIĆE U TAUNGU STO GODINA KASNIJE: ZAŠTO JE REJMOND DART BIO U PRAVU?

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Otkriće fosila poznatog kao dete iz Taunga (*Australopithecus africanus*), koje je prijavio Rejmond Dart pre sto godina i dalje je jedan od najvažnijih događaja u istoriji paleoantropologije. Od tada su objavljeni brojni istorijski izveštaji koji se uglavnom fokusiraju na razloge zbog kojih je naučna zajednica prvobitno odbacila Dartovo tumačenje fosila kao značajno u evoluciji hominida. Ponuđeno je mnogo razloga za ovo odbacivanje uključujući sukobe sa tada aktuelnim teorijama ljudske evolucije, Dartovu naučnu ličnost i predrasude koje su ljudi sa zapada imali prema Africi. Imajući u vidu ove razloge, ne iznenađuje to što su Dartove tvrdnje najpre odbačene, i pravo istorijsko pitanje je zašto je Dart interpretirao ostatke na način koji se danas smatra ispravnim. Ovde se tvrdi da za to postoji nekoliko razloga. Važno je napomenuti da Dart u to vreme nije pokazivao interesovanje za antropologiju i nije bio ograničen tadašnjim teorijskim pretpostavkama. Takođe, činilo se da je bio opčinjen pronalaženjem „tajne veze“ i pretpostavljenog pretka koji je predstavljao evolativnu tranziciju od majmuna do modernog čoveka jer to je garantovalo naučnu besmrtnost. Takođe je važno da je u promovisanju australopitekusa kao nestalog, Dart imao jaku institucionalnu podršku svog univerziteta, koji je doživeo međunarodnu promociju zahvaljujući otkriću kao i, iz istih razloga, antropološka zajednica u Južnoj Africi, pa čak i političke ličnosti.

MEDICALLY ASSISTED REPRODUCTION (MAR) IN WOMEN WITH REDUCED OVARIAN RESERVE AND REDUCED OVARIAN RESPONSE

Jelena Havrljenko

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The biggest challenge for medically assisted reproduction procedures represent women with reduced ovarian reserves and those with adequate reserves but poor ovarian response. In this group of women, there is a decrease in the number of eggs available for fertilization, which leads to a lower birth rate. Aim: To examine the outcome of MAR in women classified according to the new Poseidon criteria, compared to younger women with normal ovarian reserve and optimal ovarian response (non-Poseidon). Materials and methods: The sample comprised 1323 women undergoing MAR treatment. A comparison of outcomes (number of retrieved eggs and embryos, number of blastocyst stage embryos, birth and miscarriage rates) was made between the control group (non-Poseidon) and the different Poseidon groups. Results: The lowest number of obtained eggs and embryos was identified in younger women with normal ovarian reserve but weaker ovarian response (Poseidon group 1), while the number of obtained embryos in the blastocyst stage and the lowest delivery rate were recorded in older women with low ovarian reserve (Poseidon group 4). The miscarriage rate was highest among women in the Poseidon group 4. Conclusion: The birth rate is two to three times lower in women belonging to Poseidon groups. The obtained results indicate the existence of differences of the outcomes in different Poseidon groups, therefore the classification according to the Poseidon criteria can be useful in creating an individual therapeutic approach.

BIOMEDICINSKI POTPOMOGNUTA OPLODNJA (BMPO) KOD ŽENA SA SMANJENOM OVARIJALNOM REZERVOM I SMANJENIM ODGOVOROM JAJNIKA

Jelena Havrljenko

Specijalna ginekološka bolnica Ferona

U postupcima BMPO najveći izazov predstavljaju žene sa smanjenom rezervom jajnika i one koje imaju odgovarajuću rezervu, ali smanjen odgovor jajnika. Kod ovih žena dolazi do smanjenja broja jajnih ćelija dostupnih za oplodnju, što dovodi do manje stope rađanja. Ispitivanje ishoda BMPO kod žena klasifikovanih prema novom Poseidon modelu, u poređenju sa mlađim ženama sa normalnom ovarijalom rezervom i optimalanim odgovorom jajnika (ne-Poseidon). Studija obuhvata 1323 žene podvrgnute BMPO. Poređenje ishoda (broj dobijenih jajnih ćelija i embriona, broj embriona u stadijumu blastociste, stope porođaja i pobačaja) izvršeno je između kontrolne grupe (ne-Poseidon) i različitih Poseidon grupa. Najmanji broj dobijenih jajnih ćelija i embriona identifikovan je kod mlađih žena sa normalnom ovarijalnom rezervom ali slabijim odgovorom jajnika (Poseidon 1a grupa), dok su broj dobijenih embriona u stadijumu blastociste i najniža stopa porođaja zabeleženi kod starijih žena sa niskom ovarijalnom rezervom (Poseidon 4 grupa). Stopa pobačaja je bila najveća kod žena iz Poseidon 4 grupe. Stopa porođaja je dvostruko ili trostruko manja kod žena koje pripadaju Poseidon grupama. Dobijeni rezultati ukazuju na postojanje razlika u ishodima u različitim Poseidon grupama, stoga klasifikacija prema Poseidon modelu može biti korisna u kreiranju individualnog terapijskog pristupa.

MODERN MAN AND CHRISTIANITY

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Through the lectures, we compare earlier eras in human history that aimed to achieve certain moral and aesthetic ideals with the efforts of modern civilization to achieve the infinite multiplication of wealth and power, which necessarily suppresses all virtues. We want to point out how today Christianity with its gospel message stands in complete antagonism with the consumer mentality of modern society. Far from the Christian way of life, people risk falling into traps of modern society, which enables them to have but not to be. In order to resist everything that leads to his moral and spiritual death, man needs to adapt his ways to the Christian way of life and renounce the world as the impulse of life thus renouncing the terrible emptiness, from death behind it. Furthermore, it should be noted that the importance of Christian asceticism is not in annihilation, but in the enlightenment and transformation of the body. Healthy spirit truly lies in a healthy body; however, Christians believe that physical health is not only physical and biochemical, but also purity and freedom from passion. According to Christianity, the spiritual way of life and existence is primary in relation to biological.

ČOVEK SAVREMENOG DOBA I HRIŠĆANSTVO

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Kroz predavanja upoređujemo ranije epohe u ljudskoj istoriji koje su imale za cilj postizanje određenih moralnih i estetskih ideala sa nastojanjima savremene civilizacije da postigne beskonačno umnožavanje bogatstva i moći, koje nužno potiskuje sve vrline. Ukazujemo kako danas hrišćanstvo sa svojom jevanđelskom porukom stoji u punom antagonizmu sa potrošačkim mentalitetom savremenog društva. Daleko od hrišćanskog načina života, čovek rizikuje da upadne u sve zamke savremenog društva koje daje mogućnost da ima, ali ne i da bude. Da bi mogao da se odupre svemu što vodi ka njegovoj moralnoj i duhovnoj smrti, čovek treba da prilagodi svoje načine života, hrišćanskom načinu života. U tom slučaju odreći se sveta kao impuls života znači zapravo odreći se te strašne praznine, odnosno smrti koja stoji iza toga. S tim u vezi, takođe treba napomenuti da značaj hrišćanske askeze nije u anihilaciji, već u prosvetljenju i preobražaju tela. U zdravom telu duh je zaista zdrav, ali hrišćani veruju da fizičko zdravlje nije samo fizičko i biohemijsko, već prvenstveno čistota i sloboda od strasti. U hrišćanstvu, duhovni način života i postojanja je primaran u odnosu na onaj biološki.

APPLICATION OF CLINICAL RADIOLOGY TECHNIQUES IN DETERMINING SEX AND AGE OF INDIVIDUALS

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Osteoarcheology, as a multidisciplinary branch of science, uses human remains for the reconstruction of historical contexts, as well as for the application in forensic research. Teeth, as the most resistant structure of the human body, represent an important indicator of age and sex thanks to their durability and specific changes during the process of aging. Radiographic methods such as TCI (Tooth Coronal Index) and the Kvaal method have shown great potential in determining age, especially in cases where limited biological material is available. This approach is particularly important in archaeological and forensic contexts where it is necessary to identify individuals or reconstruct population characteristics.

PRIMENA KLINIČKIH RADIOLOŠKIH TEHNIKA ZA ODREĐIVANJU POLA I STAROSTI INDIVIDUA

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Osteoarheologija, kao multidisciplinarna grana nauke, koristi ljudske ostatke za rekonstrukciju istorijskih konteksta, ali i za primenu u forenzičkim istraživanjima. Zubi, kao najotpornija struktura ljudskog tela, predstavljaju važan indikator starosti i pola zahvaljujući svojoj izdržljivosti i specifičnim promenama tokom starenja. Radiografske metode kao što su TCI (Tooth Coronal Index) i metoda Kvaal pokazale su veliki potencijal u određivanju starosti, naročito u slučajevima kada je dostupan ograničen biološki materijal. Ovaj pristup je posebno značajan u arheološkim i forenzičkim kontekstima gde je potrebno identifikovati osobe ili rekonstruisati populacione karakteristike.

ETHNOPHARMACOLOGY OF DIABETES: FROM TRADITIONAL RECIPES TO MODERN MEDICINE

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Diabetes is one of the most prevalent chronic diseases of the 21st century. Current pharmacological interventions used in the management of this condition regulate hyperglycemia; however, they do not fully prevent the onset or progression of its secondary complications, including diabetic nephropathy, hepatic dysfunction, osteoporosis, neuropathy, retinopathy, cardiovascular diseases, increased risk of dementia, etc. Consequently, a growing number of individuals with diabetes, in addition to conventional pharmacotherapy, are incorporating herbal alternatives derived from traditional medicine, particularly in the form of herbal mixtures, which are believed to enhance therapeutic outcomes in the management of multifactorial diseases such as diabetes. Given that medicinal plants, and especially herbal mixtures, consist of a diverse array of bioactive compounds that may exert synergistic, additive, or antagonistic effects, it is plausible that their concomitant use with standard pharmaceutical agents could offer benefits in terms of glycemic control, attenuation of secondary complications, and mitigation of pharmacological side effects. However, this practice may also pose risks, including the potential for hypoglycemia, hepatotoxicity, nephrotoxicity, and other adverse effects. Therefore, comprehensive investigations into biological activities and their mechanisms of actions of both individual herbs and their combinations, particularly when used as adjuncts to conventional therapies, are imperative for ensuring their safety and efficacy in the treatment of diabetes and its associated complications.

ETNOFARMAKOTERAPIJA DIJABETESA: OD TRADICIONALNE RECEPTURE DO SAVREMENE MEDICINE

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Dijabetes je jedna od najčešćih bolesti 21. veka. Savremeni lekovi korišćeni u farmakoterapiji ovog oboljenja regulišu hiperglikemiju, ali ne sprečavaju progresiju sekundarnih komplikacija poput dijabetesne nefropatije, oštećenja jetre, osteoporoze, neuropatije, retinopatije, bolesti kardiovaskularnog sistema, povećanog rizika od demencije itd. Zbog toga, sve veći broj ljudi sa dijabetesom uz propisane lekove koristi i biljne supstituente poreklom iz narodne medicine, naročito u vidu biljnih mešavina za koje se veruje da pri terapiji složenih bolesti poput dijabetesa dovode do boljeg terapijskog ishoda. Imajući na umu da lekovito bilje, a naročito biljne mešavine, predstavljaju kompleksnu smešu brojnih bioaktivnih supstanci koje mogu delovati sinergistički, aditivno ili pak antagonistički, nije teško pretpostaviti da istovremena primena standardnih lekova i biljnih suplemenata može biti blagotvorna u smislu normalizovanja glikemije, usporavanja razvoja sekundarnih komplikacija dijabetesa, kao i smanjenja nuspojava farmakoterapije, ali takođe, može i dovesti do pojave niza neželjenih efekata kao što su hipoglikemija, oštećenja jetre, bubrega, itd. Zbog toga, detaljno ispitivanje bioloških aktivnosti i samih mehanizama delovanja, kako pojedinačnih biljaka, tako i biljnih mešavina, a naročito prilikom njihove upotrebe u vidu kotretmana sa standardnom terapijom, od ključnog je značaja za bezbednu primenu u terapiji dijabetesa i njegovih sekundarnih komplikacija.

ANTHROPOMETRIC AND BIOCHEMICAL PARAMETERS AS POTENTIAL PREDICTORS FOR TYPE 2 DIABETES IN PATIENTS IN MONTENEGRO

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Anthropometric parameters, which include body measurements such as body mass, height, waist circumference, skinfolds, body mass index (BMI), and other measures, play a key role in biomedical research, including type 2 diabetes research. The use of anthropometric measurements in biomedical research leads to a better understanding of the pathophysiological mechanisms of type 2 diabetes and other diseases. For example, research has shown that high BMI and abdominal obesity can increase the production of pro-inflammatory cytokines and free fatty acids, which contribute to insulin resistance. Furthermore, certain measurements like waist circumference can indicate specific types of fat (visceral or subcutaneous) that have different effects on metabolism. Anthropometric parameters, especially in combination with certain biochemical parameters, may also have a predictive value in specific populations, in persons with a family history of diabetes, the elderly or ethnic groups with a higher risk of type 2 diabetes. The use of these parameters can improve early detection of people with increased risk of the disease and secure the implementation of preventive measures before the disease manifests itself clinically. Therefore, anthropometric parameters are crucial for analyzing the distribution and prevalence of type 2 diabetes in different populations, in epidemiological research. Using these measurements, researchers can compare the incidence of the disease in groups with different anthropometric characteristics and analyze potential risk factors, which can help to develop public health strategies to prevent diabetes

NEKI ANTROPOMETRIJSKI I BIOHEMIJSKI PARAMETRI KAO POTENCIJALNI PREDIKTORI ZA DIJABETES TIP2 KOD PACIJENATA U CRNOJ GORI

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Antropometrijski parametri, koji uključuju mjerenja tijela kao što su tjelesna masa, visina, obim struka, kožni nabori, indeks tjelesne mase (BMI) i druge mjere, igraju ključnu ulogu u biomedicinskim istraživanjima, uključujući i istraživanja dijabetesa tipa 2. Primjena antropometrijskih mjerenja u biomedicinskim istraživanjima pomaže u boljem razumijevanju patofizioloških mehanizama dijabetesa tipa 2, a i drugih oboljenja. Na primjer, istraživanja su pokazala da visoki BMI i abdominalna gojaznost mogu povećati proizvodnju proupalnih citokina i slobodnih masnih kiselina, što doprinosi insulinskoj rezistenciji. Takođe, određena mjerenja poput obima struka mogu ukazivati na specifične tipove masti (visceralnu ili subkutanu) koji imaju različite učinke na metabolizam. Antropometrijski, a naročito u kombinaciji sa određenim biohemijskim parametrima, mogu takođe imati prediktivnu vrijednost u specifičnim populacijama, kod osoba s porodičnom istorijom dijabetesa, starijih osoba ili etničkih grupa s većim rizikom za dijabetes tipa 2. Korišćenje tih parametara može omogućiti ranu identifikaciju osoba s povećanim rizikom i implementaciju preventivnih mjera prije nego što bolest postane klinički manifestna. Stoga, u epidemiološkim istraživanjima, antropometrijski parametri su ključni za analizu distribucije i prevalencije dijabetesa tipa 2 u različitim populacijama. Pomoću tih mjerenja istraživači mogu uporediti učestalost bolesti u grupama s različitim antropometrijskim karakteristikama i analizirati potencijalne faktore rizika, što može pomoći u oblikovanju javnozdravstvenih strategija za prevenciju dijabetesa.

DANCE MOVEMENT PSYCHOTHERAPY

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Dance has been used for therapeutic purposes since the dawn of time. Dance and movement therapy was conceived based on this fact. Over the course of time, it has developed into a separate (psycho) therapeutic approach. Dance and movement psychotherapy (DMP), also known as *dance therapy*, was developed during the 1940s USA, only to reach Europe in the 1970s. Dance therapy is body oriented psychotherapy which is based on the use of dance and movement as a creative process with the aim of incorporating emotional, cognitive, social and body characteristics of every individual or in other words, connecting body, mind and soul. This type of psychotherapy includes therapeutic use of movement and psychomotor expression as a main way of analysis and intervention. Apart from being focused on the body movement and posture, the stress is put on other nonverbal signs such as breathing, gesticulation, mimic, muscle tone, rhythm and execution of certain movements, etc. Dance and movement psychotherapy has proven very useful with different groups of people and is intended for all age groups. It can be adapted to people who cannot perform demanding physical activities because of different limitations. In such situations, modified forms of dance provide more benefits than the activity itself. The therapy can be conducted individually, in pair or group. It is most often used in anxiety-depressive disorders, emotional behavioral difficulties, autism, trauma, addiction, somatic disorders, personality disorders, neurological disorders, oncological diseases or for personal development.

PSIHOTERAPIJA POKRETOM I PLESOM

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Ples se, od ljudske praistorije, koristio u terapijske svrhe te je na toj osnovi koncipirana terapija plesom i pokretom koja se s vremenom razvila u zasebni (psiho)terapijski pristup. Psihoterapija pokretom i plesom (PPP), ponekad se skraćeno zove „plesna terapija”, razvila se 40-ih godina u SAD-u, da bi u Evropu stigla 70-ih godina prošlog vijeka. Plesna terapija je tjelesno orijentisana psihoterapija koja se temelji na primjeni plesa i pokreta kao kreativnog procesa, a cilj je integrisati emocionalne, kognitivne, socijalne i tjelesne karakteristike svakog pojedinca, odnosno povezati tijelo, um i duh. Ova vrsta psihoterapije uključuje terapijsko korištenje pokreta i psihomotornu ekspresiju kao glavni način analize i intervencije. Osim fokusa na način kretanja i tjelesno držanje, važnost se pridaje i drugim neverbalnim znakovima, primjera radi disanju, gestikulaciji, mimici, tonusu mišića, ritmu izvođenja određenih pokreta, načinu korišćenja prostora i dr. Psihoterapija pokretom i plesom pokazala se izrazito korisna kod različitih grupa ljudi i namjenjena je svim uzrastima. Može se prilagoditi onima koji se ne mogu uključiti u zahtjevnije fizičke aktivnosti zbog različitih ograničenja. U takvim situacijama modifikovani oblici plesa pružaju više prednosti od same fizičke aktivnosti. Ove terapije mogu se izvoditi individualno, u paru ili grupi. Najčešće se koristi kod anksiozno-depresivnih poremećaja, emocionalno ponašajnih teškoća, autizma, trauma, zavisnosti, somatskih poremećaja, poremećaja ličnosti, neuroloških poremećaja, onkoloških bolesti ili za lični razvoj.

CLINICAL SIGNIFICANCE OF MANDIBULAR FORAMEN LOCALIZATION IN TOOTHLESS MANDIBLE

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The aim of this research is to determine the anatomical and topographic localization of the MF according to the anatomical features of the mandibular ramus and to identify morphological changes in the position of the MF and the size and shape of the ramus in cases of alveolar bone loss in the molar and premolar region. Seventy-three dry mandibles of adult humans were divided into two groups according to dental status—with or without teeth. These were measured to determine the distance from the anterior and posterior borders of the ramus (AB, PB) to the middle of the MF fossa, and from the mandibular notch (MN) and the inferior border of the ramus (IB) to the point of entry into the MF. A number of relevant anatomical characteristics of the ramus were analyzed, such as ramus width (RV), height (RH) and thickness (RT). MF was closer to PB and IB in edentulous compared to mandibles with preserved teeth. Edentulous mandibles showed reduced RV, (significantly reduced ($p = 0.03$) RH and significantly reduced ($p < 0.05$) RT in the region of the MF fossa depression compared to mandibles with preserved teeth. Changes in the position of the MF and the anatomical characteristics of the mandibular ramus in edentulous mandibles increase the potential risk of complications and failure during anesthesia of the inferior alveolar nerve.

KLINIČKI ZNAČAJ LOKALIZACIJE MANDIBULARNOG FORAMENA KOD BEZUBIH MANDIBULA

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Cilj ovog istraživanja je da se utvrdi anatomska i topografska lokalizacija MF prema anatomskim obeležjima mandibularnog ramusa i da se identifikuju morfološke promene u položaju MF i veličine i oblika ramusa kod gubitka alveolarne kosti u molarnom i premolarnom regionu. Sedamdeset i tri suve mandibule odraslih ljudi podeljene su u dve grupe prema zubnom statusu – sa zubima ili bez njih. Oni su izmereni da bi se odredila rastojanja od prednje i zadnje granice ramusa (AB, PB) do sredine MF jame, i od mandibularnog zareza (MN) i donje granice ramusa (IB) do tačke ulaska u MF. Analiziran je niz relevantnih anatomskih karakteristika ramusa, kao što su širina ramusa (RV), visina (RH) i debljina (RT). MF je bio bliži PB i IB kod bezubih u poređenju sa mandibulama sa očuvanim zubima. Bezube mandibule su pokazale smanjenu RV, (značajno smanjenu ($p = 0,03$) RH i značajno smanjenu ($p < 0,05$) RT u predelu depresije MF fose u poređenju sa mandibulama sa očuvanim zubima. Promene položaja MF i anatomskih karakteristika mandibularnog ramusa kod bezubih mandibula povećavaju potencijalni rizik od komplikacija i neuspeha kod sprovodne anestezije donjeg alveolarnog nerva.

DYNAMICS OF FUNCTIONAL INDICATORS IN SCHOOLCHILDREN IN BELARUS

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The nature of changes in the functional indicators of schoolchildren in Belarus from the end of the 20th to the beginning of the 21st centuries revealed signs of optimization of the cardiovascular system, positive dynamics of the index of adaptive potential, as well as a tendency to increase the values of hand dynamometry in girls aged 8 and 13 years. The presence of a gradient in the variability of functional parameters of the circulatory system and skeletal muscle tone in the studied age and sex groups of schoolchildren was established – an increase in signs (only with respect to pulse rate, a decrease was noted) along the axis; typological manifestations of sexual dimorphism were considered. The use of a typological approach in the study of the functional status of Belarusian children and adolescents made it possible to identify the presence of a gradient of variability in the indicators of the circulatory system and skeletal muscle tone in a series of somatotypes in the studied age and gender groups of schoolchildren. An increase in signs (blood pressure, hand dynamometry) is shown in the direction from leptosome body (slender body) to endomorph body type (largely built).

DINAMIKA FUNKCIONALNIH INDIKATORA KOD DECE ŠKOLSKOG UZRASTA U BELORUSIJI

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Priroda promena u funkcionalnim pokazateljima kod dece školskog uzrasta u Belorusiji od kraja dvadesetog do početka dvadeset prvog veka otkrila je optimizaciju kardiovaskularnog sistema, pozitivnu dinamiku indeksa adaptivnog potencijala, kao i tendenciju povećanja vrednosti dinamometrije šake kod devojčica uzrasta od 8 i 13 godina. Utvrđeno je prisustvo gradijenta varijabilnosti funkcionalnih parametara cirkularnog tonusa skeletnih mišića u ispitivanim starosnim i polnim grupama dece školskog uzrasta – povećanje znakova (samo u odnosu na brzinu pulsa zabeleženo je smanjenje) duž ose; razmatrane su i tipološke manifestacije polnog diformizma. Upotreba tipološkog pristupa u studiji funkcionalnog statusa dece i adolescenata u Belorusiji omogućila je da se identifikuje prisustvo gradijenta varijabilnosti u indikatorima cirkularnog sistema i tonusa skeletnih mišića u nizu somatotipova u ispitivanim starosnim i polnim grupama školske dece. Povećanje vrednosti (krvni pritisak, dinamometrija šake) prikazano je u pravcu od leptosomnog tipa (vitka građa) do endomorfnog tipa (krupnija građa).

FAMILY FEATURES AS MAIN INDICATORS OF PHYSICAL DEVELOPMENT OF MODERN BELARUSIANS

Halina Skryhan

Belarusian State Pedagogical University named after Maxim Tank

The purpose of this study was to assess the prevalence of underweight and overweight individuals among younger generation of Belarusians and their parents, as well as the relationship between the anthropometric indicators of children and their parents. In 2021 and 2022, a study was conducted on students. Questionnaires were used to collect data on height and weight of parents. Body weight of the majority of Belarusian students was within the normal range (67.0% of boys and 71.9% of girls). The percentage of underweight students was higher in girls (17.0% versus 7.3%, $p < 0.05$). The percentage of overweight students was 2 times higher in boys than in girls (25.7% versus 11.1%, $p < 0.001$). The majority of parents were overweight: 69.4% of fathers and 56.8% of mothers. The values were higher than at the beginning of the 21st century. Young men were more closely related to their fathers than their mothers according to main anthropometric indicators. In girls, only height was related to the same indicator of their mothers. As children grew older, the level of correlation between the indicators changed. The relationship between height, weight, BMI of parents and children was different when parents were compared with their children in adolescence (12-15 years old) and youth (18-21 years old). The correlation of these indicators was stronger between young men and their fathers (relative to adolescents), in comparison with their mothers.

PORODIČNE KARAKTERISTIKE KAO GLAVNI INDIKATORI FIZIČKOG RAZVOJA KOD SAVREMENIH BELORUSA

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Cilj ove studije bio je ispitati prevalencu neuhranjenih i gojaznih osoba kod mlade generacije Belorusa i njihovih roditelja, kao i vezu između antropometrijskih indikatora kod dece i njihovih roditelja. Studija je sprovedena 2021. i 2022. godine. Podaci vezani za visinu i težinu roditelja prikupljeni su pomoću upitnika. Težina tela većine mladih Belorusa bila je u okviru normalnih vrednosti (67,0% kod dečaka i 71,9% kod devojčica). Procenat neuhranjenih učenika bio je veći kod devojčica nego kod dečaka (17,0% protiv 7,3%, $p < 0,05$). Procenat učenika sa prekomernom težinom bio je dva put veći kod dečaka nego kod devojčica (25,7% protiv 11,1%, $p < 0,001$). Većina roditelja imala je prekomernu telesnu težinu 69,4% očeva i 56,8% majki. Ove vrednosti veće su nego na početku dvadeset i prvog veka. Mladi momci bliže su povezani sa svojim očevima, nego sa majkama u pogledu glavnih antropometrijskih indikatora. Kod devojčica jedino je visina bila povezana sa istim indikatorom kod majki. Kako deca odrastaju, nivo korelacije između indikatora se menja. Veza između visine, težine i BMI roditelja i dece bila je drugačija kada se pravilo poređenje između roditelja i njihove dece u adolescenciji (12–15 years old) i mladosti (18–21 years old). Korelacija ovih indikatora bila je veća između muškaraca i njihovih očeva (relevantno adolescenciji) u poređenju sa majkama.

UNCOVERING POWER–SKILL INTERACTIONS IN YOUNG ATHLETES: PREDICTING COUNTERMOVEMENT JUMP HEIGHT USING NEURAL NETWORKS

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Countermovement jump (CMJ) performance is a key indicator of lower-limb neuromuscular function in athletes. However, the extent to which CMJ reflects strength versus controlled, skilled movement is still debated. This study aimed to identify the primary predictors and key interactions influencing jump height (JH) in highly trained young football players. Fifty players performed CMJs, and temporal and kinetic variables were extracted. A copula-based approach generated synthetic data ($n = 1000$) that preserved the original distributions and correlations, enhancing statistical power. An artificial neural network (ANN) was trained to predict JH and tested on unseen test data. The ANN model demonstrated high predictive accuracy ($RMSE = 0.018$, $R^2 = 0.91$). Variable importance analysis identified peak power output, reactive strength index, and CMJ depth as the most influential predictors. ALE plots revealed nonlinear relationships, with a threshold-like effect emerging for peak power above ~ 45 W/kg. In addition, second-order derivative analysis confirmed a significant interaction between peak power and CMJ depth (-0.003), indicating a compensatory interaction effect, suggesting that higher power output is less effective when countermovement depth is suboptimal. Both strength and skill are associated with CMJ performance in youth football players. While peak power is critical, its effectiveness depends on technical execution, particularly countermovement depth. Therefore, coaches should consider both qualities when designing training interventions to maximize jump performance.

OTKRIVANJE INTERAKCIJE SNAGE I VEŠTINE KOD MLADIH SPORTISTA: PREDIKCIJA VISINE SKOKA IZ POČUČNJA POMOĆU NEURONSKIH MREŽA

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Skok iz počučnja (CMJ) predstavlja ključni pokazatelj neuromišićne funkcije donjih ekstremiteta kod sportista. Ipak, i dalje se vodi rasprava o tome u kojoj meri CMJ odražava snagu naspram kontrolisanog, veštog izvođenja pokreta. Cilj ove studije bio je da identifikuje glavne prediktore i ključne interakcije koje utiču na visinu skoka (JH) kod visoko treniranih mladih fudbalera. Pedeset fudbalera je izvodilo CMJ, a iz prikupljenih podataka su izdvojene vremenske i kinetičke varijable. Upotrebom kopula pristupa generisani su sintetički podaci ($n = 1000$) koji su zadržali distribuciju i korelaciju originalnog skupa podataka, čime je povećana statistička snaga. Veštačka neuronska mreža (ANN) trenirana je da predvidi visinu skoka i evaluirana je na neviđenim test podacima. ANN model je pokazao visoku tačnost predikcije ($RMSE = 0,018$, $R^2 = 0,91$). Analiza značaja varijabli identifikovala je maksimalnu snagu, reaktivni indeks snage i dubinu počučnja kao najuticajnije prediktore. ALE analiza je ukazala na nelinearne odnose, pri čemu se prag efektivnosti snage javlja iznad ~ 45 W/kg. Takođe, analiza drugog reda pokazala je značajnu interakciju između snage i dubine počučnja ($-0,003$), što ukazuje na kompenzacioni efekat, gde je veća snaga skoka manje značajna ukoliko dubina počučnja nije optimalna. Snaga i veština su povezane sa CMJ mladih fudbalera. Iako je maksimalna snaga ključna, njena efektivnost zavisi od tehničkog izvođenja, naročito od dubine počučnja. Dakle, treneri bi trebalo da kombinuju razvoj snage i tehnike radi postizanja maksimalne visine skoka.

HUMAN BIOLOGY



HUMANA BIOLOGIJA

RELATIONSHIP OF EARLY AND LATE MENARCHE WITH BODY HEIGHT AND BODY MASS INDEX IN YOUNG FEMALES

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Introduction. A number of endogenic and exogenic factors tend to affect the body height and body mass index (BMI) of adults. The current study aims at exploring the relationship between age at menarche with body height and BMI in young females.

Material and methods. A transversal anthropometric survey was conducted in the period 2021-2024 on 209 female university students between the ages of 21 and 25. The surveyed traits included body height and weight. BMI was calculated and based on these values. The age at menarche was obtained by applying the retrospective method.

Results. Early menarche (<12 years) was detected in 23% of women, while late menarche (>14 godina) was present in 16.7%. The average age at menarche was 12.78 ± 1.19 years. The prevalence of short stature (Z-score < -1) and overweight (BMI ≥ 25) was higher in early menarche women in comparison to those with late menarche (39.4% and 61% v.s. 0% and 2.4%, respectively). The prevalence of tall stature (Z-score > 1) and underweight (BMI < 18.50) was higher in women with late menarche in comparison with their early menarche peers (43.6% and 47.4% v.s. 2.4% and 15.8%, respectively). The odds ratio (OR) equaled 0.393 for short stature, 1.862 for tall stature, 1.789 for underweight and 0.327 for overweight ($P < 0.05$). The categories of age at menarche significantly affected the body height (BETA=0.432) and BMI (BETA=-0.450).

Conclusion. Early menarche is associated with short stature and overweight, while late menarche relates to tall stature and a higher risk of being underweight.

Keywords: Early Menarche, Late Menarche, Body Height, Body Mass Index, Young Females

POVEZANOST RANE I KASNE MENARHE SA VISINOM TELA I INDEKSOM TELESNE MASE KOD MLADIH ŽENA

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Uvod. Više endogenih i egzogenih faktora utiče na visinu tela i indeks telesne mase (ITM) kod odraslih osoba. Cilj ove studije bio je da se utvrdi povezanost godina menarhe sa visinom tela i indeksom telesne mase kod mladih žena.

Materijal i metode. Transferzalno antropometrijsko istraživanje izvršeno je 2021–2024. Godine, a obuhvatilo je 209 studentkinja starosti 21–25 godina. Izmerene su visina tela i masa tela iz kojih je izračunat ITM. Pojava menarhe utvrđena je retrospektivnom metodom.

Rezultati. Rana menarha (<12 godina) uočena je kod 23% studentkinja, a kasna (>14 godina) kod 16,7%. Prosečna godina menarhe iznosila je $12,78 \pm 1,19$ godina. Prevalenca niskih (Z-skor < -1) i gojazih ($ITM \geq 25$) veća je kod studentkinja sa ranom menarhom u odnosu na one sa kasnom (39,4% i 61% v.s. 0% i 2,4% respektivno). Prevalenca visokih (Z-skor > 1) i pothranjenih ($ITM < 18,50$) veća je kod ispitanica sa kasnom menarhom u odnosu na one sa ranom (43,6% i 47,4% v.s. 2,4% i 15,8% respektivno). Odnos šansi (OR) iznosio je: za nizak rast 0,393, za visok rast 1,862, pothranjenost 1,789 i gojaznost 0,327 ($P < 0,05$). Kategorije godina menarhe su značajno uticale na visinu tela ($BETA = 0,432$) i ITM ($BETA = -0,450$).

Zaključak. Rana menarha je povezana sa niskim rastom i gojaznošću, a kasna sa visokim rastom i većim rizikom od pothranjenosti.

Ključne reči: rana menarha, kasna menarha, visina tela, indeks telesne mase, odrasle mlade žene

SOMATOTYPE AND BODY NUTRITIONAL STATUS IN YOUNG ADULTS FROM SOUTH BULGARIA

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Introduction. To investigate the somatotypological characteristics and body nutritional status of young adults from Southern Bulgaria and analyze the relationship between them.

Material and Methods. The sample comprised 501 young adults (320 women and 181 men) between the ages of 19 and 25, who were assessed cross-sectionally between 2017 and 2023. All the participants were students at Plovdiv University "Paisii Hilendarski", Bulgaria, and its branch in Smolyan. Each participant underwent measurements of 10 key anthropometric indicators, following the Martin-Saller (1957) methodology, required for somatotype assessment. Additionally, BMI (kg/m^2), somatotype components, and individual somatotype were calculated using the Heath-Carter method (1967, 1990). Body composition type was determined based on BMI threshold values for adults (WHO, 1995; 2000). Data was analysed using the statistical software STATISTICA 12.0 and SPSS 26.0.

Results. The results indicate that the average somatotype for women is Endomorph-Mesomorph, while for men, it is Endomorphic Mesomorph. Endomorphic types were the most prevalent among women, while mesomorphic types were most common in men. Overweight was most frequently observed in the mesomorphic male group (28%), while obesity was prevalent among both endomorphic and mesomorphic men. In women, underweight was most common among ectomorphic types, whereas overweight and obesity were observed primarily in endomorphic types.

Conclusion. Our results confirm the relationship between body composition and somatotype in the transitional young adult age of 19 and 25 years. A personalised approach to nutrition and physical activity is essential for optimal health and the prevention of deviations.

Keywords: Somatotype, Bulgarian Young Adults, Nutritional Status

SOMATOTIP I NUTRITIVNI STATUS KOD MLADIH U SEVERNOJ BUGARSKOJ

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Uvod. Ispitati i analizirati vezu između karakteristika somatotipova i nutritivnog statusa mladih iz južne Bugarske.

Materijali i metode. Uzorkom je obuhvaćena 501 (320 žena i 181 muškarac) mlada osoba uzrasta između 19 i 25 godina, koje su ispitivane studijom poprečnog preseka u periodu između 2017. i 2023. godine. Svi učesnici bili su studenti Univerziteta u Plovdivu „Pajsije Hilendarski”, Bugarska, i njegovog ogranka u Smoljanu. Kod svakog od učesnika mereno je 10 ključnih antropometrijskih indikatora pomoću metodologije Martin-Saller (1957), neophodne za procenu somatotipa. Pored toga, BMI (kg/m^2), komponente somatotipa, kao i pojedinačni somatotip, mereni su putem Heath-Carter metode (1967, 1990). Kompozicija tela određena je na osnovu graničnih vrednosti BMI (SZO, 1995; 2000). Podaci su analizirani pomoću statističkog softvera STATISTICA 12.0 i SPSS 26.0.

Rezultati. Rezultati ukazuju na to da je prosečan somatotip kod žena endomorf-mezomorf, dok je kod muškaraca endomorfni mezomorf. Endomorfni tip dominira kod žena, dok je mezomorfni tip najzastupljeniji kod muškaraca. Povećana telesna težina zabeležena je kod muškaraca koji pripadaju mezomorfnom tipu (28%), dok je gojaznost najčešća kod žena koje pripadaju endomorfnom tipu. U slučaju žena, nedovoljna telesna težina najčešća je kod ekomorfnog tipa, dok su prekomerna telesna težina i gojaznost najčešće kod endomorfnog tipa.

Zaključak. Rezultati ovog istraživanja ukazuju na postojanje veze između kompozicije tela i somatotipa u tranzicionom periodu kod mladih uzrasta od 19 do 25 godina. Personalizovani pristup ishrani i fizičkoj aktivnosti od suštinskog je značaja za optimalno zdravlje i prevenciju odstupanja.

Ključne reči: somatotip, mladi u Bugarskoj, nutritivni status

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MOST COMMON MORPHOLOGICAL DEVIATIONS OF SPERMATOOZOA IN INFERTILE MEN DIAGNOSED WITH ASTENOZOOSPERMIA

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Introduction. Morphological structure of spermatozoa has major influence on their function. Since these cells need to actively move in the female reproductive organs, the morphological structure of the neck and flagellum is of particular importance, while in the fertilization process the acrosome in the sperm head plays a major role.

Materials and Methods. The aim of this study was to determine the most common deviations in spermatozoa morphology and their influence on the male fertile potential in terms of semen quality. We analyzed 50 semen samples of infertile men diagnosed with asthenozoospermia using computer assisted semen analysis (CASA System), according to WHO 6th edition.

Results. Most common deviation in the form of the spermatozoa head was macrocephalic spermatozoa, found in 32.2% of them, while most common deviation in the shape of the head was irregular head, 14.4%. Analysing neck morphology of the spermatozoa we found that most common neck deviation was abnormal size of the neck, found in 17.7% of analyzed spermatozoa. When spermatozoa acrosome was analyzed, we found abnormal acrosome present in 35.8% of them.

Conclusion. Spermatozoa morphology deviations, especially neck and flagella deviation affect sperm motility. According to our findings most common deviations were abnormal acrosome, abnormal size of the spermatozoa head and abnormal neck size. Deviations of the flagella were not dominant in our study.

Keywords: Spermatozoa Morphology, Asthenozoospermia, Sperm Motility

NAJČEŠĆE MORFOLOŠKE DEVIJACIJE SPERMATOZOIDA KOD NEPLODNIH MUŠKARACA KOJIMA JE DIJAGNOSTIFIKOVANA ASTENOZOSPERMIJA

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Uvod. Morfološka struktura spermatozoida ima glavni uticaj na njihovu funkciju. Kako ove ćelije treba aktivno da se kreću kroz reproduktivne organe žene, morfološka struktura vrata i flagele od posebnog su značaja, dok akrozom igra glavnu ulogu u procesu oplodnje.

Materijali i metode. Cilj ove studije bio je utvrditi najčešće devijacije u morfologiji spermatozoida i njihov uticaj na plodnost muškarca u pogledu kvaliteta semene tečnosti. Analizirali smo 50 uzoraka semene tečnosti neplodnih muškaraca kojima je dijagnostifikovana astenozospermija koristeći kompjuterski asistiranu analizu sperme (CASA sistem), prema šestom izdanju SZO.

Rezultati. Najčešća devijacija u obliku glave spermatozoida su mikrocefalni spermatozoidi, pronađeni kod 32,2% njih, dok je najčešća devijacija u pogledu oblika glave bila nepravilna glava 14,4%. Analizom morfologije vrata spermatozoida pronašli smo da je najčešće odstupanje vrata abnormalna veličina vrata, pronađena kod 17,7% analiziranih spermatozoida. Analizom akrozoma spermatozoida utvrđeno je da je abnormalan akrozom prisutan kod 35,8% njih.

Zaključak. Odstupanja u morfologiji spermatozoida, posebno devijacije vrata i flagele utiču na pokretljivost spermatozoida. Prema našim nalazima najčešća odstupanja bila su abnormalan akrozom, abnormalna veličina glave spermatozoida i abnormalna veličina vrata. Devijacije flagele nisu bile dominantne u našoj studiji.

Ključne reči: morfologija spermatozoida, astenozospermija, pokretljivost spermatozoida

CHARACTERISTICS OF THE EJACULATE IN CANDIDATES FOR IVF

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Introduction. In vitro fertilization is a series of procedures whose main goal is to attain an offspring. IVF is most utilized procedure in couples who have conditions that cause infertility. Some of those conditions, on the male side are low sperm count, low sperm motility and defects in the sperm morphology.

Materials and Methods. We conducted the study in the Laboratory for Human Ejaculate Analysis at IHE. 145 samples of IVF candidates were analyzed. The analysis consisted of examining the samples according to the Manual for the Laboratory Analysis of Human Ejaculate from the WHO 5th edition and determining the concentration, motility, morphology of the spermatozoa and the presence of inflammatory cells and debris.

Results. 37 samples had low sperm concentration. 52 ejaculates had lower percentage of progressive spermatozoa, 81 ejaculates had increased percentage of non-progressive spermatozoa, 41 ejaculates had an increased percentage of immotile spermatozoa. 46 samples had deviations in spermatozoa morphological structure. 109 ejaculates had presence of inflammatory cells. Debris was seen in 134 samples.

Conclusion. The majority of the samples showed an increased percentage of non-progressive spermatozoa at the expense of progressive ones. Inflammatory cells and debris were found in a large number of ejaculates. These disturbed parameters can affect the natural course of fertilization, as well as the IVF procedure.

Keywords: IVF, Spermatozoa, Sperm Analysis

KARAKTERISTIKE EJAKULATA KOD KANDIDATA ZA VTO

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Uvod. Veštačka oplodnja predstavlja niz procedura čiji je glavni cilj dobijanje potomstva. Vantelesna oplodnja najčešće se primenjuje kod parova koji imaju medicinska stanja koja uzrokuju neplodnost. Neka od ovih stanja kada su u putanju muškarci predstavljaju nizak broj spermatozoida, slabu pokretljivost spermatozoida i odstupanja u morfologiji sperme.

Materijali i metode. Studiju smo sproveli u Laboratoriji za humanu analizu ejakulata na Institutu za histologiju i embriologiju. Analizirano je 145 uzoraka kandidata za VTO. Analiza se sastojala od pregleda uzoraka prema Priručniku za laboratorijsku analizu humanih ejakulata iz petog izdanja SZO i utvrđivanja koncentracije, pokretljivosti, morfologije spermatozoida i prisustva inflamatornih ćelija i ostataka.

Rezultati. 37 uzoraka imalo je nisku koncentraciju spermatozoida. 52 ejakulata imao je nizak nivo progresivnih spermatozoida, 81 ejakulat imao je povišen nivo neprogresivnih spermatozoida, 41 ejakulat imao je povećan procenat nepokretnih spermatozoida. 46 uzoraka imalo je odstupanje u morfološkoj strukturi spermatozoida. Kod 109 ejakulata primećeno je prisustvo inflamatornih ćelija. Ostaci su primećeni kod 134 uzorka.

Zaključak. Kod većine uzoraka zapažen je povećan procenat neprogresivnih spermatozoida na račun progresivnih. Inflamatorne ćelije i ostaci pronađeni su kod većine uzoraka. Ovi poremećeni parametri mogu uticati na prirodni tok oplodnje kao i na VTO proceduru. Ključne **reči:** VTO, spermatozoidi, analiza sperme

Ključne reči: VTO, spermatozoa, analiza ejakulata

BLOOD GROUP AFFILIATION OF VLACHS

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Introduction. Determining blood group characteristics is an objective and accessible method in anthropological research. Of all known serological systems, the ABO and Rh systems are widely used for the anthropological characterization of a given human population. Bulgaria's Vlach population is divided into two main subgroups: one from the Oryahovo area and one from the northwestern part of the country.

Materials and Method. The sample comprised 551 Vlachs from the Oryahovo area, 15 to 85 years of age, 162 of which were women and 389 men. Blood group affiliation was established with standard tests—serums.

Results. In terms of the distribution of blood groups in the entire sample, it was established that the blood group A (47.55%) was most prevalent, then followed blood groups O (33.39%) and B (12.16%). The least prevalent was the blood group AB (6.90%). Furthermore, the studied group was characterized by a high percentage of positive Rh (92.00%).

Conclusion. When comparing this group with a group of Karakachan people, certain differences are observed in terms of prevalence of the blood groups A and O.

Keywords: Physical Anthropology, ABO Blood Group System, Rh - Factor System, Vlachs

PRIPADNOST VLAHA KRVNIM GRUPAMA

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Uvod. Određivanje karakteristika krvnih grupa predstavlja objektivan i dostupan metod antropološkog istraživanja. Od svih poznatih seroloških tehnika, ABO sistem krvnih grupa i RH faktor široko se koriste prilikom antropološke karakterizacije date populacije. Vlasi u Bugarskoj dele se u dve podgrupe: grupa iz Orjahova i grupa iz severozapadnog dela zemlje.

Materijali i metode. Uzorkom je obuhvaćen 551 Vlah iz okoline Orjahova, uzrasta od 15 do 85 godina, 162 žene i 389 muškaraca. Krvna grupa utvrđena je standardnim testovima – serumima.

Rezultati. U pogledu zastupljenosti određenih krvnih grupa u celom uzorku utvrđeno je da je grupa A (47,55%) najzastupljenija, a odmah nakon nje grupe O (33,39%) i B (12,16%). Najmanje je zastupljena krvna grupa AB (6,90%). Takođe, ispitivanu grupu karakteriše visok procenat pozitivnog RH faktora (92,00%).

Zaključak. Kada se ispitivana grupa uporedi sa grupom Karakačana, primećuju se izvesne razlike u pogledu zastupljenosti krvnih grupa A i O.

Ključne reči: fizička antropologija, ABO sistem krvnih grupa, RH faktor, Vlasi

CEPHALOMETRIC CHARACTERISTICS OF SCHOOLGIRLS (12 – 16 YEARS OLD) FROM SLIVEN DISTRICT – BULGARIA

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Introduction. The human species is characterized by great morphological diversity. Physical anthropology studies the variability of certain features or combinations of features in different human populations. Cephalometry is used as a useful anthropological tool and is the universal technique in the study of the head, due to its simplicity, acceptability, and practicality. Cephalometric features are particularly suitable for determining the different shapes of the head and face in humans.

Materials and Method. The current study was carried out in schools in Sliven district (the city of Sliven and the city of Nova Zagora) and deals with 7 cephalometric indicators, given that so far such data do not exist. The sample comprised 148 girls 12 to 16 years of age. A standard anthropological methodology of Martin & Saller was used. Six cephalometric indices were calculated.

Results. The greatest age-related growth of head size is observed in the period between 13 and 14 years of age. The majority of girls from all age groups fall into the following categories: brachycephalic (from 46.20% to 58.60%), hypsicephalic (from 82.60% to 100%), and tapeinocephalic (from 69.60% to 82.40%). In view of morphological facial index, the category leptoprosopic has the highest percentage frequency, reaching 95.70% in 13-year-old girls.

Conclusion. Following the average values of the main dimensions characterizing the cerebral part of the head, it is established that these dimensions increase slightly in the period between 15 and 16 years of age.

Keywords: Physical Anthropology, Cephalometric Traits, Schoolgirls, Sliven Region

KEFALOMETRIJSKE KARAKTERISTIKE DEVOJČICA ŠKOLSKOG UZRASTA (STAROSTI 12 DO 16 GODINA) NA PODRUČJU SLIVENA – BUGARSKA

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Uvod. Ljudsku vrstu karakteriše ogromna morfološka raznolikost. Fizičke antropološke studije proučavaju varijabilnost određenih crta i kombinaciju crta različitih naroda. Kefalometrija predstavlja koristan antropološki alat i univerzalna je tehnika za studiju glave upravo zbog svoje jednostavnosti, pristupačnosti i praktičnosti. Kefalometrijske karakteristike posebno su prikladne za određivanje različitih oblika glave i lica kod ljudi.

Materijali i metode. Ova studija sprovedena je u školama na teritorija Slivena (grad Sliven i Nova Zagora) i ispituje 7 kefalometrijskih indikatora, uzevši u obzir da do sada takvi podaci ne postoje. Uzorkom je obuhvaćeno 148 devojčica uzrasta od 12 do 16 godina. Korišćena je standardna metodologija Martin & Saller. Izračunato je šest kefalometrijskih indikatora.

Rezultati. Najveći rast glave povezan sa uzrastom primećen je na uzrastu od 13 i 14 godina. Većina devojčica svih uzrasta spada u jednu od ove tri grupe: brahikefalna (od 46,20% do 58,60%), hipskefalna (od 82,60% do 100%), i tapeinokefalna (od 69,60% do 82,40%). U pogledu morfološkog indeksa lica, najveći procenat učestalosti ima leptoporsopskopski tip lica koji dostiže 95,70% kod trinaestogodišnjih devojčica.

Zaključak. Prateći prosečne vrednosti glavnih dimenzija koje karakterišu cerebralni deo glave, utvrđeno je da se ove dimenzije blago povećavaju u periodu između 15. i 16. godine.

Ključne reči: fizička antropologija, kefalometrijske karakteristike, devojčice školskog uzrasta, oblast Sliven

DERMATOGLYPHIC CHARACTERISTIC OF THE CONTEMPORARY BULGARIAN POPULATION IN SOME REGIONS OF NORTHEASTERN BULGARIA

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Introduction. Because of their high taxonomic and diagnostic value, the dermatoglyphic traits are very important in the ethnogenetic investigations.

Material and Method. The dermatoglyphic traits of about 800 individuals of both sexes from Dobritch, Balchik, General Toshevo and Shabla are studied. The comparison of percentage frequency of dermatoglyphic traits by t-criterion method shows that the population from Northeast Bulgaria is too homogenous.

Results. In men from General Toshevo and in both sexes from Shabla the ulnar type of line B have higher frequency than the other types, which is not characteristic of the Europoid population. In the groups from Dobritch and Balchik statistically significant differences are observed only in two features – the third interfinger field and the axial triradius.

Conclusion. Based on the diagnostic analysis, by the percentage frequency of dermatoglyphic traits it was established that the studied population has weak eastern elements in its ethnogenesis.

Keywords: Dermatoglyphic Traits, T-criterion

DERMATOGLIFSKA KARAKTERISTIKA RECENTNOG BUGARSKOG STANOVNIŠTVA U NEKIM REGIONIMA SEVEROISTOČNE BUGARSKE

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Uvod. Karakteristike dermatoglifa od izuzetno su velikog značaja za antropološka istraživanja svakog naroda zbog velike vrednosti pri kvalifikaciji i dijagnostici.

Materijali i metode. Proučavane su karakteristike dermatoglifa oko 800 osoba oba pola iz Dobriča, Balčika, Generala Toševa i Šable. Poređenje procentualne učestalosti osobina dermatoglifa metodom t-kriterijuma pokazuje da je stanovništvo iz severoistočne Bugarske suviše homogeno.

Rezultati. Kod muškaraca iz Generala Toševa i kod oba pola iz Šabla ulnarni tip linije B ima veću učestalost od ostalih tipova, što nije tipično za evropeidnu rasu. U grupama iz Dobriča i Balčika statistički značajne razlike su uočene samo u dvema karakteristikama – trećem polju između prstiju i aksijalnom triradijusu.

Zaključak. Na osnovu dijagnostičke analize, prema procentualnoj učestalosti dermatoglifskih osobina, utvrđeno je da je ispitivana populacija sa slabim istočnim elementima u svojoj etnogenezi.

Ključne reči: dermatoglifska obeležja, t-kriterijum

COMPARATIVE DENTAL ANTHROPOLOGY IN BULGARIAN GROUPS FROM NORTHEASTERN BULGARIA

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Introduction. Every nation has genesis that is the result of lengthy and complex processes. The historical sources for the Bulgarian people testify that it is Slavic, but other groups have participated in its creation.

Material and Method. The sample comprised eight groups (each group contained approximately 100 individuals of both sexes) from different regions of Northeast Bulgaria. A great number of odontological traits with diagnostic and taxonomic meaning was examined. The study was carried out according to the methodology of Zoubov (1968).

Results. In the majority of the odontological features, the statistically significant intergroup differences are found in a small number of cases. Such features are diastema, form of M2, $\Sigma 4M1$, 1pa (3), TAMI, distal crest.

Conclusion. Judging by the frequency of most of the odontological traits, we can conclude that the studied population has elements of Western ethno-genesis. Intergroup differences are statistically insignificant which indicates that the population is homogenous.

Keywords: Odontological Stem, Crowding, Shovel-shaped Incisors.

UPOREDNA DENTALNA ANTROPOLOGIJA U BUGARSKIM GRUPAMA IZ SEVEROISTOČNE BUGARSKE

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Uvod. Svaka nacija ima genezu koja je rezultat dugotrajnih i složenih procesa. Istorijski izvori za bugarski narod svedoče da je u osnovi slovenski, ali su i druge grupe učestvovalе u njegovom formiranju.

Materijal i metode. Uzorkom je obuhvaćeno 8 grupa (svaka se sastojala od približno 100 osoba oba pola) iz raznih regiona severoistočne Bugarske. Obuhvaćen je veliki broj odontoloških obeležja od dijagnostičnog i taksonomičnog značaja. Studija je izvedena po metodologiji Zoubov (1968).

Rezultati. U velikom delu odontoloških karakteristika, statistički značajne međugrupne razlike zabeležene su u malom broju slučajeva. Takve osobine su na primer: dijastema, oblik M2, $\Sigma 4M1$, 1pa(3), TAMI, distalni greben.

Zaključak. Na osnovu distribucije ovih obeležja može se zaključiti da su kod stanovništva severoistočne Bugarske prisutni istočni elementi etnogeneze. Osim toga na baze slabih varijacija kod većeg dela odontoloških obeležja obuhvaćeno stanovništvo je u velikoj meri homogeno.

Ključne reči: zapadni odontološki stem, krauding, lopatasti sekutići

EFFECT OF COVID-19 PANDEMIC LOCKDOWNS ON BODY NUTRITIONAL STATUS AMONG BULGARIAN SCHOOL CHILDREN

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Introduction. Restrictive measures related to the COVID-19 pandemic affected children's daily structure, physical activity, eating habits, increased anxiety and stress levels. Probably, their complex influence is associated with the risk of increase of overweight and obesity in children. The aim of this study is to investigate the effects of COVID-19 pandemic on changes in BMI and body nutritional status among school children from Western Rhodope region, Bulgaria.

Materials and Methods. The sample comprised 1190 school children between the ages of 7 and 15. The height and weight were measured, and BMI (kg/m^2) was calculated for each child. Body nutritional status was evaluated through International BMI cut-off points for children (IOTF).

Results. The results show increased mean BMI values for both sexes at the end of the pandemic, which were more pronounced and statistically significant in boys of primary school age. There was also an increase in the prevalence of overweight and obesity, again more pronounced in boys.

Conclusion. The reasons for these effects are complex, and in addition to the Covid-19 pandemic, they are most likely related to growth processes at this age, influenced by genetic, endocrine, environmental, social and other factors.

Keywords: COVID -19 pandemic, Children, BMI, Obesity

UTICAJ LOKDAUNA TOKOM PANDEMIJE KOVIDA 19 NA NUTRITIVNI STATUS KOD DECE ŠKOLSKOG UZRASTA U BUGARSKOJ

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Uvod. Restriktivne mere vezane za pandemiju virusa kovid-19 uticale su na dnevnu rutinu dece, fizičku aktivnost, navike u ishrani, povećanu anksioznost i nivo stresa. Verovatno je njihov kompleksan uticaj povezan sa rizikom od povećanja telesne mase i pojave gojaznosti kod dece. Cilj ove studije bio je ispitati uticaje pandemije virusa kovid-19 na promene u BMI i nutritivnog statusa kod dece školskog uzrasta iz oblasti Zapadnih Rodopa u Bugarskoj.

Materijali i metode. Studijom je obuhvaćeno 1190 školske dece uzrasta od 7 do 15 godina. Svakom detetu merena je težina i visina (kg/m^2). Status uhranjenosti tela procenjen je na osnovu BMI granične tačke za decu (IOTF-Međunarodna radna grupa za gojaznost).

Rezultati. Rezultati pokazuju povećane srednje vrednosti BMI kod oba pola na kraju pandemije koji su bile izraženije i statistički značajne kod dečaka. Takođe, došlo je do porasta prevalence gojaznih i dece sa prekomernom telesnom težinom, koja je takođe bila izraženija kod dečaka.

Zaključak. Razlozi ovakvih evekata složeni su, a pored uticaja pandemije virusa kovid-19 povezani su sa procesima rasta na ovom uzrastu koji je pod uticajem gena, endokrinih, ekoloških, društvenih i drugih faktora.

Ključne reči: pandemija virusa kovid-19, deca, BMI, gojaznost

SIGNIFICANCE OF EARLY MARKERS OF PREGNANCY FOR PRETERM DELIVERY

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Introduction. The goal of the paper is to examine the clinical utility of the first-trimester maternal serum levels of pregnancy-associated plasma protein-A and free beta-human chorionic gonadotropin with regards to their ability to predict preterm delivery.

Materials and Methods. As part of the screening for trisomy 21, 700 pregnant women were tested for values of pregnancy-associated plasma protein-A (PAPP-A) and free beta-human chorionic gonadotropin (free β -hCG), combined with the nuchal translucency (NT).

Results. The analysis showed that the age of the pregnant women correlated with whether or not they had preterm delivery, whereby a statistically highly significant difference was found ($\chi^2 = 19.320$; $df = 2$; $p < 0.01$), as consequence of the fact that the younger women did not have preterm delivery much more frequently (100.0%) in comparison with the middle-aged and older women from the study (90.5% and 77.9% respectively). Furthermore, the analysis in which we took account of the number of earlier abortions presented a statistically substantial difference ($F = 14.384$; $df = 5$; $p < 0.05$), showing that women with no preterm delivery often had no earlier abortions (80.1%), as opposed to those who did (70.0%).

Conclusion. This is an important finding because it may enable the development of an algorithm to estimate an individualized risk of preterm delivery based on multiple factors, including the first-trimester biochemical markers. The clinical value of using these hormonal levels to predict and manage preterm delivery requires further investigation.

Keywords: Preterm Delivery, Pregnancy-associated Plasma Protein-A, Free Beta-human Chorionic Gonadotropin, First-trimester Biochemical Markers

ZNAČAJ RANIH MARKERA TRUDNOĆE ZA PREVREMENI POROĐAJ

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Uvod. Cilj ovog rada jeste ispitivanje kliničke vrijednosti nivoa za trudnoću vezanog plazma proteina-A i slobodnog beta humanog horionskog gonadotropina u serumu majke u prvom tromjesečju, kao indikatora koji mogu da predvide prevremeni porođaj.

Materijal i metode. U pitanju je prospektivna opservacijska studija subjekata koji su prošli skrining program otkrivanja Daunovog sindroma u prvom tromjesečju trudnoće, koja je obavljena u trajanju od jedne godine na univerzitetskoj Poliklinici Umberto I u Rimu. Kao dio skrininga na trizomiju 21, kod 700 trudnica testirane su vrijednosti za trudnoću vezanog plazma proteina-A (PAPP-A) i slobodnog beta humanog horionskog gonadotropina (slobodni β -hCG), i mjerene vrijednosti nuhalne translucence (NT). Iz studije su isključene sve trudnice kod kojih je rizik na Daunov sindrom bio veći od 1:380.

Rezultati. Analiza kategorija starosne dobi trudnica u odnosu na podjelu po kategoriji prevremeni porođaj pokazala je da postoji statistički visoko značajna razlika ($\chi^2 = 19,320$; $df = 2$; $p < 0,01$), koja nastaje kao posljedica toga što mlađe žene češće nisu imale prijevremeni porođaj (100,0%), za razliku od sredovječnih i starijih (90,5% odnosno 77,9%). Analiza po broju ranijih abortusa pokazala je da postoji statistički značajna razlika ($F = 14,384$; $df = 5$; $p < 0,05$), a ona nastaje kao posljedica toga što žene koje nisu imale prijevremene porođaje nisu imale ranije abortuse (80,1%), za razliku od onih koje imaju prijevremene porođaje (70,0%).

Zaključak. Na osnovu rezultata postoji mogućnost kreiranja algoritma koji bi procijenjivao individualizovani rizik za prevremeni porođaj na osnovu više faktora, uključujući i biohemijske markere iz prvog tromjesečja.

Ključne reči: prevremeni porođaj, za trudnoću vezan plazma protein-A, slobodni beta humani horionski gonadotropin, biohemijski markeri prvog tromjesečja

BIOMEDICAL ANTHROPOLOGY



BIOMEDICINSKA
ANTROPOLOGIJA

FEMORAL LENGTH ESTIMATION BASED ON ITS PROXIMAL END MORPHOMETRIC PARAMETERS

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Introduction. The femur, the long bone that most strongly correlates with body height, plays a crucial role in forensic identification. In cases where only bone fragments are available, forensic anthropologists estimate the length of the femur using population-specific regression equations. This study aimed to estimate femoral length from measurements of the proximal femur using regression analysis.

Materials and Methods. This study was conducted on 53 intact adult human femora that are part of the Osteological Collection of the Department of Anatomy at the Faculty of Medicine, University of Novi Sad, Serbia. We analyzed ten parameters of proximal femoral end: proximal width, vertical diameter of the head, transverse diameter of the head, foveal longitudinal and transverse diameters, foveal depth, anterior and posterior neck length, vertical and transverse diameter of the neck and femoral neck-shaft angle. Measurements were conducted using an osteometric board, digital Vernier caliper and stainlesssteel analog goniometer.

Results. The length of the femur was statistically significantly correlated ($p < 0.05$) with all observed parameters, except for those related to the fovea of the femoral head, with the strongest correlation found in the vertical diameter of the femoral head ($r = 0.796$). Simple and multiple linear regression equations were derived to estimate femoral length based on the dimensions of its proximal end.

Conclusion. The regression equations derived in this study will assist anatomists, anthropologists, archaeologists, and forensic investigators in estimating femur length. This, in turn, facilitates height reconstruction and contributes to the identification of individuals.

Keywords: Femur, length, morphometry, proximal fragment, regression equations

PROCENA DUŽINE BUTNE KOSTI NA OSNOVU MORFOMETRIJSKIH PARAMETARA NJENOG PROKSIMALNOG OKRAJKA

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Uvod. Butna kost, koja u poređenju sa drugim dugim kostima u najvećoj meri korelira sa telesnom visinom, ima ključnu ulogu u forenzičkoj identifikaciji. Kada su dostupni samo fragmenti kosti, forenzički antropolozi procenjuju dužinu butne kosti primenom populaciono-specifičnih regresionih jednačina. Ova studija imala je za cilj da razvije regresione jednačine za procenu dužine butne kosti na osnovu morfometrijskih parametara njenog proksimalnog okrajka.

Materijali i metode. Istraživanje je sprovedeno na 53 neoštećene butne kosti odraslih osoba iz osteološke zbirke Zavoda za anatomiju Medicinskog fakulteta u Novom Sadu. Analizirali smo sledećih deset parametara proksimalnog okrajka butne kosti: širinu proksimalnog okrajka, vertikalni prečnik glave, poprečni prečnik glave, vertikalni prečnik jamice glave femura, poprečni prečnik jamice glave femura, dubinu jamice glave femura, prednju dužinu vrata, zadnju dužinu vrata, vertikalni prečnik vrata, poprečni prečnik vrata, ugao između vrata i dijafize femura. Merenja su izvršena osteometrijskom pločom, digitalnim kaliperom i analognim goniometrom, a statistička obrada podataka u *IBM SPSS Statistics v. 23* softveru.

Rezultati. Dužina butne kosti statistički značajno ($p < 0,05$) korelirala je sa svim posmatranim parametrima izuzev onih vezanih za jamicu glave femura, a u najvećem stepenu sa vertikalnim prečnikom glave butne kosti ($r = 0,796$). Izvedene su jednostavne i višestruke linearne regresione jednačine za procenu dužinu butne kosti na osnovu dimenzija njenog proksimalnog okrajka.

Zaključak. Regresione jednačine do kojih smo došli u ovoj studiji mogu biti korisne anatomima, antropolozima, arheolozima i forenzičarima u proceni dužine butne kosti odraslih osoba. Ovim se olakšava procena visine tela, kao i identifikacija pojedinaca.

Ključne reči: butna kost, dužina, morfometrija, proksimalni okrajak, regresione jednačine

MODERN BEAUTY IDEALS AND THE AESTHETIC PERCEPTION OF TEETH- RESPONDENTS' ATTITUDES

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Introduction. As the central part of a smile, teeth play an important role in an individual's visual identity. The aesthetic appearance of teeth is perceived as a factor influencing physical attractiveness, emotional well-being, and social acceptance. In the era of social media and digital platforms, the ideal of beauty is becoming increasingly dominant, creating a desire to align the appearance of teeth with these norms.

Materials and Methods. The research was conducted through an online survey involving 207 participants. The survey contained 15 closed-ended questions related to the perception of dental appearance, the influence of aesthetics on emotional state and self-confidence, as well as the impact of media.

Results. Satisfaction with the appearance of their teeth was expressed by 47.8% of respondents, while 65.7% believe that the appearance of teeth affects self-confidence. The influence of media in shaping the image of the ideal smile was recognized by 47.8% of participants. 66.7% of respondents stated they would undergo an aesthetic procedure, provided it was painless and safe.

Conclusion. Dental aesthetics have a significant psychological and social impact. Raising awareness about the importance of oral health and the availability of aesthetic procedures can contribute to a better quality of life and greater personal satisfaction.

Keywords: Dental Aesthetics, Self-Confidence, Media Influence, Perception of Beauty

SAVREMENI IDEALI LEPOTE I ESTETSKA PERCEPCIJA ZUBA STAVOVI ISPITANIKA

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Uvod. Kao centralni deo osmeha, zubi igraju važnu ulogu u vizuelnom identitetu pojedinca. Estetski izgled zuba se percipira kao faktor koji utiče na fizičku privlačnost, emocionalno stanje i socijalnu prihvaćenost. U eri društvenih mreža i digitalnih medija ideal lepote postaje sve dominantniji, i stvara želju da se izgled zuba uskladi sa tim normama.

Materijal i metode. Istraživanje je sprovedeno putem onlajn ankete koja je obuhvatala 207 ispitanika. Anketa je sadržala 15 zatvorenih pitanja koja su se odnosila na percepciju izgleda zuba, uticaj estetike na emocionalno stanje i samopouzdanje, kao i uticaj medija.

Rezultati. Zadovoljstvo izgledom svojih zuba iskazalo je 47,8% ispitanika, dok 65,7% smatra da izgled zuba utiče na samopouzdanje. Uticaj medija na formiranje slike o idealnom osmehu prepoznaje 47,8% učesnika. Spremnost da se podvrgnu estetskoj intervenciji, pod uslovom da je bezbolna i bezbedna, izrazilo je 66,7% ispitanika.

Zaključak. Estetika zuba ima značajan psihološki i socijalni uticaj. Podizanje svesti o važnosti oralnog zdravlja i dostupnost estetskih zahvata mogu doprineti boljem kvalitetu života i većem ličnom zadovoljstvu.

Ključne reči: estetika zuba, samopouzdanje, uticaj medija, percepcija lepote

MORPHOLOGICAL CHARACTERISTICS OF MAXILLARY LATERAL INCISORS IN PATIENTS WITH CANINE IMPACTION

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Introduction. Maxillary canine impaction (MCI) is relatively common dental anomaly, with a pivotal role in dental aesthetics, occlusion and function due to its specific anatomical positioning. Etiology of MCI is multifactorial and could be related to local (supernumerary tooth, ankylosis, odontomas) and systemic (endocrine deficiencies, genetic, irradiation, syndromes). However, the following two theories have become most investigate- “guidance” and genetic theories. According to guidance theory, morphological characteristics of maxillary lateral incisor (MLI), both the crown and root, are posited to exert the influence on canine eruption and possible lead to their impaction. The aim of this research was to investigate morphological characteristics of MLI in patients with canine impaction (CI) and without this anomaly.

Material and Method. This study comprised CBCT scans of 65 patients with CI and 65 patients without CI, selected based on the inclusion criteria that required intact MLI on all scans. The following morphological parameters were evaluated: tooth length (TL), root length (RL), crown length (CL), mesiodistal crown width (MDW).

Results. The results showed that all evaluated parameters were statistically significantly smaller in the experimental group compared to control group.

Conclusion. The morphology of MLIs adjacent to an IMC showed a tendency of shorter root length, shorter crown length and smaller mesiodistal crown width.

Keywords: Canine Impaction, Lateral Incisors, Canine Impaction Etiology

MORFOLOŠKE KARAKTERISTIKE MAKSILARNIH LATERALNIH SEKUTIĆA KOD PACIJENTA SA IMPAKCIJOM OČNJAKA

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Uvod. Impakcija maksilarnog očnjaka (MCI) je relativno česta ortodonska anomalija, sa ključnom ulogom u dentalnoj estetici, okluziji i funkciji, s obzirom na specifičnost anatomskeg položaja. Etiologija MCI je multifaktorijska i može biti povezana sa lokalnim (prekobrajni zubi, ankiloza, odontomi) i opštim faktorima (endokrini poremećaji, genetska predispozicija, zračenje, sindromi). Dve teorije su do sada bile predmet najvećeg broja istraživanja – „teorija vođenja“ i genetska teorija. Prema teoriji vođenja, pretpostavlja se da morfološke karakteristike maksilarnog lateralnog sekutića (MLI), kako krune tako i korena, utiču na put nicanja i moguću impakciju maksilarnog stalnog očnjaka. Cilj ovog istraživanja bio je da se ispituju morfološke karakteristike MLI kod pacijenata sa impakcijom očnjaka i pacijenata bez ove anomalije.

Materijal i metode. Ova studija je analizirala CBCT snimke 65 pacijenata sa MCI i 65 pacijenata bez MCI sa intaktnim lateralnim sekutićem. Procenjivani su sledeći morfološki parametri: dužina zuba (TL), dužina korena (RL), dužina krunice (CL), meziodistalna širina krunice (MDV).

Rezultati. Rezultati su pokazali da su svi evaluirani parametri statistički značajno manji u eksperimentalnoj grupi u odnosu na kontrolnu grupu.

Zaključak. Morfologija MLI u blizini MCI-a pokazala je tendenciju kraće dužine korena, kraće dužine krunice i manje mezio-distalne širine krunice.

Ključne reči: impakcija očnjaka, lateralni sekutići, etiologija impakcije

AN ONLINE QUEST FOR PERFECT SMILE

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Introduction. The Internet has become an essential source of information for younger generations, who use it more frequently than older individuals. A common behavior among internet users is searching for symptoms they experience to identify possible conditions and explore treatment options. This trend extends to oral health, with people increasingly relying on online resources to understand oral health. This study aimed to examine the attitudes of students toward using the internet as a source of information about oral health.

Materials and Methods. The research was conducted using an online survey designed in Google Forms. The sample comprised 226 students at the University of Niš.

Results. Approximately 31% of respondents reported implementing advice about oral health seen in online advertisements by purchasing products, while 25% changed personal habits, such as smoking or diet. In contrast, 23% ignored the advice due to lack of interest, and 21% distrusted it. 75% of participants reported having conducted searches on internet about oral health on the internet. Their primary motivations included improving general knowledge (67%), learning better brushing techniques (32%), and understanding dental procedures (39%). Other reasons included reducing stress related to dental visits (15%) and finding remedies for toothaches or swelling (12%). In addition, 41% sought information on forums from people who had similar dental problems as them.

Conclusion. Students frequently use the Internet to become more familiar with various aspects of oral health. This reliance on online resources significantly influences their attitudes and behaviors regarding oral health care. Due to possible misinformation that can be found on the Internet, it is recommended to consult with experts to confirm the accuracy and security of the information.

Keywords: Dentistry, Students, Internet, Oral Health

ONLAJN POTRAGA ZA SAVRŠENIM OSMEHOM

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Uvod. Internet je postao glavi izvor informisanja mlađih generacija, koje ga koriste češće nego starije osobe. Česta navika korisnika interneta je istraživanje simptoma bolesti radi identifikacije mogućih stanja i mogućnosti lečenja. Ovaj trend se proteže i na oralno zdravlje, pri čemu se ljudi sve više oslanjaju na onlajn izvore da bi razumeli oralno zdravlje. Ova studija je imala za cilj da ispita stavove studenata prema korišćenju interneta kao izvora informacija o oralnom zdravlju.

Materijali i metode. Ispitivanje je sprovedeno putem onlajn ankete napravljene u *Google Forms*-u. Učestvovalo je 226 studenata Univerziteta u Nišu.

Rezultati. Skoro 31% ispitanika je prijavilo da je implementiralo savet o oralnom zdravlju, koji su videli u onlajn marketingu naručivši proizvod, dok je 25% promenilo neku svoju naviku, kao što je pušenje ili ishrana. Nasuprot tome, 23% je ignorisalo savet zbog manjka interesovanja, a 21 % nije verovalo. Ukupno 75% učesnika je izjavilo da je vršilo pretrage na internetu u vezi sa oralnim zdravljem. Njihova primarna motivacija uključivala je poboljšanje opšteg znanja (67%), učenje boljih tehnika pranja zuba (32%) i razumevanje stomatoloških procedura (39%). Ostali razlozi uključivali su smanjenje stresa zbog poseta stomatologu (15%) i pronalaženje lekova za zubobolju ili otok (12%). Takođe, 41% je tražilo informacije na forumima od ljudi koji su imali slične stomatološke probleme kao oni.

Zaključak. Studenti često koriste internet da bi se bolje upoznali sa različitim aspektima oralnog zdravlja. Ovo oslanjanje na onlajn izvore značajno utiče na njihove stavove i ponašanja u pogledu oralne zdravstvene zaštite. Zbog mogućih dezinformacija koje se mogu naći na internetu, obavezno se preporučuje konsultacija sa stručnjacima kako bi se potvrdila tačnost i informacija.

Ključne reči: stomatologija, studenti, internet, oralno zdravlje

INFLUENCE OF PHYTOTHERAPY ON THE IMPROVEMENT OF CLINICAL PARAMETERS IN PATIENTS WITH CHRONIC PERIODONTITIS

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Introduction. Periodontitis is a chronic inflammatory disease of the supporting tissues caused by microorganisms, which disrupts homeostasis, which is necessary for an appropriate host immune response. The development of periodontitis is caused by immunological and inflammatory reactions between the host and oral biofilm, which can be influenced by numerous local and general factors. The gold standard in the treatment of periodontitis is basic therapy. Phytopreparations can be used as an adjunct method to mechanical therapy in the treatment of inflammatory periodontal diseases. The aim: was to evaluate the effect of Propoherb G®, as an adjunct to mechanical therapy in subjects with chronic periodontitis through monitoring of clinical parameters.

Material and Methods. The research was conducted at the Clinic of Dental Medicine, Faculty of Medicine, University of Niš. 60 subjects with a diagnosis of chronic periodontitis were divided into the SRP group and the SRP + Propoherb G® group. Clinical parameters, periodontal pocket depth PPD, attachment epithelium level CAL and Muhlemann bleeding index BI were measured at the beginning and after the completion of therapy.

Results. The use of phytopreparations led to a statistically significant reduction in PPD and CAL values ($p < 0.05$) in contrast to the group receiving only basic therapy where PPD and CAL values did not show a significant difference ($p > 0.05$). BI values decreased statistically significantly in both groups after treatment.

Conclusion. The use of the phytopreparation Propoherb G as an adjunct treatment to the basic therapy leads to an improvement in the clinical parameters of BI, PPD and CAL.

Keywords: Periodontitis, Oral Biofilm, Basic Therapy, Phytotherapy, Clinical Parameters

UTICAJ FITOTERAPIJE NA POBOLŠANJE KLINIČKIH PARAMETARA KOD PACIJENATA SA HRONIČNIM PARODONTITISOM

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Uvod. Parodontitis predstavlja hronično, inflamatorno oboljenje potpornog aparata zuba uzrokovano specifičnim mikroorganizmima ili grupama mikroorganizama gde dolazi do poremećaja homeostaze koja je neophodna za odgovarajući imuni odgovor domaćina. Razvoj parodontitisa je uslovljen imunološkim i inflamatornim reakcijama između domaćina i bakterija oralnog biofilma, na koje mogu uticati i brojni lokalni i opšti faktori. Zlatni standard u terapiji parodontitisa je bazična terapija koja podrazumeva uklanjanje etioloških faktora, prvenstveno oralnog biofilma. Fitopreparati se zbog brojnih prednosti mogu koristiti kao dopunska metoda mehaničkoj terapiji u tretmanu inflamatornih parodontalnih oboljenja. Cilj je bio procena efekta fitopreparata Propoherb G®, kao dopuskog sredstva mehaničkoj terapiji kod ispitanika sa hroničnim parodontitisom kroz praćenje kliničkih parametara.

Materijal i metode. Istraživanje je sprovedeno na Klinici za dentalnu medicinu, Medicinskog fakulteta Univerziteta u Nišu. Učestvovalo je 60 sistemski zdravih ispitanika sa dijagnozom hroničnog parodontitisa koji su usmeravani u SRP grupu – kod koje je rađena bazična terapija, i fitoterapijsku grupu u kojoj je pored bazičnog tretmana sprovedena i fitoterapija, SRP + Propoherb G®. Klinički parametri, dubina parodontalnog džepa PPD, nivo pripojnog epitela CAL i indeks krvarenja – Muhlemann bleeding index BI mereni su na početku i nakon završene terapije.

Rezultati. Upotreba fitopreparata kao dodatak bazičnoj terapiji hroničnog parodontitisa dovodi do statistički značajnog smanjenja PPD i CAL vrednosti ($p < 0,05$) za razliku od grupe gde je rađena samo bazična terapija gde vrednosti PPD i CAL nisu pokazale značajniju razliku ($p > 0,05$). Vrednosti BI su se statistički značajno umanjile u obe grupe nakon tretmana.

Zaključak. Upotreba fitopreparata dovodi do statističkog poboljšanja srednjih vrednosti kliničkih parametara BI, PPD i CAL.

Ključne reči: parodontitis, oralni biofilm, bazična terapija, fitoterapija, klinički parametri

THE BODY COMPOSITION CHANGES IN MENOPAUSAL WOMEN

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In modern times, about one third of women over the age of 40 have menopausal symptoms, and most women in menopause experience changes in their body composition in the developed countries. The incidence and level of changes in body mass and body composition is insufficiently studied and known. Body weight increases with age regardless of gender. Changes in body weight and body composition are influenced by several factors. In addition to bad lifestyle habits, metabolic rate changes and changes in hormonal status are considered the main causes of these phenomena. In the postmenopausal period, there is a decrease in the lean body component, which significantly affects the metabolic rate in women (about 200-250 kcal per day). At the same time, the percentage of fat tissue increases, especially its abdominal and visceral composition, which represents an increased risk for the development of cardiovascular diseases. Changes in body fat composition, reduction of subcutaneous fat in peripheral parts of the body and increase of the central adiposity are associated with inflammatory processes, meta-inflammation and inflammaging. To maintain metabolic homeostasis and good health, it is necessary to maintain a good balance of body fats and their distribution. Changes in body composition in menopausal women have a significant impact on general health and the quality of life. It is necessary to implement preventive measures in terms of changing personal life habits, especially regarding the diet and physical activity, in order to reduce unwanted physical changes in women in menopause.

Keywords: Menopause, Body Fat, Lean Mass, Metabolic Health

PROMENA TELESNOG SASTAVA KOD ŽENA U MENOPAUZI

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U savremenom svetu u razvijenim zemljama oko jedna trećina žena starijih od 40 godina ima simptome menopauze i kod većine žena u menopauzi prisutne su promene u telesnom sastavu. Incidenca i nivo promena u telesnoj masi i telesnom sastavu nedovoljno je proučena i poznata. Telesna težina se povećava sa starenjem nezavisno od pola. Promene u telesnoj težini i telesnim komponentama, i kod žena i muškaraca, pod uticajem su više faktora, no pored loših životnih navika, metaboličke promene i promene u hormonskom statusu smatraju se glavnim uzročnikom ovih pojava. U postmenopauzalnom periodu pojavljuje se smanjenje čiste telesne komponente što značajno utiče na metabolički rad kod žene (oko 200–250 kcal dnevno). U isto vreme se povećava procent masnog tkiva, osobito abdominalna i visceralna komponenta, što predstavlja povećan rizik za razvoj kardiovaskularnih bolesti. Promene u masnoj telesnoj komponenti, smanjenje subkutane masti u perifernim delovima tela, a povećanje centralnog adipoziteta povezano je sa inflamatornim procesima, metainflamacijom i zapaljenjima. Za održavanje metaboličke homeostaze i dobrog zdravstvenog stanja potrebno je održavati dobar balans telesnih masti i njihovu distribuciju. Promene u telesnom sastavu kod žena u menopauzi imaju značajan uticaj na opšte zdravlje žene i kvalitet života. Neophodno je primeniti preventivne mere u promeni ličnih životnih navika, osobito u vezi sa ishranom i fizičkom aktivnosti, kako bi se smanjile neželjene telesne promene kod žena u menopauzi.

Ključne reči: menopauza, telesne masti, čista masa, metaboličko zdravlje

EVALUATION OF GINGIVA VISIBILITY IN NATURAL AND FORCED SMILE

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Introduction. A smile is a facial expression that usually indicates pleasure, kindness and gratitude. Every person wants to have as beautiful smile as possible, therefore visits to the dentist are frequent. Excessive visibility of gingiva impairs the aesthetic appearance of the smile. With development of mucogingival surgery, patients have been given the opportunity to improve the aesthetics of their smile by reducing visibility of the gingival. The aim of the study was to examine the visibility of the gingival in people of different sex and age, during natural and forced smile.

Material and Methods. 50 patients from the Clinic for Dental Medicine in Nis were selected. Pictures of the patients were taken during their natural and forced smiles. By analyzing the photographs, the patients were divided into 4 groups. The first group (1) comprised patients with a broad smile in which the visibility of gingival is over 3mm, (2) patients in which the visibility of gingival is from 0 to 3mm, (3) patients with a smile line in which only the edge of free gingival is visible, and (4) patients in which the gingival is not visible while smiling. The analysis was done for both natural and forced smiles.

Results. The following results were obtained for natural smile: G1:1, G2:3, G3:21, G4:25; and for forced smile: G1:1, G2:9, G3:19, G4:21.

Conclusion. The duty of every dentist is to see the aesthetic component of gingival health and to improve the smile line of the patient, who then becomes more satisfied with his appearance.

Keywords: Smile Line, Gingival Visibility, Aesthetics, Mucogingival Surgery

PROCENA VIDLJIVOSTI GINGIVE KOD PRIRODNOG I FORSIRANOG OSMEHA

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Uvod. Osmeh je izraz lica koji obično ukazuje na zadovoljstvo, ljubaznost i zahvalnost. Važnost analize osmeha ogleda se u tome što lep osmeh poboljšava estetski izgled osobe. Svaka osoba želi da ima što lepši osmeh, pa su i posete stomatologu iz tog razloga česte. Prekomerna vidljivost gingive narušuje estetski izgled osmeha. Razvitkom mukogingivalne hirurgije pacijentima je pružena mogućnost da poboljšaju estetiku svog osmeha, smanjenjem vidljivosti gingive. Cilj rada je bio ispitati vidljivost gingive kod osoba različitog pola i različite životne dobi, prilikom prirodnog i forsiranog osmeha.

Materijali i metode. Izabrano je 50 pacijenata sa Klinike za Dentalnu medicinu u Nišu, (25 muškaraca i 25 žena), doba između 25 i 45 godina. Napravljene su slike pacijenata prilikom njihovog prirodnog i forsiranog osmeha. Analizom fotografija, pacijenti su podeljeni u 4 grupe: (1) Pacijenti sa visokim osmehom kod kojih je vidljivost gingive preko 3mm, (2) pacijenti kojima je vidljivost gingive od 0 do 3mm, (3) pacijenti sa linijom osmeha prilikom koje se vide samo ivica slobodne gingive i (4) pacijenti kod kojih se ne vidi gingiva prilikom osmeha. Analiza je urađena i kod prirodnog i kod forsiranog osmeha.

Rezultati. Sledeći rezultati su dobijeni kod prirodnog osmeha: G1: 1, G2: 3, G3: 21, G4: 25. Analizom forsiranog osmeha dobijeni su sledeći rezultati: G1: 1 G2: 9 G3: 19: G4 21.

Zaključak. Dužnost stomatologa je da uvidi estetsku komponentu gingivalnog zdravlja i da unapredi liniju osmeha pacijenta, koji tada postaje zadovoljniji svojim izgledom.

Glavne reči: linija osmeha, vidljivost gingive, estetika, mukogingivalna hirurgija

SURGICAL REMOVAL OF DEEP IMPACTED MAXILLARY AND MANDIBULAR TEETH

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Introduction. Removing teeth that are deeply impacted in the maxilla and mandible presents significant challenges for surgical clinicians. Aim was to present clinical experience in surgical extraction of deeply impacted teeth.

Material and Methods. The records of 118 patients were analyzed, with particular focus on cases involving impaction of teeth in the maxilla and mandible. The use of 3D cone beam computed tomography (CBCT) as a tool for precise visualization and localization of impacted teeth is highlighted. Cases with perioperative complications related to soft tissue, nerve damage, and bone are documented.

Results. From the study cohort 9 patients (7,6%), were identified with deep impaction of third molars in the maxilla or mandible. Among these patients, 6 were females between the ages of 22 and 40, while 3 were males between the ages of 20 and 68. The surgical extraction of the impacted third molars was performed from the following anatomical regions: infratemporal fossa (2 patients), pterygopalatine fissure (1 patient), pterygopalatine fossa (1 patient), angle of the mandible with involvement of the inferior alveolar nerve (3 patient), and base of the mandible (2 patients with permanent premolar and deciduous molar). Temporary postoperative sequelae, including pain, trismus, and swelling, were reported in 7 (77.7%) patients, all of which resolved within 7 to 20 days postoperatively.

Conclusion. Meticulous preoperative planning, appropriate radiographic imaging, and sufficient surgical technique can reduce the morbidity associated with the procedure and avoid permanent complications.

Keywords: Deep Impaction, Maxilla, Mandible, Teeth

HIRURŠKA EKSTRAKCIJA DUBOKO IMPAKTIRANIH MAKSILARNIH I MANDIBULARNIH ZUBA

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Uvod. Ekstrakcija duboko impaktiranih zuba iz maksile i mandibule predstavlja značajan izazov za hiruršku praksu. Cilj je bio prikazati kliničko iskustvo u hirurškoj ekstrakciji duboko impaktiranih zuba.

Materijal i metode. Analizirano je 118 oralnohirurških pacijenata, sa posebnim osvrtom na slučajeve duboko impaktiranih zuba, u maksili i mandibuli. Istaknuta je upotreba 3D kompjuterizovane tomografije konusnog snopa (CBCT), kao rendgen alata za preciznu vizualizaciju i lokalizaciju impaktiranih zuba. Dokumentovani su slučajevi sa perioperativnim sekvelama i komplikacijama u vezi sa mekim tkivima, oštećenjem nerava i kostima.

Rezultati. Iz ispitivane grupe, identifikovano je 9 pacijenata (7,6%), sa dubokom impakcijom trećih molara u maksili ili mandibuli, kao i premolara u mandibuli. Među ovim pacijentima, 6 je bilo ženskog pola, starosti između 22–40 godina, dok je 3 bilo muškog pola starosti 20–68 godina. Hirurška ekstrakcija impaktiranih trećih molara izvršena je iz sledećih anatomskih regiona: infratemporalna jama (2 pacijenta), pterigopalatina fisura (1 pacijent), pterigopalatina fossa (1 pacijent), ugao mandibule sa zahvaćenošću donjeg alveolarnog nerva (3 pacijenta), i baza mandibule sa mlečnim molarom i stalnim premolarom (2 pacijenta). Sekvele, uključujući bol, trzmus i otok, prijavljene su kod 7 (77,7%) pacijenata, i sve su se povukle u roku od 7 do 20 dana, posle operacije.

Zaključak. Pažljivo preoperativno planiranje, uz odgovarajuće radiografsko snimanje i dovoljnu pažljivu hiruršku tehniku, može smanjiti morbiditet povezan sa operacijom, kao i izbeći trajne komplikacije.

Ključne reči: duboka impakcija, maksila, mandibula, zubi

ADAPTATION OF DENTAL TREATMENT TO SENSITIVE GROUPS OF PEOPLE

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There is almost no branch of medicine, as is the case with dentistry, whose "patient" can be considered the entire world population. Caries affects about 99% of people, and besides it, there are other diseases of the orofacial system, irregularities in the number and position of teeth, etc. Therefore, the need for dental care also exists when people suffer from serious illnesses, expect important operations, have a risky pregnancy, disability, have suffered a great loss or when it comes to mass disasters such as war or pandemic. The fact that toothache is one of the most painful medical conditions in medicine means that these are often urgent conditions for patients who are going through difficult periods in life. Every person whose dental treatment must be adapted, for the dentist is a patient with "special needs". Our multi-year research aimed to look at the problem from the point of view of a sensitive patient - scared, or undergoing a therapy that limits dental care, a patient with a disability or a pregnant patient. It has been shown that the path to reach the same goal often has to be different. Understanding their priorities and concerns is the basis of building a long-term quality relationship based on mutual understanding and adaptation with a common goal - to ensure the best possible functioning of the orofacial system and a healthier and more beautiful smile in difficult life circumstances.

Keywords: Dental Care, Disability, Risk Patients

PRILAGOĐAVANJE STOMATOLOŠKOG TRETMANA OSETLJIVIM GRUPAMA LJUDI

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Gotovo da nema grane medicine, kao što je slučaj sa stomatologijom, čijim se „pacijentom“ može smatrati celokupna svetska populacija. Karijes pogađa oko 99% ljudi, a osim njega, zastupljene su druge bolesti orofacijalnog sistema, nepravilnosti u broju i položaju zuba itd. Zbog toga potreba za stomatološkom negom postoji i kada ljudi pate od teških bolesti, očekuju važne operacije, imaju rizičnu trudnoću, invaliditet, veliki gubitak ili kada su u pitanju masovne katastrofe poput rata ili pandemije. Činjenica da zubobolja spada u najjače bolove u medicini, utiče da su to često hitna stanja kod pacijenata koji prolaze kroz teške periode. Svaka osoba kojoj se mora prilagoditi stomatološki tretman za stomatologa je pacijent sa „posebnim potrebama“. Naša višegodišnja istraživanja su za cilj imala da se problem sagleda iz ugla osetljivog pacijenta – uplašenog, na određenoj terapiji koja ograničava stomatološku negu, pacijenta sa invaliditetom ili pacijentkinje u drugom stanju. Pokazalo se da put do postizanja istog cilja često mora biti drugačiji. Razumevanje njihovih prioriteta i zabrinutosti temelj su izgradnje dugotrajnog kvalitetnog odnosa koji počiva na međusobnom razumevanju i prilagođavanju sa zajedničkim ciljem da u teškim životnim okolnostima obezbedi što bolje funkcionisanje orofacijalnog sistema i da osmeh bude zdraviji i lepši.

Gljučne reči: Stomatološka nega, invaliditet, pacijenti rizika

FREQUENCY OF FORMATION OF CALCULUS IN THE CALYCES OF THE KIDNEY SYSTEM

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Introduction. Kidney calculus or nephrolith is a solid mineral mass that forms in the kidneys due to the crystallization of minerals and salts in the urine. It is more common in men. The most common types of stones are calcium-oxalate, calcium phosphate, struvite, while urate and cystine stones are less common. The aim of the work was to show in which calyces of the kidney the renal calculi are dominantly formed.

Materials and Methods. The retrospective analysis included 33 studies - intravenous urograms, on which the diagnosis of multiple renal calculus was made, with at least two calculi, in the calyces and in the renal pelvis.

Results. Analyzing the studies, it was found that the distribution of multiple stones was: in the upper calyx and pelvis 4 (12.12%), in the middle calyx and pelvis 10 (30.30%) and in the lower calyx and pelvis 19 (57.58%). One of the reasons for the greater number of stones in the calyx for the lower part can be due to anatomical position of the calyx for the lower part, whose necks are longer than the calyx from the upper part, so probably the "physiological" stagnation of urine due to ascending drainage is responsible for the appearance of calculus.

Conclusion. A kidney calculus is a solid mineral mass that forms in the kidneys. It is most often formed in calyx for the lower part. This is very important because of the rapid and adequate diagnosis, but also because of complementary imaging methods.

Keywords: Kidney Stones, Kidney, Calyx, Frequency

UČESTALOST STVARANJA KAMENACA U ČAŠIČNOM SISTEMU BUBREGA

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Uvod. Kalkulus bubrega ili nefrolit je čvrsta mineralna masa koja se formira u bubrezima usled kristalizacije minerala i soli u urinu. Češća je kod muškaraca. Najčešći tip kamenaca je kalcijum-oksalatni, kalcijum-fosfatni, struvitni, dok su ređi uratni i cistinski. Cilj rada je bio da pokaže u kojim čašicama bubrega se dominantno stvaraju bubrežni kalkulusi.

Materijali i metode. Retrospektivnom analizom bile su obuhvaćene 33 studije – intravenskih ugrografija, na kojima je bila postavljena dijagnoza multiple bubrežne kalkuloze, sa bar dva kalkulusa, u čašicama i u bubrežnoj karlici.

Rezultati. Analiziranjem studija dobijeni su podaci da je raspored multiplih kamenaca bio: u gornjoj čašici i karlici 4 (12,12%), u srednjoj čašici i karlici 10 (30,30%) i u donjoj čašici i karlici 19 (57,58%). Jedan od razloga većeg broja kamenaca u čašicama za donji pol može biti zbog samog anatomskeg položaja čašica za donji pol, čiji su vratovi duži od čašica iz gornjeg pola, pa je verovatno "fiziološki" zastoј urina zbog ushodne drenaže odgovoran za pojavu kalkuloze.

Zaključak. Kalkulus bubrega je čvrsta mineralna masa koja se formira u bubrezima. Najčešće se formira u čašicama za donji pol. Ovo je vrlo važno zbog postavljanja brze i adekvatne dijagnoze, ali i zbog komplementarnih metoda snimanja.

Ključne reči: bubrežni kamenci, bubreg, čašica, učestalost

TONGUE AS A MULTIFUNCTIONAL ORGAN, WITH SPECIAL REFERENCE TO THE POSSIBILITY OF ADDITIONAL DIAGNOSTICS

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A tongue is the strongest muscle in the human body. It is located in the oral cavity and is lined with mucous membrane. On the dorsal surface of the tongue, there are receptors for bitter, sweet, salty and sour taste. It plays an important role in the processes of sucking, chewing, swallowing, speaking and showing emotions. In a healthy person, the tongue is clearly pink in color, shiny, velvety, embossed, and easily mobile. A routine examination of the tongue is of key importance in detecting certain diseases. An enlarged tongue, flat - more voluminous, wide, which often protrudes from the mouth, indicates a hypothyroidism. A swollen, large tongue indicates the possibility of an allergy such as Quincke's edema. A dark color of the tongue could suggest nicotine addiction, excessive use of antibiotics or poor circulation. Whitish deposits, distributed in a mesh on the surface of the tongue, warn that there is an infection, which can be accompanied by fever and dehydration. In support of this claim is the fact that the tongue is dry, cracked in places, and more difficult to move. Raspberry tongue is found in bacterial rash (scarlet fever). If bubbles filled with a clear liquid appear on the surface of the tongue, painful to the touch, it is most likely a viral infection, such as herpes. Dryness of the tongue is the result of fluid loss caused by diarrhea, vomiting, bleeding. Hypersalivation occurs with the use of drugs in psychiatric diseases. If the tip of the tongue turns to the left or right during swallowing, there is a suspicion that it is a neurological disease. In recent times, among the younger generation within the subculture, the appearance of piercings, tattoos, and surgical remodeling of the tongue can be seen as a fashion trend.

Keywords: Language, Multifunctionality, Diagnostics, Size, Color, Humidity, Position.

JEZIK KAO MULTIFUNKCIONALNI ORGAN SA POSEBNIM OSVRTOM NA MOGUĆNOST DOPUNSKJE DIJAGNOSTIKE

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Jezik je najjači mišić u organizmu čoveka. Nalazi se u usnoj duplji i obložen je sluzokožom. Na dorzalnoj površini jezika se nalaze receptori za gorko, za slatko, za slano i kiselo. Igra važnu ulogu u procesima sisanja, žvakanja, gutanja, pri govoru i pokazivanju emocija. Kod zdrave osobe jezik je jasno ružičaste boje, sjajan, baršunast, reljefast, lako pokretljiv. Rutinski pregled jezika je od ključnog značaja u otkrivanju pojedinih bolesti. Uvećan jezik, pljosnato – voluminozniji, širok, koji često prominira iz usta, ukazuje na hipotireozu. Otečen, veliki jezik ukazuje na mogućnost alergije kao kod Kvinkeovog edema. Tamna boja jezika može da sugeriše da se radi o nikotinomaniji, preteranoj upotrebi antibiotika ili o lošoj cirkulaciji. Beličaste naslage, mrežasto raspoređene po površini jezika upozoravaju da je prisutna infekcija, koja može biti praćena febrilnošću i dehidratacijom. U prilog ovoj tvrdnji je i činjenica da je jezik suv, mestimično ispucao, teže pokretljiv. Malinast jezik se sreće kod bakterijskih osipnih groznica (šarlah). Ako se na površini jezika pojave mehurići ispunjeni bistrom tečnošću, bolni na dodir, najverovatnije se radi o virusnoj infekciji, kao što je herpes. Suvoća jezika je posledica gubitka tečnosti uzrokovanog prolivima, povraćanjem, krvarenjem. Hipersalivacija nastaje kod upotrebe lekova u psihijatrijskim obolenjima. Prilikom plaženja, ako vrh jezika skreće levo ili desno, postoji sumnja da se radi o nekom neurološkom obolenju. U novije vreme, kod mlađe generacije u okviru supkulture, kao modni trend sreće se pojava pirsinga, tetovaže, ali i hirurško remodelovanje jezika.

Ključne reči: jezik, multifunkcionalnost, dijagnostika, veličina, boja, vlažnost, položaj

THE COMBINED ORTHODONTIC AND SURGICAL MANAGEMENT OF MANDIBULAR PROGNATHISM AS INITIAL STEP TOWARD ATTRACTIVE FACE

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Introduction. Patients experiencing severe mandibular prognathism are most effectively treated using a combined orthodontic-surgical method. The aim was to present experience in orthodontic-surgical management of mandibular prognathism aimed at correcting dental malocclusion and restoring facial balance and harmony.

Material and Methods. The orthodontist's objective is to place the maxillary anterior teeth 4mm forward to the line NA at a 22 degree angle; the mandibular anterior teeth are set 4 mm forward to the line NB at a 25 degree angle (for 2 degree ANB angle*), respecting Bell's principle(ideal tooth position which is not attainable in most cases). The teeth of the maxilla and mandible are aligned, the arches are leveled, rotations are corrected, and spaces are closed. Bilateral sagittal osteotomy of the ramus and corpus of mandible is performed according to Obwegeser-Dal Pont's technique to set back the mandible in skeletal Class I(normocclusion according to Angle), with perioperative condyle normal positioned.

Results. In all 6 patients, of equal gender representation, age range from 18 to 27 years, the direct result of surgically repositioning the mandible, was to shorten mandibular length, which consequently moved the chin position backward, in normal dental occlusion. The angle of the mandibular plane is corrected in every patient. Postoperative relapse was not observed, and the occlusion rate was stable in all patients.

Conclusion. The goal of surgical-orthodontic treatment of mandibular prognathism could be achieved if the proper orthodontic therapy is performed preoperatively and postoperatively, leading to facial balance and beauty.

Keywords: Mandibular Prognathismus, Orthodontic Therapy, Surgery

KOMBINOVANO ORTODONTSKO I HIRURŠKO LEČENJE MANDIBULARNOG PROGNATIZMA KAO POČETNI KORAK KA NORMALNOM LICU

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Uvod. Pacijenti koji imaju teški mandibularni prognatizam najefikasnije se leče kombinovanom ortodontsko-hirurškom metodom. Cilj je bio predstaviti iskustvo u ortodontsko-hirurškom lečenju teškog mandibularnog prognatizma u cilju ispravljanja dentalne malokluzije, skeletne diskrepance i vraćanja ravnoteže i harmonije lica.

Materijal i metode. Kod 6 pacijenata sa mandibularnim prognatizmom, ortodontskom terapijom je bilo potrebno, da se maksilarni incizivi postave 4 mm ispred linije NA pod uglom od 22 stepena, a mandibularni incizivi da budu postavljeni 4 mm ispred linije NB pod uglom od 25 stepeni (za ANB ugao od 2 stepena*), poštujući Bellov princip (idealni položaji zuba koji se u većini slučajeva ne mogu postići). Preoperativno ortodontskom terapijom, zubi maksile i mandibule se nivelišu, rotacije zuba se koriguju, a prostori između zuba se zatvaraju do međusobnog kontakta. Hirurškim postupkom u vidu bilateralne sagitalne osteotomije ramusa i korpusa mandibule koja se izvodi prema Obwegeser-Dal Pont-ovoj tehnici, omogućuje se vraćanje mandibule u skeletnu klasu I (normokluzija prema Angleu), sa perioperativnim pozicioniranjem kondila.

Rezultati. Kod svih 6 pacijenata, jednake polne zastupljenosti, starosti od 18 do 27 godina, direktan rezultat hirurške repozicije mandibule je skraćivanje dužine mandibule, što je posledično pomerilo položaj tela mandibule i brade unazad, u normalnu okluziju zuba. Ugao mandibularne ravni je korigovan kod svakog pacijenta. Postoperativni recidiv nije primećen, a stepen normalne okluzije je bio uniforman, stabilan, kod svih pacijenata.

Zaključak. Opisanim ortodontsko-hirurškim lečenjem mandibularnog prognatizma, ako se preoperativno i postoperativno sprovodi pravilna ortodontska terapija, striktno se poštuju hirurški principi, može se postići na kraju terapije ravnoteža anatomskih elemenata koji daju izgled normalnog lica.

Ključne reči: mandibularni prognatizam, ortodontska terapija, hirurgija

SUCCESS OF ENDODONTIC THERAPY IN TEETH WITH LARGE PERIAPICAL LESIONS WITHOUT THE APPLICATION OF ORAL-SURGICAL INTERVENTIONS

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Introduction. Regardless of different endodontic techniques, the success of endodontic treatment of infected root canal and periapical lesions is 48 to 95%. The aim was to present the results of the treatment of endodontically infected root canals with periapical lesions (PAL), which are candidates for open periapical surgery.

Material and Method. The sample comprised 20 patients of both sexes between the ages of 17 and 67. Conventional 2D digital radiological diagnosis PAL was applied before the interventions themselves, and if necessary 3D CBCT diagnosis. The diagnosis of PAL was made according to the Abbott classification. A strict aseptic endodontic protocol was applied to all patients. Treatment of the infected root canal was done with combined manual and mechanical instruments for canal treatment, with the application of strong concentrations of irrigants for a long period of time. Evaluation of success of the endodontic treatment of PAL was done according to Strinberg's classification.

Result. In the follow-up period of up to 48 months, in 15 (75%) patients radiologically and clinically, there was no recurrence of PAL, in 1 (5%) patient retreatment of the root canal was performed, and in 4 (20%) patients, additional surgery was performed.

Conclusion. The results of this study indicate the biological value of maintaining natural teeth with PAL, using rigorous endodontic treatment. Infection control during endodontic treatment, as well as proper obturation of the root canal and subsequent restoration of the tooth crown, are key factors for successful treatment of an infected root canal with PAL.

Keywords: Infected Tooth Canal, Periapical Lesion, Endodontic Treatment

USPEH ENDODONTSKE TERAPIJE KOD ZUBA SA VELIKIM PERIAPIKALNIM LEZIJAMA BEZ PRIMENE ORALNO-HIRURŠKIH INTERVENCIJA

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Uvod. Bez obzira na različite endodontske tehnike, uspeh endodontske terapije inficiranog kanala korena i periapikalnih lezija je od 48 do 95%. Cilj je bio prikazati rezultate lečenja endodontski inficiranih kanala korena sa periapikalnim lezijama (PAL), koji su kandidati za otvorenu periapikalnu hirurgiju.

Materijal i metode 20 pacijenta oba pola, životne starosti od 17–67 godina, uključeni su u ovu studiju. Primenjena je konvencionalna digitalna radiološka dijagnostika PAL pre samih intervencija, i po potrebi 3D CBCT dijagnostika. Dijagnoza PAL je rađena prema klasifikaciji po Abottu. Striktni aseptični endodontski protokol primenjen je kod svih pacijenta. Obrada kanala inficiranog korena rađena je kombinovanim ručnim i mašinskim instrumentima za obradu kanala, uz primenu iriganasa jakih koncentracija u dužem vremenskom periodu. Evaluacija uspeha endodontskog lečenja PAL-a, rađena je po klasifikaciji po Strinbergu.

Rezultati U periodu praćenja do 48 meseci, kod 15 (75%) pacijenata radiološki i klinički, nije bilo recidiva PAL, kod 1 (5%) pacijenta rađena je revizionarna endodontska obrada kanala korena, a kod 4 (20%) pacijenta, dopunska hirurška terapija.

Zaključak Rezultati ove studije ukazuju na biološku vrednost održavanja prirodnih zuba sa PAL-om, primenom rigoroznog endodontskog tretmana. Kontrola infekcije tokom endodontskog lečenja, kao i pravilna obturacija kanala korena, a zatim i restauracija krunice zuba, ključni su faktori za uspešno lečenja inficiranog kanala korena zuba sa PAL-om.

Ključne reči: inficirani kanal zuba, periapikalna lezija, endodontsko lečenje

INFLUENCE OF INDIVIDUAL TRAINING IN MAINTENANCE OF ORAL HYGIENE ON THE LEVEL OF ORAL HYGIENE AND ORAL HEALTH

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Introduction. The goal of this research was to determine whether individual training in maintaining oral hygiene gives better results in oral hygiene, compared to theoretical training.

Materials and Method. 40 subjects were randomly divided into two groups. Plaque index, gingival index and interdental bleeding index have been recorded at the start of the investigation. Then, basic periodontal therapy has been performed. At the next stage, the control group received theoretical instructions on tooth brushing and interdental cleaning and oral healthcare products. Besides these, the test group received theoretical and practical individual training in maintaining oral hygiene according to the principles of Individually Trained Oral Prophylaxis TOP (modified Bass-technique, ultra-soft toothbrush, and interdental brushes of the proper size). Reevaluation and remotivation of the patients were performed 1 month and then 2 months after the first appointment.

Results. The improvement had been noticed after the first and second month in both groups. However, the respondents in the test group showed a greater improvement in the examined parameters compared to the control group, which confirms the effectiveness of individual practical training.

Conclusion. The individually trained group showed significantly ($p < 0,05$) better results in the level of oral hygiene at the end of the research period (after 2 months). It can be concluded that individual training in maintaining oral hygiene improves the level of oral hygiene and the oral health of the participants. It can be concluded that individual training in maintaining oral hygiene improves the level of oral hygiene and the oral health of the subjects

Keywords: Oral Hygiene, iTOP, Toothbrush

UTICAJ INDIVIDUALNE OBUKE U ODRŽAVANJU ORALNE HIGIJENE NA NIVO ORALNE HIGIJENE I ORALNO ZDRAVLJE

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Uvod. Cilj ovog istraživanja je bio da se utvrdi da li individualna obuka u održavanju oralne higijene daje bolje rezultate u oralnoj higijeni, u odnosu na samo teoretsku obuku u održavanju oralne higijene.

Materijali i metode. 40 ispitanika je nasumično podeljeno u dve grupe iste veličine. Plak indeks, gingivalni indeks i indeks interdentalnog krvarenja zabeleženi su na početku ispitivanja, a zatim urađena bazična parodontalna terapija. Nakon toga, kontrolna grupa je dobila teorijske instrukcije o načinu pranja zuba, interdentalnog čišćenja i odabiru sredstava za oralnu higijenu. Test grupa je bila praktično i teorijski individualno obučena u održavanju oralne higijene prema principima iTOP-a (modifikovana Bass tehnika, ultra meka četkica za zube i interdentalne četkice odgovarajuće veličine). Reevaluacija i remotivacija pacijenata je obavljena nakon 1. i 2. meseca od početka istraživanja.

Rezultati. Pобољшanje u nivou oralne higijene je primećeno nakon prvog i drugog meseca u obe ispitivane grupe u odnosu na početak istraživanja. Ispitanici u test grupi su imali veće poboljšanje ispitivanih parametara u odnosu na kontrolnu grupu, što potvrđuje efikasnost individualne praktične obuke.

Zaključak. Grupa ispitanika koja je individualno obučena u održavanju oralne higijene pokazala je značajno ($p < 0,05$) bolje rezultate u nivou oralne higijene na kraju perioda istraživanja (posle 2 meseca). Može se zaključiti da individualna obuka u održavanju oralne higijene poboljšava nivo oralne higijene i oralno zdravlje ispitanika.

Ključne reči: oralna higijena, iTOP, četkica za zube

PREGNANCY - A REASON OR AN EXCUSE FOR POOR ORAL HEALTH?

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Introduction. Pregnancy represents a period of physical and psychological changes. Although during pregnancy women often show greater motivation when it comes to health care, practice shows that the end of pregnancy and the postpartum period most often lead to neglect of oral health. It is believed that the lack of time contributes to this, as well as the traditional understanding that pregnancy itself is the cause of “decay” and “loss” of teeth. The aim of this study was to examine the attitudes and behaviors of pregnant women related to oral health and to evaluate their oral health by self-assessment.

Materials and Methods. An anonymous online survey was completed by 89 pregnant women, and the results were statistically analyzed.

Results. The largest number of respondents believe that their oral health has not changed since pregnancy, 33% believe that they have a problem with soft tissue and 29% that they have caries. 12% believe in the saying "one pregnancy, one tooth". 13.5% of respondents does not visit dentist at all during pregnancy.

Conclusion. Pregnancy has an impact on the attitude of expectant mothers towards dental health care, and there is room for raising oral and dental health care during pregnancy and the postpartum period to a higher level by engaging professional teams.

Keywords: Pregnancy, Oral Health, Preventive Examinations

TRUDNOĆA – RAZLOG ILI IZGOVOR ZA LOŠE ORALNO ZDRAVLJE?

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Uvod. Trudnoća predstavlja period fizičkih i psihičkih promena budućih majki. Iako tokom trudnoće žene neretko pokazuju veću motivisanost kada je u pitanju briga o zdravlju, praksa pokazuje da kraj trudnoće i postpartalni period najčešće dovode do zapostavljanja oralnog zdravlja. Smatra se da tome doprinose nedostatak vremena, ali i tradicionalna shvatanja da je trudnoća sama po sebi uzročnik „propadanja“ i „gubljenja“ zuba. Cilj ovog rada bio je da se ispituju stavovi i ponašanja trudnica vezani za oralno zdravlje u trudnoći i da se oceni njihovo oralno zdravlje samoprocenom.

Materijal i metode. Anonimnu onlajn anketu popunilo 89 trudnica, a rezultati su zatim statistički analizirani.

Rezultati. Najveći broj ispitanica smatra da im se oralno zdravlje nije promenilo u trudnoći, 33% ocenjuje da ima problem sa mekim tkivom, a 29% da ima karijes. U izreku „jedna trudnoća, jedan zub“ veruje 12% ispitanica. Tokom trudnoće 13,5% trudnica uopšte ne ide kod zubara.

Zaključak. Trudnoća ima uticaja na odnos budućih majki prema stomatološkoj zdravstvenoj zaštiti, i ima prostora da se briga o zdravlju usta i zuba u trudnoći i postpartalnom periodu podigne na viši nivo angažovanjem stručnih timova.

Ključne reči: trudnoća, oralno zdravlje, preventivni pregledi

MEDICATION RELATED OSTEONECROSIS OF THE JAWS: A GROWING CLINICAL CHALLENGE

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Introduction. Medication-Related Osteonecrosis of the Jaws (MRONJ) is an increasingly common condition in the general population, primarily resulting from the use of drugs that disrupt bone homeostasis. These medications are commonly prescribed for the treatment of osteoporosis, malignant tumors, endocrine disorders, and other conditions. The aim of this study is to highlight the medications associated with an increased risk of MRONJ, as well as strategies for its prevention and treatment.

Materials and Methods. Data were collected through a review of relevant database and medical records from the Clinic of Dental Medicine in Niš.

Results. The majority of MRONJ cases were associated with the use of bisphosphonates and denosumab. Tooth extraction was identified as the most frequent triggering factor. MRONJ was more commonly observed in the mandible (73%) compared to the maxilla (22%), and was less frequently found in both jaws simultaneously (5%). A notable increase in the number of patients diagnosed with MRONJ was observed at the clinic, often with the condition previously unrecognized by other institutions. Most patients went to the clinic in the second (75%) or third (25%) stage of the disease. None of the patients had been informed about the potential risk of developing MRONJ prior to initiating therapy.

Conclusion. There is a significant lack of awareness regarding the medications that can lead to MRONJ, alongside a growing number of patients affected by this condition. Education of both prescribing physicians and dental professionals is essential in order to prevent the development of serious MRONJ-related complications.

Keywords: Osteonecrosis, Medications, Prevention, Therapy

OSTEONEKROZA VILICA IZAZVANA LEKOVIMA: SVE VEĆI KLINIČKI IZAZOV

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Uvod. Osteonekroza vilice povezana sa upotrebom lekova (Medication-Related Osteonecrosis of the Jaws, MRONJ) sve je češća pojava u opštoj populaciji kao posledica primene lekova koji remete koštanu homeostazu, a koji su primarna terapija osteoporoze, malignih tumora, endokrinih poremećaja itd. Cilj je upozoriti na lekove koji stvaraju rizik od MRONJ-a, prevenciju i terapiju.

Materijal i metode. Podaci su prikupljeni pretragom baza podataka i putem medicinske dokumentacije Klinike za dentalnu medicinu Niš.

Rezultati. Najveći broj slučajeva MRONJ-a posledica je primene bisfosfonata i denosumaba, a najčešći okidač za razvoj MRONJ je ekstrakcija zuba. MRONJ se češće javlja u mandibuli (73%) nego u maksili (22%), ređe u obe vilice (5%). Zapažen je višestruki porast broja pacijenata na klinici, sa razvijenim MRONJ-om, koji nije prepoznat u drugim ustanovama. Najveći broj pacijenata se na Kliniku javio u drugoj (75%) i trećoj fazi oboljenja (25%). Nije bilo pacijenata koji su na bilo koji način bili upućeni u mogućnost nastanka MRONJ-a pre početka terapije.

Zaključak. Postoji vrlo malo znanja o lekovima koji mogu izazvati MRONJ i pored sve većeg broja pacijenata kod kojih se javlja ovo stanje. Potrebna je edukacija lekara koji propisuju terapiju kao i stomatologa, kako bi se prevenirala mogućnost nastanka ozbiljnih komplikacija MRONJ-a.

Gljučne reči: osteonekroza, lekovi, prevencija, terapija

ANATOMICAL ANALYSIS OF TYPICAL CLASSIFICATION OF THE ANTERIOR ETHMOIDAL ARTERY ON HEAD CT SCANS

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Introduction. The anterior ethmoidal artery (AEA), a branch of the ophthalmic artery, supplies the orbital, anterior cranial and nasal cavities. It may cross the skull base as non-prominent (Type 1), prominent (Type 2), or suspended by a connective stalk through anterior ethmoidal cells (Type 3). This study aims to determine the morphology, morphometry, and bony relations of the AEA, with emphasis on the clinical relevance of its types.

Materials and Methods. A descriptive retrospective clinical case series study was conducted. The sample comprised 250 head computed tomography (CT) scans of adult individuals obtained between 2022 and 2024 (146 males and 104 females), with an average age of 51.13 ± 14.23 years. The morphometric analysis encompassed the measurement and calculation of the dimensions of structures of interest in relation to the AEA.

Results. The mean length of the AEA within the anterior ethmoidal canal is 7 ± 2.08 mm, and its distance from the anterior nasal spine is 48.04 ± 4.35 mm. Type 3 AEAs are significantly longer than Types 1 and 2 ($p < 0.001$). Parameters reflecting the typical position of the canal's orbital opening relative to the nasal cavity floor and orbital floor are significantly lower in Type 1 than in Type 3 ($p = 0.032$).

Conclusion. Preoperative and intraoperative CT evaluation of the position and relationship of the AEA with surrounding structures is imperative to prevent potential surgical complications. The results of the study contribute to enhancing the general understanding of the characteristics of the AEA, its variations, and thus its significance as a landmark in surgical procedures.

Keywords: Anterior Ethmoidal Artery, Morphological Analysis, Head CT Scan

KLASIFIKACIJA PREDNJE ETMOIDALNE ARTERIJE NA SNIMCIMA KOMPJUTERIZOVANE TOMOGRAFIJE GLAVE – ANATOMSKA ANALIZA

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Uvod. Prednja etmoidalna arterija – PEA (a. ethmoidea anterior), kao grana oftalmične arterije (a. ophthalmica), vaskularizuje strukture očne, prednje lobanjske i nosne duplje. Stablo arterije može da prolazi kroz bazu lobanje bez prominencije (tip 1), sa prominencijom (tip 2) ili da bude zakačeno vezivnom peteljkom za bazu, prolazeći slobodno kroz prednje sitaste ćelije (tip 3). Cilj istraživanja je da se odrede morfološke i morfometrijske karakteristike PEA-e, kao i njen odnos sa okolnim koštanim strukturama, s posebnom pažnjom na značaj tipova arterija.

Materijali i metode. Sprovedena je deskriptivna retrospektivna studija kliničke serije slučajeva. Obuhvaćeno je 250 snimaka kompjuterizovane tomografije (KT) glave odraslih pojedinaca, načinjenih u periodu od 2022. do 2024. godine (146 ispitanika muškog i 104 ispitanika ženskog pola), prosečne starosti $51,13 \pm 14,23$ godina. Morfometrijska analiza obuhvatila je merenje i izračunavanje dimenzija struktura od interesa koje su u odnosu sa PEA-om.

Rezultati. Prosečna dužina PEA-e u prednjem etmoidalnom kanalu iznosi $7 \pm 2,08$ mm, dok je udaljenost PEA-e od prednje nosne bodlje $48,04 \pm 4,35$ mm. PEA-e koje pripadaju tipu 3 statistički su značajno duže u odnosu na druga dva tipa ($p < 0,001$). Statistički značajno niže vrednosti parametara koji ukazuju na normalnu relaciju između orbitalnog otvora prednjeg etmoidalnog kanala i ravni koja prolazi kroz dna nosne duplje i dna očne duplje prisutnije su kod tipa 1 u odnosu na tip 3 ($p = 0,032$).

Zaključak. Pre- i intraoperativna KT-evaluacija položaja i odnosa PEA-e sa okolnim strukturama predstavlja imperativ kako bi se sprečile potencijalne hiruške komplikacije. Rezultati studije doprinose podizanju opšteg poznavanja osobina PEA-e, njenih varijacija, pa s tim i značaju PEA-e kao orijentira u hiruškim zahvatima.

Ključne reči: prednja etmoidalna arterija, morfološka analiza, kompjuterizovana tomografija glave

FREQUENCY OF FLAT FOOT IN SCHOOL CHILDREN IN RELATION TO GENDER AND AGE

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Introduction. The sample comprised 251 children, 10, 12 and 14 years of age. The research was conducted with the aim of determining the frequency and magnitude of flat feet in relation to gender and age.

Material and Methods. The research program included students of fourth, fifth and seventh grade in elementary schools in Nikšić. The assessment of the lowering of the arches of the feet was carried out using plantogram, and the size of the disorder index using the Čižin method.

Results. The results of the research showed that the arches of the feet in all three age groups are significantly impaired. The highest frequency of disorders is present in 12-year-old girls (31.5%) and 14-year-old boys (30%). The earlier onset of puberty in girls also explains the greater prevalence of flat feet at a younger age. Puberty starts a little later in boys, and accordingly the highest frequency of disorders occurs later than in girls. In both cases, the highest percentage of deviations from normal are functional disorders, where the shape and function of the feet are largely preserved, and the changes are reversible.

Conclusion. It is necessary to point out the need for timely detection and the most effective preventive and corrective treatment of this increasingly frequent disorder among young people, bearing in mind the condition of the arches of the feet.

Keywords Flat Foot, Age, Gender, Differences

UČESTALOST RAVNOG STOPALA KOD ŠKOLSKE DJECE U ODNOSU NA POL I UZRASNO DOBA

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Uvod. Na uzorku od 251 ispitanika/ce, uzrasta 10, 12 i 14 godina, sprovedeno je istraživanje sa ciljem da se utvrdi učestalost i veličina pojave ravnog stopala u odnosu na pol i uzrasno doba.

Materijal i metode. Programom istraživanja obuhvaćeni su učenici/ce IV, VI i VIII razreda u tri osnovne škole u Nikšiću. Procjena spuštenosti svodova stopala izvršena je metodom plantograma, a veličina indeksa poremećaja primjenom Čižinove metode.

Rezultati. Rezultati istraživanja su pokazali da je status svodova stopala kod sve tri uzrasne grupe u znatnoj mjeri narušen. Najveća frekvencija poremećaja prisutna je kod 12-godišnjih djevojčica (31,5%) i dječaka od 14 godina (30%). Raniji ulazak djevojčica u pubertet objašnjava i veću zastupljenost ravnih stopala u mlađem uzrastu. Kod dječaka pubertet počinje nešto kasnije, pa se u skladu sa tim najveća učestalost poremećaja javlja kasnije od djevojčica. Kod oba pola najveći procenat odstupanja od normale čine funkcionalni poremećaji, gdje su oblik i funkcija stopala u velikoj mjeri očuvani i promjene su reverzibilnog karaktera.

Zaključak. Imajući u vidu stanje svodova stopala neophodno je ukazati na potrebu pravovremene detekcije i što efikasnijeg preventivno-korektivnog tretmana, ovog sve učestalijeg poremećaja kod mladih.

Ključne reči: ravno stopalo, uzrasno doba, pol, razlike

RECENT ANATOMICAL INSIGHTS INTO THE PELVIC CAVITY AND ENDOPELVIC FASCIA

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Introduction. The pelvic cavity is a complex anatomical space enclosed by the pelvic bones, muscles, and ligaments. It houses vital structures such as the bladder, reproductive organs, and rectum. Advances in imaging techniques, including high-resolution MRI and 3D reconstructions, have enhanced our understanding of organ interactions and their support by fascia and connective tissues. The endopelvic fascia is a crucial connective tissue network supporting pelvic organs. It consists of smooth muscles, collagen, elastin, ligaments, blood vessels, and connective tissue, lying between the parietal and visceral fascia. This structure sometimes condenses into fibrous fascial septa, separating organs and defining specific pelvic spaces.

Material and Methods. Recent anatomical studies have explored the role of the endopelvic fascia in defining key pelvic spaces. These studies used advanced imaging and dissection techniques to examine its structure and function in organ support and compartment formation.

Results. The endopelvic fascia contributes to essential spaces, including the paravesical, rectouterine, and retrorectal spaces, facilitating pelvic organ mobility. In females, it forms the rectovaginal septum and supports ligaments such as the pubocervical, cardinal, and uterosacral ligaments. In males, the Denonvilliers fascia (rectovesical septum) corresponds to the rectovaginal septum in females.

Conclusion. Ongoing studies continue to improve our understanding of pelvic organ support, aiding in diagnosing and treating prolapse, incontinence, and chronic pelvic pain, thereby advancing clinical care in obstetrics and pelvic health.

Keyword: Pelvic Cavity, Endopelvic Fascia

AKTUELNA ANATOMSKA OTKRIĆA O KARLIČNOJ ŠUPLJINI I ENDOPELVIČNOJ FASCIJI

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Uvod. Karlična šupljina je složen anatomski prostor koji je okružen karličnim kostima, mišićima i ligamentima. Ovaj prostor sadrži vitalne strukture kao što su bešika, reproduktivni organi i rektum. Napredak u tehnici snimanja, uključujući visokorezolucioni MRI i 3D rekonstrukcije, unapredio je naše razumevanje interakcije organa i njihove podrške putem fascija i vezivnog tkiva. Endopelvična fascija je ključna mreža vezivnog tkiva koja podržava karlične organe. Sastoji se od glatkih mišića, kolagena, elastina, ligamenata, krvnih sudova i vezivnog tkiva, a nalazi se između parijetalne i visceralne fascije. Ova struktura ponekad se kondenzuje u vlaknaste fascijalne septume koji razdvajaju organe i definišu specifične karlične prostore.

Materijali i metode. Nedavna anatomska istraživanja ispitivala su ulogu endopelvične fascije u definisanju ključnih karličnih prostora. Ove studije koristile su napredne tehnike snimanja i disekcije kako bi ispitale njenu strukturu i funkciju u podršci organa i formiranju kompartmana.

Rezultati. Endopelvična fascija doprinosi formiranju osnovnih prostora, uključujući paravezikalni, rektouterini i retrorektalni prostor, olakšavajući mobilnost karličnih organa. Kod žena, ona formira rekto-vaginalni septum i podržava ligamente kao što su pubocervikalni, kardinalni i uterosakralni ligamenti. Kod muškaraca, Denonvilijeva fascija (rekto-vezikalni septum) odgovara rekto-vaginalnom septumu kod žena.

Zaključak. Aktuelna istraživanja nastavljaju da unapređuju naše razumevanje podrške karličnim organa, što pomaže u dijagnostici i lečenju prolapsa, inkontinencije i hroničnog karličnog bola, čime se unapređuje klinička nega u oblasti opstetrike i zdravlja karlice.

Ključne reči: karlična šupljina, endopelvična fascija

CORRELATION BETWEEN BODY MASS INDEX (BMI) AND WAIST CIRCUMFERENCE (WC) IN DETECTION OF OBESITY AMONG STUDENT POPULATION FROM NORTH MACEDONIA

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Introduction. Body Mass Index (BMI) is commonly used to assess the prevalence of overweight and obesity within populations, serving as an indicator of general obesity. Waist circumference (WC), on the other hand, is a practical and straightforward measurement used to evaluate central adiposity. This study aims to explore the correlation between BMI and WC and assess their effectiveness as obesity indicators in a student population.

Materials and Methods. The sample comprised 839 university students between the ages of 18 and 20 (411 males and 428 females), from the University of St. Cyril and Methodius (UKIM), Skopje, North Macedonia. The following anthropometric parameters and indices were considered using a standard protocol: weight, height, waist circumference, and BMI.

Results. The average BMI in males was 24.28 kg/m², and their average WC was 88.01 cm. The average BMI in females was 21.56 kg/m², with an average WC of 74.17 cm. A strong positive correlation was found between BMI and WC in males ($r = 0.81$), while the correlation in females was also positive ($r = 0.72$). WC was found to identify significantly more individuals as overweight or obese compared to BMI (255 vs. 186). Although both BMI and WC can help identify individuals at risk of weight-related diseases, the findings suggest that WC may be a better predictor for detecting those at high risk of abdominal obesity.

Conclusion. Anthropometric measurements remain an important method for the early detection and prevention of obesity-related health issues among university students.

Keywords: Body Mass Index, Waist Circumference, Student Population

KORELACIJA IZMEĐU INDEKSA TELESNE MASE (ITM) I OBIMA STRUKA (OS) U DETEKCIJI GOJAZNOSTI KOD STUDENTSKE POPULACIJE U SEVERNOJ MAKEDONIJI

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Uvod. Indeks telesne mase (ITM) omogućava procenu prevalencije prekomerne telesne mase, gojaznosti u populaciji i određivanje opšte gojaznosti. Obim struka (OS) je jednostavan i praktičan antropometrijski pokazatelj za procenu centralne adipoznosti. Cilj ove studije je da proceni korelaciju između ITM-a i OS-a i ispita njihovu značajnost kao pokazatelja gojaznosti kod studenata.

Materijal i metode. Analizirano je ukupno 839 studenata sa univerziteta UKIM iz Skoplja (Severna Makedonija), na uzrastu od 18-20 godina (411 muškaraca i 428 žena). Mereni su sledeći antropometrijski parametri i indeksi: težina, visina, obim struka i ITM prema standardnom protokolu.

Rezultati. Srednja vrednost za ITM i OS kod studenata iznosila je 24,28 kg/m² i 88,01 cm, a kod studentkinje 21,56 kg/m² i 74,17 cm. Uočena je jaka pozitivna korelacija između ITM-a i OS-a kod studenata ($r = 0,81$), i pozitivna korelacija kod studentkinja ($r = 0,72$). Prilikom identifikacije prekomerne telesne mase/gojaznosti, OS je identifikovao značajno više studenata nego ITM (255 u odnosu na 186). I ITM i OS identifikuju osobe sa rizikom od bolesti povezanih sa gojaznošću. Takođe ovi rezultati ukazuju da je OS bolji prediktor za otkrivanje osoba sa visokim rizikom od abdominalnog obeziteta.

Zaključak. Određivanje gojaznosti na osnovu ovih antropometrijskih pokazatelja i dalje je važna metoda za ranu prevenciju ozbiljnih posledica gojaznosti kod populacije studenata.

Ključne reči: *Body Mass* indeks, obim struka, populacija studenata

DOMINANCE OF CORONARY ARTERIES IN WOMEN

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Introduction. The dominant coronary artery gives rise to the posterior interventricular branch and vascularizes the inferior wall of the heart and the posterior part of the interventricular septum. We distinguish three types of dominance: right, left, and codominant. Understanding the dominance of coronary circulation is of crucial importance in diagnosing and treating cardiovascular diseases. The aim of this study is to establish the relationship between the dominance of coronary circulation and specific anthropometric characteristics, as well as the occurrence of cardiovascular diseases in women.

Material and Methods. The sample comprised 221 females with an average age of 58.49 ± 12.02 years. All women underwent computed tomography coronary angiography (CT coronary angiography). We collected anamnestic data and performed anthropometric measurements, including height, weight and determination of body mass index (BMI), from each participant. Based on the CT coronary angiography images, we analyzed the dominance of coronary arteries, determined the degree of coronary arteries stenosis, and calculated calcium score values, as well as the thickness, volume, and mass of the epicardial adipose tissue (EAT).

Results. Based on CT coronary angiography images, we determined that 186 participants had a dominant right coronary artery, 20 had a dominant left coronary artery, and 15 had codominant coronary circulation. Stenosis and arterial hypertension were most frequently observed in participants with codominant circulation. However, no statistically significant differences were found between groups in terms of anthropometric parameters, calcium score, or EAT measurements.

Conclusion. According to our results, the codominant coronary circulation carries the highest risk for arterial hypertension and coronary artery disease.

Keywords: Coronary Artery Dominance; Anthropometry; CT Coronary Angiography; Cardiovascular Diseases

DOMINANTNOST KORONARNIH ARTERIJA KOD ŽENA

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Uvod. Dominantna koronarna arterija je ona koja daje zadnju međukomornu granu (r. interventricularis posterior) i vaskularizuje donji zid srca i zadnji deo srčane pregrade. Razlikujemo tri tipa dominantnosti: desni, levi i kodominatni tip. Poznavanje dominantnosti koronarne cirkulacije ima izuzetan značaj u dijagnostici i terapiji kardiovaskularnih oboljenja. Cilj ovog istraživanja je utvrditi povezanost između dominantnosti koronarne cirkulacije i određenih antropometrijskih karakteristika, kao i nastanka kardiovaskularnih oboljenja kod žena.

Materijali i metode. U istraživanju je učestvovala 221 osoba ženskog pola, prosečne starosti $58,49 \pm 12,02$ godina. Sve ispitanice su upućene na kompjuterizovanu tomografiju koronarnih krvnih sudova (CT koronarografiju). Od svake ispitanice uzeti su anamnestički podaci i izvršena su antropometrijska merenja, koja su obuhvatala merenje telesne visine, telesne mase i određivanje vrednosti indeksa telesne mase (BMI). Na snimcima CT koronarografije određena je dominantna koronarna arterija, stepen stenoze koronarnih arterija, vrednosti Sa skora kao i debljina, zapremina i masa epikardijalnog masnog tkiva (EMT).

Rezultati. Na osnovu snimaka CT koronarografije, utvrdili smo da je 186 ispitanica imalo dominantnu desnu, 20 dominantnu levu koronarnu arteriju, a kod 15 njih je uočena kodominantna koronarna cirkulacija. Stenoza i arterijska hipertenzija bile su najzastupljenije kod ispitanica sa kodominantnom koronarnom cirkulacijom. Nije utvrđeno postojanje statistički značajne razlike između antropometrijskih parametara, vrednosti kalcijum skora, mase, debljine i zapremine EMT u odnosu na dominantnost koronarne cirkulacije.

Zaključak. Na osnovu dobijenih rezultata zaključili smo da prisutvo kodominantne koronarne cirkulacije nosi najveći rizik za razvoj arterijske hipertenzije i koronarne bolesti.

Ključne reči: dominantna koronarna arterija, antropometrija, CT koronarografija, kardiovaskularna oboljenja

SKINFOLD THICKNESS IN PUPILS IN NOVI SAD

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Introduction. Anthropometric measurements are very important part of the physical examination in children. Some anthropometric indicators have varying sensitivities depending on the goal and age at which the measurements are performed; nevertheless, they represent a simple, cost-effective way to determine body characteristics and nutritional status.

Materials and Methods. The research was conducted in selected elementary schools in the City of Novi Sad, the sample comprised students whose parents gave written consent for their children's participation in the study. Measurements were performed on the same pupils throughout all eight years of elementary school. The children were dressed in standard sportswear used for physical education classes (a t-shirt, shorts, and socks), and measurements were taken using a body caliper (The Caliper Co. Inc.). Measurements were carried out at two standardized points.

Results. The average values of SFT1 in the sample of boys ranged from 12.7 to 16.8 mm, while in the sample of girls, they ranged from 14.3 to 17.7 mm. The average values of SFT2 ranged from 8.8 to 13.6 mm in boys and from 10.4 to 15.4 mm in girls.

Conclusion. Elementary school age is an exceptionally important period in a child's life, as the body undergoes significant changes. Inadequate nutritional status can have serious consequences on a child's health and physical development. Therefore, it is essential to monitor body characteristics and nutritional status of school-aged children.

Keywords: Anthropometry, Children, Skinfold Thickness

DEBLJINA KOŽNIH NABORA KOD UČENIKA U NOVOM SADU

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Uvod. Antropometrijska merenja se smatraju veoma značajnim delom fizičkog pregleda dece. Neki antropometrijski pokazatelji imaju različitu osetljivost, u zavisnosti od cilja i uzrasta na kojem se primenjuju, ali predstavljaju jednostavan, jeftin način utvrđivanja telesnih karakteristika i nutritivnog statusa.

Materijali i metode. Istraživanje je sprovedeno u određenim osnovnim školama na teritoriji Grada Novog Sada, na uzorku učenika čiji su roditelji dali pismenu saglasnost za učešće njihove dece u istraživanju. Merenja su sprovedena kod istih učenika tokom svih osam godina osnovnoškolskog uzrasta. Deca su bila obučena u standardnu sportsku opremu koja se koristi za časove fizičkog vaspitanja (majica, šorts i čarape), a merenja su vršena pomoću telesnog kalipera (*The Caliper Co. Inc*). Merenja su obavljena na dve standardizovane tačke.

Rezultati. Prosečne vrednosti DKN1 u uzorku dečaka su se kretale 12,7–16,8mm, a u uzorku devojčica 14,3–17,7 mm. Prosečne vrednosti DKN2 su se kretale od 8–13,6mm u uzorku dečaka, a 10,4–15,4 u uzorku devojčica.

Zaključak. Osnovnoškolski uzrast predstavlja izuzetno važan period u životu deteta, jer se u tom periodu organizam intenzivno razvija. Neadekvatan nutritivni status, kao što su neuhranjenost ili gojaznost, može imati ozbiljne posledice na zdravlje i fizički razvoj deteta. Iz tog razloga je neophodno kontinuirano praćenje telesnih karakteristika i nutritivnog stanja učenika.

Ključne reči: antropometrija, deca, debljina kožnih nabora

RISK FACTORS AND PREVENTIVE ERGONOMIC MEASURES IN THE DEVELOPMENT OF MUSCULOSKELETAL DISORDERS IN DENTISTS

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Introduction. Musculoskeletal disorders (MSDs) occur as a result of an imbalance between the physical capacity of the dentist and physical exertion during work. Dentistry is considered a high-risk profession for their development because due to the constant repetition of the same body movements and forced and uncomfortable body posture, cumulative trauma can develop, which can lead to absenteeism, loss of productivity or even long-term disability. The aim of the study was to determine the prevalence of MSD in dentists, to investigate risk factors, and to propose preventive measures for their development.

Materials and Methods. The sample comprised 120 dentists from Niš district. The respondents filled out a standardized Nordic questionnaire and an additional questionnaire which concerns ergonomic principles of work.

Results. A total of 82.5% of dentists declared that they suffer from MSD. The most common localizations of pain were lower back (43.33%), shoulders (41.66%) and neck (39.16%). Risk factors that indicate a higher representation of MSDs were standing and unpleasant working position (80.83%), length of service (50%), as well as gender because MSDs were more represented among women (86.66%). The most common preventive measures were the application of the concept of four hands (56.66%), physical activity (24.16%) and work in a sitting position (19.17%).

Conclusion. The study and application of ergonomic principles is of great importance in the prevention of MSDs, in improving the position in work, as well as in increasing the work productivity of dentists for a longer period of time.

Keywords: Dentistry, Ergonomics, Musculoskeletal Disorders

FAKTORI RIZIKA I PREVENTIVNE ERGONOMSKE MERE U RAZVOJU MUSKULOSKELETNIH POREMEĆAJA KOD STOMATOLOGA

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Uvod. Muskuloskeletni poremećaji (MSP) nastaju kao posledica disbalansa između fizičkog kapaciteta stomatologa i fizičkog napora tokom rada. Stomatologija se smatra profesijom visokog rizika za njihov razvoj jer se usled stalnog ponavljanja istih telesnih pokreta i forsiranog i neugodnog telesnog stava, mogu razviti kumulativne traume, što može dovesti do izostanaka sa posla, gubitka produktivnosti ili čak dugotrajne invalidnosti. Cilj istraživanja je bio da se utvrdi zastupljenost MSP kod stomatologa, da se istraže faktori rizika, kao i da se predlože preventivne mere za njihov razvoj.

Materijali i metode. U istraživanju je učestvovalo 120 stomatologa niškog okruga, Ispitanici su popunjavali standardizovani Nordijski upitnik i dodatni upitnik o ergonomskim principima rada.

Rezultati. Ukupno 82,5% stomatologa se izjasnilo da pati od MSP. Najčešće lokalizacije bolova su bile donji deo leđa (43,33%), ramena (41,66%) i vrat (39,16%). Faktori rizika koji ukazuju na veću zastupljenost MSP bili su stojeći i neugodan radni položaj (80,83%), dužina radnog staža (50%), kao i pol jer su MSP bili zastupljeniji kod žena (86,66%). Najzastupljenije preventivne mere su bile primena koncepta rada sa četiri ruke (56,66%), fizička aktivnost (24,16%) i rad u sedećem položaju (19,17%).

Zaključak. Proučavanje i primena ergonomskih principa je od velikog značaja u prevenciji MSP, u poboljšanju položaja u radu, kao i u povećanju radne produktivnosti stomatologa na duži vremenski period.

Ključne reči: Stomatologija, ergonomija, muskuloskeletni poremećaji

MORPHOMETRIC CHARACTERISTICS OF THE UPPER END OF THE FEMUR

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*- teachers under whose mentorship the study was conducted

Introduction. The femur plays an important role in transferring its weight to the skeletal structure of the foot. Knowledge of the anthropometric characteristics of the femur is essential for the precise performance of orthopedic-surgical interventions. The aim of the study was to perform a morphometric analysis of the upper end of the femur using a manual caliper and the ImageJ 1.48v[®] software program, as well as to determine the difference between the two measurement techniques.

Material and Methods. The sample comprised 47 dry femurs of adult individuals from the osteological collection of the Department of Anatomy at the Faculty of Medicine in Novi Sad. In the first phase of the research, defined morphometric parameters were measured using a sliding caliper. In the second phase, the sample was photographed using a Nikon D3400[®] camera, and the same defined parameters were measured using the ImageJ 1.48v[®] software program.

Results. The diameter of the femoral head in the cranio-caudal plane, measured with a manual caliper, is 4.48 ± 0.34 mm, while the same parameter measured with the software program is 4.37 ± 0.32 mm. The diameter of the femoral head in the sagittal plane, measured with a manual caliper, is 4.52 ± 0.34 mm, while the same parameter measured with the software program is 4.45 ± 0.35 mm.

Conclusion. There are statistically significant differences in the values of morphometric parameters depending on the measurement technique.

Keywords: Anthropometry, Femur, Sliding Caliper, ImageJ 1.48v[®]

MORFOMETRIJSKE KARAKTERISTIKE GORNJEG OKRAJKA BUTNE KOSTI

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Uvod. Butna kost ima važnu ulogu u prenosu težine tela na kostur stopala. Poznavanje antropometrijskih karakteristika butne kosti od esencijalne je važnosti za precizno izvođenje ortopedsko-hirurških intervencija. Cilj istraživanja je bio da se izvrši morfometrijska analiza gornjeg okrajka butne kosti upotrebom manualnog kalipera i *ImageJ 1.48v*[®] softverskog programa, kao i da se utvrdi razlika između pomenutih tehnika merenja.

Materijal i metode. Istraživanje je obuhvatilo 47 suvih butnih kostiju odraslih pojedinaca iz osteološke zbirke Zavoda za Anatomiju Medicinskog fakulteta u Novom Sadu. Tokom prve faze istraživanja mereni su definisani morfometrijski parametri klizajućim kaliperom. Tokom druge faze istraživanja uzorak je fotografisan fotoaparatom marke *Nikon D3400*[®], a potom su isti definisani parametri mereni softverskim programom *ImageJ 1.48v*[®].

Rezultati. Dijametar glave butne kosti u kranio-kaudalnoj ravni meren manualnim kaliperom iznosi $4,48 \pm 0,34$ mm, a isti parametar meren softverskim programom iznosi $4,37 \pm 0,32$ mm. Dijametar glave butne kosti u sagitalnoj ravni izmeren manualnim kaliperom iznosi $4,52 \pm 0,34$ mm, dok isti parametar izmeren softverskim programom iznosi $4,45 \pm 0,35$ mm.

Zaključak. Postoje statistički značajne razlike vrednosti morfometrijskih parametara u odnosu na tehniku merenja.

Ključne reči: antropometrija, butna kost, klizajući kaliper, *ImageJ 1.48v*[®]

BIOELECTRICAL IMPEDANCE IN THE ASSESSMENT AND CLASSIFICATION OF VISCERAL FAT IN INDIVIDUALS WITH TYPE 2 DIABETES

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Introduction. Individuals with type 2 diabetes typically have higher amounts of visceral, subcutaneous, total, and intermuscular fat compared to healthy individuals. Elevated visceral fat (VF) is closely associated with an increased risk of cardiovascular diseases, insulin resistance, dyslipidemia, and glucose intolerance, which further predisposes diabetic patients to metabolic complications. Given these associations, an accurate assessment of body composition, particularly fat distribution, is essential for risk evaluation and clinical management.

Materials and Method. This cross-sectional study was conducted at the University Clinical Center of the Republic of Srpska, the sample comprised 160 participants with type 2 diabetes, 57.5% (n=92) of whom were women and 42.5% (n=68) men. VF levels were determined using bioelectrical impedance analysis (BIA) and classified according to the Omron BF-511 device manual into three categories: normal (1–9), high (10–14), and very high (15–30).

Results. More than half of the participants (53.13%) had high VF levels (women 60.24%, men 42.17%), while 33.75% had very high VF levels (women 51.85%, men 48.15%). Only 13.13% of participants had normal VF levels (women 66.67%, men 33.33%). Additionally, waist-to-height ratio (WHtR) analysis revealed that only 5.63% of participants had values below the cutoff of 0.5, while 94.37% had values above this threshold.

Conclusion. These findings indicate high prevalence of visceral obesity among diabetic patients and highlight the importance of utilizing accessible, non-invasive methods such as BIA for body composition assessment. Further research is needed to validate these findings and explore the clinical significance of VF classification in diabetes management.

Keywords: Bioelectrical Impedance Analysis, Visceral Fat, Diabetes Type 2

BIOELETRIČNA IMPEDANSA U PROCJENI I KLASIFIKACIJI VISCELARNE MASTI KOD OSOBA SA DIJABETESOM TIP 2

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Uvod. Osobe oboljele od dijabetesa tip 2 obično imaju veće količine visceralne, potkožne, ukupne i intermuskularne masti u poređenju sa zdravim osobama. Povišena visceralna mast (VM) snažno je povezana sa povećanim rizikom od kardiovaskularnih bolesti, insulinske rezistencije, dislipidemije i intolerancije na glukozu, što dodatno predisponira dijabetičare ka metaboličkim komplikacijama. S obzirom na ove povezanosti, precizna procjena tjelesnog sastava, posebno raspodjele masnog tkiva, ključna je za procjenu rizika i kliničko upravljanje.

Materijali i metode. Ova presječna studija sprovedena je u Univerzitetskom kliničkom centru Republike Srpske i obuhvatila je 160 ispitanika s dijabetesom tip 2, od kojih je 57,5% (n=92) bilo žena, a 42,5% (n=68) muškaraca. Nivoi visceralne masti određeni su metodom bioelektrične impedanse (BIA) i klasifikovani prema priručniku uređaja Omron BF-511 u tri kategorije: normalan (1–9), visok (10–14) i veoma visok (15–30).

Rezultati. Više od polovine ispitanika (53,13%) imalo je visok nivo VM (žene 60,24%, muškarci 42,17%), dok je 33,75% imalo veoma visok nivo VM (žene 51,85%, muškarci 48,15%). Samo 13,13% ispitanika imalo je normalan nivo VM (žene 66,67%, muškarci 33,33%). Takođe, analiza odnosa obima struka i visine (WHtR) pokazala je da je samo 5,63% ispitanika imalo vrijednosti ispod graničnih 0,5, dok je 94,37% imalo vrednosti iznad ovog praga.

Zaključak. Ovi rezultati ukazuju na visoku prevalenciju visceralne gojaznosti među pacijentima sa dijabetesom i naglašavaju važnost korišćenja dostupnih, neinvazivnih metoda poput BIA za procjenu tjelesnog sastava. Dalja istraživanja su neophodna kako bi se potvrdili ovi nalazi i ispitao klinički značaj klasifikacije VM u upravljanju dijabetesom.

Ključne reči bioimpedansna analiza, visceralne masti, dijabetes tip 2

ANALYSIS OF CORRELATIONS BETWEEN BASIC AND DERIVED ANTHROPOMETRIC INDICES AND BODY FAT IN INDIVIDUALS WITH TYPE 2 DIABETES

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Introduction. Anthropometric indices play a key role in medicine, particularly in assessing body composition, obesity, and the risk of metabolic disorders. The aim of this study is to examine the relationship between basic and derived anthropometric indices and body fat percentage in patients with type 2 diabetes.

Materials and Method. The sample comprised 160 participants, with an average age of 65.3 years. Body weight, height, waist circumference (WC), and hip circumference (HC) were measured. Body fat percentage was determined using a bioelectrical impedance analysis (BIA) device, Omron BF-511. Derived anthropometric indices were calculated: BMI (body mass index), WHtR (waist-to-height ratio), WHR (waist-to-hip ratio), BRI (body roundness index), BAI (body adiposity index), CI (conicity index), and AVI (abdominal volume index). Pearson's correlation coefficient was used for statistical analysis.

Results. The strongest positive correlation with body fat percentage was shown by BAI ($r=0.553$; $p<0.001$), BMI ($r=0.551$; $p<0.001$), BRI ($r=0.529$; $p<0.001$), and WHtR ($r=0.510$; $p<0.001$), compared to WC ($r=0.362$; $p<0.001$) and HC ($r=0.461$; $p<0.001$), which had weaker correlations than the derived indices, indicating their greater reliability in assessing body composition. On the other hand, WHR ($r=0.052$; $p=0.516$) and CI ($r=0.159$; $p=0.045$) showed the weakest associations, suggesting they are not reliable indicators of body fat.

Conclusion. Since certain anthropometric indices exhibited a moderate correlation with the BIA-derived body fat assessment, the findings indicate that additional methods should be utilized to improve the accuracy of body fat estimation.

Keywords: Anthropometric Indices, Bioelectrical Impedance Analysis, Diabetes Type 2

ANALIZA KORELACIJA IZMEĐU OSNOVNIH I IZVEDENIH ANTROPOMETRIJSKIH INDEKSA I TJELESNE MASTI KOD OSOBA S DIJABETESOM TIP 2

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Uvod. Antropometrijski indeksi imaju ključnu primjenu u medicini posebno u procjeni tjelesne kompozicije, gojaznosti i rizika od metaboličkih oboljenja. Cilj ovog istraživanja je da se ispita povezanost osnovnih i izvedenih antropometrijskih indeksa sa procentom tjelesne masti kod pacijenata sa dijabetesom tipa 2.

Materijali i metode. Istraživanje je sprovedeno na uzorku od 160 ispitanika, prosječne dobi 65,3 godine. Izmjereni su tjelesna masa, visina, obim struka (OS) i obim kukova (OK). Procentat tjelesne masti je određen aparatom za bioimpedansnu analizu (BIA) Omron BF-511. Izračunati su izvedeni antropometrijski indeksi: BMI (body mass index), WHtR (waist to height ratio), WHR (waist to hip ratio) BRI (body roundness index), BAI (body adiposity index), CI (conicity index), AVI (abdominal volumen index). Za statističku analizu korišten je Pearsonov koeficijent korelacije.

Rezultati. Najjaču pozitivnu korelaciju sa procentom tjelesne masti pokazali su BAI ($r=0,553$; $p<0,001$), BMI ($r=0,551$; $p<0,001$), BRI ($r=0,529$; $p<0,001$) i WHtR ($r=0,510$; $p<0,001$), u odnosu na OS ($r=0,362$; $p<0,001$) i OK ($r=0,461$; $p<0,001$) koji su imali slabiju korelaciju u odnosu na izvedene indekse, što ukazuje na njihovu veću pouzdanost u procjeni tjelesne kompozicije. S druge strane, WHR ($r=0,052$; $p=0,516$), CI ($r=0,159$; $p=0,045$) imali su najslabiju povezanost, sugerišući da nisu pouzdani pokazatelji tjelesne masti.

Zaključak. S obzirom na to da su određeni antropometrijski indeksi pokazali srednje jaku korelaciju s BIA procjenom masnog tkiva, rezultati sugerišu da za precizniju procjenu masnog tkiva treba koristiti i druge metode.

Ključne riječi: antropometrijski indeksi, bioimpedansna analiza, dijabetes tip 2

EVALUATION OF CORTICAL BONE THICKNESS IN THE ANTERIOR SEGMENT OF MANDIBLE

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*- teachers under whose mentorship the study was conducted

Introduction. The thickness of the cortical bone of the mandible represents a relevant anthropological indicator when studying human skeletal remains. Altered bone in the jaws may exist due to local changes in bone segments or in the composition of systemic osteoporosis. The anterior segment of the mandible is specific due to the proximity of vital anatomical structures. The aim of this study was to compare the thickness of the cortical bone of the mandible between edentulous patients and patients with preserved anterior teeth on cone beam computed tomography (CBCT) images.

Material and Methods. 132 CBCT images of adults of both sexes, 89 patients with preserved dentition and 43 edentulous patients were analyzed. The cortical bone was analyzed in the anterior segment of the mandible, in relation to the sagittal plane that passed through the lingual canals. The distance between the alveolar ridge and the base of the mandible is divided into three thirds, upper, middle and lower. Cortical bone thickness was measured in the middle of each third, on the labial and lingual sides.

Results. The greatest thickness of the cortical bone was observed on the lingual side in the middle third in patients with preserved teeth and was 4.03 mm. Patients with preserved teeth had higher average bone thickness at all measurement points compared to edentulous patients ($p < 0.05$). In both groups of patients, a significant difference in cortical bone thickness was observed in the measured parts of the anterior segment of the mandible ($p < 0.05$) on both the labial and buccal sides.

Conclusion. The results indicate that edentulous patients have significantly thinner lingual cortical bone in the anterior segment of the mandible compared to edentulous patients. In addition to anthropological significance, these findings may have clinical significance during surgical procedures in this region.

Keywords: Anatomy, Mandible, Cortical Bone, CBCT.

PROCENA DEBLJINE KORTIKALNE KOSTI U PREDNJEM SEGMENTU MANDIBULE

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Uvod. Debljina kortikalne kosti predstavlja relevantan antropološki indikator prilikom proučavanja ljudskog skeleta. Izmenjena kost u vilicama može postojati usled lokalnih promena u koštanim segmenatima ili u sastavu sistemske osteoporoze. Prednji segment mandibule je specifična zbog blizine vitalnih anatomskih struktura. Cilj rada je bio da se na snimcima kompjuterizovane tomografije konusnog zraka (CBCT) analizira debljina kortikalne kosti mandibule kod pacijenata sa očuvanom denticijom i bezubih pacijenata.

Materijal i metode. Analizirana su 132 CBCT snimka odraslih osoba oba pola, 89 pacijenata sa očuvanom denticijom i 43 bezubih pacijenata. Kortikalna kost je analizirana u prednjem segmentu mandibule, u odnosu na sagitalnu ravan koja je prolazila kroz lingvalne kanale. Rastojanje između alveolarnog grebena i baze mandibule podeljeno je na tri trećine, gornju, srednju i donju. Debljina kortikalne kosti merena je na sredini svake trećine, na labijalnoj i lingvalnoj strani.

Rezultati. Najveća debljina kortikalne kosti uočena je na lingvalnoj strani srednje trećine prednjeg segmenta mandibule kod pacijenata sa očuvanom denticijom i iznosila je 4,03 mm. Kod pacijenata sa očuvanom denticijom zabeležena je veća prosečna debljina kosti na svim mernim tačkama u odnosu na bezube pacijente ($p < 0,05$). Kod obe grupe pacijenata uočena je značajna razlika u debljini kortikalne kosti u merenim delovima prednjeg segmenta mandibule ($p < 0,05$) i na labijalnoj i na bukalnoj strani.

Zaključak. Rezultati pokazuju da bezubi pacijenti imaju značajno tanju kortikalnu kost na lingvalnoj strani prednjeg segmenta mandibule u odnosu na pacijente sa očuvanom denticijom. Pored antropološkog značaja, ovi nalazi mogu imati klinički značaj prilikom hirurških zahvata u ovoj regiji.

Ključne reči: anatomija, mandibula, kortikalna kost, CBCT.

HYPERTROPHIC PULMONARY OSTEOARTHROPATHY DETECTED ON BONE SCAN IN LUNG CANCER; CASE REPORT

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Introduction. Determining the stage of lung neoplasm often requires multiple preoperative tests and invasive procedures. Bone scintigraphy may simplify and improve the evaluation and staging of patients with this type of neoplasm.

Case report. A 58-year-old female presented with a several months history of cough with expectoration. Immunological laboratory analysis showed elevated C reactive protein and elevated Anti-U1RNP antibody, which is generally known to be a serological marker for mixed connective tissue disease. Due to prolonged treatment at the rheumatology clinic and the appearance of drum fingers, a lung X-ray was taken. A triangular shadow was seen on the left suprahilar segment towards the periphery, which was consistent with a tumor. An additional computed tomography of the lungs was performed, which showed an oval soft tissue mass with irregular contours and a radiating spread to the surrounding area in the right parenchyma, measuring 36.6 x 30.9 millimeters in diameter and a band-like connection to the pleura. For further diagnosis, biopsy and bone scintigraphy with technetium 99m methylene diphosphonate were performed. During the microscopic examination of the biopsy material, one fragment was analyzed, which was in favor of lung cancer. Bone scintigraphy demonstrated mild, diffuse, longitudinally increased radiotracer uptake along the long bones of the legs, femur and tibia, findings which suggested hypertrophic pulmonary osteoarthropathy.

Keywords: Lung Neoplasm, Bone Scintigraphy, Hypertrophic Pulmonary Osteoarthropathy

HIPERTROFIČNA PLUĆNA OSTEOARTROPATIJA OTKRIVENA NA SKEN KOSTIJU KOD RAKA PLUĆA; PRIKAZ SLUČAJA

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Uvod. Određivanje stadijuma neoplazme pluća često zahteva višestruke preoperativne testove i invazivne procedure. Scintigrafija kostiju može pojednostaviti i poboljšati procenu i stadijume pacijenata sa ovom vrstom neoplazme.

Prikaz slučaja. Žena stara 58 godina imala je višemesečnu istoriju kašlja sa iskašljavanjem. Imunološka laboratorijska analiza pokazala je povišen C-reaktivni protein i povišeno anti-U1RNP antitelo za koje je opšte poznato da je serološki marker za mešovitu bolest vezivnog tkiva. Zbog produženog lečenja na reumatološkoj klinici i pojave bubnih prstiju, urađen je rendgenski snimak pluća. Na levom suprahilarnom segmentu prema periferiji vidi se trouglasta senka, što je u skladu sa tumorom. Urađena je dodatna kompjuterska tomografija pluća koja je pokazala ovalnu mekotkivnu masu nepravilnih kontura i zračeće širenje u okolno područje u desnom parenhimu, prečnika 36,6 x 30,9 milimetara i trakastu vezu sa pleurom. Za dalju dijagnozu urađena je biopsija i scintigrafija kostiju tehnecijum 99m metilen difosfonatom. Prilikom mikroskopskog pregleda biopsijskog materijala analiziran je jedan fragment koji je bio u prilog karcinoma pluća. Scintigrafija kostiju pokazala je blagu, difuznu, uzdužno povećanu apsorpciju radiotracera duž dugih kostiju nogu, butne kosti i tibije, nalazi koji sugerišu hipertrofičnu plućnu osteoartropatiju.

Ključne reči: neoplazma pluća, scintigrafija kostiju, hipertrofična plućna osteoartropatija

COMPARISON OF COMMON MORPHOLOGICAL VARIATIONS OF MAXILLARY AND MANDIBULAR THIRD MOLARS

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Introduction. Detailed knowledge of the external morphology of upper and lower third molars is essential due to their increased susceptibility to both carious and non-carious pathological processes, making this understanding crucial for timely diagnosis and appropriate treatment. The aim of this study was to determine and compare the most common geometric crown shapes, sizes, and cusp numbers of maxillary and mandibular third molars.

Material and Methods. 120 third molars from adult patients between the ages of 20 and 65 were analyzed. Crown shape, occlusal surface morphology, and cusp number and arrangement were assessed visually.

Results. The most common shapes observed were parallelepiped, triangular prism, cube, and spherical. Shape of parallelepiped and triangular prism were more frequently found in upper third molars compared to lower ones. The occlusal surface of the upper third molar was rectangular in 46.1% of cases, parallelogram-shaped in 28.7%, triangular in 22.5%, and square in 12.7%. Rectangular and parallelogram forms were more prevalent in mandibular molars than in maxillary. Regarding cusp count, maxillary third molars most commonly had four cusps (52.25%), followed by three (35.25%) and two (12.5%). Mandibular third molars typically had four cusps (62%), then three (31%), and rarely two (7%).

Conclusion. The most frequent crown shape overall was the parallelepiped, particularly common in maxillary third molars. The rectangular occlusal surface was more typical in mandibular molars compared with maxillary third molars, while four cusps were most commonly observed, especially in mandibular third molars.

Keywords: Third Molar, Size, Cusp

KOMPARACIJA UČESTALIH MORFOLOŠKIH VARIJACIJA GORNJIH I DONJIH TREĆIH MOLARA

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Uvod. Detaljno poznavanje spoljašnje građe gornjeg i donjeg trećeg molara od suštinskog je značaja, imajući u vidu njegovu povećanu predispoziciju ka razvoju karioznih i nekarioznih patoloških procesa, što predstavlja ključni faktor za pravovremenu dijagnostiku i adekvatnu terapiju. Cilj istraživanja je bio da se utvrdi i uporedi najčešći geometrijski oblik krunice i okluzalne površine gornjih i donjih trećih molara, kao i najčešći broj kvržica.

Materijali i metode. U studiji je analizirano 120 umnjaka gornje i donje vilice odraslih pacijenata oba pola, starosti 20–65 godina. Oblik krunice, morfologija okluzalne površine, broj i raspored kvržice utvrđivan je vizuelno.

Rezultati. Najučestaliji oblici gornjeg i donjeg trećeg molara bili su paralelopiped, trouglasta prizma, kocka i sferični oblik. Gornji treći molar imao je znatno veću zastupljenost oblika paralelopipeda i trouglaste prizme u poređenju sa donjim trećim molarom. Okluzalna površina gornjeg trećeg molara je u 46,1% slučajeva bila oblika pravougaonika, u 28,7% slučajeva je bila oblika paralelograma, trouglasti oblik je bio zastupljen sa 22,5%, kvadratni sa 12,7%. Oblici pravougaonika i paralelograma okluzalne površine donjeg trećeg molara su bili učestaliji u poređenju sa gornjim. Gornji treći molar najčešće ima četiri kvržice (52,25%), zatim tri (35,25%) i dve (12,5%), dok donji treći molar najčešće pokazuje četiri kvržice (62%), potom tri (31%) i retko dve (7%).

Zaključak. Najzastupljeniji oblik je bio oblik paralelopipeda koji je učestaliji kod gornjeg trećeg molara u poređenju sa donjim. Najčešći oblik okluzalne površine bio je pravouganik koji je zastupljeniji kod donjih trećih molara. Kod najvećeg broja zuba zapažene su četiri kvržice koje su učestalije kod donjih trećih molara.

Ključne reči: treći molar, oblik krunice, kvržica

MORPHOMETRIC ANALYSIS OF LINGUAL FRENULUM

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Introduction. The lingual frenulum is a mucosal fold in the sagittal plane that connects the lower side of the tongue with the structures of the floor of the oral cavity. The morphological and morphometric characteristics of the lingual frenulum are subject to individual variations. Aim was to perform a morphometric analysis of the lingual frenulum and examine differences in relation to the gender of the subjects.

Material and Methods. The sample comprised 55 individuals (27 men, 28 women) 19.53±0.86 years of age. The condition for participation in the research was that the person did not have a speech defect due to malformations within the oral cavity, as well as a positive history of diseases and surgical interventions in the examined region. The parameters of the lingual frenulum from photos of the subjects were measured in the ImageJ 1.48v® program and statistically analyzed in the IBM SPSS 23 Statistics® program. Comparison of average values for two different groups is done with the t-test, and statistical significance was determined at the level $p < 0.05$.

Results. The average length of the anterior edge of the lingual frenulum in males was 14.31±4.49 mm, while it was 14.20±3.77 mm in females. The surface area of the lingual frenulum in males was 54.94±52.20 mm², while in females was 62.60±46.27 mm².

Conclusion. There are differences in the measured parameters of the lingual frenulum in men compared to the lingual frenulum in women, but they are not statistically significant.

Keywords: Morphology; Morphometry; Lingual frenulum; ImageJ 1.48v®.

MORFOMETRIJSKA ANALIZA VEZICE JEZIKA

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Uvod. Vezica jezika je sluzokožni nabor u sagitalnoj ravni koji povezuje donju stranu jezika sa strukturama poda usne duplje. Morfološke i morfometrijske karakteristike vezice jezika podležu individualnim varijacijama. Cilj je bio izvršiti morfometrijsku analizu vezice jezika i ispitati razlike u odnosu na pol ispitanika.

Materijal i metode. Istraživanje je sprovedeno na 55 ispitanika (27 muškaraca, 28 žena) starosne dobi $19,53 \pm 0,86$ godina. Uslov za učestvovanje u istraživanju bio je da ispitanik nema govornu manu uslovljenu malformacijama unutar usne duplje, kao ni pozitivnu istoriju oboljenja i hirurških intervencija ispitivane regije. Parametri vezice jezika sa fotografije ispitanika mereni su u programu *ImageJ 1.48v*® i statistički obrađeni u programu *IBM SPSS 23 Statistics*®. Poređenje prosečnih vrednosti za dve različite grupe je urađeno t-testom, a statistička značajnost određivana je na nivou $p < 0,05$.

Rezultati. Prosečna dužina prednje ivice vezice jezika iznosi $14,31 \pm 4,49$ mm kod osoba muškog pola, dok ista dimenzija kod osoba ženskog pola iznosi $14,20 \pm 3,77$ mm. Površina vezice jezika kod osoba muškog pola iznosi $54,94 \pm 52,20$ mm², dok kod osoba ženskog pola iznosi $62,60 \pm 46,27$ mm².

Zaključak. Postoje razlike izmerenih parametara vezice jezika muškaraca u odnosu na vezicu jezika žena, međutim one nisu statistički značajne.

Ključne reči: morfologija, morfometrija, vezica jezika, *ImageJ 1.48v*®

THE CONSTANT NEED TO ALLEVIATE THE TOXIC EFFECTS OF DRUGS – NEW POTENTIAL USES OF NANOLIPOSOMES AS A DELIVERY TOOLS

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The development of pharmacotherapy has a great impact on the longevity and quality of human life. Unfortunately, the clinical use of many drugs is usually limited because of their side effects that may include damages of liver, kidneys, lungs and gastrointestinal mucosa. Therefore, one of the main goals of modern medicine is to alleviate the toxic effects of drugs. Nanoliposomes are bilayer lipid vesicles, which can encapsulate various bioactive agents including medicaments, pharmaceuticals, nutritional supplements, antioxidants, and polypeptides. Researchers have primarily found their use as easy-to-prepare transport mediums that enhance the bioavailability of a carried substance. The aim of our study was to evaluate whether the encapsulation of lycopene and ellagic acid into nanoliposomes would improve their potential in preventing methotrexate/ cyclophosphamide-induced liver damage in rats. The application of both forms of lycopene and ellagic acid (alone and encapsulated) concomitantly with methotrexate/ cyclophosphamide reduced the changes in oxidative damage markers and greatly reversed structural changes of liver tissue. Moreover, animals that received an encapsulated form of these antioxidants showed a higher degree of recovery than those treated with antioxidants alone. The findings of our study indicate that the treatment with nanoliposome-encapsulated antioxidants compared with antioxidants alone has an advantage, as it more efficiently reduces the liver damages in rats induced by drug administration. We can conclude that the encapsulation process might be effective in preventing applied antioxidants from different environmental influences and could significantly increase their hepatoprotective potential. The results of our study also indicate that the encapsulation of supporting agents can be used in clinical practice in patients treated with different drugs

Keywords: Nanoliposomes, Drug Toxicity, Antioxidants

VEĆITA TEŽNJA SMANJENJA TOKSIČNIH EFEKATA LEKOVA- NOVE MOGUĆNOSTI U PRIMENI NANOLIPOZOMA KAO TRANSPORTNIH MEDIJUMA

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Razvoj farmakoterapije ima veliki doprinos za produženje i poboljšanje kvaliteta života ljudi. Klinička primena mnogih lekova je često i ograničena zbog njihovih neželjenih efekata koji uključuju oštećenja jetre, bubrega, pluća i gastrointestinalne sluzokože. Zbog ovoga, jedan od glavnih ciljeva savremene medicine jeste smanjenje toksičnosti lekova. Nanolipozomi su lipidne vezikule u koje se mogu inkapsulirati različiti bioaktivni agensi uključujući lekove, farmaceutske proizvode, suplemente i polipeptide. Pre svega se primenjuju kao transportni medijumi koji se lako pripremaju i koji povećavaju bioraspoloživost supstance koja se prenosi. U našim studijama, imali smo za cilj da procenimo da li bi enkapsulacija likopena i elaginske kiseline u nanolipozome poboljšala njihov potencijal u prevenciji oštećenja jetre izazvanih metotreksatom/ciklofosfamidom kod pacova. Primena oba oblika likopena i elaginske kiseline (slobodni i enkapsulisani) istovremeno sa metotreksatom/ciklofosfamidom ublažila je promene u niovima markera oksidativnog oštećenja i značajno prevenirala morfološke promene tkiva jetre. Štaviše, životinje koje su primale enkapsulirani oblik ovih antioksidanata pokazale su veći stepen oporavka od onih tretiranih slobodnim oblikom. Nalazi ove studije pokazuju da tretman sa enkapsuliranim nanolipozomima u poređenju sa slobodnim oblikom antioksidanasa ima prednost jer efikasnije smanjuje oštećenja jetre kod pacova izazvana primenom lekova. Možemo zaključiti da bi proces enkapsulacije mogao biti efikasan u zaštiti primenjenih antioksidanata od različitih uticaja okoline i da bi mogao značajno povećati njihov hepatoprotektivni potencijal. Rezultati naših studija takođe ukazuju da se enkapsulacija protektivnih agenasa može koristiti u kliničkoj praksi kod pacijenata lečenih različitim lekovima.

Ključne reči: nanolipozomi, toksični efekti lekova, antioksidansi

RELATIONSHIPS BETWEEN NUTRITIONAL STATUS TYPE AND BODY COMPOSITION IN BULGARIAN STUDENTS

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Introduction. To study the relationship between nutritional status type and basic characteristics of body composition in Bulgarian students.

Materials and Methods. This study presents results of a bioimpedance analysis (*BIA*) of the body composition of representative samples of Bulgarian students between the ages of 19 and 25. The study is cross-sectional and was conducted in the period between 2015 and 2022. All the subjects examined were measured by height, body weight, waist and hip circumferences by means of standard anthropometry. Body nutritional status type was defined according to the cut-off points of % BF. The evaluation of body composition was carried out by means of the *BIA* analyzer *ABC-01 "Medass"*. The individual values of resistance, reactance, impedance, and phase angle were measured for each person, which are the basis for the evaluation of body composition. It was characterized by the body fat (*BF*) mass, free-fat mass, skeletal-muscle mass, active cell mass, basal metabolic rate and specific metabolic rate.

Results. The results showed that all the studied anthropometric indices were significantly higher ($p < 0.001$) in young men, with the exception of fat mass, which was significantly higher in women. The average values of basal metabolic rate were significantly higher in overweight men and women. Specific metabolic rates are greatest in the underweight students of both sexes.

Conclusion. These results show that there is no equality between the concepts of underweight and undernutrition/malnutrition, although they are often equated in the scientific literature.

Keywords: *BIA*, Body Composition, Nutritional Status, Students

VEZA IZMEĐU TIPA NUTRITIVNOG STATUSA I KOMPOZICIJE TELA KOD STUDENATA U BUGARSKOJ

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Uvod. Cilj istraživanja bio je ispitati vezu između tipa nutritivnog statusa i osnovnih karakteristika kompozicije tela kod studenata u Bugarskoj.

Materijali i metode. Ova studija predstavlja rezultati analize bioimpedanse (BIA) kompozicije tela reprezentativnih uzoraka bugarskih studenata starosti od 19 do 25 godina. Studija preseka sprovedena je u periodu između 2015. i 2022. godine. Svim ispitanicima merena je visina, težina tela, obim struka i kukova standardnim antropometrijskim procedurama. Tip nutritivnog statusa određen je na osnovu procenta masnoće tela % BF. Procena kompozicije tela urađena je pomoću analize bioelektrične impedanse BIA a *ABC-01 Medass*. Za svaku osobu izmerene su vrednosti otpora, reaktanse, impedanse i faznog ugla koji su osnova za procenu kompozicije tela. Karakteriše ga masnoća tela (BF), nemasna masa, masa skeletnih mišića, masa aktivne ćelije, bazalna brzina metabolizma i specifična metabolička brzina.

Rezultati. Rezultati su pokazali da su svi ispitivani antropometrijski indeksi značajno viši ($p < 0,001$) kod mladića, izuzev manse masnoće koja je značajno veća kod žena. Prosečne vrednosti bazalnog metabolizma bile su značajno veće kod muškaraca i žena sa prekomernom težinom. Specifične metaboličke vrednosti najveće su kod studentata oba pola sa nižom telesnom težinom.

Zaključak. Rezultati pokazuju da ne postoji jednakost između koncepata pothranjenosti i neuhranjenosti, iako se često poistovećuju u naučnoj literaturi.

Glavne reči: BIA, kompozicija tela, nutritivni status, studenti

FORENSIC ANTHROPOLOGY



FORENZIČKA ANTROPOLOGIJA

COMPARATIVE ANALYSIS OF THE NEONATAL LINE IN PRIMARY TEETH FROM BRONZE AGE AND MODERN CLINICAL SAMPLES USING SEM AND HUVITZ HRM-300 POLARIZING OPTICAL MICROSCOPY

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*- teachers under whose mentorship the study was conducted

Introduction. The neonatal line (NNL) serves as a crucial histological marker distinguishing prenatal and postnatal enamel formation. This study aims to analyse and compare the NNL in primary teeth from two distinct populations: three deciduous teeth from a Bronze Age archaeological sample and three from a modern clinical sample.

Materials and Methods. Scanning Electron Microscopy (SEM) and Huvitz HRM-300 polarizing optical microscopy were used to identify, measure, and describe the NNL, as well as the structural differences in prenatal and postnatal enamel. While SEM provided high-resolution imaging, facilitating detailed visualization of enamel microstructures, Huvitz microscopy offered advantages in color differentiation and enhanced contrast through specialized polarizing and filter-based capabilities, making it complementary to SEM analysis.

Results. The comparative analysis revealed variations in enamel thickness and NNL characteristics between the archaeological and modern samples, potentially reflecting differences in maternal health, nutrition, and environmental factors.

Conclusion. These findings contribute to a better understanding of early childhood growth conditions in past populations and underscore the value of combining multiple imaging techniques in dental histology research.

Keywords: Primary Teeth, Neonatal Line, Scanning Electron Microscopy, Polarizing Optical Microscopy, Dental Histology

KOMPARATIVNA ANALIZA NEONATALNE LINIJE KOD MLEČNIH ZUBA IZ BRONZANOG DOBA I MODERNIH KLINIČKIH UZORAKA KORISTEĆI SEM I HUVITZ HRM-300 POLARIZOVANU OPTIČKU MIKROSKOPIJU

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Uvod. Neonatalna linija (NNL) predstavlja ključni histološki marker koji razlikuje prenatalnu i postnatalnu formaciju gleđi. Ova studija ima za cilj analizu i poređenje NNL-a kod mlečnih zuba iz dve različite populacije: tri mlečna zuba iz arheološkog uzorka iz bronzanog doba i tri iz savremenog kliničkog uzorka.

Materijal i metode. Za identifikaciju, merenje i opis NNL-a, kao i strukturalnih razlika između prenatalne i postnatalne gleđi, korišćeni su skenirajući elektronski mikroskop (SEM) i polarizujući optički mikroskop Huvitz HRM-300. Dok je SEM omogućio snimanje visoke rezolucije i detaljnu vizualizaciju mikrostruktura gleđi, Huvitz mikroskop je pružio prednosti u diferencijaciji boja i poboljšanom kontrastu zahvaljujući specijalizovanim polarizacionim i filtrirajućim mogućnostima, što ga čini komplementarnim alatom uz SEM analizu.

Rezultati. Komparativna analiza je otkrila varijacije u debljini gleđi i karakteristikama NNL-a između arheoloških i savremenih uzoraka, što potencijalno odražava razlike u zdravstvenom stanju majki, ishrani i faktorima životne sredine.

Zaključak. Ovi nalazi doprinose boljem razumevanju uslova rasta u ranom detinjstvu kod populacija iz prošlosti i naglašavaju značaj kombinovanja različitih tehnika snimanja u istraživanjima dentalne histologije.

Ključne reči: mlečni zubi; neonatalna linija; skenirajuća elektronska mikroskopija; polarizovana optička mikroskopija; dentalna histologija

NEW DATA FROM THE RESEARCH AT THE KREMIKOVTSI MONASTERY ST. GEORGE THE VICTORIOUS IN THE BALKAN MOUNTAINS, BULGARIA

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Introduction. The Kremikovtsi Monastery *St. George the Victorious* is located on the southern slopes of the Balkan Mountains. The first known mention of the monastery appears in a shortened Ottoman tax register from 1530. Archaeological excavations have been conducted since the late 1970s, with long interruptions. A necropolis located over a large area north of the old church *St. George* has been registered and partially studied.

Material and Method. The anthropological investigation includes inhumated skeletal remains from 19 individuals, discovered during archaeological research of the mentioned necropolis and dated to the late 15th and early 18th century. Using standard anthropological methods, metric and scopical analysis of the osteological materials was made in order to determine the age of death and the sex of the buried. The health status of the studied population is assessed by age-sex distribution of the identified morphological bone changes.

Results. In the series, dentitions were found in only five adult males, and dental pathological changes were identified in all of them. Notably, there was a high number of intravitaly lost teeth. The permanent dentitions in the necropolis exhibit very high caries frequency, which is characteristic of populations from the Ottoman period in Bulgaria. The most commonly observed conditions among the buried individuals include degenerative-dystrophic changes of the spine and limbs, as well as ossifying enthesopathies of the humeral bones.

Conclusion. The paleopathological changes observed in the necropolis of the Kremikovtsi Monastery can be associated with physical overstrain, which was characteristic of the Christian population during the Ottoman period.

Keywords: Monastery, Christian Necropolis, Anthropological Investigation, Paleopathological Data, Archaeological Research

NOVI PODACI ISTRAŽIVANJA KREMIKOVSKOG MANASTIRA SVETOG GREGORIJA POBEDONOSCA NA STAROJ PLANINI, BUGARSKA

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Uvod. Kremikovski Manastir Svetog Georgija Pobedonosca smešten je na južnim obroncima Stare planine. Manastir se prvi put spominje u skraćenom osmanskim poreskom registru iz 1530. godine. Arheološke iskopine vrše se još od 1970. uz duge prekide. Nekropol koja se nalazi na velikom prostoru severno od Crkve Sv. Georgija pronađena je i delimično ispitana.

Materijali i metode. Antropološkim istraživanjem obuhvaćeni su inhumirani skeletni ostaci 19 osoba, otkriveni tokom arheološkog istraživanja pomenute nekropole koji datiraju od petnaestog i početka devetnaestog veka. Standardnim antropološkim analizama urađena je metrička i vizuelna analiza osteološkog materijala kako bi se utvrdio uzrast i pol zakopanih osoba. Zdravlje ispitivane populacije procenjuje se na osnovu starosne i polne distribucije identifikovanih morfoloških promena na kostima.

Rezultati. U ispitivanoj seriji denticija je primećena kod samo pet odraslih muškaraca, a dentalne patološke promene utvrđene su kod svih. Takođe je zapaženo da je veliki broj zuba izgubljen intravitalno. Trajne denticije u nekropoli ukazale su na veliku učestalost karijesa, što je karakteristično za populaciju iz otomanskog perioda u Bugarskoj. Najčešća stanja kod sahranjenih osoba su degenerativno-distrofične promene kičme i udova, kao i okoštavajuća entezopatija nadlaktičnih kostiju.

Zaključak. Paleopatološke promene zapažene na nekropoli u kremikovskom manastiru mogu se povezati sa fizičkim naporom koji je karakterističan za hrišćansko stanovništvo tokom osmanskog perioda.

Ključne reči: manastir, hrišćanska nekropola, antropološko istraživanje, paleopatološki podaci

HEIGHT IN BULGARIA DURING THE OTTOMAN PERIOD AND THE FIRST POST-LIBERATION DECADES

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Materials and Method. Six skeletal series from the 15th to the 19th centuries from Bulgarian lands were studied. Height was reconstructed according to Pearson and Trotter-Gleser formulas. A comparison was made with the data on the height of conscripts between 1880 and 1920.

Results and Conclusion. The average values of height according to Pearson formula (164.2-168.7 cm) fit well into the territorial variability of average height in Bulgaria after Liberation for men in the individual series (163.0-169.9 cm by district). The coincidence of average height for all series with average height is approximately 166 cm, which is good. In case of women, the average height of individual series vary from 151.9 to 154.2, with about 153 cm on average, for all series. This is slightly lower than average height of adult women around 1900 according to Vatev 55.6 cm. One possible reason is the more difficult situation of women during Ottoman period. The highest values of height were present in Muslim men, a phenomenon that persists in post-liberation years, which contemporaries attribute to Orthodox fasting and deprivation of protein food in adolescents. The largest intersex differences in height are observed between Muslim men and women – 8.7%, which could be associated with more degraded social position of women in Muslim society. Trotter-Gleser formulas provide about 4-5 cm higher height and a significant discrepancy with the data from the post-liberation period.

Keywords: Height, Bulgaria, Ottoman Period, Post-liberation Period

VISINA U BUGARSKOJ TOKOM OSMANLIJSKOG PERIODA I PRVIH DECENIJA NAKON OSLOBOĐENJA

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Materijali i metode. Proučavali smo šest skeletnih serija od petnaestog do devetnaestog veka na teritoriji Bugarske. Visina je rekonstruisana na osnovu formula Pearson i Trotter-Gleser. Napravljeno je poređenje podataka o visini regrutovanih vojnika između 1880. i 1920. godine.

Rezultati i zaključak. Prosečne vrednosti visine prema Pirsonovoj formuli (164,2 –168,7 cm) dobro se uklapaju u teritorijalnu varijabilnost prosečne visine u Bugarskoj posle oslobođenja, za muškarce u pojedinačnoj seriji (163,0 –169,9 cm po okrugu). Podudarnost prosečne visine za sve serije sa prosečnom visinom je približno 166 cm, što je dobro. U slučaju žena, prosečna visina individualnih serija varira od 151,9 do 154,2, sa prosekom od 153 cm, za sve serije. Ovo su nešto niže vrednosti u poređenju sa prosečnom visinom žena iz 1900. prema Vatevu 55,6 cm. Jedan od mogućih razloga jeste teži položaj žena u toku osmanlijske vlasti. Najviše vrednosti za visinu zabeležene su kod muškaraca muslimana, fenomen koji preovladava u periodu nakon oslobođenja i koji savremenici pripisuju parvoslavnom postu i uskraćivanju proteinske hrane kod adolescenata. Najveće razlike među polovima primećene su između muslimana i muslimanki – 8,7%, što bi se moglo dovesti u vezu sa degradiranim položajem žena u muslimanskom društvu. Trotter-Gleser formule daju oko 4 do 5 cm veću visinu i značajno odstupanje sa podacima iz perioda nakon oslobođenja.

Ključne reči: visina, Bugarska, osmanlijski period, period nakon oslobođenja

SPORT ANTHROPOLOGY



SPORTSKA ANTROPOLOGIJA

THE EFFECTS OF DAILY PHYSICAL ACTIVITY ON FUNDAMENTAL MOTOR SKILLS: AN ASSESSMENT USING THE TGMD-2 TEST BATTERY

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Introduction. Physical activity during early childhood plays a crucial role in the development of fundamental motor skills (FMS), which are essential for motor competence and lifelong engagement in physical activity. This study aimed to investigate the effects of a structured daily physical activity program on gross motor development in preschool children using the Test of Gross Motor Development–Second Edition (TGMD-2).

Materials and Methods. The study included 258 preschool children (mean age = 6.55 ± 0.42 years) from 14 kindergartens in the city of Sombor. Participants were divided into two groups: an intervention group ($n=125$) that engaged in structured daily physical activity, and a control group ($n=133$) that followed the standard kindergarten physical education curriculum. TGMD-2 assessments were conducted pre- and post-intervention over a six-month period, measuring locomotor skills, object control skills, and gross motor quotient (GMQ).

Results. Multivariate analysis of covariance (MANCOVA) revealed statistically significant differences ($p<0.001$) between the intervention and control groups in all measured variables. The structured daily physical activity program led to significant improvements in the intervention group across all three TGMD-2 subtests: locomotor skills ($p<0.001$), object control skills ($p<0.001$), and GMQ ($p<0.001$).

Conclusion. The findings indicate that structured daily physical activity significantly enhances motor skill development in preschool children. Incorporating such programs into early childhood education may foster improved motor development, health, and long-term engagement in the active lifestyle of preschool children.

Keywords: Physical Activity, Fundamental Motor Skills, TGMD-2, Motor Development, Preschool Children

EFEKTI SVAKODNEVNE FIZIČKE AKTIVNOSTI NA FUNDAMENTALNE MOTORIČKE VEŠTINE: PROCENA PRIMENOM TGMD-2 BATERIJE TESTOVA

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Uvod. Fizička aktivnost u ranom detinjstvu igra ključnu ulogu u razvoju bazičnih motoričkih veština (FMS), koje su od suštinskog značaja za sticanje motoričke kompetencije i celoživotno angažovanje u fizičkim aktivnostima. Cilj ovog istraživanja bio je da ispita efekte svakodnevnih programiranih fizičkih aktivnosti na razvoj grube motorike kod dece predškolskog uzrasta, koristeći bateriju testova “*Test of Gross Motor Development*” – Drugo izdanje

Materijal i metode. Istraživanje je obuhvatilo 258 dece predškolskog uzrasta (prosečni uzrast = $6,55 \pm 0,42$ godine) iz 14 vrtića u gradu Somboru. Ispitanici su bili podeljeni u dve grupe: eksperimentalnu grupu ($n = 125$), koja je bila uključena u svakodnevne programirane fizičke aktivnosti, i kontrolnu grupu ($n = 133$), koja je upražnjavala standardni nastavni plan i program fizičkog vaspitanja u vrtićima. Testiranje ispitanika primenom TGMD-2 baterije testova sprovedeno je pre i posle eksperimentalnog tretmana tokom šestomesečnog perioda, sa akcentom na procenu kvaliteta lokomotornih veština, veština manipulacije objektima i ukupnog motoričkog koeficijenta

Rezultati. Primenom multivarijatne analize kovarijanse (MANCOVA) utvrđene su statistički značajne razlike ($P < 0,001$) između eksperimentalne i kontrolne grupe u svim izmerenim varijablama. Upražnjavanje svakodnevnih programiranih fizičkih aktivnosti dovelo je do značajnih poboljšanja u eksperimentalnoj grupi u sva tri TGMD-2 subtesta: lokomotorne veštine ($p < 0,001$), veštine manipulacije objektima ($p < 0,001$) i ukupni motorički koeficijent ($p < 0,001$).

Zaključak. Svakodnevna fizička aktivnost značajno pospešuje razvoj bazičnih motoričkih veština kod dece predškolskog uzrasta. Uključivanje takvih programa u obrazovni sistem predškolskih ustanova u ranom detinjstvu može unaprediti motorički razvoj, poboljšati zdravlje i stvoriti odličnu bazu za dugoročno angažovanje u aktivnom stilu života predškolske dece.

Ključne reči: fizička aktivnost, fundamentalne motoričke veštine, TGMD-2, motorički razvoj, predškolska deca

THE INFLUENCE OF HAMSTRING FLEXIBILITY ON LINEAR SPEED, CHANGE OF DIRECTION SPEED, AND VERTICAL JUMP IN FOOTBALL PLAYERS

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Introduction. Hamstring flexibility is considered an essential factor for sports performance, especially in disciplines that require speed and explosiveness. This study examined the relationship between hamstring flexibility and linear speed, change of direction speed, and vertical jump in football players.

Materials and Methods. The sample consisted of 32 football players from the Serbian First League, with an average age of 25.75 ± 6.44 years. Hamstring flexibility was assessed using the Sit-and-Reach test, linear speed was measured with a 20-meter sprint, change of direction speed was assessed using the Illinois Test, and vertical jump was measured using the Countermovement Jump (CMJ). Pearson's correlation and multiple regression analysis (stepwise method) were applied.

Results. A significant positive correlation was found between hamstring flexibility and linear speed ($r = 0.503$; $p < 0.01$), as well as vertical jump ($r = 0.635$; $p < 0.01$). The correlation with change of direction speed was not statistically significant ($r = 0.281$; $p > 0.05$). Regression analysis showed that flexibility was a significant predictor of vertical jump performance ($R = 0.635$; $p < 0.001$) but not of linear speed or change of direction speed.

Conclusion. The results suggest that higher hamstring flexibility can improve explosiveness, especially in vertical jumping. It is recommended that the exercises to improve hamstring flexibility are systematically included in the training programs of football players, particularly in programs aimed at enhancing jumping ability and overall explosive strength.

Keywords: Flexibility, Speed, Change of Direction, Vertical Jump, Football

UTICAJ FLEKSIBILNOSTI ZADNJE LOŽE NA LINEARNU BRZINU, BRZINU PROMENE PRAVCA I VERTIKALNI SKOK FUDBALERA

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Uvod. Fleksibilnost zadnje lože smatra se važnim faktorom za sportske performanse, posebno u disciplinama koje zahtevaju brzinu i eksplozivnost. Cilj ovog istraživanja bio je da se ispita povezanost fleksibilnosti zadnje lože sa linearnom brzinom, brzinom promene pravca i visinom vertikalnog skoka kod fudbalera.

Materijal i metode. U istraživanju je učestvovalo 32 fudbalera Prve lige Srbije, prosečne starosti $25,75 \pm 6,44$ godina. Fleksibilnost je procenjena testom „Sit-and-Reach“, linearna brzina sprintom na 20 metara, brzina promene pravca Illinois testom, a visina vertikalnog skoka CMJ – (Countermovement Jump). Korišćene su Pearsonova korelaciona i multipla regresiona analiza (stepwise metod).

Rezultati. Zabeležena je značajna pozitivna korelacija između fleksibilnosti zadnje lože i linearne brzine ($r = 0,503$; $p < 0,01$), kao i visine vertikalnog skoka ($r = 0,635$; $p < 0,01$). Povezanost sa brzinom promene pravca nije bila statistički značajna ($r = 0,281$; $p > 0,05$). Regresiona analiza je pokazala da je fleksibilnost značajan prediktor visine skoka ($R = 0,635$; $p < 0,001$), ali ne i ostalih sposobnosti.

Zaključak. Dobijeni rezultati ukazuju da veći nivo fleksibilnosti zadnje lože može doprineti boljoj eksplozivnosti, posebno u vertikalnom skoku. Preporučuje se sistematsko uključivanje vežbi za razvoj fleksibilnosti zadnje lože u trenažni proces fudbalera, naročito u okviru programa za unapređenje skok sposobnosti i eksplozivne snage.

Ključne reči: fleksibilnost, brzina, promena pravca, vertikalni skok, fudbal

THE IMPACT OF TACTICAL SYSTEMS ON PHYSICAL DEMANDS OF YOUNG FOOTBALL PLAYERS: A LITERATURE REVIEW

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Introduction. Modern football demands high levels of physical preparedness, especially among young players who are in a phase of intensive development. The tactical system used by a team significantly influences the players' physical efficiency, as it determines the volume and intensity of physical activity on the field.

Materials and Methods. The aim of this paper was to analyze, through a review of relevant literature, how different tactical formations (4-3-3, 4-4-2, 3-5-2, 3-4-3) affect the physical demands and performance of young football players between the ages of 12 and 16. Special attention was given to parameters such as the number of sprints, total distance covered, and game intensity. The literature was searched using electronic database: Google Scholar for academic papers and PubMed for studies in sports and health sciences.

Results. The results of the review show that offensive formations, such as 4-3-3 and 3-4-3, require higher physical exertion, while defensive systems (4-4-2, 3-5-2) involve less physical effort but demand greater tactical discipline.

Conclusion. Different tactical systems have a direct impact on the physical efficiency of young football players. Proper alignment of physical preparation with the tactical formation and the player's position can contribute to a more efficient development of physical capacities and better readiness for the demands of modern football.

Keywords: Physical Efficiency, Football Formations, Game Intensity, Performance

UTICAJ TAKTIČKIH SISTEMA NA FIZIČKE ZAHTEVE MLADIH FUDBALERA: PREGLED LITERATURE

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Uvod. Savremeni fudbal zahteva visoke nivoe fizičke spremnosti, posebno kod mladih igrača koji se nalaze u fazi intenzivnog razvoja. Na fizičku efikasnost igrača značajno utiče taktički sistem koji tim koristi tokom igre, jer on određuje obim i intenzitet fizičkog angažovanja na terenu.

Materijal i metode. Cilj ovog rada bio je da se kroz pregled relevantne literature analizira kako različite taktičke formacije (4-3-3, 4-4-2, 3-5-2, 3-4-3) utiču na fizičke zahteve i performanse mladih fudbalera uzrasta od 12 do 16 godina. Posebna pažnja posvećena je parametrima kao što su broj sprintova, ukupna pređena distanca i intenzitet igre. Literatura je pretražena korišćenjem elektronskih baze: *Google Scholar* za akademske radove i *PubMed* za studije iz oblasti sporta i zdravstva.

Rezultati. Rezultati pregleda pokazuju da ofanzivne formacije, poput 4-3-3 i 3-4-3, zahtevaju veće fizičko opterećenje, dok defanzivni sistemi (4-4-2, 3-5-2) nameću manji fizički napor, ali veću taktičku disciplinu.

Zaključak. Različiti taktički sistemi imaju direktan uticaj na fizičku efikasnost mladih fudbalera. Pravilno usklađivanje fizičke pripreme sa taktičkom formacijom i pozicijom igrača može doprineti efikasnijem razvoju fizičkih kapaciteta i boljoj pripremljenosti za zahteve savremenog fudbala.

Ključne reči: fizička efikasnost, formacije u fudbalu, intenzitet igre, performanse

COMPARISON OF GROSS MOTOR COORDINATION IN GIRLS ENGAGED IN MODERN DANCE AND MULTICOMPONENT SPORTS PROGRAMS: A KTK-BASED EXPERIMENTAL STUDY

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Introduction. Gross motor coordination developed in early childhood is vital for acquiring fundamental motor skills and lifelong physical competence. Physical activity programs such as modern dance and multicomponent sports may impact coordination in different ways. This study compared the effects of these two modalities on gross motor coordination using the *Körperkoordinationstest für Kinder* (KTK) test battery.

Materials and Methods. A total of 91 girls (between the ages of 7 and 10) participated in this quasi-experimental study: a modern dance group (n = 43, mean age = 8.61 ± 0.96) and a multicomponent sports group (n = 48, mean age = 8.49 ± 0.93). The dance group trained three times per week for 60 minutes; the sports group trained twice a week for 60 minutes. Post-intervention coordination was evaluated using the KTK test battery, comprising balance beam walking, lateral jumping, hopping for height, and lateral movement tasks.

Results. MANOVA revealed significant differences between the groups ($F=4.81$, $p<0.01$). The multicomponent group outperformed the dance group in three tasks and had a significantly higher total motor quotient ($p<0.05$). The dance group showed advantages in balance and jumping.

Conclusion. Both programs improved gross motor coordination but emphasized different abilities. Modern dance enhanced rhythmic movement and balance-related tasks, while multicomponent sports led to broader coordination gains. These findings support incorporating diverse movement experiences in early physical education to promote comprehensive motor development.

Keywords: Gross Motor Coordination, KTK, Modern Dance, Multicomponent Sports Activities

POREĐENJE OPŠTE KOORDINACIJE TELA KOD DEVOJČICA UKLJUČENIH U SAVREMENI PLES I MULTIKOMPONENTNE SPORTSKE PROGRAME: EKSPERIMENTALNA STUDIJA ZASNOVANA NA KTK BATERIJI TESTOVA

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Uvod. Opšta koordinacija tela razvijena u ranom detinjstvu ključna je za usvajanje osnovnih motoričkih veština i dugoročnu fizičku kompetenciju. Programi fizičke aktivnosti, poput modernog plesa i multikomponentnih sportova, mogu različito uticati na razvoj koordinacije. Ova studija uporedila je efekte ova dva pristupa korišćenjem baterije testova Körperkoordinationstest für Kinder (KTK).

Materijali i metode. U kvaziekperimentalnom istraživanju učestvovala je 91 devojčica uzrasta 7–10 godina: grupa modernog plesa ($n = 43$, prosečna starost = $8,61 \pm 0,96$) i grupa multikomponentnog sportskog programa ($n = 48$, prosečna starost = $8,49 \pm 0,93$). Grupa plesa trenirala je tri puta nedeljno po 60 minuta, dok je sportska grupa trenirala dva puta nedeljno po 60 minuta. Nakon intervencije, koordinacija je procenjena korišćenjem KTK baterije, koja obuhvata hodanje unazad po gredi, sunožne bočne skokove, jednonožno preskakanje prepreka i bočno premeštanje platformi.

Rezultati. MANOVA analiza pokazala je značajne razlike među grupama ($F=4,81$, $p < 0,01$). Multikomponentna grupa postigla je bolje rezultate u tri testa i viši ukupni motorički kvocijent ($p < 0,05$). Grupa plesa pokazala je prednosti u ravnoteži i skokovima.

Zaključak. Oba programa doprinose unapređenju opšte koordinacije, ali sa različitim fokusom. Moderni ples unapređuje ritmičke i ravnotežne zadatke, dok sportski programi pružaju šire motoričke koristi. Rezultati ukazuju na važnost uključivanja raznovrsnih koordinativnih aktivnosti u programe ranog fizičkog vaspitanja, sa ciljem unapređenja sveobuhvatnog razvoja motoričkih sposobnosti.

Ključne reči: opšta koordinacija tela, KTK, savremeni ples, multikomponentne sportske aktivnosti

OBESITY DIAGNOSED PARAMETERS IN BOXERS AND WRESTLERS

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Introduction. Combat sports are sports with weight categories; as a result, athletes need to pay special attention to their weight in order to stay in the desired weight category. Besides total weight, body composition, the representation of fat and fat-free components are particularly important for boxers and wrestlers.

Material and Methods. The sample comprised 50 male athletes between the ages of 18 and 30. They were divided into two groups of 25 boxers and 25 wrestlers. Body composition analysis was performed using the bioelectrical impedance method, Inbody 720 device.

Results. Comparison of analyzed obesity parameters showed the following results: average values for BMI were the same in both groups of athletes, boxers vs wrestlers = 24.01 ± 2.23 vs 24.08 ± 1.71 ; BF % = 13.8 ± 4.02 vs. 12.41 ± 3.83 ; WHR = 0.85 ± 0.05 vs 0.84 ± 0.05 ; Obesity Degree = 108.68 ± 10.21 vs 108.88 ± 7.74 . All parameters of obesity were statistically insignificantly lower in the group of wrestlers.

Conclusion. Obesity parameters in both groups of athletes were within optimal ranges, with slightly lower absolute values in wrestlers.

Keywords: Obesity, Wrestlers, Boxers, Body Composition, Body Fat Percent

PARAMETRI GOJAZNOSTI KOD BOKSERA I RVAČA

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Uvod. Borilački sportovi spadaju u grupu sportova sa težinskim kategorijama što nameće sportistima potrebu da posebno paze na svoju težinu da bi ostali u željenoj težinskoj kategoriji. Osim ukupne težine za sportiste je osobito važan i telesni sastav, zastupljenost masne i bezmasne komponente.

Materijal i metode. Uzorkom je obuhvaćeno 50 muškaraca, uzrasta od 18 do 30 godina, podeljenih u dve grupe od 25 boksera i 25 rvača. Analiza telesnog sastava je izvedena metodom bioelektrične impedanse, aparatom *Inbody 720*.

Rezultati. Komparacija analiziranih parametara gojaznosti pokazala je sledeće rezultate: prosečne vrednosti za BMI su bile iste kod obe grupe ispitanika, boks protiv rvanja = $24,01 \pm 2,23$ vs $24,08 \pm 1,71$; BF% = $13,8 \pm 4,02$ vs $12,41 \pm 3,83$; WHR = $0,85 \pm 0,05$ vs $0,84 \pm 0,05$; Stepen gojaznosti = $108,68 \pm 10,21$ vs $108,88 \pm 7,74$. Svi parametri gojaznosti bili su statistički neznčajno niži kod grupe rvača.

Zaključak. Parametri gojaznosti kod obe grupe ispitanika bili su u optimalnim granicama, sa nešto nižim apsolutnim vrednostima kod rvača.

Ključne reči: gojaznost, bokseri, rvači, telesni sastav, procent telesnih masti

THE IMPLICATIONS OF SOMATOTYPES ON ATHLETES' HEALTH AND SPORT PERFORMANCE

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Introduction. Different somatotypes (ectomorph, mesomorph, and endomorph) have been widely used in sport science and health research. Each somatotype is associated with distinct physiological characteristics that influence athletic performance, injury susceptibility, and health outcomes, crucial for optimizing training, nutrition, and healthcare in athletes. The aim was to examine the relationship between somatotypes and health in athletes, focusing on metabolic efficiency, musculoskeletal health, injury risk, and sport adaptation.

Material and Method. A comprehensive literature review was conducted using peer reviewed sources from databases such as Pubmed, Scopus, and Web of Science. Studies examining the associations between somatotypes and various health parameters in athletes were included. Key themes as cardiovascular fitness, bone density, recovery rates, and predisposition to injury were analyzed.

Results. The evidence suggests that mesomorphic athletes (higher muscle mass), exhibit superior strength and power, but are prone to joint and ligament injuries. Ectomorphic athletes, (lower fat and muscle mass), demonstrate advantages in endurance sports but may have a higher risk of stress fractures and energy deficiencies. Endomorphic athletes (higher fat to muscle ratio) face challenges related to metabolic health, weight management and joint stress, particularly in weight bearing sports. The review highlights sport specific adaptations and strategies to mitigate health risks associated with each somatotype.

Conclusion. Somatotyping provides valuable insights into individualized health risks and performance in athletes. By integrating somatotype-based assessments into training, nutrition, and medical interventions, sport professionals can enhance performance and minimize injury risks. Future research should explore genetic and environmental interactions influencing somatotype traits and their longterm impact on athletic health.

Keywords: Somatotypes, Athletes, Health Risks, Sport Performance

IMPLIKACIJE SOMATOTIPOVA NA ZDRAVLJE SPORTISTA I SPORTSKE PERFORMANSE

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Uvod. Različiti somatotipovi (ektomorf, mezomorf i endomorf) široko se koriste u nauci o sportu i zdravstvenim istraživanjima. Svaki somatotip je povezan sa različitim fiziološkim karakteristikama koje utiču na atletske performanse, podložnost povredama i zdravstvene ishode, što je ključno za optimizaciju treninga, ishrane i zdravstvene zaštite kod sportista. Cilj je bio da se ispita odnos između somatotipova i zdravlja kod sportista, sa fokusom na metaboličku efikasnost, zdravlje mišićno-skeletnog sistema, rizik od povreda i sportsku adaptaciju.

Materijali i metode. Pregled literature je sproveden korišćenjem recenziranih izvora iz baza podataka iz Pubmed, Scopus, i Web of Science. Uključene su studije koje su ispitivale povezanost između somatotipova i različitih zdravstvenih parametara kod sportista. Analizirane su ključne teme kao kardiovaskularna kondicija, gustina kostiju, stopa oporavka i predispozicija za povrede.

Rezultati. Mezomorfni sportisti (veća mišićna masa) pokazuju superiornu snagu i moć, ali su skloni povredama zglobova i ligamenata. Ektomorfni sportisti (manja masnoća i mišićna masa) pokazuju prednosti u sportovima izdržljivosti, ali veći rizik od stresnih fraktura i energetske nedostataka. Endomorfnici sportisti (veći odnos masti-mišića) suočavaju se sa izazovima za metaboličkim zdravljem, upravljanjem težinom i stresom u zglobovima, posebno u sportovima koji nose težinu. Pregled naglašava sportske specifične adaptacije i strategije za ublažavanje zdravstvenih rizika povezanih sa svakim somatotipom.

Zaključak. Somatotipizacija daje koristan uvid u individualizovane zdravstvene rizike i performanse sportista. Integracijom procena zasnovanih na somatotipu u trening, ishranu i medicinske intervencije, sportisti mogu poboljšati performanse i minimizirati rizik od povreda. Buduća istraživanja bi trebala da istraže genetske i ekološke interakcije koje utiču na somatopske osobine i njihov dugoročni uticaj na sportsko zdravlje.

Ključne reči: somatotipovi, sportisti, zdravstveni rizici, sportski performans

ANALYSIS OF SEGMENTAL BODY COMPOSITION WITH BIOELECTRICAL IMPEDANCE IN ATHLETES AGED FROM 15 TO 18 YEARS

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Introduction. In North Macedonia (NM), there are no published data on segmental body composition in young athletes. The aim of this study was to analyze the segmental body composition in young athletes depending on age.

Materials and Methods. The sample comprised 140 male athletes from school leagues in NM, divided in 4 age categories between the ages of 15 and 18. Segmental body composition was analyzed with bioelectrical impedance on InBody 720 analyzer. Segmental fat and skeletal muscle mass in kg (FM and SMM) and percents (%FM and %SMM), were performed on: right arm (RA), left arm (LA), trunk (TR), right leg (RL) and left leg (LL).

Results. Significant differences on the trunk were shown for FM ($F = 3.644183$, $p < 0.05$) and % FM ($F = 2.83637$, $p < 0.05$) and those variables were higher in 15 years old athletes (3.29 ± 0.86 kg and 74.37 ± 32.12 %), compared to 18 years old athletes (4.59 ± 1.31 kg and 100.83 ± 42.76 %, respectively).

Conclusion. In young athletes from NM the age differences in segmental fat mass are better expressed, especially on the trunk, compared to muscle mass.

Keywords: Body Composition, Body Segments, Bioelectrical Impedance, Youth Athlete

ANALIZA SEGMENTNOG TELESNOG SASTAVA POMOĆU BIOELEKTRIČNE IMPEDANSE KOD SPORTISTA NA UZRASTU OD 15- 18 GODINA

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Uvod. U Severnoj Makedoniji (SM) ne postoje objavljeni podaci o segmentnom telesnom sastavu kod mladih sportista. Cilj ovog istraživanja je bio analizirati segmentni telesni sastav kod mladih sportista u odnosu na uzrast.

Materijali i metode. U presečnoj studiji bilo je obuhvaćeno 140 mladih sportista muškog pola od školskih liga u SM, koji su podeljeni u 4 uzrasne kategorije od 15 do 18 godina. Segmentni telesni sastav analiziran je pomoću bioelektrične impedanse (BIA) na InBody720 analizatoru. Segmentna masna i skeletna mišićna masa u kg (FM i SMM) i procentima (%FM i %SMM) bila je određena na: desnoj ruci (RA), levoj ruci (LA), trupu (TR), desnoj nozi (RL) i levoj nozi (LL).

Rezultati. Signifikantne razlike na trupu pokazali su FM ($F = 3,644183$, $p < 0,05$) i %FM ($F = 2,83637$, $p < 0,05$), a ove varijable bile su veće kod 15-godišnjih sportista ($3,29 \pm 0,86$ kg i $74,37 \pm 32,12$ %), u poređenju sa 18-godišnjim ($4,59 \pm 1,31$ kg i $100,83 \pm 42,76$ %, sledstveno).

Zaključak. Kod mladih sportista iz SM razlike u odnosu na uzrast za segmentnoj masnoj masi bolje su izraženi, osobito na trupu, upoređenju sa mišićnoj masi.

Keywords: Telesni sastav, telesni segmenti, bioelektrična impedansa, mladi sportisti

ANALYSIS OF TOTAL BODY COMPOSITION WITH BIOELECTRICAL IMPEDANCE IN ATHLETES BETWEEN THE AGES OF 15 AND 18

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Introduction. Athletes between the ages of 15 and 18 belong to a very vulnerable group in sports medicine. Total body composition analysis in these athletes is of particular importance.

Materials and Methods. The aim of this study was to evaluate the age differences of total body composition with multi-frequency bioelectrical impedance (BMI) in male athletes between the ages of 15 and 18. The analysis was done with In Body 720 analyzer in 140 athletes included in competitive sports. We analysed body weight (BW), body height (BH), body mass index (BMI), body fat mass (BFM and %BFM), skeletal muscle mass (SMM and %SMM) and bone mineral mass (BMM and %BMM).

Results. SMM significantly increased ($F = 2.83637$, $p < 0.05$) from 33.83 ± 6.4 kg in 15 years old to 38.25 ± 8.1 kg in 18 years old athletes. The increase of BMM and %BMM is not significant. BFM and %BFM show elevation over the age of 17.

Conclusion. In athletes from NM the skeletal muscle mass and bone mineral mass increase, while the body fat mass stagnates during the age period between 15 and 18.

Keywords: Body Composition, Athletes, Age from 15 to 18 years, Multi-frequency Bioelectrical Impedance

ANALIZA UKUPNOG TELESNOG SASTAVA POMOĆU BIOELEKTRIČNE IMPEDANSE KOD SPORTISTA NA UZRASTU OD 15-18 GODINA

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Uvod. Sportisti uzrasta od 15 do 18 godina veoma su vulnerabilna kategorija u sportskoj medicini. Analiza ukupnog telesnog sastava ovih sportista je od osobitog značaja.

Materijali i metode. Cilj ovog rada je da istraži uzrasne razlike ukupnog telesnog sastava pomoću metode multifrekventne bioelektrične impedanse (BIA) kod sportista muškog pola, na uzrastu od 15 do 18 godina. Analiza je urađena na InBody 720 analizatoru kod 140 sportista uključenih u kompetitivne sportove. Analizirani su telesna masa (BW), telesna visina (BH), indeks telesne mase (BMI), masna telesna masa (BFM i %BFM), skeletna mišićna masa tela (SMM i %SMM) i masa koštanih mineral (BMM i %BMM).

Rezultati. SMM se značajno povećava ($F = 4,0112$, $p < 0,001$) od $33,83 \pm 6,4$ kg kod 15 godišnjih do $38,25 \pm 8,1$ kg kod 18 godišnjih sportista. Povećanje BMM i %BMM nije signifikantno. BFM i %BFM beleže rast posle 17-te godine.

Zaključak. Kod sportista iz SM masa skeletnih mišića i koštanih minerala se povećava, a masna telesna masa stagnira u uzrasnom periodu od 15 do 18 godina.

Ključne reči: telesni sastav, sportisti, uzrast 15 do 18 godina, multifrekventna bioelektrična impedansa

MORPHOLOGICAL CHANGES OF THE HEART AS A RESULT OF VARIOUS FORMS OF PHYSICAL EXERTION

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Introduction. As a result of regular physical activity/physical training, i.e. long-term participation in sports, changes in the structure and function of the heart occur, more commonly known as cardiac remodeling.

Materials and Methods. The sample comprised 285 athletes of both sexes between the ages of 9 to 38. Anthropometric parameters (gender, age, height, weight) were determined, a personal and sports history was taken, and a 12-lead electrocardiogram (ECG) was performed in the group of studied athletes. In 54 subjects with ECG changes, 2D transthoracic echocardiography was performed.

Results. Longer duration of resistance training throughout the week was statistically significantly associated with: greater left atrial (LA) internal dimension ($r = 0.359$, $p = 0.008$), greater indexed LA volume ($r = 0.315$, $p = 0.020$), lower LA ejection fraction ($r = -0.380$, $p = 0.005$), greater left ventricular (LV) internal dimension in systole ($r = 0.336$, $p = 0.013$), greater interventricular septal and posterior wall thickness in diastole ($r = 0.399$; $p = 0.003$; $r = 0.347$, $p = 0.010$; respectively), as well as a greater indexed LV mass ($r = 0.326$, $p = 0.016$; going to the gym and lifting heavier weights was shown to be associated with: greater internal dimension of the LA ($r = 0.322$, $p = 0.018$), greater internal dimension of the right atrium (RA) ($r = 0.322$, $p = 0.018$) and greater thickness of the interventricular septum and posterior wall in diastole ($r = 0.272$; $p = 0.004$; $r = 0.397$, $p = 0.003$).

Conclusion. The impact of physical exertion is most frequently reflected in changes in the dimensions, function, and deformation of the left and right atria in athletes.

Keywords: Sport Heart, Physical Activity, Echocardiography

MORFOLOŠKE PROMENE SRCA KAO REZULTAT RAZLIČITIH OBLIKA FIZIČKOG NAPORA

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Uvod. Kao rezultat redovne fizičke aktivnosti/fizičkog treninga, odnosno dugotrajnog bavljenja sportom, nastaju promene u strukturi i funkciji srca, poznate kao remodeliranje srca.

Materijal i metode. U ovu prospektivnu studiju poprečnog preseka uključeno je 285 sportista uzrasta od 9 do 38 godina oba pola. Kod sportista su utvrđeni antropometrijski parametri (pol, starost, visina, težina), uzeta je lična i sportska anamneza i urađen je elektrokardiogram (EKG) u 12 odvoda, a urađena je i 2D transtorakalna ehokardiografija kod 54 ispitanika sa EKG promenama.

Rezultati. Veće trajanje treninga otpora tokom nedelje je statistički značajno povezano sa: većom unutrašnjom dimenzijom leve predkomore (LP) ($r = 0,359$, $p = 0,008$), većim indeksiranim volumenom LP ($r = 0,315$, $p = 0,020$), manjom ejekcionom frakcijom LA ($r = -0,380$ LV), većom unutrašnjom LK = $-0,380$, p. u sistoli ($r = 0,336$, $p = 0,013$), veća debljina interventrikularnog septuma i zadnjeg zida u diastoli ($r = 0,399$; $p = 0,003$; $r = 0,347$, $p = 0,010$; respektivno), kao i veća indeksirana masa LK. Ur6 = indeksirana L. pokazalo se da su teretana i dizanje većih tegova povezani sa: većom unutrašnjom dimenzijom LP ($r = 0,322$, $p = 0,018$), većom unutrašnjom dimenzijom desne pretkomora (RA) ($r = 0,322$, $p = 0,018$ i većom debljinom interventrikularnog septuma i zadnjeg zida ($p = 0,272$ r = diastole; $0,40$. $r = 0,397$, $p = 0,003$).

Zaključak. Uticaj fizičkog opterećenja najčešće se ogleda u promeni dimenzija, funkcije i deformacije leve i desne pretkomora kod sportista.

Ključne reči: sportsko srce, fizička aktivnost, ehokardiografija

RESTING METABOLIC RATE RELATED TO BODY COMPOSITION IN DIFFERENT SPORT DISCIPLINES

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Introduction. Resting metabolic rate (BMR) is the minimal amount of energy the body requires while resting. Body composition (BC) is known to have an impact on BMR and vice versa. The aim of the study was to show the influence of different sport disciplines on BMR regarding BC.

Material and Methods. The sample comprised 360 men (between the ages of 18 and 38). They were divided into 4 groups: I – men who do anaerobic sports (n=90), II – men who do aerobic sports (n=90), III- men who do sports recreationally (n=90), and IV- sedentary control group (n=90). BMR was measured by indirect calorimetry FitMate, Cosmed, Italy. BC was assessed by the bioelectrical impedance, Inbody 720, Great Britain.

Results. The I group showed the highest RMR, 2298.67 ± 298.1 kcal/day, compared to the other groups. II group had 2250.21 ± 316.3 kcal/day; III- 2147.80 ± 337.3 kcal/day; and IV group - 1983.79 ± 316.1 kcal/day. The IV group had the lowest BMR compared to all the other groups ($p < 0.05$). The BC showed that the IV group had the highest body mass index (BMI) of 26.04 ± 3.5 kg/m² where the skeletal muscle mass (SMM) had the lowest level of $44.53 \pm 3.9\%$, compared to the other groups. The IV group showed lowest SMM ($46.19 \pm 4.1\%$), while the I group showed the highest SMM of $49.36 \pm 3.6\%$, compared to the other sports groups ($p < 0.05$).

Conclusion. Based on the obtained results, we may conclude that anaerobic sports showed highest BMR to maintain the energy requirements and proper BC within appropriate muscle mass that may contribute to better sport achievements and healthy lifestyle, respectively.

Keywords: Resting Metabolic Rate, Indirect Calorimetry, Body Composition, Sport

METABOLNA KOLIČINA U MIROVANJU I TELESNI SASTAV KOD RAZLIČITIH SPORTSKIH DISCIPLINA

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Uvod. Bazalna metabolička stopa (BMR) je minimalna količina energije koja je telu potrebna dok se odmara. Poznato je da telesni sastav (TS) utiče na BMR i obrnuto. Cilj istraživanja bio je da se pokaže uticaj različitih sportskih disciplina na BMR u pogledu TS.

Materijal i metode. Obuhvaćeno je 360 ispitanika muškog pola (uzrasta između 18 i 38 godina) koje su podeljene u 4 grupe: I – muškarci koji se bave anaerobnim sportovima ($n=90$), II – muškarci koji se bave aerobnim sportovima ($n=90$), III – muškarci koji se rekreativno bave sportom ($n=90$) i IV – muškarci koji vode sedentarni način života, koja je bila kontrolna grupa ($n=90$). BMR je meren indirektnom kalorimetrijom, FitMate, Cosmed, Italija, a TS je izveden bioelektričnom impedansom, Inbody 720, Velika Britanija.

Rezultati. I grupa je pokazala najveći BMR, $2298,67 \pm 298,1$ kcal /dan, u poređenju sa ostalim grupama; II grupa – $2250,21 \pm 316,3$ kcal /dan; III – $2147,80 \pm 337,3$ kcal /dan i IV grupa – $1983,79 \pm 316,1$ kcal /dan. IV grupa je imala najniži BMR u poređenju sa svim ostalim grupama ($p < 0.05$). TS je pokazao da je IV grupa imala najveći indeks telesne mase (BMI) od $26,04 \pm 3,5$ kg/m² pri čemu je masa skeletnih mišića (SMM) imala najniži nivo od $44,53 \pm 3,9$ % u poređenju sa ostalim grupama. IV grupa je pokazala najniži SMM ($46,19 \pm 4,1$ %), dok je I grupa pokazala najveću SMM od $49,36 \pm 3,6$ %, u poređenju sa ostalim sportskim grupama ($p < 0.05$).

Zaključak. Iz dobijenih rezultata možemo zaključiti da su anaerobni sportovi pokazali najveći BMR za održavanje energetske potrebe i pravilnog TS u okviru odgovarajuće mišićne mase što može doprineti boljim sportskim dostignućima i zdravom načinu života.

Ključne reči: metabolna količina u mirovanju, indirektna kalorimetrija, telesni sastav, sport.

THE EFFECTS OF RESISTANCE TRAINING IN OBESITY TREATMENT: A SYSTEMATIC REVIEW

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Introduction. Obesity is a chronic disease characterized by excessive fat accumulation in the body and increased body. On the other hand, resistance training enhances muscle strength by engaging muscles to work against weight or force. Different forms of resistance training include the use of weights, resistance bands, or body weight. The aim of this study was to assess the effects of resistance training in obesity treatment based on previous research.

Materials and Methods. We used PubMed and Google Scholar database. Twelve studies met the criteria for inclusion in the detailed analysis. The studies were presented in tabular form, including information on the first author and year of publication, sample characteristics, experimental program, and achieved results. The study samples included both male and female participants, with a total of 490 participants.

Results. All studies confirmed that resistance training has significant positive effects in the treatment of obesity, including increased muscle mass, reduced fat mass, and improved metabolic parameters. Regular exercise contributes to an increase in basal metabolic rate, which facilitates long-term weight management. Additionally, resistance training improves insulin sensitivity, reduces inflammatory processes, and enhances cardiorespiratory function, which is crucial for the overall health of individuals with obesity.

Conclusion. Resistance training has proven to be an effective strategy in obesity treatment. Its benefits highlight the need for further studies to determine optimal exercise protocols and long-term health effects.

Keywords: Resistance Training, Obesity, Body Composition

EFEKTI TRENINGA SA OPTEREĆENJEM U LEČENJU GOJAZNOSTI: SISTEMATSKO-PREGLEDNO ISTRAŽIVANJE

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Uvod. Gojaznost je hronična bolest koja se ispoljava prekomernim nakupljanjem masti u organizmu i povećanjem telesne mase. S druge strane, trening sa opterećenjem, povećava snagu mišića tako što dovodi do aktivnosti kada mišići rade protiv težine ili sile. Različiti oblici treninga sa opterećenjem uključuju korišćenje tegova, trake ili sopstvene telesne težine. Cilj istraživanja bio je da na osnovu dosadašnjih istraživanja proceni efekte treninga sa opterećenjem u lečenju gojaznosti.

Materijali i metode. Korišćene su dve elektronske baze podataka: *PubMed* i *Google Scholar*. Dvanaest istraživanja ispunilo je uslove za uključivanje u detaljnu analizu. Istraživanja su predstavljena tabelarno sa informacijama o prvom autoru i godini publikacije, uzorku ispitanika, eksperimentalnom programu i postignutim rezultatima istraživanja. Uzorak ispitanika u istraživanjima su činili i muškarci i žene, a ukupan broj ispitanika je bio 490.

Rezultati. U svim istraživanjima potvrđeno je da trening sa opterećenjem ima značajne pozitivne efekte u lečenju gojaznosti, uključujući povećanje mišićne mase, smanjenje masnog tkiva i poboljšanje metaboličkih parametara. Redovno vežbanje doprinosi povećanju bazalnog metabolizma, što olakšava dugoročno održavanje telesne mase. Takođe, trening sa opterećenjem poboljšava insulinsku senzitivnost, smanjuje upalne procese i doprinosi boljoj kardiorespiratornoj funkciji, što je ključno za opšte zdravlje osoba sa gojaznošću.

Zaključak. Trening sa opterećenjem pokazao se kao efikasna strategija u lečenju gojaznosti. Njegovi benefiti ukazuju na potrebu za daljim istraživanjima kako bi se odredili optimalni protokoli vežbanja i dugoročni efekti na zdravlje.

Key words: trening sa opterećenjem, gojaznost, telesni sastav

SEGMENTAL ANALYSIS OF BODY COMPOSITION IN BOXERS AND WRESTLERS

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Introduction. Different types of sports require specific body composition of athletes, which helps them be better competitors. Various training techniques make certain parts of the body more dominant to others. Athletes also tend to exercise muscle groups which their sport demands.

Material and Methods. The sample comprised 50 men, between the ages of 18 and 30. They were divided into two groups of 25 boxers and 25 wrestlers. Body composition analysis was performed using the bioelectrical impedance method, Inbody 720 device.

Results. The results of the comparison between lean muscle mass and body fat in different body segments are the following: distribution of muscle mass by segment, boxers vs wrestlers: right arm: 4.006kg vs 3.571kg; left arm = 3.985kg vs 3.601kg; Trunks= 28.900kg vs 26.892kg; right leg = 9.727 kg vs 8.532kg; left leg= 9.680kg vs 8.887 kg. There was a significant difference in the segmental fat analysis between the two groups, boxers vs wrestlers: Right arm = 0.444kg vs 0.732kg; left arms = 0.456kg vs 0.730kg; trunk= 5.848kg vs 7.792kg; right leg= 1.644kg vs 2.380kg and left leg = 1.624kg vs 2.3812kg respectively.

Conclusion. While both groups show good body composition results, we can conclude that boxing requires greater lean muscle mass in the whole body. Opposed to that, wrestling requires greater body fat mass in all of the segments analyzed.

Keywords: Segmental Analysis, Boxers, Wrestlers, Body Composition, Lean Muscle Mass, Fat Tissue

SEGMENTALNA ANALIZA TELESNOG SASTVA KOD BOKSER I RVAČA

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Uvod. Različiti sportovi zahtevaju specifičan sastav tela sportista koji im pomaže da budu bolji takmičari. Specifične tehnike treniranja dovode do toga da delovi tela postaju dominantniji u odnosu na druge. Cilj ovog rada bio je da se uporedi distribucija čiste i masne telesne komponente na određenim delovima tela.

Materijal i metode. U ovom istraživanju učestvovalo je 50 ispitanika muškog pola starosti od 18 do 30 godina, podeljenih u dve grupe, 25 boksera i 25 rvača. Analiza sastava tela je urađena metodom bioelektrične impedanse, Inbodi 720 aparat.

Rezultati. Poređenje mišićne mase i telesne masti u različitim segmentima tela dalo je sledeće rezultate: distribucija mišićne mase po segmentima, bokseri vs rvači: desna ruka – 4,006 kg prema 3,571 kg; leva ruka – 3,985 kg vs 3,601 kg; trup – 28,900 kg vs 26,892 kg; desna noga – 9,727 kg prema 8,532 kg; leva noga – 9,680 kg vs 8,887 kg. Postojala je značajna razlika u segmentalnoj analizi masti između dve grupe, bokseri protiv rvača: desna ruka – 0,444 kg prema 0,732 kg; leve ruke – 0,456 kg vs 0,730 kg; trup – 5,848 kg vs 7,792 kg; desna noga – 1,644 kg prema 2,380 kg i leva noga – 1,624 kg prema 2,3812 kg.

Zaključak. Obe grupe pokazuju telesne komponente u optimalnim granicama. Možemo zaključiti da su bokseri imali veću mišićnu masu u svim segmentima. Rvači su imali veću količinu masnog tkiva u svim analiziranim segmentima, u poređenju sa bokserima.

Ključne reči: segmentalna, telesni sastav, bokseri, rvači, telesne masti, mišićna masa

SOCIO-CULTURAL ANTHROPOLOGY



SOCIO-KULTURNA ANTROPOLOGIJA

DEMOGRAPHIC SHIFTS IN ROMANIA: ANALYZING THE DECLINE IN BIRTH RATES AND ITS SOCIOECONOMIC IMPLICATIONS

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Introduction. This paper considers the decline in birth rate in Romania, examining demographic, social, and cultural causes. This trend, found all across Europe, indicates risks to Romania's future labor force and economic stability.

Materials and Methods. In this research we combined anthropological analysis, demographic data, and sociological insights. It encompasses the analysis of statistical reports on Romania's birth rates since the 1990s, supplemented by qualitative observations regarding social values and trends in urbanization. Furthermore, the study evaluates the effect of emigration, particularly among younger generations, on population dynamics.

Results. The findings indicate a notable decline in Romania's birth rate, particularly in urban areas. The fertility rate has decreased from 2.1 children per woman in the early 1990s to below replacement levels. Factors contributing to this trend include increased professional aspirations among young adults, delayed marriages, and migration to other countries in search of better economic opportunities. The paper also discusses the impact of changing cultural norms regarding family life and the challenges of balancing work and family responsibilities.

Conclusion. The study finds that Romania's demographic decline presents significant long-term economic challenges, such as labor shortages and a stressed social security system. Comprehensive policies addressing family support, economic stability, and reversing emigration trends are essential to mitigate the impact of the aging population.

Keywords: Aging Population, Birth Rate, Migration

DEMOGRAFSKE PROMENE U RUMUNIJU: ANALIZA PADA NATALITETA I NJEGOVE DRUŠTVENO-EKONOMSKE IMPLIKACIJE

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Uvod. Ovaj rad bavi se ispitivanjem pada stope nataliteta u Rumuniji, analizirajući demografske, društvene i kulturološke uzroke. Ovaj trend koji je prisutan u celoj Evropi predstavlja rizik za rumunsku buduću radnu snagu i ekonomsku stabilnost.

Materijali i metode. Istraživanje predstavlja kombinaciju antropološke analize, demografskih podataka kao i socioloških uvida. Analizirani su statistički izveštaji o stopi nataliteta u Rumuniji od devedesetih godina, kao i kvalitativne opservacije vezane za društvene vrednosti i trendove urbanizacije. Istraživanje dalje procenjuje uticaje emigracije, posebno kada su u pitanju mlađe generacije, na dinamiku populacije.

Rezultati. Podaci ukazuju na značajan pad stope nataliteta u Rumuniji, posebno u urbanim oblastima. Stopa fertiliteta devedesetih godina iznosila je 2,1 dete po ženi dok je danas značajno ispod tog nivoa. Faktori koji doprinose ovom trendu su profesionalne aspiracije među mladima, odlaganje braka i migracija u druge zemlje u potrazi za boljim ekonomskim mogućnostima. Rad takođe analizira uticaj kulturnih normi koje se menjaju u pogledu porodičnog života i izazova u balansiranju između posla i porodičnih odgovornosti.

Zaključak. Studija otkriva da pad stope nataliteta u Rumuniji predstavlja značajne dugoročne ekonomske izazove, kao što su nedostatak radne snage i narušen sistem društvene sigurnosti. Sveobuhvatna politika koja se bavi podrškom porodice, ekonomskom stabilnošću i preusmerenjem trendova migracije od suštinskog je značaja za smanjenje starenja stanovništva.

Ključne reči: starenje populacije, natalitet, migracija

ANTHROPO-MEDICAL ASPECTS OF THE CONSUMPTION OF NEW PSYCHOACTIVE SUBSTANCES AMONG YOUNG PEOPLE FROM BUCHAREST

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Introduction. The market for the new psychoactive substances, known mainly as "ethnobotanicals", is booming, their composition changing permanently and very easily. The objective of this paper is to present some aspects related to the consumption of ethnobotanicals among young people from Bucharest and their effects on the health and the activity carried out.

Materials and Methods. The sample comprised 407 pupils and students (38.3% boys, 61.7% girls) between the ages of 14 and 22, from a high school and a university in Bucharest. An omnibus questionnaire was applied; the items related to the consumption of ethnobotanicals were selected for this paper. The results were statistically processed using SPSS 21. The ethical norms of scientific research were respected.

Results. 3.9% of the participants of the studied group consumed "ethnobotanicals". 88.2% of the consumers confirmed that they consumed them out of curiosity. The consumption was most common at the weekend, namely 73.8% of the consumers. In 89.1% of the cases, it was consumed at meetings with friends. 48.9% of young people claimed that "ethnobotanicals" had negative effects on the health, positive in 16.4 % of cases, and 34.7% of the questioned people were not influenced in any way. The school performance was negatively affected in 53.5 % of the cases, positively in 6.8%, and in 39.9%, no effects were observed on school performance.

Conclusion. Although the percentage of young people who declared the consumption of "ethnobotanicals" was not high, the negative effects on the health and the school performance were recognized by the majority.

Keywords: "Ethnobotanicals", Youth, Health, Performance

ANTROPOLOŠKO-MEDICINSKI ASPEKTI KONZUMIRANJA PSIHOAKTIVNIH SUPSTANCI KOD MLADIH IZ BUKUREŠTA

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Uvod. Tržište za nove psihodelične supstance neprestano raste, a njihov sastav menja se stalno i lako. Ovaj rad ima za cilj da predstavi neke aspekte vezane za konzumiranje psihodeličnih supstanci kod mladih iz Bukurešta kao i efekte koje imaju na zdravlje i obavljanje različitih aktivnosti.

Materijali i metode. Uzorkom je obuhvaćeno 407 učenika i studenata (38,3% momaka i 61,7% devojaka) uzrasta između 14 i 22 godine, iz srednje škole i sa univerziteta u Bukureštu. Korišćen je omnibus upitnik, izabrana su pitanja u vezi sa konzumacijom supstanci. Rezultati su statistički obrađeni pomoću SPSS 21. Poštovane su etičke norme naučnog istraživanja.

Rezultati. 3,9% ispitanika konzumirali su psihodelične supstance. 88,2% ispitanika koji su bili konzumenti izjavilo je da su to učinili iz radoznalosti. Najčešće su konzumirali supstance vikendom, i to 73,8% ispitanika. U 89,1% slučajeva, konzumirali su ih prilikom susreta sa prijateljima. 48,9% tvrdilo je da supstance negativno utiču na zdravlje, 16,4% da imaju pozitivan efekat, dok je 34,7% tvrdilo da nije bilo nikakvog uticaja. U 53,5 % slučajeva, konzumiranje je imalo negativan uticaj na akademski uspeh, u 6,8 % pozitivan, dok u 39,9 % slučajeva nije bilo nikakvog uticaja.

Zaključak. Iako procenat mladih osoba koje su konzumirale ove supstance nije visok, većina prepoznaje negativni uticaji na zdravlje i akademski uspeh.

Ključne reči: psihodelične supstance, mladi, zdravlje, učinak

CULTURAL CONDITIONING OF DEVELOPMENT AND THE FREQUENCY OF SPECIFIC MODALITIES OF INSECURE ATTACHMENT

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The attachment theory provides the foundation for understanding the emotional bond between a child and their primary caregivers, which significantly influences socio-emotional development throughout life. A major critique of this theory has been its Western bias, as it was primarily based on research conducted in the United States and England. However, research conducted in other cultural contexts has begun to reveal variations in attachment patterns across different societies. This paper aims to explore and discuss the findings of existing studies on cross-cultural perspectives of attachment theory, focusing on those that suggest that certain insecure attachment patterns are more common in specific cultural settings. These studies have uncovered valuable insights into the cultural factors influencing developmental outcomes and the prevalence of various insecure attachment styles. Additionally, they raise an important question: Are individuals with insecure attachment necessarily socially unsuccessful if they were raised in a culture that promotes such attachment patterns? It is plausible that these individuals, despite having insecure attachment, can lead socially fulfilling lives without significant emotional difficulties, as they have internalized the values and norms of their cultural environment. These findings are crucial for addressing ethnocentrism and promoting culturally sensitive applications of attachment theory in both scientific and clinical settings. They also advocate for an approach that adapts universal psychological theories to cultural differences, furthering our understanding of their role in an individual's socio-emotional development.

Keywords: Attachment Theory, Attachment Patterns, Culture, Norms, Ethnocentrism

KULTURNA USLOVLJENOST RAZVOJA I UČESTALOSTI POJEDINIH MODALITETA NESIGURNOG AFEKTIVNOG VEZIVANJA

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Teorija afektivne vezanosti pruža osnovu za razumevanje duboke emocionalne povezanosti između deteta i njegovog primarnog negovatelja, koja značajno utiče na dalji socio-emocionalni razvoj tokom života. Jednim od najvećih nedostataka ove teorije dugo se smatrala njena zapadnoevropska orijentacija, budući da se temelji na istraživanjima rađenim u Americi i Engleskoj. Početak istraživanja na drugim podnebljima značio je početak ispitivanja varijacija u obrascima afektivne vezanosti u različitim kulturama. Cilj ovog rada jeste prikaz i diskusija rezultata nekih dosadašnjih istraživanja u oblasti kros-kulturalnog pristupa teoriji afektivne vezanosti, odnosno onih rezultata koji sugerišu da su određeni nesigurni obrasci tipični za neku kulturu. Takva istraživanja došla su do zanimljivih otkrića, koja se pre svega tiču kulturne uslovljenosti razvoja i učestalosti pojedinih modaliteta nesigurnog afektivnog vezivanja. Osim toga, navedeni nalazi otvaraju novu, veoma važnu diskusiju: da li su ljudi kod kojih je dominantan neki od nesigurnih obrasca nužno socijalno „neuspešni“, ukoliko su rođeni i odrastali unutar kulturnog konteksta koji podstiče razvoj nekog od nesigurnih obrazaca? Postoje osnove za pretpostavku da će ti ljudi, iako su nesigurno vezani, živeti produktivan socijalan život, bez emocionalnih problema, baš zato što su usvojili vrednosti i norme sopstvene sredine. Navedeni nalazi su posebno značajni jer doprinose prevazilaženju etnocentrizma, podstičući kulturno osetljivu primenu teorije afektivne vezanosti u naučnim i kliničkim praksama. U antropološkom smislu, oni pozivaju na takav pristup koji otvara put prilagođavanju jedne univerzalne psihološke teorije specifičnostima svake kulture, i razumevanju njenog uticaja na socio-emocionalni razvoj čoveka.

Ključne reči: afektivna vezanost, obrasci vezanosti, kultura, norma, etnocentrizam

BLOGS AND MICROBLOGS AS MEANS OF DIGITAL SELF-EXPRESSION AND COMMUNITY BUILDING

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The development of digital media has enabled individuals to actively participate in content creation and distribution, significantly shaping modern communication and social relations. Blogs and microblogs are not merely technological tools but cultural phenomena that influence self-expression, identity formation, and digital community building. These platforms provide users with spaces to articulate opinions, share personal experiences, and engage in discursive practices that can shape public opinion. From an anthropological perspective, they function as spaces for digital socialization and collective action, allowing users to construct narratives, develop a sense of belonging, and participate in symbolic exchanges within the digital environment. At the same time, questions of authenticity and credibility arise, as bloggers often operate outside institutional media frameworks, leading to a reassessment of their role in information dissemination and discourse creation. The aim of this paper is to analyze the role of blogs and microblogs in contemporary digital society from the perspective of digital anthropology, examining them as tools for self-expression, platforms for social interaction, and spaces for identity and community construction. Methodologically, this study is based on a review of academic literature published between 2004 and 2024. Relevant sources were retrieved from Google Scholar and LibGen to encompass diverse theoretical and empirical approaches to studying blogs and microblogs. This paper explores how these platforms function within digital culture, shaping social interaction, information exchange, and activism, while challenging traditional media structures and redefining communication in the digital era.

Keywords: Blogs, Microblogs, Digital Identity, Online Communities, Social Interaction, Digital Activism.

BLOGOVI I MIKROBLOGOVI KAO SREDSTVA DIGITALNE SAMOEKSPRESIJE I IZGRADNJE ZAJEDNICA

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Razvoj digitalnih medija omogućio je pojedincima da postanu aktivni učesnici u kreiranju i distribuciji sadržaja, što je značajno uticalo na savremene komunikacijske i društvene odnose. Blogovi i mikroblogovi nisu samo tehnološki alati, već i kulturni fenomeni koji oblikuju načine samoizražavanja, izgradnje identiteta i stvaranja digitalnih zajednica. Oni korisnicima pružaju prostor za artikulisanje stavova, deljenje ličnih iskustava i učešće u diskurzivnim praksama koje mogu uticati na javno mnjenje. Iz antropološke perspektive, ove platforme funkcionišu kao prostori digitalne socijalizacije i kolektivnog delovanja. Kroz njih korisnici razvijaju osećaj pripadnosti, konstruišu narative o sebi i svojoj zajednici i učestvuju u simboličkoj razmeni unutar digitalnog okruženja. Istovremeno, postavlja se pitanje autentičnosti i kredibiliteta sadržaja, s obzirom na to da blogeri često deluju izvan okvira institucionalnih medija, što dovodi do preispitivanja njihove uloge u procesu informisanja i kreiranja diskursa. Cilj rada je da analizira ulogu blogova i mikroblogova u savremenom digitalnom društvu iz perspektive digitalne antropologije, posmatrajući ih kao alate samoekspresije, platforme za društvenu interakciju i prostore za konstruisanje identiteta i zajednica. Metodološki, rad se zasniva na pregledu dostupne naučne literature objavljene u periodu od 2004. do 2024. godine. Analizirani su relevantni akademski izvori pretraženi putem platformi Google Scholar i LibGen, sa ciljem da se obuhvate različiti teorijski i empirijski pristupi proučavanju blogova i mikroblogova. Ovaj rad istražuje ulogu blogova i mikroblogova u savremenom digitalnom društvu iz perspektive digitalne antropologije, analizirajući ih kao alate samoekspresije, platforme za društvenu interakciju i prostore za konstruisanje identiteta i zajednica.

Ključne reči: blogovi, mikroblogovi, digitalni identitet, *online* zajednice, društvena interakcija, digitalni aktivizam.

ASPECTS OBSERVED IN ADOLESCENTS AND YOUNG ADULTS DEPRIVED OF LIBERTY: IMPLICATIONS OF AFFECTIVE DISTRESS

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Introduction. This study was designed to analyze the relationship between personality dimensions, affective distress, and the variables such as the lack of parental care, chronic conditions, and intimate visitation.

Materials and Methods. The sample comprised 455 adolescents and young adults between the ages of 18 and 25 from seven units under the National Administration of Penitentiaries in Romania. The participants completed the Five-Factor Personality Questionnaire (CP5F), the Affective Distress Profile (PDA), and a questionnaire designed to collect data on the evaluated variables.

Results. Young people deprived of liberty who had spent time in a placement center achieved higher scores on the Depression scale ($z = -2.068$, $p = .039$) and Total Distress ($z = -2.090$, $p = .037$) compared to those who had not been institutionalized. Additionally, those diagnosed with a chronic disease achieved higher scores on the Total Distress scale ($z = -4.288$, $p < .001$). In contrast, receiving an intimate visit was correlated with significantly lower scores for Sadness ($z = -2.498$, $p = .012$) and Total Distress ($z = -2.228$, $p = .026$). An increase in dysfunctional distress led to lower scores on the Desirability, Conscientiousness, Agreeableness, and Emotional Stability scales, whereas higher scores of Functional distress and Positive emotions were associated with increased scores on personality measures.

Conclusion. It is recommended that specialized interventions for adolescents and young adults deprived of liberty focus not only on the cognitive aspect but also on the emotional component. Reducing dysfunctional affective distress may help facilitate better adaptation to this, at the very least, challenging environment.

Keywords: Adolescents, Young Adults, Detention, Affective Distress, Recidivism

ZAPAŽENI ASPEKTI KOD ADOLESCENATA I MLADIH LIŠENIH SLOBODE: IMPLIKACIJE AFEKTIVNE UZNEMIRENOSTI

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Uvod. U ovoj studiji analizirali smo vezu između dimenzija ličnosti, afektivne uznemirenosti i varijabli kao što su nedostatak roditeljske brige, hronična stanja i intimne posete.

Materijali i metode. Uzorkom je obuhvaćeno 455 adolescenata i mladih uzrasta od 18 do 25 godina iz sedam jedinica Nacionalne uprave za popravne zavode u Rumuniji. Ispitanici su popunjavali Upitnik ličnosti sa pet faktora (CP5F), Profil afektivne uznemirenosti (PAU), kao i upitnik napravljen u cilju prikupljanja podataka vezanih za procenjivane varijable.

Rezultati. Mladi ljudi lišeni slobode koji su proveli vreme u jednoj od smeštajnih jedinica imali su više vrednosti na skali za procenu depresije ($z = -2,068$, $p = 0,039$) i ukupne uznemirenosti ($z = -2,090$, $p = 0,037$) u poređenju sa onima koji nisu institucionalizovani. Takođe, osobe sa postavljenom dijagnozom hronične bolesti imali su više vrednosti na ukupnoj skali uznemirenosti ($z = -4,288$, $p < 0,001$). Nasuprot tome, intimne posete u korelaciji su sa značajno nižim vrednostima tuge ($z = -2,498$, $p = 0,012$) i ukupne uznemirenosti ($z = -2,228$, $p = 0,026$). Povećane vrednosti na skali disfunkcionalnog stresa vodile su do nižih vrednosti na skali poželjnosti, savesnosti, prijatnosti i emocionalne stabilnosti, dok su više vrednosti funkcionalnog stresa i pozitivnih emocija bile u vezi sa višim vrednostima mera ličnosti.

Zaključak. Preporučljivo je da se specijalizovane intervencije za adolescente i mlade lišene slobode fokusiraju ne samo na kognitivne aspekte već i emocionalne komponente. Smanjenje disfunkcionalnog afektivnog stresa može doprineti boljoj adaptaciji na ovo, u najmanju ruku, izazovno okruženje.

Ključne reči: adolescenti, mladi, pritvor, afektivni stres, recidivizam

PERSONALITY AND SELF-ESTEEM IN ADOLESCENTS AND YOUNG ADULTS DEPRIVED OF LIBERTY: IMPLICATIONS

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Introduction. The study examines the relationship between personality dimensions, self-esteem, and the following variables: criminal recidivism, chronic conditions, and lack of parental care.

Materials and Methods. The Five-Factor Personality Questionnaire (CP5F), Rosenberg Self-Esteem Scale (RSES), and an omnibus questionnaire were used in this study. The sample comprised 455 adolescents and young adults between the ages of 18 and 25 from seven units under the National Administration of Penitentiaries in Romania.

Results. Young individuals reached higher levels of self-esteem on their first conviction ($z = -2.875$, $p = .004$) compared to recidivists. Lower self-esteem levels were observed among detained young people who had received a diagnosis of a chronic disease ($z = -3.228$, $p = .001$), as well as among individuals who had been placed in protective custody prior to their deprivation of liberty ($z = -2.380$, $p = .017$). The linear mediation model indicated that as personality trait scores increase, so do self-esteem levels, $F(4,393) = 40.1$, $p < .001$, with emotional stability showing the strongest effect.

Conclusion. During the period of deprivation of liberty, it is recommended that the specialized interventions focus on improving self-esteem levels among adolescents and young adults, while also ensuring access to necessary treatment for chronic diseases.

Keywords: Adolescents, Young Adults, Detention, Self-esteem, Recidivism.

LIČNOST I SAMOPOŠTOVANJE KOD MLADIH I ADOLESCENATA LIŠENIH SLOBODE: IMPLIKACIJE

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Uvod. Ova studija ispituje vezu između dimenzija ličnosti, samopoštovanja i varijabli kao što su: kriminalni recidivizam, hronična stanja i nedostatak roditeljske brige.

Materijali i metode. Koristili smo Upitnik ličnosti sa pet faktora (CP5F), Rozenbegovu skalu samopoštovanja (RSES) i omnibus anketu. Uzorkom je obuhvaćeno 455 adolescenata i mladih starosti od 18 do 25 godina iz sedam jedinica Nacionalne uprave za popravne zavode u Rumuniji.

Rezultati. Mladi imaju veći nivo samopoštovanja pri prvoj presudi u poređenju sa recidivistima ($z = -2,875$, $p = 0,004$). Niži nivoi samopoštovanja primećeni su kod privedenih mladih osoba kojima je postavljena dijagnoza neke hronične bolesti ($z = -3,228$, $p = 0,001$), kao i kod pojedinaca koji su pre lišavanja slobode smešteni u zaštitni pritvor ($z = -2,380$, $p = 0,017$). Model linearne medijacije ukazao je da kako se povećavaju rezultati osobina ličnosti tako raste i nivo samopoštovanja, $F(4,393) = 40,1$, $p < 0,001$, pri čemu je emocionalna stabilnost imala najjači efekat.

Zaključak. U toku perioda lišavanja slobode preporučuju se specijalizovane intervencije fokusirane na povećanje samopoštovanja kod adolescenata i mladih, kao i pružanje neophodnog lečenja hroničnih bolesti.

Ključne reči: adolescenti, mladi, pritvor, samopoštovanje, recidivizam

MIGRATION IN THE MEDIA: THE CONSTRUCTION OF NARRATIVES AND PUBLIC PERCEPTION

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In contemporary society, the media play a crucial role in shaping the perception of migration and attitudes toward migrants through selective reporting, language use, and visual representation. This paper examines how migration is represented in Eastern European countries, including Serbia, by analyzing the influence of various sources of information – from traditional media to social networks and direct interactions. Special attention is given to the differences between countries with relatively independent public media services and those where the media operate under greater political pressure, as well as the role of digital platforms in spreading misinformation and creating alternative narratives. The study is based on a literature review and secondary data analysis of media reporting in Eastern European countries, combining a comparative analysis of media content with an overview of previous research on the media's influence on attitudes toward migrants. The aim of the study is to provide insight into reporting patterns and the way they shape public opinion, with an emphasis on the importance of critical media literacy in recognizing manipulative techniques. The findings indicate that sensationalist and negative reporting often contribute to the rise of xenophobic attitudes, whereas neutral or positive media coverage fosters greater empathy and understanding of migration processes. Social media simultaneously play a contradictory role – serving as a platform for spreading misinformation while also enabling the contestation of dominant, negative narratives. These findings highlight the need to improve objective journalism in migration reporting while also educating the public on critical thinking and the interpretation of media messages.

Keywords: Migration, Media, Public Opinion, Stereotypes, Information Sources, Eastern Europe.

MIGRACIJE U MEDIJIMA: KONSTRUKCIJA NARATIVA I JAVNA PERCEPCIJA

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U savremenom društvu, mediji igraju ključnu ulogu u oblikovanju percepcije migracija i stavova o migrantima kroz selektivno izveštavanje, upotrebu jezika i vizuelnih prikaza. Ovaj rad istražuje kako se migracije predstavljaju u istočnoevropskim zemljama, uključujući Srbiju, analizirajući uticaj različitih izvora informacija – od tradicionalnih medija do društvenih mreža i neposrednih kontakata. Posebna pažnja posvećena je razlikama između zemalja sa relativno nezavisnim javnim medijskim servisima i onih u kojima su mediji pod većim političkim pritiskom, kao i ulozi digitalnih platformi u širenju dezinformacija, ali i u stvaranju alternativnih narativa. Rad se oslanja na analizu literature i sekundarnih podataka o medijskom izveštavanju u istočnoevropskim zemljama kombinujući komparativnu analizu medijskih sadržaja sa pregledom prethodnih istraživanja o medijskom uticaju na stavove o migrantima. Cilj rada je da pruži uvid u obrasce izveštavanja i načine na koje oni oblikuju javno mnjenje, uz naglasak na značaj kritičke medijske pismenosti u prepoznavanju manipulativnih tehnika. Rezultati istraživanja pokazuju da senzacionalističko i negativno izveštavanje često dovodi do rasta ksenofobičnih stavova, dok neutralno ili pozitivno medijsko pokrivanje doprinosi većem stepenu empatije i razumevanja migracionih procesa. Društvene mreže istovremeno mogu imati kontradiktornu ulogu – kao prostor za širenje dezinformacija, ali i kao alat za osporavanje dominantnih, negativnih narativa. Ovi nalazi ukazuju na potrebu za unapređenjem objektivnog novinarstva, edukujući istovremeno javnost u kritičkom promišljanju i načinima interpretacije medijskih poruka.

Ključne reči: migracija, mediji, javno mnjenje, stereotipi, informativni izvori, istočna Evropa.

SLEEP QUALITY AND WORK/FAMILY CONFLICT IN EMPLOYED RESIDENTS OF SERBIA

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Introduction. Different life cycle periods bring different challenges in balancing work and family life. One of the consequences of impaired work-family balance is poor sleep quality.

Materials and Methods. Our study aims to inquire into the relationship between sleep quality and work-family conflict in a large sample of Serbian working adults divided into two age groups, i.e., emerging adults (19-29 years of age; N=224; Nfemale = 63.9 %) and older adults (30-65 years of age; N=757; Nfemale= 63.7%). The instruments used are the following: Work-family conflict and family-work conflict scales (Netemeyer et al., 1996) and the Pittsburgh Sleep Quality Index (Buysse et al., 1989).

Results. There are no differences in global sleep quality between the two groups of subjects ($t(993)=0.39$, $p = 0.697$). However, sleep latency is more impaired in emerging adults ($t(947)=2.90$, $p = 0.004$), while sleep duration is more impaired in older adults ($t(971)=-2.54$, $p = 0.011$). Results show that sleep quality correlates more strongly with work-family ($r = 0.21$, $p < 0.001$) and family-work ($r = 0.15$, $p < 0.001$) conflict in older adults than in emerging adults (work-family conflict: $r = 0.18$, $p = 0.009$; family-work conflict: $r = 0.11$, $p=0.104$).

Conclusion. The results indicate that in older working adults, work-life balance impairment has a stronger association with sleep quality than in emerging adults.

Keywords: Sleep Quality, Work-family Conflict, Adults

KVALITET SNA I SUKOB IZMEĐU POSLA I PORODICE KOD ZAPOSLENIH STANOVNIKA SRBIJE

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Uvod. Različiti periodi životnog ciklusa donose različite izazove u balansiranju između posla i porodice. Jedna od posledica narušenog balansa između posla i porodice je loš kvalitet sna.

Materijal i metode. Naše istraživanje ima za cilj da ispita odnos između kvaliteta sna i sukoba između posla i porodice u velikom uzorku radno aktivnih odraslih osoba u Srbiji, podeljenih u dve starosne grupe, tj. odraslo doba u nastajanju (19–29 godina; N = 224; Nž = 63,9%) i stariji odrasli (30–65 godina; N = 757; Nž = 63,7%). Korišćeni instrumenti su skale sukoba između posla i porodice i sukoba između porodice i posla (*Netemeyer et al., 1996*) i *Pittsburgh* indeks kvaliteta sna (*Buysse et al., 1989*).

Rezultati. Nema razlika u globalnom kvalitetu spavanja između dve grupe subjekata ($t(993) = 0,39$, $p=0,697$). Međutim, latencija spavanja je više narušena kod odraslih u nastajanju ($t(947)=2,90$, $p=0,004$), dok je trajanje spavanja više narušeno kod starijih odraslih ($t(971)= -2,54$, $p = 0,011$). Rezultati pokazuju da kvalitet sna ima jaču korelaciju sa sukobom između posla i porodice ($r=0,21$, $p<0,001$) i sukobom između porodice i posla ($r=0,15$, $p < 0,001$) kod starijih odraslih osoba nego kod odraslih u nastajanju (sukob između posla i porodice: $r=0,18$, $p=0,009$; sukob između porodice i posla: $r=0,11$, $p= 0,104$).

Zaključak. Rezultati ukazuju da narušavanje balansa između posla i privatnog života kod starijih radno aktivnih osoba ima jaču povezanost sa kvalitetom sna, nego kod odraslih u nastajanju.

Ključne reči: kvalitet sna, sukob posla i porodice, odrasli

UNIVERSAL PERCEPTION OF ARCHETYPAL SYMBOLS: EMPIRICAL STUDY OF THE COLLECTIVE UNCONSCIOUS

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Introduction. This study examined the ability of participants to recognize the adequate meaning of archetypal symbols in an experimental setting. The primary objective was to determine whether participants would be better at remembering symbols paired with their authentic meaning compared to those paired with incorrect or neutral meanings. Additionally, a detailed item analysis was conducted to identify the symbols with the highest archetypal recognition power. This approach allowed for a deeper exploration of the cognitive processing of symbols on an unconscious level and the identification of patterns universally present in human perception of symbols.

Material and Methods. The study was designed as a replication of previous research conducted in the United States, Australia, and Switzerland, aiming to test the universality of the effect across different cultural contexts.

Results. The results confirmed that participants are better at remembering symbols paired with their true meaning on a statistically significant level, thereby further supporting the hypothesis of the universal nature of archetypal symbols, regardless of cultural background, ethnicity, and linguistic framework.

Conclusion. These findings contribute to understanding the role of the collective unconscious in the cognitive processing of symbols and open the door for further research in the field of symbolic perception and the collective unconscious. Furthermore, these results are of significant value for anthropological studies, as they provide insight into the similarities and differences among various cultures and peoples. While similarities emerged in the universality of symbols, differences were observed in regard to which archetypal symbols hold the greatest recognition power.

Keywords: Archetype, Symbol, Archetypal Image, Collective Unconscious, Jung

UNIVERZALNA PERCEPCIJA ARHETIPSKIH SIMBOLA: EMPIRIJSKO ISPITIVANJE KOLEKTIVNOG NESVESNOG

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Uvod. U ovom istraživanju ispitivana je sposobnost ispitanika da u eksperimentalnoj situaciji prepoznaju adekvatno značenje arhetipskih simbola. Osnovni cilj rada bio je da se utvrdi da li će ispitanici bolje pamtit simbole koji su upareni sa svojim autentičnim značenjem u odnosu na one koji su upareni sa pogrešnim ili neutralnim značenjem. Pored toga, sprovedena je detaljna ajtem analiza sa ciljem identifikovanja simbola koji poseduju najvišu arhetipsku moć prepoznavanja. Ovim pristupom omogućeno je da se dodatno ispita kognitivna obrada simbola na dubljem, nesvesnom nivou, kao i da se identifikuju obrasci koji su univerzalno prisutni u ljudskoj percepciji simbola.

Materijali i metode. Istraživanje je dizajnirano kao replikacija prethodnih studija sprovedenih u Sjedinjenim Američkim Državama, Australiji i Švajcarskoj, sa ciljem da se ispita univerzalnost efekta u različitim kulturnim kontekstima.

Rezultati. Rezultati su potvrdili da ispitanici statistički značajno bolje pamte simbole koji su upareni sa svojim pravim značenjem, čime je dodatno podržana hipoteza o univerzalnoj prirodi arhetipskih simbola, nezavisno od kulturne pozadine, etniciteta i jezičkog okvira.

Zaključak. Ovi nalazi doprinose razumevanju uloge kolektivnog nesvesnog u procesu kognitivne obrade simbola i otvaraju prostor za dalja istraživanja u domenu simboličke percepcije i kolektivnog nesvesnog. Takođe, ovi rezultati imaju značajnu vrednost i za antropološke studije, jer pružaju uvid u sličnosti i razlike različitih kultura i naroda. Dok su se sličnosti javile u kontekstu univerzalnosti simbola, razlika je bila primećena po pitanju toga koji arhetipski simboli imaju najveću arhetipsku moć prepoznavanja.

Ključne reči: arhetip, simbol, arhetipska slika, kolektivno nesvesno, Jung

ECONOMIC DETERMINANTS OF FERTILITY VARIATIONS IN THE REPUBLIC OF SRPSKA

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Introduction. The paper considers the spatial variation and economic determinants of fertility in the Republic of Srpska, from 2020 to 2024.

Material and Methods. Spatial variation of the total fertility rate and specific fertility rates was investigated in five NUTS 3 regions in Republic of Srpska. The role of economic determinants of fertility was investigated using conventional and spatial regression models, first, on a joint sample of five NUTS 3 regions. The main indicator used is gross domestic product per inhabitant.

Results. The results by region indicate that with the increase in the level of economic development, the significance of the link between fertility and economic development within. At all investigated levels, a negative relationship between fertility and economic development was confirmed in the younger, and a positive relationship in the older cohort group. Empirical research forms a special part of this work, proving the impact of increased fertility on GDP growth per capita. The research used a multiple regression model for analysis.

Conclusion. The results of the model demonstrate that with the application of the ceteris paribus clause, with other unchanging circumstances, the total fertility rate increases by 0.1, i.e. if in one year 10% of women in their fertile period give birth to another child. This further leads to an increase in the growth rate of GDP per capita by 0.69% in the second following year. Human development is the most effective solution as a response to demographic changes, i.e. a strategic program that would indicate new approaches to population policy.

Keywords: Fertility, GDP, Human Development

EKONOMSKE DETERMINANTE VARIJACIJE FERTILITETA U REPUBLICI SRPSKOJ

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Uvod. U radu je istražena prostorna varijacija i ekonomske determinante fertiliteta u Republici Srpskoj, od 2020. do 2024. godine.

Materijali i metode. Prostorna varijacija stope ukupnog fertiliteta i specifičnih stopa fertiliteta istražena je u pet NUTS 3 regija u Republici Srpskoj. Uloga ekonomskih determinanti fertiliteta istražena je modelima konvencionalne i prostorne regresije, prvo, na zajedničkom uzorku pet NUTS 3 regija, zatim u Republici Srpskoj u cjelini. Glavni korišćeni indikator je bruto domaći proizvod po stanovniku (BDP).

Rezultati. Rezultati po regijama upućuju na to da se porastom stepena ekonomskog razvoja, smanjuje značajnost veze fertiliteta i ekonomskog razvoja unutar Republike Srpske. Na svim istraženim nivoima potvrđena je negativna veza fertiliteta i ekonomskog razvoja u mlađoj, a pozitivna veza u starijoj kohortnoj grupi. Empirijsko istraživanje čini poseban dio u ovom radu, dokazujući uticaj povećanog fertiliteta na rast BDP po glavi stanovnika. U istraživanju je korišćen višestruki regresioni model za analizu. Korišćeni su panelirani podaci za regresioni model: $y_{it} = a + x_{it}\beta + c_i + u_{it}$.

Zaključak. Rezultati modela upućuju na zaključak da uz primjenu klauzule ceteris paribus, uz ostale nepromjenljive okolnosti, ukoliko se u nekoj privredi stopa ukupnog fertiliteta poveća za 0,1, odnosno da u jednoj godini 10% žena u svom fertilnom periodu rodi još jedno dijete, to uslovljava povećanje stope rasta BDP-a po glavi stanovnika za 0,69% u drugoj narednoj godini. Ljudski razvoj je najcjelishodnije rješenje kao odgovor na demografske promjene, odnosno strateški program koji bi ukazao na nove pristupe populacionoj politici sa prijedlozima intervencija u vezi sa smanjenjem i starenjem stanovništva u Republici Srpskoj.

Ključne reči: fertilitet, BDP, ljudski razvoj

ANTHROPOLOGICAL INVESTIGATIONS IN VOJVODINA

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Anthropological studies in our region can be divided into three periods. The first period related to the end of the 19th and the first decade of the 20th century, when researchers from other countries or other disciplines (zoologists, archaeologists...) mainly carried out anthropological studies of our population. The second period related to the beginning of the 20th century, with emphasis on paleontology and paleoanthropology, and studies on morphological characteristics, body constitution and variability of human populations. The third period related to the time after World War II when biological, historical, ethnic, medical, dental and sports anthropology are constituted. The Anthropological Society of Yugoslavia, which continued its work as the Anthropological Society of Serbia after the breakup of Yugoslavia, (founded in 2007) has had a great influence on the development of anthropology in this region. Today, the members of the society from our country are mainly researchers from the Universities of Novi Sad and Niš. In Novi Sad, anthropological studies are carried out by researchers from the Department of Biology and Ecology of the Faculty of Sciences, the Institute of Anatomy and the Institute of Public Health within the Faculty of Medicine and the Faculty of Sports and Physical Education. Studies have focused on morphological, genetic and physiological properties of human populations, the growth and development of children and young people, sexual maturation and the secular growth trend. Research also focuses on the association between obesity and malignancy, predictors of metabolic syndrome, the causes, incidence and treatment of infertility. The results have been published in a number of international and national journals.

Keywords: Anthropology, Investigations, Vojvodina

ANTROPOLOŠKA ISTRAŽIVANJA U VOJVODINI

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Antropološka proučavanja u našem geografskom regionu mogu se podeliti u tri perioda: Prvi period je kraj XIX i prva decenija XX veka, kada su antropološka izučavanja našeg stanovništva uglavnom radili istraživači iz drugih zemalja ili drugih naučnih disciplina: zoolozi, geografi i arheolozi. Ova istraživanja su utvrdila značaj uticaja geografske sredine i materijalne kulture na razvoj čoveka. Drugi period obuhvata početak XX veka, a posebna pažnja se posvećuje paleontologiji i paleoantropologiji. Takođe se izučavaju morfološke karakteristike, telesna konstitucija i varijabilnost humanih populacija. Treći period obuhvata vreme nakon II svetskog rata. Istraživači iz različitih naučnih disciplina vrše antropološka istraživanja, te se konstituiše biološka, istorijska, etnička, medicinska, stomatološka i sportska antropologija. Veliki uticaj na razvoj antropologije na ovim prostorima imalo je Antropološko društvo Jugoslavije koje je osnovano 1959. godine i koje je nakon raspada Jugoslavije nastavilo svoj rad kao Antropološko društvo Srbije, osnovano 2007. godine. Članovi društva iz naše zemlje, danas su uglavnom istraživači sa Univerziteta u Novom Sadu i Nišu. U Novom Sadu antropološkim proučavanjima se bave istraživači sa Departmana za biologiju i ekologiju Prirodno-matematičkog fakulteta, Zavoda za anatomiju i Instituta za javno zdravlje u okviru Medicinskog fakulteta i Fakulteta za sport i fizičko vaspitanje. Dosadašnja ispitivanja su usmerena na istraživanje morfoloških, genetičkih i fizioloških svojstava humanih populacija, rast i razvoj dece i omladine, polno sazrevanje, sekularni trend rasta. Istraživanja su takođe posvećena ispitivanju povezanosti gojaznosti i maligniteta, prediktorima metaboličkog sindroma kao i uzrocima, učestalosti i lečenju infertiliteta. Rezultati ovih istraživanja objavljeni su u većem broju međunarodnih i domaćih časopisa.

Ključne reči: antropologija, istraživanje, Vojvodina

THE SOCIAL PHENOMENON OF DISCURSIVE MANIPULATION IN COMMUNICATION

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Introduction. In this paper, we deal with the social phenomenon of discursive manipulation in verbal and non-verbal communication with the idea of pointing out the power of words in human relations, but also the techniques that make communication authentic. It is known that the problem of influence and manipulation occurs not only in propaganda, commercials and the educational system, but also in all human relationships. That is why the issue of discovering the meaning of words, intentions and gestures is an essential issue of human relations. The aim of the paper is to point out the importance of discourse analysis and its impact on the perspective of interactive relationships, through the analysis of non-verbal signals (non-verbal pressures or manipulative tone), in order to eliminate typical obstacles in communication and for a person to realize his authenticity.

Material and Methods. Based on the model of the psychology of communication (Friedrich Schulz von Tuss), which enables social skills to be improved through professional learning, methodical practice and human maturation, the paper will interpretively consider other theories that deal with issues of communication relationships. In this paper, we will look at the historical roots and development of manipulative discourse. In the review of theories, we used a holistic method that involves consideration of all factors that can affect the communication situation because it requires a comprehensive understanding of the problem, physical, emotional, mental and spiritual aspects.

Results and Conclusion. The research of materials from the field of psychology of communication provides a comprehensive overview of theories important for good human communication, on which a stable society should rest.

Keywords: Discursive Manipulation, Verbal and Non-verbal Communication

DRUŠTVENI FENOMEN DISKURZIVNE MANIPULACIJE U KOMUNIKACIJI

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Uvod U ovom radu se bavimo društvenim fenomenom diskurzivne manipulacije u verbalnoj i neverbalnoj komunikaciji sa idejom da ukažemo na moć reči u ljudskim odnosima, ali i na tehnike koje komunikaciju čine autentičnom. Poznato je da se problem uticaja i manipulacije ne javlja samo u propagandi, reklamnim spotovima i vaspitno-obrazovnom sistemu, već u svim ljudskim odnosima. Zato je pitanje otkrivanja smisla reči, namera i gestova suštinsko pitanje ljudskih odnosa. Cilj rada je ukazivanje na važnost analize diskursa i njegovog uticaja na perspektivu interaktivnih odnosa, kroz analizu neverbalnih signala (neverbalni pritisci ili manipulativni ton), kako bi se otklonile tipične smetnje u komunikaciji i kako bi se čovek ostvario u svojoj autentičnosti.

Materijal i metode. Na osnovu modela psihologije komunikacije (Fridrih Šulc fon Tus), koji omogućavaju da se kroz stručno učenje, metodično vežbanje i ljudsko sazrevanje unaprede društvene veštine, u radu će se interpretativno razmatrati i druge teorije koje se bave pitanjima komunikacionih odnosa. U ovom radu ćemo se osvrnuti na istorijske korene i razvoj manipulativnog diskursa. U pregledu teorija koristili smo holistički metod koji podrazumeva razmatranje svih faktora koji mogu uticati na komunikacionu situaciju jer zahteva sveobuhvatno razumevanje problema, fizičke, emocionalne, mentalne i duhovne aspekte.

Rezultati i zaključak. Istraživanje materijala iz oblasti psihologije komunikacije donosi sveobuhvatan pregled teorija od važnosti za dobru ljudsku komunikaciju na kojoj treba da počiva stabilno društvo.

Ključne reči: diskurzivna manipulacija, verbalna i neverbalna komunikacija

INTERCULTURAL EDUCATION: PERSPECTIVES AND CHALLENGES OF THE MODERN SCHOOL

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Introduction. Intercultural education is one of the priorities of modern school system, which is confirmed by the Education Development Strategy in the Republic of Serbia until 2030. This concept arises from global changes such as increased population mobility, expanding intercultural conflicts, discrimination, and the need for individuals to be prepared for a life in a multicultural society. This theoretical paper considers the perspectives and challenges of intercultural education in the context of a modern school. It focuses on theoretical frameworks, pedagogical approaches, the benefits of intercultural education, and the barriers to its effective implementation in school practice.

Results. The analysis of theoretical approaches shows that intercultural pedagogy, based on constructivist and inclusive methods, significantly contributes to the internalization of intercultural values of all participants in the educational process. However, challenges such as social inequalities among students, cultural stereotypes, prejudice, discrimination, teacher incompetence, curriculum limitations, and the lack of institutional support hinder successful implementation, while concurrently highlighting the importance of improving the application of intercultural education.

Conclusion. In order to adequately respond to current challenges and remove existing barriers for the successful implementation of intercultural education, a comprehensive approach that includes the engagement of all participants in the educational process, as well as wider social community, is of crucial importance.

Keywords: Interculturality, Intercultural Pedagogy, Culture, Modern School

INTERKULTURALNO OBRAZOVANJE: PERSPEKTIVE I IZAZOVI SAVREMENE ŠKOLE

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Uvod. Interkulturalno obrazovanje je jedan od prioriternih ciljeva savremenog školskog sistema, što potvrđuje i Strategija razvoja obrazovanja u Republici Srbiji do 2030. godine. Uvođenje ovog koncepta uslovljeno globalnim promenama, odnosno ekspanzijom mobilnosti stanovništva i međukulturnih konflikata i diskriminacije, kao i potrebom da se pojedinci pripreme za život u multikulturalnom društvu. U ovom teorijskom radu razmatraju se perspektive i izazovi interkulturalnog obrazovanja u kontekstu savremene škole. Poseban fokus u radu usmeren je na razmatranje teorijskih okvira i pedagoških pristupa, benefita primene interkulturalnog obrazovanja, ali i barijera koje onemogućavaju efikasnu primenu interkulturalnog obrazovanja u školskoj praksi.

Rezultati. Analizom teorijskih pristupa utvrđeno je da interkulturalna pedagogija zasnovana na konstruktivističkom i inkluzivnom pristupu umnogome doprinosi uspešnoj internalizaciji interkulturalnih vrednosti svih učesnika vaspitno-obrazovnog procesa. Sa druge strane, specifični izazovi poput socijalnih nejednakosti učenika, kulturnih stereotipa, predrasuda i diskriminacije, nekompetentnosti nastavnika, kurikulumske barijere i nedostatak institucionalne podrške onemogućavaju uspešnu implementaciju u školskoj praksi, ali istovremeno ukazuju i na važnost unapređivanja primene ovog koncepta u cilju korišćenja njenih perspektiva.

Zaključak. Da bi se adekvatno odgovorilo na aktuelne izazove i prevazišle postojeće barijere u sprovođenju interkulturalnog obrazovanja, od ključne je važnosti primena sveobuhvatnog pristupa koji uključuje angažovanje svih aktera u školi, ali i šire društvene zajednice.

Ključne reči: interkulturalnost, interkulturalna pedagogija, kultura, savremena škola

ACTION ANTHROPOLOGY: CHARACTERISTICS, SCOPE AND LIMITATIONS

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Introduction. The emergence of action anthropology is linked to the Fox Project (1948–1959), which aimed to address the reconstruction of the Meskwaki Indian community in Tama, Iowa, initiated by Sol Tax.

Material and Methods. This paper examines the methodological foundations of action anthropology, offering a critical analysis of its scope and limitations, as identified in Tax's project and explored in relevant academic literature on research methods specific to action anthropology.

Results. Action anthropology is viewed as a 'clinical' science, where researchers focus on specific situations, diagnose social issues, and create localized solutions. Action anthropologists are reflexive practitioners who consider the potential outcomes and implications of their actions. Key limitations include challenges in evaluating the effectiveness and long-term impacts of interventions, ethical dilemmas, the lack of integration between diagnosis and practical action, the tension between researcher engagement and objectivity, and concerns about the sustainability of results. Despite these limitations, action anthropology holds significant potential, evident in its interdisciplinary approach, capacity for conceptual innovation, and development of new theoretical insights. Its humanistic ethos, focuses on marginalized social issues, and commitment to community empowerment through participatory processes which highlight its value.

Conclusion. The scope and limitations of action anthropology present important social, theoretical, and methodological dilemmas, posing challenges for researchers studying various social phenomena. Further exploration and refinement of the action anthropology framework are necessary to fully harness its potential in contemporary research.

Keywords: Applied Anthropology, Action Anthropology, Methodology

AKCIONA ANTROPOLOGIJA: OSOBENOSTI, DOMETI I OGRANIČENJA

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Uvod. Nastanak akcione antropologije vezuje se za projekat Foks (1948–1959), koji je bio posvećen problemu obnove društva Meskvaki Indijanaca u mestu Tama, Ajova. Idejni tvorac ovog projekta je Sol Teks.

Materijal i metode. Rad se bavi pregledom metodološkog pristupa akcione antropologije i kritičkom analizom u kontekstu dometa i ograničenja koji su identifikovani u projektu Sol Teksa, kao i u ostaloj relevantnoj literaturi, koja se bavi analizom metoda i tehnika istraživanja specifičnih za akcionu antropologiju.

Rezultati. Nauka akcione antropologije je 'klinička', što implicira fokusiranje naučnika na specifične situacije, dijagnosticiranje društvenih problema i usredsređenost na lokalizovana rešenja. Akcioni antropolog je refleksivni istraživač, koji promišlja o mogućim pravcima delanja i posledicama istih u saradnji sa zajednicom u kojoj radi. Problemi u proceni rezultata i efekata intervencija, etički izazovi, nedovoljna simbioza između dijagnoze i kliničke akcije, teškoće u balansiranju između angažmana i objektivnosti, kao i problemi sa održivošću postignutih rezultata, samo su neka od ograničenja akcione antropologije. Uprkos ograničenjima, akciona antropologija ima značajan potencijal, koji se ogleda u interdisciplinarnom pristupu, konceptualnom doprinosu i razvoju novih teorijskih znanja, humanističkom porivu, osvetljavanju nevidljivih problema društvenih zajednica, osnaživanju zajednice kroz proces empowermenta, itd.

Zaključak. Dometi i ograničenja akcione antropologije otvaraju mnoge društvene, teorijske, ali i metodološke dileme, koje se pred istraživačima postavljaju kao izazovi u proučavanju različitih društvenih fenomena. Stoga je od ključne važnosti dalje istražiti i utvrditi načine za unapređenje postavki akcione antropologije kako bi se u potpunosti iskoristili njeni potencijali u savremenim istraživanjima.

Ključne reči: primenjena antropologija, akciona antropologija, metodologija

EDUCATION FOR LEISURE TIME: A CULTURAL-HISTORICAL PERSPECTIVE

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Introduction. Leisure time is a socially conditioned phenomenon that has evolved in accordance with socio-political conditions, cultural patterns, and attitudes toward work. Modern society defines it through a clear distinction from working hours, implying a period of complete freedom in which an individual can express their individuality (Ilišin, 1999; Vidulin-Orbanić, 2008). It enables a person to learn, improve, express creativity, and achieve self-actualization.

Materials and Methods. This paper explores the role of education for leisure in building a culture of leisure time use. We used a theoretical-historical approach to highlight the connection between the culture of leisure time use and the needs of individuals and society for development in different cultural and historical contexts.

Results. The paper shows the ancient and medieval understanding of leisure time, the changes it underwent during economic and social transformations to modern society. However, the dominance of consumer and mass culture tends to occupy leisure time with content that can lead individuals into consumerism and uncritical acceptance of content offered through technology. As a result, leisure time loses its essential function and becomes “unfree.” Therefore, concern for the quality and organization of leisure time has become a priority in individual and social development.

Conclusion. Education for leisure today plays an essential role in developing a culture of leisure time and involves preparing children and young people to organize their time meaningfully. This process is based on a holistic approach, involving coordinated and joint action by all educational agents. Quality leisure time in contemporary culture implies a balance between rest, recreation, and personal development.

Keywords: Leisure Time, Contemporary Culture, Education, Personal and Social Development

VASPITANJE ZA SLOBODNO VREME: KULTUROLOŠKO-ISTORIJSKA PERSPEKTIVA

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Uvod. Slobodno vreme predstavlja društveno uslovljen fenomen koji se menjao u skladu sa društveno-političkim uslovima, kulturološkim obrascima i odnosom prema radu. U savremenom društvu, ono je određeno kroz jasno razgraničenje sa radnim vremenom, podrazumevajući period potpune slobode u kome čovek može izraziti svoju individualnost (Ilišin, 1999; Vidulin-Orbanić, 2008). Ono pojedincu omogućava da uči i usavršava se, ali i da ispolji svoju kreativnost i dođe do samoaktuelizacije.

Materijali i metode. Cilj ovog rada je da istraži ulogu vaspitanja za slobodno vreme u izgrađivanju kulture korišćenja slobodnog vremena. U istraživanju smo koristili teorijsko-istorijski pristup sa namerom da ukažemo na povezanost između kulture korišćenja slobodnog vremena i potreba pojedinaca i društva za razvojem u različitim kulturnim i istorijskim kontekstima.

Rezultati. U radu je prikazano antičko i srednjovekovno razumevanje slobodnog vremena, promene koje je doživelo tokom ekonomskog i društvenog razvoja da bi u savremenom društvu postalo vrlo značajan aspekt života. Ipak, dominacija potrošačke i masovne kulture, okupira sadržaje slobodnog vremena, i može pojedinca odvesti u konzumerizam i nekritičko prepuštanje sadržajima ponuđenim kroz savremenu tehnologiju. Slobodno vreme tako gubi svoju suštinsku funkciju i postaje "neslobodno". Zato je briga o kvalitetu i pravilnoj organizaciji slobodnog vremena postala prioritet u procesu individualnog i društvenog razvoja.

Zaključak. Vaspitanje za slobodno vreme danas ima veliki značaj u razvoju kulture provođenja slobodnog vremena, i podrazumeva osposobljavanje dece i mladih da svoje vreme organizuju na optimalan i smislen način. U tom procesu ono je zasnovano na holističkom pristupu, podrazumeva usklađeno i zajedničko delovanje svih vaspitnih činilaca. Kvalitetno slobodno vreme u savremenoj kulturi podrazumeva balans između odmora, razonode i razvoja.

Ključne reči: slobodno vreme, savremena kultura, vaspitanje, lični i društveni razvoj

DEMOGRAPHIC PROCESSES, FORECASTS, AND POPULATION PROJECTIONS FOR EASTERN AND SOUTHERN SERBIA

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Introduction. The aim of this research is to analyze the population projections for Eastern and Southern Serbia using an analytical method for estimating future demographic changes.

Material and Methods. The application of this method implies that, based on past population changes, hypotheses are defined about future changes in the components of population movement, fertility, mortality and migration, with which, starting from the current age-sex structure, we project the future population. The research covered the territory of Eastern and Southern Serbia, which includes specific geographic and administrative regions, with particular attention to the demographic characteristics of these areas. The projection refers to the period from 2022 to 2052, which allows for the analysis of medium-term demographic changes and their potential impact on the society and economy of the region. Projections were made in ten variants, but four variants (low, medium, high, and constant) were highlighted and analyzed based on the representativeness of the obtained results.

Results and Conclusion. The results indicate that in the next thirty years, a population decrease can be expected according to all projection variants. If the assumptions underlying the expected scenario (middle variant) are realized, the population would decrease by 32% compared to the initial population (from 1.4 million to 964 thousand). The average age will increase from 44,8 to 47,5 years. It is expected that the proportion of older individuals will rise from 23,6% to 30,1%, while the proportion of younger individuals will slightly decrease from 13,4% to 12,8%. The total fertility rate will remain at 1,6 children. Life expectancy will increase by approximately 5 years.

Keywords: Population Projections, Eastern and Southern Serbia, Demographic Analysis

DEMOGRAFSKI PROCESI, PROGNOZE I PROJEKCIJE STANOVNIŠTVA ISTOČNE I JUŽNE SRBIJE

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Uvod. Cilj ovog istraživanja je da se analiziraju projekcije stanovništva Istočne i Južne Srbije, primenom analitičke metode za procenu budućih demografskih promena.

Materijal i metode. Primena ove metode podrazumeva da se na osnovu dosadašnjih promena u stanovništvu definišu hipoteze o budućim promenama komponenata kretanja stanovništva fertiliteta, mortaliteta i migracija, pomoću kojih, polazeći od aktuelne starosno-polne strukture projektujemo buduće stanovništvo. Istraživanjem je obuhvaćena teritorija Istočne i Južne Srbije, koja uključuje specifične geografske i administrativne regione, s posebnim osvrtom na demografske karakteristike ovih područja. Projekcija se odnosi na period od 2022. do 2052. godine, čime se omogućava analiza srednjeročnih demografskih promena i njihovih potencijalnih uticaja na društvo i ekonomiju regiona. Projekcije su urađene u deset varijanti, ali su na osnovu reprezentativnosti dobijenih rezultata, izdvojene i analizirane četiri varijante (niska, srednja, visoka i konstantna).

Rezultati i zaključak. Rezultati ukazuju da se u narednih trideset godina može očekivati smanjenje populacije po svim varijantama projekcije. Ako se ostvare pretpostavke na kojima je zasnovan očekivani scenario (srednja varijanta) broj stanovnika bi u odnosu na početnu populaciju opao za 32% (sa 1,4 miliona na 964 hiljade). Prosečna starost će porasti sa 44,8 na 47,5 godine. Očekuje se da će udeo starijih porasti sa 23,6% na 30,1%, dok će udeo mladih neznatno opasti sa 13,4% na 12,8%. Stopa ukupnog fertilitet zadržaće se na nivou od 1,6 deteta. Životni vek će se produžiti za oko 5 godina.

Ključne reči: projekcije stanovništva, Istočna i Južna Srbija, demografska analiza

COMPARATIVE ANTHROPOLOGICAL CHARACTERIZATION OF NORTHERN BALKAN POPULATION BASED ON ANTHROPOLOGICAL MATERIALS OF 20th CENTURY

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Introduction. In recent years, the interest in the phenotypic and genotypic classification of mankind and its populations has grown. The aim of this study is to make comparative anthropological (phenotypic) characterization of the populations of the Northern Balkans.

Material and Method. The anthropological structure of 64 local populations (Bulgarian, Macedonian, Serbian, Albanian, Rumanian, Turkish, Montenegrins, Roma, Armenian, and Muslims from Bulgaria, Macedonia and from Monte Negro, Karakachan) is analyzed and compared according to the methodology of Michalski-Henzel (Polish Lodz comparative-morphological anthropological school) and by statistical methods (Euclidean distances, cluster analysis).

Results and Conclusion. The results show that these local population samples are forming two clusters: one group with Central-European characteristics (a combination of Nordic, Armenoid and Laponoid elements) and the other with Atlanto-Pontic characteristics (a combination of Nordic and Mediterranean elements). The populations of Northern Bulgaria, Eastern Sofia region, Serbia, Western Kosovo, Northern Albania and Western Macedonia fall with minor exception in the Central European cluster and the populations of Thrace, Western Bulgaria and Eastern Macedonia fall in the Atlanto-Pontic cluster. Outside of these clusters are three samples: Montenegrin Muslim and one North Albanian sample (because of prevalence of Armenoid element) and the sample of Serbian Roma (because of the prevalence of Mediterranean element).

Keywords: Anthropological Characterization, Northern Balkans, Michalski-Henzel Methodology, Euclidean Distances, Cluster Analysis

KOMPARATIVNA ANTROPOLOŠKA KATEGORIZACIJA NARODA SEVERNOG BALKANA ZASNOVANA NA ANTROPOLOŠKIM MATERIJALIMA DVADESETOG VEKA

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Uvod. Poslednjih godina povećano je interesovanje za fenotipsku i genotipsku klasifikaciju čovečanstva i njegovih naroda. Cilj ove studije je da se napravi komparativna antropološka (fenotipska) karakterizacija naroda koji žive na prostoru severnog Balkana.

Materijal i metode. Antropološka struktura 64 lokalne populacije (bugarska, makedonska, srpska, albanska, rumunska, turska, crnogorska, romska, armenijska i muslimanska iz Bugarske, Makedonije i Crne Gore, karakačanska) analizirana je i upoređivana pomoću metodologije Michalski-Henzel (poljska komparativno-morfološka antropološka škola u Lođu) i statističkih metoda (euklidska udaljenost, klaster analiza).

Rezultati i zaključak. Rezultati pokazuju da ovi uzorci populacija formiraju dva klastera: jednu grupu sa centralnoevropskim karakteristikama (kombinacija nordijskih, armenoidnih, laponoidnih elemenata) i druga sa atlanto-pontijskim karakteristikama (kombinacija nordijskih i mediteranskih elemenata). Stanovništvo severne Bugarske, istočnog regiona Sofije, zapadnog Kosova, severne Albanije i zapadne Makedonije, sa manjim izizetkom pripada centralnoevropskom klasteru, dok stanovništvo Trakije, zapadne Bugarske i istočne Makedonije pripada atlantsko-pontskom klasteru. Tri uzorka nalaze se izvan ovih klastera: crnogorski muslimanski i jedan severoalbanski uzorak (zbog prevalence armenoidnog elementa) i uzorak srpskih Roma (zbog prevalence mediteranskog elementa).

Ključne reči: antropološka karakterizacija, severni Balkan, Michalski-Henzel metodologija, euklidska distanca, analiza klastera

APPLICATION OF THE FLIPPED CLASSROOM MODEL IN TEACHING ANTHROPOLOGICAL CONTENT

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The flipped classroom model represents an innovative approach to education that transforms the traditional learning process. Students first independently explore learning materials at home, most often using digital resources and other multimedia tools. This allows classroom time to be used for interactive teaching methods, discussions, case study analyses, and practical problem-solving, rather than passive lecture-based learning. This approach enables a deeper understanding of the subject matter, fosters critical thinking, and enhances student engagement in the learning process. The flipped classroom model is particularly suitable for teaching biology, especially when covering anthropological topics, which are often complex and require the integration of theoretical and practical knowledge. Students can explore areas such as anatomy, physiology, and health in advance, allowing them to actively participate in classroom discussions. This method promotes collaborative learning and connects theoretical concepts with real-life situations. Additionally, this teaching model supports differentiated learning, as students can study at their own pace and review instructional materials multiple times. Teachers also have more time during lessons to address students' individual needs. Research shows that students who learn through the flipped classroom model achieve better results in tasks requiring deeper understanding, logical reasoning, and the practical application of knowledge in various contexts. By implementing this approach in the teaching of anthropological content, it is possible to create a more dynamic, interactive, and stimulating learning environment that encourages active student participation. As a result, lessons become more engaging, and the knowledge acquired is long lasting and applicable to everyday life.

Keywords: Flipped Classroom, Anthropological Content, Primary School, Biology Teaching

PRIMENA MODELA IZOKRENUTE NASTAVE PRI OBRADI ANTROPOLOŠKIH SADRŽAJA

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Model izokrenute nastave predstavlja inovativan pristup obrazovanju koji menja tradicionalni tok učenja – učenici najpre samostalno istražuju nastavne sadržaje kod kuće, najčešće koristeći digitalne materijale i druge multimedijalne resurse. Na taj način, vreme provedeno u učionici koristi se za interaktivne metode rada, diskusije, analizu studija slučaja i rešavanje praktičnih zadataka, umesto za pasivno slušanje predavanja. Ovakav pristup omogućava dublje razumevanje gradiva, podstiče razvoj kritičkog mišljenja i poboljšava angažovanost učenika u procesu učenja. Izokrenuta nastava je pogodna za nastavu biologije, naročito prilikom obrade antropoloških sadržaja, koji su često kompleksni i zahtevaju integraciju teorijskih i praktičnih znanja. Učenici mogu unapred istraživati oblasti poput anatomije, fiziologije i zdravlja, što im omogućava da se aktivno uključe u diskusiju na času. Ovakav način rada podstiče saradničko učenje i povezivanje teorijskih koncepata sa realnim životnim situacijama. Pored toga, ovaj model nastave omogućava diferencirano učenje, jer učenici mogu učiti sopstvenim tempom i više puta pregledati nastavne materijale. Takođe, nastavnik ima više vremena da se tokom časa posveti individualnim potrebama učenika. Učenici koji uče koristeći model izokrenute nastave postižu bolje rezultate u zadacima koji zahtevaju dublje razumevanje, logičko zaključivanje i praktičnu primenu znanja u različitim kontekstima. Uvođenjem ovog pristupa pri obradi antropoloških sadržaja, moguće je stvoriti dinamičnije, interaktivnije i stimulativnije okruženje koje podstiče aktivno učešće učenika. Na taj način, nastava postaje zanimljivija, a stečena znanja dugotrajnija i primenljivija u svakodnevnom životu.

Ključne reči: izokrenuta nastava, antropološki sadržaji, osnovna škola, nastava biologije

YOUNG EXPLORERS IN THE CLASSROOM: PROJECT-BASED LEARNING AS A TOOL FOR EXPLORING HUMAN HERITAGE

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Introduction. In modern education, the need for actively engaging students in the learning process is strongly emphasized, with project-based learning taking a prominent place as a method that fosters the development of critical thinking, collaboration, and the application of acquired knowledge in real-life situations.

Material and Method. This paper explores the possibilities and potential of applying project-based learning in the implementation of anthropological content, with a particular focus on the teaching unit *Inheritance and Evolution* within the biology curriculum for eighth-grade primary school students. Emphasis is placed on the interdisciplinary integration of content from biology, history, geography, visual arts, music culture, technology and engineering, and physical education, with the goal of developing anthropological thinking in students — through understanding human evolution, cultural diversity, customs, and the material culture of various people. Concrete examples of project tasks are presented, including: “Following in the first people’s footsteps,” “My family through the ages,” “Culture from head to toe,” and “Sounds and rhythms of the world’s nations,” along with detailed research guidelines for each task.

Results. The results indicate that this approach to teaching not only contributes to a deeper understanding of anthropological topics but also empowers students to develop their own identity in relation to the past, their community, and the world around them.

Conclusion. It is concluded that carefully planned and interdisciplinary project-based learning can significantly contribute to developing a spirit of inquiry and a culture of understanding diversity among primary school students.

Keywords: Project-based Learning, Interdisciplinary Approach, Inheritance and Evolution, Primary School Education

MLADI ISTRAŽIVAČI U UČIONICI: PROJEKTNASTAVA KAO ALAT ZA ISTRAŽIVANJE ČOVEKOVOG NASLEĐA

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Uvod. U savremenom obrazovanju sve više se ističe potreba za aktivnim uključivanjem učenika u proces učenja, pri čemu projektna nastava zauzima značajno mesto kao metod koji podstiče razvoj kritičkog mišljenja, saradnje i primene stečenih znanja u realnim situacijama.

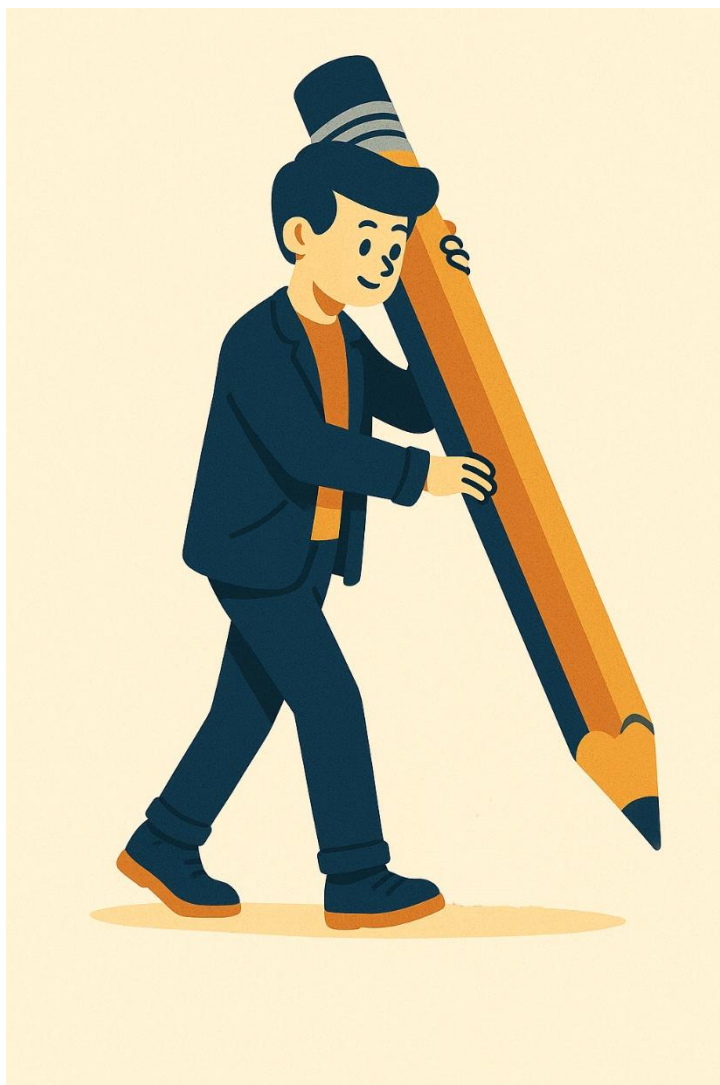
Materijal i metode. Ovaj rad istražuje mogućnosti i potencijale primene projektne nastave u realizaciji antropoloških sadržaja, sa posebnim fokusom na nastavnu temu *Nasleđivanje i evolucija* u okviru nastave biologije za učenike osmog razreda osnovne škole. Akcenat je stavljen na interdisciplinarno povezivanje sadržaja iz biologije, istorije, geografije, likovne kulture, muzičke kulture, tehnike i tehnologije, kao i fizičkog vaspitanja, s ciljem razvoja antropološkog mišljenja kod učenika – kroz razumevanje evolucije čoveka, kulturne raznolikosti, običaja i materijalne kulture različitih naroda. Predstavljeni su konkretni primeri projektnih zadataka, uključujući: „Tragovima prvih ljudi“, „Moja porodica kroz vekove“, „Kultura od glave do pete“ i „Zvuci i ritmovi naroda sveta“, uz detaljne istraživačke smernice za svaki zadatak.

Rezultati. Rezultati ukazuju na to da ovakav pristup nastavi ne samo da doprinosi dubljem razumevanju antropoloških tema, već i osnažuje učenike da razviju sopstveni identitet u odnosu na prošlost, zajednicu i svet koji ih okružuje.

Zaključak. Zaključuje se da pažljivo planirana i interdisciplinarno osmišljena projektna nastava može značajno doprineti razvoju istraživačkog duha i kulture razumevanja različitosti kod učenika osnovne škole.

Ključne reči: projektna nastava, interdisciplinarni pristup, nasleđivanje i evolucija, osnovnoškolsko obrazovanje

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