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FAKULTET ZA SPECIJALNU
EDUKACIJU I REHABILITACIJU

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FACULTY OF SPECIAL EDUCATION
AND REHABILITATION

13. MEĐUNARODNI NAUČNI SKUP „SPECIJALNA EDUKACIJA I REHABILITACIJA DANAS: Oblikovanje budućnosti – analiza trendova za novo doba”

13th INTERNATIONAL SCIENTIFIC CONFERENCE “SPECIAL EDUCATION AND REHABILITATION TODAY: Shaping the Future – Trends and Insights for Tomorrow”

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SADRŽAJ / TABLE OF CONTENTS

PLENARNA IZLAGANJA ... 8
PLENARY PRESENTATIONS ... 8

PROFESIONALNE KOMPETENCIJE I IZAZOVI U INKLUZIVNOM OBRAZOVANJU ... 13
PROFESSIONAL COMPETENCIES AND CHALLENGES IN INCLUSIVE EDUCATION ... 13

TEHNOLOGIJA U SLUŽBI INKLUZIJE ... 27
TECHNOLOGY IN THE SERVICE OF INCLUSION ... 27

FUNKCIONISANJE ODRASLIH OSOBA SA INVALIDITETOM ... 35
FUNCTIONING OF ADULTS WITH DISABILITIES ... 35

INKLUZIVNO OBRAZOVANJE OSOBA SA SMETNJAMA U RAZVOJU ... 48
INCLUSIVE EDUCATION OF PERSONS WITH DEVELOPMENTAL DISABILITIES ... 48

SPORT KAO SREDSTVO INKLUZIJE ... 60
SPORT AS A MEANS OF INCLUSION ... 60

GOVOR, JEZIK I KOMUNIKACIJA: OD PROCENE DO TERAPIJE ... 73
SPEECH, LANGUAGE AND COMMUNICATION: FROM ASSESSMENT TO THERAPY ... 73

DECA I MLADI U RIZIKU: OD PREVENCIJE DO INTERVENCIJE ... 87
CHILDREN AND YOUTH AT RISK: FROM PREVENTION TO INTERVENTION ... 87

SAVREMENI REHABILITACIONI KONTEKST ... 100
CONTEMPORARY REHABILITATION CONTEXT ... 100

MEDICINSKI ASPEKTI U SPECIJALNOJ EDUKACIJI I REHABILITACIJI ... 114
MEDICAL ASPECTS IN SPECIAL EDUCATION AND REHABILITATION ... 114

OKRUGLI STO ... 126
ROUND TABLE ... 126

POSTER SESIJA ... 129
POSTER SESSION ... 129

RADIONICE ... 151
WORKSHOPS ... 151

INDEKS IMENA / AUTHOR INDEX ... 159

PLENARNA IZLAGANJA
PLENARY PRESENTATIONS

THE CHILD AS SYMPTOM: THE LIMITS OF BEHAVIOUR AND THE LIMITS OF THE SYSTEM AN INTERDISCIPLINARY INSIGHT INTO THE CONSTRUCTION AND TREATMENT OF EMOTIONAL AND BEHAVIOURAL DIFFICULTIES

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Introduction: This paper is based on a nationwide interdisciplinary study involving key stakeholders engaged in the treatment of children and adolescents with emotional and behavioural difficulties, including educational institutions, social work centres, child and adolescent psychiatry, and the judicial system.

Results: The findings indicate that emotional and behavioural difficulties cannot be understood merely as individual deviations, but rather as the result of complex interactions among biological, psychological, and social factors.

The paper advances the thesis that the child can be understood as a symptom of a broader system within which behavioural patterns emerge, are identified, and addressed. It highlights key tensions between detection and stigmatization, support and regulation, as well as between declarative interdisciplinarity and the actual fragmentation of practices.

Conclusion: In conclusion, the paper calls for a shift toward holistic and context-sensitive approaches that move beyond the individualization of problems and incorporate critical reflection on the systemic conditions within which children's behaviour acquires meaning. It also points to a central paradox: although the professional field has long articulated the need for more preventive and integrative approaches, their implementation is often constrained by systemic structures that reproduce existing power relations and, in doing so, indirectly sustain the very problems they seek to resolve.

The question, therefore, is no longer simply what is wrong with the child, but what is happening within the system that defines the child's behaviour.

Keywords: *phenomenological analysis, behavioral problems, emotional difficulties, trauma, emotional regulation*

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INTERFACING WESTERN AND EASTERN PERSPECTIVES ON THE MEASUREMENT OF MENTAL FUNCTIONS: AN ALTERNATIVE APPROACH TO UNDERSTANDING THE MIND

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Despite its over-century history, psychology has yet to bring together disparate interpretations of mental abilities to establish a global perspective on these functions. This presentation will provide a hybrid perspective, bringing the best of both worlds. Specifically, the ideas of Roger W. Sperry, the first psychologist to win a Nobel Prize, and Alexander Luria, the first neuropsychologist, will be blended to provide a quantitative and qualitative, experimental, and socio-historical approach to empirically understanding complex mental functions.

Keywords: *mental functions, measurement of mental abilities, hybrid perspective*

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IT'S TIME FOR INSTRUMENTAL: FROM HIDDEN DYSFUNCTIONS TO CLEAR DIRECTIONS

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Introduction: Speech-language pathologists are often the first professionals to identify signs of feeding, swallowing, and speech disorders, yet they often lack access to the tools necessary to fully uncover underlying causes. Despite significant advances in the field, implementation of instrumental assessments such as Fiberoptic Endoscopic Evaluation of Swallowing, Nasoendoscopic Evaluation of Velopharyngeal Function, Videofluoroscopic Swallowing Study, High-Resolution Manometry, and other instrumental methods remains limited or absent in many regions and clinical settings worldwide. As a result, important physiological dysfunctions may remain undetected, affecting diagnostic accuracy and treatment outcomes.

Aim: The aim is to highlight the essential role of instrumental assessment in the evaluation of feeding, swallowing, and speech disorders and to emphasize the unique contribution of speech-language pathologists in integrating anatomical, physiological, and functional information for evidence-based clinical decision-making.

Methods: This lecture provides a synthesis of contemporary literature, evidence, and professional guidelines related to instrumental assessment in speech-language pathology.

Results: Scientific evidence and clinical practice consistently demonstrate that instrumental assessments provide objective, dynamic information that cannot be obtained through clinical observation alone. Together with clinical evaluation, instrumental assessments improve diagnostic precision, facilitate identification of hidden dysfunctions, support individualized intervention planning, and contribute to improved patient safety and clinical outcomes.

Conclusion: A deep understanding of the pathophysiological mechanisms underlying disordered swallowing and speech is essential for evidence-based practice. Instrumental assessment provides a precise, objective, and dynamic view of these mechanisms, moving clinicians beyond surface-level symptom observation into targeted, mechanism driven intervention. This is not an optional enhancement but a necessary component of contemporary speech-language pathology practice. Expanding access to and implementation of instrumental assessment is essential for improving diagnostic accuracy, clinical decision-making, and

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patient outcomes. “Let’s do instrumental!” is a call to action for speech-language pathologists to fully embrace their role in objective, high-level clinical assessment.

Keywords: *instrumental assessment, feeding, swallowing, speech, speech-language pathologist*

PROFESIONALNE KOMPETENCIJE I IZAZOVI U INKLUZIVNOM OBRAZOVANJU

PROFESSIONAL COMPETENCIES AND CHALLENGES IN INCLUSIVE EDUCATION

INKLUZIVNA POLITIKA U OSNOVNOJ ŠKOLI

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Uvod: Inkluzivno obrazovanje je kontinuirani proces koji se može ostvariti u kulturi saradnje, međusobnog poštovanja, podrške i rešavanja problema između države, nastavnika i roditelja, pri čemu se očekuje da sva tri aktera budu angažaovana da uspostave komunikaciju u kontekstu sprovođenja politika inkluzivnog obrazovanja.

Cilj: Ovaj rad je usmeren ka ispitivanju nivoa inkluzivne politike u osnovnim školama.

Metode: Uzorak istraživanja čini 143 ispitanika, 77 nastavnika i 66 učitelja, iz Beograda i Aleksandrovca. Za potrebe istraživanja korišćena je druga dimenzija Indeksa za inkluziju (Index for Inclusion, Booth & Ainscow, 2010) – Inkluzivna politika. Od deskriptivnih statističkih mera korišćene su mere prebrojavanja, mere centralne tendencije i mere varijabilnosti. Razlika u frekvencama kategorija proverena je Hi kvadrat testom, a značajnost razlika između grupa ispitivana je Man-Vitnijevim U-testom.

Rezultati: Rezultati istraživanja pokazuju da se ispitanici uglavnom ili delimično slažu sa tvrdnjama, kao i da im je, u nekim slučajevima, potrebno još dodatnih informacija kako bi mogli da daju odgovor. Rezultati Man-Vitnijevog U-testa pokazali su da se u statistički značajno većoj meri, nastavnici i učitelji iz beogradskih osnovnih škola slažu sa tvrdnjom da se zapošljavanje i stručno usavršavanje odvijaju odgovorno ($p<0,03$), kao i da je nasilno ponašanje smanjeno ($p<0,01$), nego što je to slučaj sa kolegama iz škola u Aleksandrovcu. Nasuprot tome, nastavnici i učitelji iz Aleksandrovca skloniji su stavu da škola nastoji da primi sve učenike iz lokalne zajednice ($p<0,007$), da školski prostor omogućava pristupačnost za sve ($p<0,04$), da je uvažavanje posebnih obrazovnih potreba deo politike škole ($p<0,05$), i da su smanjene prepreke za izvođenje nastave ($p<0,05$), nego nastavnici i učitelji iz Beograda.

Zaključak: Ispitivanje, analiziranje i razvijanje inkluzivne politike je veoma važno kako bi inkluzivno obrazovanje bilo uspešno.

Ključne reči: *inkluzivno obrazovanje, Indeks za inkluziju, nastavnici, učitelji*

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INCLUSIVE POLICY IN PRIMARY SCHOOL

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Introduction: Inclusive education is a continuous process that can be achieved in a culture of cooperation, mutual respect, support and problem solving between the state, teachers and parents, where all three actors are expected to be engaged to establish communication in the context of implementing inclusive education policies.

Aim: This work is aimed at examining inclusive policy levels in primary schools.

Methods: The research sample comprises 143 respondents, 77 higher grade teachers and 66 lower grade teachers from Belgrade and Aleksandrovac. For research purposes, Inclusive Policy, the second dimension of the *Index for Inclusion* (Booth & Ainscow, 2010) was used. Descriptive statistical measures used were count measures, central tendency measures, and variability measures. The difference in the categories frequencies was checked with the Chi-square test, and the significance of the differences between the groups was examined with the Mann-Whitney U-test.

Results: The results obtained show that respondents mostly or partially agree with the statements, but also that, in some cases, they need additional information to answer. The results of the Mann-Whitney U-test showed that to a statistically significant greater extent teachers from Belgrade elementary schools agree with the statement that employment and professional development are carried out responsibly ($p<0.03$), as well as that violent behavior is reduced ($p<0.01$), than is the case with colleagues from schools in Aleksandrovac. In contrast, teachers from Aleksandrovac are more inclined to the opinion that the school strives to accommodate all students from the local community ($p<0.007$), that the school space provides accessibility for all ($p<0.04$), that respect for special educational needs is part of the school's policy ($p<0.05$), and that obstacles to teaching are reduced ($p<0.05$), than teachers from Belgrade.

Conclusion: Examining, analyzing, and developing inclusive policy is very important for inclusive education to be successful.

Keywords: *inclusive education, the Index for Inclusion, higher-grade teachers, lower-grade teachers*

KARAKTERISTIKE STRUČNIH USAVRŠAVANJA DEFEKTOLOGA ZAPOSLENIH U USTANOVAMA ZA OBRAZOVANJE UČENIKA SA SMETNJAMA U RAZVOJU – KVALITET I FAKTORI UKLJUČIVANJA

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Uvod: Stručno usavršavanje specijalnih edukatora zaposlenih u ustanovama za obrazovanje učenika sa smetnjama u razvoju predstavlja važan faktor u unapređivanju profesionalnih kompetencija i kvaliteta obrazovne prakse.

Cilj: Cilj ovog istraživanja bio je da se ispitaju osnovne karakteristike stručnog usavršavanja, njegov uticaj na kvalitet nastave, kao i ključni faktori koji utiču na učešće u aktivnostima stručnog usavršavanja specijalnih edukatora zaposlenih u školama za učenike sa smetnjama u razvoju.

Metode: Istraživanje je sprovedeno u aprilu 2026. godine primenom upitnika koji je obuhvatio nekoliko celina: demografske karakteristike ispitanika, karakteristike stručnog usavršavanja, procenu uticaja stručnog usavršavanja na kvalitet nastave, kao i stavove o motivaciji, preprekama i mogućnostima za unapređivanje programa stručnog usavršavanja. Uzorak su činila 44 specijalna edukatora zaposlena u osnovnim školama u Beogradu i Nišu.

Rezultati: Rezultati pokazuju da većina ispitanika učestvuje u programima stručnog usavršavanja dva do tri puta godišnje (54,5%), prvenstveno putem onlajn kurseva i vebinara (59,1%). Ispitanici najčešće učestvuju u programima usmerenim na lični i profesionalni razvoj (59,1%) i unapređivanje nastavne prakse (50,0%). Više od polovine ispitanika (54,5%) smatra da su završeni programi stručnog usavršavanja uglavnom odgovarajući za njihov svakodnevni rad u specijalnoj edukaciji. Unapređivanje znanja i veština (52,3%) i lični profesionalni razvoj (52,3%) identifikovani su kao najčešći motivi za učešće. Kao glavne prepreke izdvojeni su nedostatak vremena (50,0%), nedostatak relevantnih programa (43,2%) i nedovoljna finansijska sredstva (38,6%). Kada je reč o budućim prioritetima, ispitanici su najčešće izdvojili praktične primere i neposrednu stručnu podršku (36,4%), kao i teme specifične za pojedine smetnje u razvoju (36,4%). Rezultati hi-kvadrat testa pokazali su da se distribucija odgovora na svih 13 stavki upitnika statistički značajno razlikuje od slučajne distribucije ($p<0,05$), što ukazuje na jasno definisane obrasce stavova ispitanika.

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Zaključak: Rezultati ukazuju na značaj kontinuiranog stručnog usavršavanja specijalnih edukatora i naglašavaju potrebu za razvijanjem dostupnijih, praktično usmerenih i sadržajno relevantnih programa koji odgovaraju specifičnim zahtevima rada sa učenicima sa smetnjama u razvoju.

Ključne reči: *stručno usavršavanje, defektolog, obrazovanje*

CHARACTERISTICS OF PROFESSIONAL DEVELOPMENT OF SPECIAL EDUCATORS EMPLOYED IN INSTITUTIONS FOR THE EDUCATION OF STUDENTS WITH DEVELOPMENTAL DISABILITIES – QUALITY AND FACTORS OF PARTICIPATION

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Introduction: Professional development of special educators employed in institutions for the education of students with developmental disabilities represents an important factor in improving professional competencies and enhancing the quality of educational practice.

Aim: The aim of this study was to examine the main characteristics of professional development, the impact of professional development programs on the quality of teaching, and the key factors influencing participation in professional development activities in schools for students with developmental disabilities.

Methods: The study was conducted in April 2026 using a questionnaire consisting of several sections: respondents' demographic characteristics, characteristics of professional development, the impact of professional development on teaching quality, and attitudes regarding motivation, barriers, and opportunities for improving professional development programs. The sample included 44 special educators employed in primary schools in the cities of Belgrade and Niš.

Results: The findings indicate that most respondents attend professional development programs two to three times per year (54.5%), primarily through online courses and webinars (59.1%). Respondents most frequently participate in programs related to personal and professional development (59.1%) and the improvement of teaching practice (50%). More than half of the respondents (54.5%) believe that the completed professional development programs are generally appropriate for everyday work in special education. Improving knowledge and skills (52.3%) and personal professional growth (52.3%) were identified as the most common motivations for participation, whereas the main barriers were lack of time (50%), lack of relevant programs (43.2%), and insufficient financial resources (38.6%). Future priorities should focus on practical examples and direct professional support (36.4%), as well as issues specific to particular developmental disorders (36.4%). The Chi-square test results confirmed that the distribution of responses across all 13 questionnaire items significantly differed from a random distribution ($p<0.05$), indicating clearly defined attitudes among the respondents.

Conclusion: The findings highlight the importance of professional development for special educators and emphasize the need to develop more accessible, practice-oriented, and content-relevant programs that address the specific demands of working with students with developmental disabilities.

Keywords: *professional development, special educator, education*

FAKTORI POVEZANI SA STRESOM KOD NASTAVNIKA U USLOVIMA OBRAZOVNE INKLUZIJE

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Uvod: Stres i sagorevanje kod prosvetnih radnika u uslovima inkluzivnog obrazovanja predstavlja interakciju pojedinačnih ličnih aspekata i radnog okruženja.

Cilj: Cilj istraživanja je da se utvrde faktori povezani sa stresom kod nastavnika u inkluzivnom obrazovanju u odnosu na pol, radni staž, vrstu radnog odnosa, pomoć personalnog asistenta.

Metode: U istraživanju korišćen je Fimijanov upitnik, Inventar stresa nastavnika (Teacher Stress Inventori). Pitanja u upitniku su grupisana prema ukupno 10 faktora (aspekata, dimenzija) stresa. Deset faktora stresa (po pet u svakoj skali) se grupišu u dve subskale: subskala Izvora stresa i subskala Manifestacije stresa. Dve subskale čine ukupnu skalu Stresa nastavnika. Uzorkom je obuhvaćeno 49 nastavnika koji su u razredu osim učenika tipičnog razvoja, imali i učenike sa smetnjama u razvoju i invaliditetom. Upitnik se popunjavao online. Za potrebe utvrđivanja povezanosti faktora i nivoa stresa korišćeni su Studentov t-test i Pirsonov test korelacije. Kronbahov alfa koeficijent je korišćen za merenje unutrašnje konzistencije i pouzdanosti upitnika. Levenov test korišćen je za proveru homogenosti varijansi između dve ili više grupa, dok je oblik distribucije podataka proveravan Skjunis i Kurtoazis testovima.

Rezultati: Pouzdanost subskala i ukupne skale bio je 0,9. Faktori podskale Izvori stresa imali su veći uticaj na stres nastavnika (prosečne vrednosti su se kretale 3,06 do 3,77 od maksimalnih 5,00). Nije zabeležena statistički značajna povezanost između nivoa stresa i godina radnog staža ($p>0,05$). Zabeležena je statistički značajna razlika ($p<0,05$) između nivoa stresa i pomoći personalnog asistenta, vrste radnog odnosa, pola ispitanika.

Zaključak: Iako dobijeni na nereprezentativnom uzorku, rezultati ukazuju da inkluzivno obrazovanje dovodi do visokog nivoa stresa kod prosvetnih radnika, što zahteva obimnija i temeljna istraživanja u svrhu pružanja sistemske podrške prosvetnim radnicima.

Ključne reči: *obrazovna inkluzija, izvori stresa, manifestacije stresa, prosvetni radnici*

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FACTORS RELATED TO TEACHERS' STRESS IN THE CONDITIONS OF EDUCATIONAL INCLUSION

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Introduction: Stress and burnout among educators in conditions of inclusive education are results of interactions between individual aspects and work environment.

Aim: The objective of the research is to determine the factors associated with stress among teachers in inclusive education in relation to gender, length of service, type of employment, and the help of a personal assistant.

Methods: The research used Fimijan's questionnaire, Teacher Stress Inventories. The questions in the questionnaire are grouped according to a total of 10 factors (aspects, dimensions) of stress. Ten stress factors (five in each scale) are grouped into two subscales: the Sources of Stress subscale and the Manifestations of Stress subscale. Two subscales make up the overall Teacher Stress scale. The sample included 49 teachers who, in addition to students with typical development, also had students with developmental disabilities in their class. The questionnaire was filled out online. Student's t-test and Pearson's correlation test were used to determine the relationship between factors and stress levels. Cronbach's alpha coefficient was used to measure the internal consistency and reliability of the questionnaire. Levene's test was used reliably to check the homogeneity of variances between two or more groups, while the shape of the data distribution was checked with Skjunis and Kurtosis tests.

Results: The reliability of the subscales and the total scale was 0.9. The factors of the Sources of Stress subscale had a greater impact on teacher stress (average values ranged from 3.06 to 3.77 out of a maximum of 5.00). There was no statistically significant correlation between stress level and years of service ($p>0.05$). A statistically significant difference ($p<0.05$) was recorded between the level of stress and the help of the personal assistant, the type of employment, and the gender of the respondents.

Conclusion: Although obtained on a non-representative sample, the results indicate that inclusive education leads to a high level of stress among educators, which requires more extensive and thorough research in order to provide systemic support to educators.

Keywords: *educational inclusion, sources of stress, manifestations of stress, educators*

ZADOVOLJSTVO POSLOM DEFEKTOLOGA ZAPOSLENIH U ŠKOLAMA

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Uvod: Specijalna edukacija je profesija koja podrazumeva izuzetno specifične izazove u radu. Zadovoljstvo poslom među zaposlenima u specijalnoj edukaciji je važan parametar, jer ne utiče samo na dužinu njihove karijere, već i na kvalitet njihovog podučavanja i akademski uspeh učenika.

Cilj: Cilj istraživanja ogleda se u identifikovanju različitih aspekata zadovoljstva, odnosno nezadovoljstva poslom, defektologa zaposlenih u osnovnim školama.

Metode: Uzorkom istraživanja obuhvaćeno je 28 defektologa iz dve osnovne škole u Beogradu. Za potrebe istraživanja korišćen je Upitnik o zadovoljstvu poslom. Od statističkih analiza korišćen je T – test za jedan uzorak i Vilkoksonov test za jedan uzorak.

Rezultati: Rezultati su pokazali statistički značajno nezadovoljstvo zaposlenih na tri, od ukupno devet analiziranih aspekata posla. Nezadovoljstvo zaposlenih ogleda se u dimenzijama koje se odnose na mogućnosti za napredovanje ($t=-2,61$, $df=27$, $p=0,01$), nagrade zasnovane na učinku ($t=-1,90$, $df=27$, $p=0,07$), kao i na visinu zarade ($t=-3,25$, $df=27$, $p=0,003$). S druge strane, zaposleni su statistički značajno zadovoljni dimenzijama koje podrazumevaju rukovođenje ($W=267,50$, $z=2,84$, $p=0,005$), odnos sa kolegama ($t=4,09$, $df=27$, $p<0,001$) i prirodu njihovog posla ($W=306,50$, $z=2,83$, $p=0,005$).

Zaključak: Istraživanja pokazuju da i pored visokog unutrašnjeg zadovoljstva koje zaposleni u ovoj oblasti prijavljuju, takođe izražavaju potrebu za dodatnim resursima i većim poštovanjem posla koji obavljaju.

Ključne reči*: specijalno obrazovanje, zadovoljstvo poslom, osnovna škola*

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JOB SATISFACTION AMONG EMPLOYEES IN SPECIAL EDUCATION

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Introduction: Special education is a profession characterized by highly specific challenges in professional practice. Job satisfaction among special education professionals is an important indicator, as it affects not only career longevity but also the quality of teaching and students' academic achievement.

Aim: The aim of this study was to identify different aspects of job satisfaction and dissatisfaction among special education professionals employed in primary schools.

Methods: The study sample consisted of 28 special education professionals employed in two primary schools in Belgrade. For research purposes, the Job Satisfaction Survey was used. For statistical analyses, T-test for one sample and Wilcoxon test for one sample were used. Results.

Results: The results indicated statistically significant dissatisfaction with three of the nine analyzed aspects of the job. Dissatisfaction was observed in the dimensions related to promotion ($t=-2.61$, $df=27$, $p=0.01$), contingent rewards ($t=-1.90$, $df=27$, $p=0.07$), and pay ($t=-3.25$, $df=27$, $p=0.003$). In contrast, statistically significant satisfaction was observed in the dimensions related to supervision ($W=267.50$, $z=2.84$, $p=0.005$), coworkers ($t=4.09$, $df=27$, $p<0.001$), and nature of work ($W=306.50$, $z=2.83$, $p=0.005$).

Conclusion: Research findings indicate that, despite the high levels of intrinsic satisfaction reported by professionals in this field, they also express a need for additional resources and greater recognition of the work they perform.

Keywords: *special educatiors, job satisfaction, elementary school*

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ASSOCIATIONS BETWEEN TEACHERS' OBSERVATIONS OF VISUAL BEHAVIOURS AND OBJECTIVELY ASSESSED VISUAL FUNCTIONING IN PRIMARY SCHOOL STUDENTS

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Introduction: Vision screening programmes primarily assess visual acuity and may overlook functional visual difficulties relevant to classroom performance. Teachers are well positioned to observe students' visual behaviours during everyday school activities; however, little is known about the relationship between these observations and objectively assessed visual functioning.

Aim: This study examined the associations between teachers' observations of visual behaviours and objective measures of basic and higher visual functions in 42 primary school students.

Methods: Teachers completed a newly developed questionnaire, while students underwent a comprehensive assessment of visual functioning. The questionnaire demonstrated acceptable internal consistency (Cronbach's α=0.679; McDonald's ω=0.691).

Results: No significant associations were found between the total questionnaire score and objective measures of visual functioning. Among the predefined analyses, only teacher-reported difficulties copying from the board were associated with poorer saccadic eye movements, while exploratory analyses identified additional associations with selected oculomotor functions.

Conclusion: These findings suggest that specific teacher-reported visual behaviours may contribute to school-based vision screening and referral. Further research is needed to confirm these findings.

Keywords: *functional vision assessment, visual behaviors, teacher guidelines, classroom screening, primary education*

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STANDARDIZACIJA I METRIJSKA SVOJSTVA RAZVOJNE SKRINING SKALE STOŠLJEVIĆ-ALEKSOV

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Uvod: Savremeno doba dovelo je do značajnih odstupanja od normi skala koje se koriste za rano prepoznavanje razvojnih odstupanja, već duže od pedeset godina, te je uvođenje i primena novih skala neminovna potreba savremene prakse i trendova razvoja dece.

Cilj: Cilj istraživanja bio je standardizacija i procena metrijskih svojstava Razvojne skrining skale Stošljević-Aleksov namenjene proceni dece uzrasta 0–36 meseci. Skala predstavlja revidiranu verziju instrumenta čiji koreni potiču iz Somatopedskog dijagnostičkog protokola (1995) i obuhvata 240 stavki raspoređenih u pet razvojnih domena: motorički razvoj, govor i jezik, kognitivni razvoj, socio-emocionalni razvoj i adaptivno ponašanje.

Metode: Metod rada obuhvatio je pilot istraživanje na uzorku od 1034 roditelja dece tipičnog i atipičnog razvoja, analizu interne konzistentnosti primenom Kronbahovog alfa koeficijenta, faktorsku analizu radi provere konstruktne validnosti i postupak normiranja.

Rezultati: Rezultati ukazuju na zadovoljavajuću pouzdanost, potvrđenu teorijsku strukturu i praktičnu primenljivost instrumenta.

Zaključak: Zaključak je da Razvojna skrining skala Stošljević-Aleksov predstavlja validan i pouzdan skrining instrument za rano prepoznavanje razvojnih odstupanja i podršku sistemu rane intervencije.

Ključne reči: *rani razvoj, rana detekcija, razvojne poteškoće, rana intervencija*

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STANDARDIZATION AND METRIC PROPERTIES OF THE STOSLJEVIC-ALEKSOV DEVELOPMENTAL SCREENING SCALE

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Introduction: The contemporary era has brought about significant deviations from the norms of scales used for the early identification of developmental deviations for more than fifty years, making the introduction and application of new scales an inevitable need of contemporary practice and trends in child development.

Aim: The objective of the study was to standardize and assess the metric properties of the Stosljevic-Aleksov Developmental Screening Scale, intended for the assessment of children aged 0–36 months. The scale represents a revised version of an instrument whose roots originate from the Somatopedic Diagnostic Protocol (1995) and comprises 240 items distributed across five developmental domains: motor development, speech and language, cognitive development, socio-emotional development, and adaptive behavior.

Methods: The methodology included a pilot study involving a sample of 1,034 parents of children with typical and atypical development, analysis of internal consistency using Cronbach’s alpha coefficient, factor analysis to assess construct validity, and a standardization procedure.

Results: The results indicate satisfactory reliability, a confirmed theoretical structure, and the practical applicability of the instrument.

Conclusion: The conclusion is that the Stosljevic-Aleksov Developmental Screening Scale represents a valid and reliable screening instrument for the early identification of developmental deviations and for supporting the early intervention system.

Keywords*: early development, early detection, developmental difficulties, early intervention*

TEHNOLOGIJA U SLUŽBI INKLUZIJE

TECHNOLOGY IN THE SERVICE OF INCLUSION

ISHODI KORIŠĆENJA SLUŠNIH APARATA KOD OSOBA SA PREZBIAKUZIJOM: PROCENA ZADOVOLJSTVA I ANALIZA PREDIKTORA

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Uvod: Prezbiakuzija predstavlja progresivan gubitak sluha koji nastaje kao posledica procesa starenja i javlja se kod velikog broja starijih osoba. Prezbiakuzija značajno utiče na svakodnevnu komunikaciju, socijalizaciju i kvalitet života jedne osobe. Primena slušnih aparata doprinosi boljoj komunikaciji, svakodnevnom funkcionisanju i kvalitetu života korisnika, pri čemu na ishode auditivne rehabilitacije mogu uticati različiti faktori.

Cilj: Cilj istraživanja bio je procena ishoda korišćenja slušnih aparata kod osoba sa prezbiakuzijom primenom upitnika International Outcome Inventory for Hearing Aids (IOI-HA). Pored toga, cilj rada bio je i da se ispita povezanost ishoda korišćenja slušnih aparata sa sociodemografskim i audiološkim karakteristikama korisnika.

Metode: Istraživanje je sprovedeno na uzorku od 51 ispitanika sa prezbiakuzijom koji su korisnici slušnih aparata. Ishodi korišćenja slušnih aparata procenjivani su primenom upitnika Međunarodni inventar ishoda za slušne aparate (eng. The International Outcome Inventory for Hearing Aids (IOI-HA)). U analizu su uključene sledeće varijable: pol, starost, zaposlenost, stepen obrazovanja, stepen oštećenja sluha, dužina korišćenja slušnog aparata i broj sati dnevnog korišćenja aparata. Korišćene su deskriptivne statistike i korelaciona analiza.

Rezultati: Ispitanici su pokazali visok nivo zadovoljstva ishodima korišćenja slušnih aparata (M=30,29; SD=4,76), dok je samo 7,8% ispitanika ostvarilo skor niži od 20 poena na IOI-HA skali, koji ukazuje na visoko zadovoljstvo korisnika. Ispitujući uticaj različitih faktora na sveukupno zadovoljstvo ishodima korišćenja slušnih aparata, dobili smo statistički značajnu povezanost ukupnog skora na IOI-HA i pola, stepena obrazovanja, stepena oštećenja sluha i broja sati dnevnog korišćenja slušnog aparata.

Zaključak: Osobe sa prezbiakuzijom uglavnom iskazuju visok stepen zadovoljstva ishodima slušne amplifikacije. Rezultati potvrđuju značaj individualizovanog surdološkog pristupa i ukazuju da subjektivni doživljaj koristi predstavlja važan faktor kontinuiteta u korišćenju slušnih aparata.

Ključne reči: *prezbiakuzija, amplifikacija, auditivna rehabilitacija, IOI-HA, slušni aparat*

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OUTCOMES OF HEARING AID USE IN INDIVIDUALS WITH PRESBYCUSIS: ASSESSMENT OF SATISFACTION AND ANALYSIS OF PREDICTORS

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Introduction: Presbycusis is a progressive hearing loss resulting from the aging process and occurs in a large proportion of older adults. Presbycusis significantly affects everyday communication, socialization, and an individual's quality of life. The use of hearing aids contributes to improved communication, everyday functioning, and quality of life among users, while various factors may influence the outcomes of auditory rehabilitation.

Aim: The aim of this study was to assess the outcomes of hearing aid use among individuals with presbycusis using the International Outcome Inventory for Hearing Aids (IOI-HA). In addition, the study aimed to examine the association between hearing aid outcomes and users' sociodemographic and audiological characteristics.

Methods: The study was conducted on a sample of 51 participants with presbycusis who were hearing aid users. The outcomes of hearing aid use were assessed using the International Outcome Inventory for Hearing Aids (IOI-HA). The following variables were included in the analysis: sex, age, employment status, educational level, degree of hearing loss, duration of hearing aid use, and the number of hours of daily hearing aid use. Descriptive statistics and correlation analysis were employed.

Results: Participants demonstrated a high level of satisfaction with the outcomes of hearing aid use (M=30.29; SD=4.76), while only 7.8% of participants obtained a score below 20 points on the IOI-HA scale, which indicates a high level of user satisfaction. When examining the influence of various factors on overall satisfaction with hearing aid outcomes, a statistically significant association was found between the total IOI-HA score and sex, educational level, degree of hearing loss, and the number of hours of daily hearing aid use.

Conclusion: Individuals with presbycusis generally report a high level of satisfaction with the outcomes of hearing amplification. The results confirm the importance of an individualized audiological rehabilitation approach and indicate that the subjective perception of benefit is an important factor in maintaining continued hearing aid use.

Keywords: *presbycusis, amplification, auditory rehabilitation, IOI-HA, hearing aid*

TEACHERS’ COMPETENCIES FOR USING ASSISTIVE TECHNOLOGY IN THE EDUCATION OF STUDENTS WITH VISUAL IMPAIRMENTS

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Introduction: Assistive technology enables students with visual impairments to access educational content, foster independence, and enhance academic achievement. However, its effective implementation depends on teachers’ competencies, including technical, methodological, and pedagogical skills. A lack of training and limited resources remain significant barriers.

Aim: This review paper aims to analyze teachers’ competencies in using assistive technology to educate students with visual impairments and to identify key challenges and potential strategies for enhancing professional practice.

Methods: A literature search was conducted across several relevant electronic databases, including *PubMed*, *Scopus*, *ResearchGate*, and *Google Scholar*. A total of 24 studies were included in the final analysis.

Results: Findings reveal that many teachers lack sufficient knowledge and skills for the effective integration of assistive technology, thereby hindering the educational process for students with visual impairments. Structured training programs, mentorship opportunities, and hands-on workshops can significantly improve teachers’ preparedness. Moreover, institutional support and clear implementation guidelines are critical for improving teaching effectiveness.

Conclusion: Enhancing teacher training programs is essential for developing competencies in using assistive technology. Integrating assistive technology into teacher education curricula, ensuring continuous professional development, and providing institutional support can facilitate implementation, which will result in students with visual impairments accessing high-quality education and acquiring key skills for academic and professional success.

Keywords: *assistive technology, visual impairment, teachers’ competencies*

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DIGITAL EPISTEMIC COMPETENCE OF DEAF AND HARD-OF-HEARING STUDENTS: AN EVIDENCE-BASED MODEL FOR ITS DEVELOPMENT IN HIGHER EDUCATION

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Introduction: The digital transformation of higher education relies heavily on information-processing capabilities. For deaf and hard-of-hearing university students, text comprehension barriers, written communication constraints, and isolated technical approaches frequently disrupt successful learning, creating a distinct digital divide.

Aim: This paper aims to conceptualize the structural dimensions of digital epistemic competence for deaf and hard-of-hearing students and propose an evidence-based pedagogical model to facilitate inclusive digital learning.

Methods: A comprehensive two-year research project was implemented using a mixed-methods design. The methodology integrated expert evaluation, verbal protocol analysis, questionnaires, qualitative interviews, diary analysis, and pedagogical experiments tracking students across digital instructional settings.

Results: The empirical findings established a four-dimensional structure of digital epistemic competence encompassing motivational, cognitive, operational, and communicative modules. The study demonstrated that while deaf and hard-of-hearing students experience no difficulties with technical skills, their information-processing strategies remain significantly limited due to underdeveloped text analysis and search skills. Statistically, deaf and hard-of-hearing individuals demonstrated significantly lower perspective-taking capacities and lower baseline quality scores during asynchronous online discussions compared to hearing classmates. Concurrently, the investigation refined the digital divide as a multifaceted structural phenomenon determined by systematic inequalities in digital community, information perception, and overall online learning experience.

Conclusion: Based on these diagnostic outcomes, an evidence-based conceptual model was developed. The proposed framework provides a systematic theoretical and practical foundation for structured digital design, offering higher education institutions explicit pathways to scaffold inclusive learning and actively mitigate the effects of digital inequality.

Keywords: *deaf students, digital epistemic competence, higher education, inclusive learning, digital divide*

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ADVANTAGES AND BENEFITS OF THE 3D PRINTING FOR INDIVIDUALS WITH VISUAL IMPAIRMENT: LITERATURE REVIEW

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Introduction: This paper presents a literature review on the application of 3D printing to support the needs of individuals with visual impairment. It examines the advantages and benefits of 3D printing, the technical characteristics of 3D printed objects and models, and the ways in which people with visual impairment perceive, accept, and use these tactile resources.

Aim: The primary objective is to present a range of perspectives from different authors regarding the advantages and benefits of 3D printing for individuals with visual impairment.

Methods: The study employs a literature review methodology, involving the identification, presentation, and brief analysis of relevant publications retrieved from various scientific databases. In addition, the paper provides information about the current Bulgarian national research project, “Exploring 3D Technologies to Support the Learning Process and Lives of People with Visual Impairment,” within the framework of which this literature review has been conducted.

Results: The reviewed literature demonstrates that 3D technologies enhance access to educational content and other areas of daily life by transforming information into tangible tactile forms. The findings highlight the potential of 3D printing to support cognitive understanding, spatial awareness, and greater independence, contributing to more inclusive participation and improved accessibility for individuals with visual impairment.

Conclusion: The literature also indicates that the continued development of 3D technologies and interdisciplinary collaboration will further expand opportunities for accessible learning, social inclusion, and equitable participation for people with visual impairment.

Keywords: *3D printing, 3D modelling, individuals with visual impairment, advantages and benefits*

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INTELIGENCIJA U SUSRET INOVACIJI: VEŠTAČKA INTELIGENCIJA KAO SAVREMENI ALAT ZA POBOLJŠANJE RAZUMEVANJA GOVORA KOD KORISNIKA SLUŠNIH APARATA

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Uvod: Digitalni slušni aparat predstavlja model savremene amplifikacije kod osoba koje se suočavaju sa različitim tipovima oštećenja sluha, od blagog ka dubokom OS.

Cilj: Cilj rada je analiza doprinosa koji je uvrštavanje veštačke inteligencije imalo na poboljšanja u oblasti slušne amplifikacije digitalnim slušnim aparatima.

Metode: Metodološki, ovaj rad je pregled dostupne literature o primeni veštačke inteligencije radi poboljšanja razumevanja govora kod osoba sa OS. U ovu analizu uključeno je više od 10 istraživanja koja ukazuju na potencijalne napretke u oblasti rehabilitacije govora pri korišćenju slušnih aparata, objavljenih u naučnim časopisima širom Evrope i sveta.

Rezultati: Analizirana literatura ukazuje da primena veštačke inteligencije omogućava automatsku klasifikaciju zvučnih okruženja, adaptivno smanjenje buke, poboljšanu diskriminaciju i lokalizaciju govora kao i dodatne funkcije poput maskiranja tinitusa. Ove tehnologije značajno doprinose boljem razumevanju govora, posebno u bučnim sredinama, i predstavljaju neizostavni korak u efikasnoj slušnoj rehabilitaciji, te veštačku inteligenciju možemo smatrati savremenim alatom za postizanje boljih rezultata u razumevanju govora.

Zaključak: Veštačka inteligencija predstavlja značajan tehnološki napredak u razvoju digitalnih slušnih aparata. Aktivna i promišljena primena doprinosi kvalitetnijoj komunikaciji, većoj samostalnosti korisnika i uspešnijoj socijalnoj participaciji, zbog čega predstavlja važan pravac budućeg razvoja slušne amplifikacije.

Ključne reči: *savremeni modeli amplifikacije, veštačka inteligencija, inovacija, razumevanje govora, slušni aparati*

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INTELLIGENCE MEETS INNOVATION: ARTIFICIAL INTELLIGENCE AS A MODERN TOOL FOR IMPROVING SPEECH UNDERSTANDING IN HEARING AID USERS

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Introduction: A digital hearing aid represents a model of modern amplification for individuals facing various types of hearing impairment, ranging from mild to profound hearing loss (HL).

Aim: The aim of this paper is to analyze the contribution that the incorporation of artificial intelligence has made to improvements in the field of auditory amplification with digital hearing aids.

Methods: Methodologically, this paper is a review of the available literature on the application of artificial intelligence for improving speech understanding in individuals with HL. This analysis includes more than 10 studies indicating potential advances in the field of speech rehabilitation when using hearing aids, published in scientific journals across Europe and the world.

Results: The literature analyzed indicates that the application of artificial intelligence enables automatic classification of acoustic environments, adaptive noise reduction, improved speech discrimination and localization, as well as additional functions such as tinnitus masking. These technologies significantly contribute to better speech understanding, particularly in noisy environments, and represent an indispensable step in effective auditory rehabilitation, so artificial intelligence can be considered a modern tool for achieving better outcomes in speech understanding.

Conclusion: Artificial intelligence represents a significant technological advance in the development of digital hearing aids. Its active and deliberate application contributes to higher-quality communication, greater user independence, and more successful social participation, making it an important direction for the future development of auditory amplification.

Keywords: *modern amplification models, artificial intelligence, innovation, speech understanding, hearing aids*

FUNKCIONISANJE ODRASLIH OSOBA SA INVALIDITETOM

FUNCTIONING OF ADULTS WITH DISABILITIES

THE CORRELATION BETWEEN VISUAL FUNCTIONS AND PHYSICAL ACTIVITY IN OLDER ADULTS: PROJECT RESULTS QUALITY OF LIFE OF OLDER ADULTS WITH VISUAL FUNCTIONING PROBLEMS

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Introduction: Visual functions have a major impact on everyday life. Existing literature indicates that older adults and people with visual functioning problems spend more time sitting and are less physically active.

Aim: The aim of this study was to examine the correlation between visual functions and the amount of physical activity in older adults living in nursing homes.

Methods: Visual functions were assessed using objective measurement of functional vision (eye position, fixation, motility, pursuit movements, convergence, saccades, distance and near VA, accommodation, colour vision, contrast sensitivity, visual field). Physical activity was assessed using the International Physical Activity Questionnaire. The sample consisted of 236 older adults living in nursing homes in Zagreb (M=83.62).

Results: The results indicate that older adults lead a sedentary lifestyle. Spearman’s correlation revealed negative correlations between walking and the accommodation of the right ($r_s=-0.303$, $p<0.001$) and left eye ($r_s=-0.177$, $p=0.048$), and a positive correlation between walking and fixation ($r_s=0.208$, $p=0.010$). Moderate physical activity positively correlated with convergence ($r_s=0.216$, $p=0.025$), saccades ($r_s=0.224$, $p=0.020$), and distance acuity ($r_s=0.225$, $p=0.021$). Mann-Whitney U test confirmed a significant difference between groups with different levels of walking in accommodation, for both eyes, the right ($U=1060.50$, $Z=-3.435$, $p=0.001$) and left ($U=1126.00$, $Z=-2.886$, $p=0.004$).

Conclusion: Results indicate a significant association between accommodation, oculomotor functions, and physical activity. Participants with poorer accommodation walk less, while better oculomotor and acuity findings accompany higher levels of moderate physical activity.

Keywords: *visual functions, functional vision, sitting, walking, physical activity, older adults*

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DUALNO SENZORNO OŠTEĆENJE I KVALITET ŽIVOTA KOD STARIJIH OSOBA: PREGLED ISTRAŽIVANJA

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Uvod: Starenje je fiziološki proces praćen postepenim opadanjem fizičkih i kognitivnih sposobnosti, pri čemu senzorna oštećenja predstavljaju značajan faktor funkcionalnog ograničenja u starijoj populaciji. Dualno senzorno oštećenje (DSO) definiše se kao istovremeno prisustvo oštećenja vida i sluha, a kod starijih osoba se najčešće javlja kao stečeno, progresivno stanje.

Cilj: Ovaj pregled literature imao je za cilj analizu povezanosti oštećenja sluha, oštećenja vida i dualnog senzornog oštećenja sa kvalitetom života, funkcionalnim i psihosocijalnim ishodima kod starijih osoba.

Metode: Sproveden je sistematski pregled literature u bazi PubMed, uz dopunsku pretragu putem Google Scholar pretraživača i ručno pretraživanje referenci relevantnih studija. Uključeni su originalni empirijski radovi koji ispituju povezanost senzornog statusa sa kvalitetom života, funkcionalnim statusom i psihosocijalnim ishodima, uz korišćenje standardizovanih instrumenata procene. Kriterijum uključivanja obuhvatao je studije sa odraslom i starijom populacijom (≥40 godina). Isključene su studije koje se odnose na dečju populaciju, neempirijski radovi i publikacije bez relevantnih ishoda ili punog teksta. Na osnovu definisanih kriterijuma, u konačnu analizu uključeno je 27 studija.

Rezultati: Dualno senzorno oštećenje dosledno je povezano sa smanjenim kvalitetom života starijih osoba, kao i sa ograničenjima u svakodnevnom funkcionisanju, nižim nivoom samostalnosti i smanjenom socijalnom participacijom. U poređenju sa izolovanim oštećenjem vida ili sluha, DSO je udruženo sa izraženijim funkcionalnim ograničenjima i većom potrebom za podrškom u svakodnevnim aktivnostima. Posebno su pogođene instrumentalne aktivnosti svakodnevnog života, mobilnost i samostalno obavljanje složenijih svakodnevnih zadataka.

Zaključak: Dualno senzorno oštećenje predstavlja kompleksan zdravstveni problem u starijoj populaciji koji prevazilazi izolovane senzorne deficite, sa značajnim posledicama na funkcionalnu nezavisnost i psihosocijalno funkcionisanje. Postepeni tok i učestalo neprepoznavanje ovog stanja dodatno otežavaju pravovremenu identifikaciju i adekvatno planiranje podrške.

Ključne reči: *dualno senzorno oštećenje, starije osobe, kvalitet života, funkcionalni status*

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DUAL SENSORY IMPAIRMENT AND QUALITY OF LIFE IN OLDER ADULTS: A SYSTEMATIC REVIEW

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Introduction: Aging is a physiological process characterized by the gradual decline of physical and cognitive functions, with sensory impairments representing a major contributor to functional limitations in older adults. Dual sensory impairment (DSI), defined as the concurrent presence of vision and hearing impairment, is most commonly acquired and progressive in later life.

Aim: This systematic literature review aimed to examine the associations of hearing impairment, vision impairment, and dual sensory impairment with quality of life, functional status, and psychosocial outcomes in older adults.

Methods: A systematic literature search was conducted in PubMed, supplemented by searches in Google Scholar and manual screening of the reference lists of relevant studies. Original empirical studies investigating the relationship between sensory status and quality of life, functional status, and psychosocial outcomes using standardized assessment instruments were included. Studies involving adult and older populations (≥40 years) were eligible for inclusion. Studies focusing on pediatric populations, non-empirical publications, and articles lacking relevant outcomes or full-text availability were excluded. Based on the predefined eligibility criteria, 27 studies were included in the final review.

Results: Dual sensory impairment was consistently associated with reduced quality of life, limitations in everyday functioning, lower levels of independence, and reduced social participation among older adults. Compared with isolated vision or hearing impairment, DSI was associated with greater functional limitations and a higher need for assistance with daily activities. Instrumental activities of daily living, mobility, and the ability to perform more complex everyday tasks were particularly affected.

Conclusion: Dual sensory impairment is a complex health condition in older adults that extends beyond the effects of isolated sensory deficits, with substantial consequences for functional independence and psychosocial functioning. Its gradual progression and frequent underrecognition further hinder timely identification and appropriate support planning.

Keywords: *dual sensory impairment, older adults, quality of life, functional status*

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THE RELATIONSHIP BETWEEN SENSORY PROCESSING AND QUALITY OF LIFE IN INDIVIDUALS WITH MULTIPLE SCLEROSIS – A REVIEW OF RECENT RESEARCHES

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Introduction: Sensory processing refers to the way individuals perceive, interpret, and respond to information received from their environment. People with multiple sclerosis may experience difficulties in sensory processing, resulting in hypo- or hypersensitivity to sensory input. Hypersensitive individuals may suffer from sensory overload due to the influx of diverse stimuli to which they cannot adequately adapt or respond effectively that potentially could compromising the quality of life in individuals with multiple sclerosis.

Aim: This paper aims to provide an overview of current scientific findings on the relationship between sensory processing and quality of life in individuals with multiple sclerosis.

Methods: The research questions focus on whether sensory processing influences the quality of life in individuals with multiple sclerosis and which additional factors are associated with both sensory processing and quality of life. Relevant research articles were identified through electronic database searches in PubMed, ScienceDirect, Google Scholar, JSTOR, and SCIndex, using predefined keywords. Inclusion and exclusion criteria were established for study selection.

Results: A total of 979 articles were initially identified. After removing duplicates, screening titles, abstracts and full text reading four studies met the inclusion criteria. These studies were published within the past eight years, indicating that this is a relatively new research area. Despite the limited number of studies, findings indicate that sensory processing, combined with factors such as anxiety, cognitive fatigue, disease severity, and others, affects the quality of life and daily functioning of individuals with multiple sclerosis.

Conclusion: The findings from the selected studies highlight the importance of integrating sensory processing into intervention planning aimed at improving the quality of life of individuals with multiple sclerosis. It is essential to recognize and understand individual sensory characteristics in order to develop personalized approaches. Furthermore, research on sensory processing in individuals with multiple sclerosis is still in early stages, necessitating further studies focused on appropriate assessment and treatment.

Keywords: *sensory profile, sensitivity, quality of life, multiple sclerosis*

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ANALYSIS OF SOCIAL INVOLVEMENT OF PERSONS WITH DISABILITIES IN THE FEDERATION BOSNIA AND HERZEGOVINA: SITUATION, CHALLENGES AND RECOMMENDATIONS

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Aim: The goal of this research was to examine level of social inclusion of persons with disabilities in the Federation of Bosnia and Herzegovina, with a special focus on access to education, employment, social and health services, as well as the possibility of active participation in the community and socio-political life.

Methods: The research was conducted using a quantitative approach on a non-probabilistic sample of persons with disabilities over the age of 18 from the Federation of Bosnia and Herzegovina. To assess social inclusion, the Social Inclusion Scale (SIS) was used, which includes the dimensions of acceptance, participation in the community, access to services and sense of belonging. The quality of life of the respondents was assessed using a shortened version of the WHOQOL-DIS instrument, which includes the domains of physical health, freedom of movement, social support, access to services and general life satisfaction. The collected data were processed using descriptive and inferential statistics.

Results: The results of the research indicated the existence of significant differences in the degree of social inclusion in relation to certain socio-demographic characteristics and access to social resources, while numerous obstacles were identified that hinder the full participation of persons with disabilities in social life. The connection between the perception of the quality of life and the level of social inclusion was also determined, which confirms the importance of the availability of services and social support for improving the position of people with disabilities.

Conclusion: The obtained results represent an empirical basis for the creation of recommendations aimed at improving public policies, strengthening inclusive practices and reducing the social exclusion of persons with disabilities in the Federation of Bosnia and Herzegovina.

Keywords: *social inclusion, persons with disabilities, quality of life, Federation of Bosnia and Herzegovina, inclusion, public policies*

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SAMOODREĐENJE, RADNA MEMORIJA I INHIBITORNA KONTROLA KOD ODRASLIH OSOBA SA LAKOM INTELEKTUALNOM OMETENOŠĆU

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Uvod: Samoodređenje obuhvata skup veština neophodnih za samostalno definisanje različitih ličnih životnih ciljeva. Egzekutivne funkcije, koje su generalno odgovorne za organizaciju ponašanja osobe, determinišu i individualne sposobnosti planiranja i odabira optimalnih strategija realizacije tih ciljeva.

Cilj: Cilj ovog istraživanja je utvrđivanje povezanosti između egzekutivnih sposobnosti (radne memorije i inhibitorne kontrole) i samoodređenja kod odraslih osoba sa lakom intelektualnom ometenošću.

Metode: Uzorak je obuhvatio 41 odraslu osobu sa lakom intelektualnom ometenošću, oba pola, uzrasta između 22 i 50 godina. Podaci su prikupljeni primenom Ark Skale za procenu samoodređenja (*Arc's Self-Determination Scale*), zadacima za procenu verbalne i neverbalne memorije (*Digit Span Backward; Corsi Block Test*) i zadacima za procenu motoričke i verbalne inhibitorne kontrole (*Go no Go Task; Day/Night Stroop Task*).

Rezultati: Rezultati ukazuju na statistički značajnu, slabu i pozitivnu korelaciju između ukupnog skora samoodređenja i verbalne radne memorije (r=0,356; p=0,022), kao i statistički značajnu, pozitivnu i umerenu korelaciju sa neverbalnom radnom memorijom (r=0,456; p=0,003). Korelacija između ukupnog skora samoodređenja ispitanika u uzorku i uspeha na zadacima inhibitorne kontrole nije bila značajna.

Zaključak: Odnos između različitih egzekutivnih procesa i samoodređenja odraslih osoba sa lakom intelektualnom ometenošću pokazuje da statistička značajnost ispitanih korelacija nije konzistentna. Dobijene rezultate bi trebalo dalje proveravati na obimnijem i raznovrsnijem uzorku ispitanika uključujući i ispitanike različitih nivoa intelektualne ometenosti i mlađeg hronološkog uzrasta.

Ključne reči: *samoodređenje, radna memorija, inhibitorna kontrola, laka intelektualna ometenost*

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SELF-DETERMINATION, WORKING MEMORY AND INHIBITORY CONTROL IN ADULTS WITH MILD INTELLECTUAL DISABILITY

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Introduction. Self-determination encompasses a range of abilities required for self-definition of various personal life goals. Executive functions, which are generally responsible for organising a person’s behaviour, also determine the individual’s ability to plan and select optimal strategies for achieving these goals.

Aim: The objective of this study is to examine the relationship between executive functions (working memory and inhibitory control) and self-determination in adults with mild intellectual disabilities.

Methods: The sample included 41 adults with mild intellectual disability, both sexes, aged between 22 and 50 years. Data were collected using the Arc’s Self-Determination Scale, tasks to assess verbal and non-verbal working memory (Digit Span Backward; Corsi Block Test) and tasks to assess motor and verbal inhibitory control (Go no Go Task; Day/Night Stroop Task).

Results: The results show a statistically significant, weak and positive correlation between the total score of self-determination and verbal working memory (r=0.356; p=0.022), as well as a statistically significant positive and moderate correlation with non-verbal working memory (r=0.456; p=0.003). The correlation between the total score for self-determination of the subjects in the sample and success in the inhibitory control tasks was not significant.

Conclusion: The relationship between various executive processes and the self-determination of adults with mild intellectual disabilities demonstrates inconsistent statistical significance. It would be justified to conduct further research on a larger and more diverse sample, including individuals with different levels of intellectual disabilities of a younger chronological age.

Keywords: *self-determination, working memory, inhibitory control, mild intellectual disability*

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OBELEŽJA ZDRAVSTVENE PISMENOSTI STARIJIH OSOBA S TEŠKOĆAMA VIDA

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Uvod: Zdravstvena pismenost podrazumijeva znanja, motivaciju i kompetencije potrebne za pristup zdravstvenim informacijama, njihovo razumijevanje, procjenu i primjenu pri donošenju odluka povezanih sa zdravljem. U starijoj životnoj dobi, osobito uz prisutne teškoće vida, mogućnosti pristupa i korištenja zdravstvenih informacija mogu biti dodatno ograničene. Ograničena zdravstvena pismenost može otežati pravovremeno prepoznavanje zdravstvenih potreba i donošenje informisanih odluka, povećati oslanjanje starije osobe na članove porodice te pridonijeti većim zahtjevima prema zdravstvenom i sistemu socijalne zaštite.

Cilj: Cilj istraživanja bio je analizirati obeležja zdravstvene pismenosti starijih osoba s teškoćama vida te utvrditi područja u kojima se pojavljuju izraženije poteškoće u pristupu, razumijevanju, procjeni i primjeni zdravstvenih informacija.

Metode: U istraživanju su sudjelovala 203 korisnika/ce domova za starije osobe s teškoćama vida, urednog mentalnog statusa. Podaci su prikupljeni individualnim intervjuom primjenom Europskog upitnika zdravstvene pismenosti – kratke verzije od 16 ajtema (European Health Literacy Survey Questionnaire, HLS-EU-Q16) kojim su obuhvaćeni domeni zdravstvene zaštite, prevencije bolesti i promocije zdravlja.

Rezultati: Najizraženije poteškoće utvrđene su u odlučivanju o zaštiti od bolesti na temelju medijskih informacija (50,7%) i procjeni pouzdanosti medijskih informacija o zdravstvenim rizicima (46,8%), dok su poteškoće bile najmanje izražene u razumijevanju uputstava o uzimanju lijekova (7,2%) i upozorenja o nezdravim ponašanjima (8,3%). Posmatrano prema domenama, najveći prosječni udio odgovora „teško" utvrđen je u području prevencije bolesti (29,0%), potom zdravstvene zaštite (21,0%), a najmanji u području promocije zdravlja (16,1%). Relativno visok udio odgovora „ne znam" utvrđen je kod procjene potrebe za drugim liječničkim mišljenjem (37,9%) te sadržaja povezanih s mentalnim zdravljem (31,4–35,0%).

Zaključak: Dobijeni rezultati upućuju na neujednačenost pojedinih sastavnica zdravstvene pismenosti. Starije osobe s teškoćama vida pokazuju manje poteškoća u razumijevanju konkretnih zdravstvenih uputstava (niži nivoi zdravstvene pismenosti), dok su poteškoće

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izraženije kada informacije treba samostalno procijeniti i primijeniti pri donošenju odluka (viši nivoi zdravstvene pismenosti). Nalazi sugerišu potrebu usmjeravanja intervencija ne samo na dostupnost i razumljivost zdravstvenih informacija, već i na osnaživanje starijih osoba za njihovu kritičku procjenu i primjenu.

Ključne riječi*: zdravstvena pismenost, starije osobe, teškoće vida*

CHARACTERISTICS OF HEALTH LITERACY AMONG OLDER ADULTS WITH VISUAL DIFFICULTIES

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Introduction: Health literacy encompasses the knowledge, motivation, and competencies required to access, understand, appraise, and apply health information when making health-related decisions. In older age, particularly in the presence of visual difficulties, access to and use of health information may be further restricted. Limited health literacy may hinder the timely recognition of health needs and informed decision-making, increase older adults' reliance on family members, and place additional demands on health and social care systems.

Aim: The aim of this study was to analyse the characteristics of health literacy among older adults with visual difficulties and to identify areas in which they experience greater difficulties in accessing, understanding, appraising, and applying health information.

Methods: The study included 203 residents of homes for older adults with visual difficulties and intact mental status. Data were collected through individual interviews using the 16-item European Health Literacy Survey Questionnaire (HLS-EU-Q16), covering the domains of healthcare, disease prevention, and health promotion.

Results: The greatest difficulties were identified in making decisions about protection from illness based on information from the media (50.7%) and appraising the reliability of media information about health risks (46.8%). The least difficulty was reported in understanding instructions on how to take prescribed medication (7.2%) and understanding warnings about unhealthy behaviours (8.3%). Across domains, the highest average proportion of responses indicating difficulty was found in disease prevention (29.0%), followed by healthcare (21.0%), while the lowest was found in health promotion (16.1%). Relatively high proportions of "don't know" responses were observed for judging the need for a second medical opinion (37.9%) and for items related to mental health (31.4–35.0%).

Conclusion: The findings indicate an uneven profile across different components of health literacy. Older adults with visual difficulties experience fewer difficulties in understanding specific health instructions, which involves less complex health literacy skills, while greater difficulties emerge when information needs to be independently appraised and applied in decision-making, requiring more complex health literacy skills. The findings suggest that interventions should focus not only on the accessibility and comprehensibility of health information, but also on empowering older adults to critically appraise and apply such information.

Keywords: *health literacy, older adults, visual difficulties*

MOŽE LI ODSUSTVO VIDA DA ŠTITI? PREGLED ISTRAŽIVANJA O POVEZANOSTI UROĐENE SLEPOĆE I SHIZOFRENIJE

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Uvod: Unazad nekoliko decenija objavljivani su klinički podaci koji ukazuju na to da osobe koje su rođene slepe ne razvijaju shizofreniju, to jest da do sada nisu opisani slučajevi kongenitalno slepih osoba sa dijagnozom shizofrenije. Ovakvi nalazi naveli su brojne autore na pretpostavku o kortikalnoj slepoći kao protektivnom faktoru u razvoju shizofrenije.

Cilj: Cilj rada je da, kroz pregled relevantne literature, sumira postojeća objašnjenja ovog fenomena, sa posebnim osvrtom na neuropsihološke nalaze, kao i da razmotri moguće kognitivne mehanizme u njegovoj osnovi.

Metode: Rad se zasniva na sistematizaciji i interpretaciji postojećih saznanja iz relevantne literature o odnosu između kongenitalne slepoće i shizofrenije.

Rezultati: Pregledom literature identifikovana su različita objašnjenja koja ukazuju na potencijalne neuropsihološke i kognitivne mehanizme zaštitnog dejstva slepoće. Istaknuta je važnost razlikovanja etiologije slepoće i stepena oštećenja u razumevanju obrazaca komorbiditeta i mogućih protektivnih efekata u odnosu na shizofreniju.

Zaključak: Potvrđivanje negativne veze između dva vrlo retka stanja je izuzetno izazovan i delikatan zadatak, kako sa teorijskog tako i sa metodološkog stanovišta, i pouzdani odgovor na ovo pitanje čekaće formiranje velikih registara podataka nad kojima će biti primenjene sofisticirane statističke tehnike. No, traganje za činiocima koji bi rasvetlili ovaj odnos o kom se već decenijama polemiše predstavlja putokaz u specifična saznanja o prirodi i poreklu shizofrenije, kao i različitim implikacijama slepoće, i doprinosi kako teorijskim i kliničkim uvidima, tako i oblikovanju potencijalnih novih puteva podrške ovim pacijentima u budućnosti.

Ključne reči: *slepoća, shizofrenija, kognitivni mehanizmi, pregledni rad*

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CAN THE ABSENCE OF SIGHT BE PROTECTIVE? A REVIEW OF RESEARCH ON THE LINK BETWEEN CONGENITAL BLINDNESS AND SCHIZOPHRENIA

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Introduction: Over the past few decades, clinical data have indicated that people born blind do not develop schizophrenia; that is, to date, no cases of congenitally blind individuals with a diagnosis of schizophrenia have been described. Such findings have led numerous authors to hypothesize cortical blindness as a protective factor in the development of schizophrenia.

Aim: The objective of the paper is to summarize existing explanations for this phenomenon, with a special focus on neuropsychological findings, and to consider the possible cognitive mechanisms underlying it, through a review of the relevant literature.

Methods: The paper is based on the systematization and interpretation of existing knowledge from the relevant literature on the relationship between congenital blindness and schizophrenia.

Results: The literature review identified various explanations that point to potential neuropsychological and cognitive mechanisms for the protective effect of blindness. The importance of distinguishing the etiology of blindness and the degree of impairment in understanding patterns of comorbidity and possible protective effects in relation to schizophrenia is highlighted.

Conclusion: Confirming a negative association between two very rare conditions is an extremely challenging and delicate task from both theoretical and methodological standpoints, and a reliable answer to this question will await the creation of large data registries to which sophisticated statistical techniques will be applied. However, the search for factors that would shed light on this relationship, which has been debated for decades, represents a guide to specific insights into the nature and origin of schizophrenia, as well as the various implications of blindness, and contributes to both theoretical and clinical insights, as well as the shaping of potential new avenues of support for these patients in the future.

Keywords: *blindness, schizophrenia, cognitive mechanisms, review*

INKLUZIVNO OBRAZOVANJE OSOBA SA SMETNJAMA U RAZVOJU

INCLUSIVE EDUCATION OF PERSONS WITH DEVELOPMENTAL DISABILITIES

EVERY CHILD HAS THE KEY TO THE DOOR OF KNOWLEDGE, WE JUST HAVE TO FIND THE RIGHT ONE – INCLUSIVE TEACHING TOOLS FOR CHILDREN WITH SPECIAL NEEDS

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Introduction: Access to knowledge depends not only on a child's abilities but also on the accessibility of the learning environment. This paper presents original examples of adapted and multisensory teaching tools developed for children with special educational needs from preschool to the end of primary education. The materials demonstrate how creative pedagogical adaptations can remove barriers to learning while enriching the educational experience of all pupils.

Aim: The paper aims to demonstrate how innovative, adapted teaching tools can enhance motivation, participation, and learning outcomes. It also highlights the broader value of inclusive teaching materials that support diverse learners and promote universal access to knowledge.

Methods: The study is based on long-term professional practice, supported by research findings on inclusive education. A selection of original teaching tools and multisensory learning materials was analysed with regard to their contribution to accessibility, active participation, motivation, and independent learning.

Results: The examples show that adapted teaching tools significantly increase engagement and learning motivation among children with special educational needs. At the same time, they enrich classroom instruction for typically developing pupils by offering multiple ways of exploring concepts and participating in learning activities. The findings support the principles of inclusive and universally designed learning environments.

Conclusion: Innovative adapted teaching tools are not compensatory aids but effective pedagogical resources that enable equitable participation without lowering educational expectations. By addressing diverse learning styles and sensory needs, they foster independence, self-confidence, creativity, and social inclusion. The paper argues that well-designed inclusive teaching materials improve learning opportunities for every child and contribute to a more accessible, equitable, and high-quality education system.

Keywords: *inclusive education, adapted teaching tools, multisensory learning, universal design for learning, special educational needs*

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PREDIKTORI KVALITETA PEDAGOŠKOG ODNOSA UČENIK-NASTAVNIK KOD UČENIKA SA INTELEKTUALNOM OMETENOŠĆU

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Uvod: Određene odlike ponašanja učenika sa intelektualnom ometenošću mogu predstavljati prepreku kvalitetnom pedagoškom odnosu sa defektolozima.

Cilj: Cilj ovog rada je utvrđivanje odnosa usvojenosti veština poštovanja pravila, upravljanja besom i ostvarivanja pozitivnih socio-emocionalnih interakcija kod učenika sa umerenom i teškom intelektualnom ometenošću, kao i utvrđivanje prediktivnog značaja ovih veština za dimenzije bliskosti i konflikta u pedagoškim odnosima sa defektolozima.

Metode: Uzorak je činilo 30 učenika sa umerenom i 30 učenika sa teškom intelektualnom ometenošću, uzrasta 7–15 godina. Za procenu percepcije defektologa o kvalitetu njihovih pedagoškog odnosa sa učenicima korišćena je kratka forma Skale odnosa učenik–nastavnik (*Student–Teacher Relationship Scale- Short Form*). Tri subskale iz Inventara bihejvioralnih, emocionalnih i socijalnih veština (*Behavioral, Emotional and Social Skills Inventory*) korišćene su za procenu veština u praćenju pravila (*Rule-Following Skill: capacity to follow instructions, rules, and norms*), pozitivne socijalne interakcije (*Capacity for Social Warmth: capacity to evoke positive social responses from other people*) i regulacije besa (*Anger Management: capacity to regulate anger and irritation*).

Rezultati: Učenici sa umerenom intelektualnom ometenošću pokazali su viši nivo usvojenosti veština praćenja pravila ($p<0,001$), pozitivne socijalne interakcije ($p<0,001$) i regulacije besa ($p<0,001$) u poređenju sa učenicima sa teškom intelektualnom ometenošću. Kapacitet za pozitivne socijalne interakcije i veštine poštovanja pravila bili su prediktori bliskosti u pedagoškim odnosima učenika i defektologa kod učenika sa umerenom ($R^2=0,545$, prilagođeni $R^2=0,511$) i teškom ($R^2=0,427$, prilagođeni $R^2=0,384$) intelektualnom ometenošću, dok su upravljanje besom i veštine poštovanja pravila predvideli nivoe sukoba samo u grupi učenika sa umerenom intelektualnom ometenošću ($R^2=0,710$, prilagođeni $R^2=0,677$).

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Zaključak: Rezultati ukazuju na značaj veština samoregulacije i socio-emocionalnih veština, kao i potrebu za kreiranjem programa intervencije usmerenih na unapređenje ovih veština kod učenika i jačanje profesionalnih kompetencija nastavnika radi efikasnijeg upravljanja izazovnim ponašanjima učenika.

Ključne reči: *intelektualna ometenost, kvalitet pedagoškog odnosa, konflikt, bliskost*

PREDICTORS OF THE QUALITY OF THE STUDENT–TEACHER PEDAGOGICAL RELATIONSHIP IN STUDENTS WITH INTELLECTUAL DISABILITIES

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Introduction: Certain behavioral characteristics of students with intellectual disabilities may pose barriers to establishing a high-quality pedagogical relationship with special educators.

Aim: This study aims to examine the relationship between the level of skill acquisition in rule-following, anger management, and positive socio-emotional interactions among students with moderate and severe intellectual disabilities, and to determine which of these skills predict the levels of closeness and conflict in their pedagogical relationships with special educators.

Methods: The sample consisted of 30 students with moderate and 30 with severe intellectual disabilities, aged 7–15 years. The *Student-Teacher Relationship Scale – Short Form* was used to assess special educators' perceptions of the quality of their pedagogical relationships with students. Three subscales from the *Behavioral, Emotional, and Social Skills Inventory* were used to assess skills in rule-following (*Rule-Following Skill: capacity to follow instructions, rules, and norms*), positive social interaction (*Capacity for Social Warmth: capacity to evoke positive social responses from other people*), and anger regulation (*Anger Management: capacity to regulate anger and irritation*).

Results: Students with moderate intellectual disabilities demonstrated higher levels of rule-following ($p<0.001$), positive social interaction ($p<0.001$), and anger regulation ($p<0.001$) skills compared to students with severe intellectual disabilities. *Capacity for Social Warmth* and *Rule-Following Skill* emerged as predictors of closeness in the student-special educators' pedagogical relationships across students with moderate ($R^2=0.545$, adjusted $R^2=0.511$) and severe ($R^2=0.427$, adjusted $R^2=0.384$) intellectual disability, while *Anger Management* and *Rule-Following Skill* predicted conflict levels only in the group of students with moderate intellectual disabilities ($R^2=0.710$, adjusted $R^2=0.677$).

Conclusion: The findings highlight key self-regulation and socio-emotional skills that should be targeted in intervention programs through a dual approach: enhancing students' skills and strengthening special educators' abilities to address challenging behaviors.

Keywords: *intellectual disability, students, quality of the pedagogical relationship, conflicts, closeness*

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ADDITIONAL SUPPORT PROVIDED BY SPECIAL EDUCATORS TO STUDENTS WITH SPECIAL EDUCATIONAL NEEDS IN MAINSTREAM SCHOOLS: ATTITUDES OF PARENTS, TEACHERS, AND SCHOOL SUPPORT PROFESSIONALS

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Introduction: Collaboration with parents, teachers, and school support professionals represents an indirect form of additional support provided by special educators to students with special educational needs in mainstream schools, in line with the social model of disability.

Aim: The aim of this study was to examine the attitudes of parents, teachers, and school support professionals toward the additional support provided by special educators to students with special educational needs in mainstream schools, with the purpose of evaluating current and improving future support delivered by the special educators of the Secondary Vocational School in Belgrade.

Methods: The sample consisted of 50 parents, 92 teachers, and 13 school support professionals from nine primary and nine secondary schools in Belgrade. Attitudes were assessed using a five-point Likert-type scale developed for this study and consisting of four subscales (need for support, satisfaction with support, perceived benefits, and general views), as well as two open-ended questions (expectations, comments). Internal consistency was high across the total scale and subscales (α=0.83–0.96).

Results: Overall attitudes toward additional support were positive among both parents (Mdn=4.47, IQR=0.57) and teachers and school support professionals (Mdn=4.32, IQR=0.74). Parents reported a significantly higher need for support (Mdn= 4.30, IQR=1.33) than teachers and school support professionals (Mdn=3.50, IQR=1.33; U=1821.00, p=0.002). No significant differences were found in overall attitudes, the remaining subscales, or most items (p>0.05). An exception was collaborative work with support providers in the classroom, which was perceived as more beneficial by parents (Mdn=5.00, IQR=1.00) than by teachers and school support professionals (Mdn=5.00, IQR=1.00; U=2080.50, p=0.026). Participants expected continued collaboration, advisory support, and student progress, while also highlighting the need for more frequent and widely available additional support.

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Conclusion: Findings highlight the value of additional support and the need for its broader availability in inclusive education, consistent with existing literature.

Keywords: *educational support services, inclusive education, school collaboration, special education*

SPECIAL EDUCATION PREPARATION AS A DETERMINANT OF TEACHING ASSISTANTS' ATTITUDES TOWARD THE INCLUSIVE EDUCATION VALUES IN PHYSICAL EDUCATION CLASSES

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Introduction: The inclusion of students with disabilities in physical education (PE) represents an important component of contemporary inclusive education. The success of the inclusion process is influenced by multiple factors, among which teaching assistants' (TAs) attitudes and their professional preparation for working with students with disabilities play a crucial role.

Aim: The aim of the study was to analyse and compare teaching assistants' attitudes toward inclusive education values in the context of including students with disabilities in PE according to their special education preparation.

Methods: The research sample consisted of 119 TAs supporting students during PE lessons (mean age=38.08±10.75 years). Of these, 76 had completed special education preparation, while 43 had not. Data were collected using the standardized Attitudes Toward Teaching Individuals with Disabilities in Physical Education-Revised questionnaire. Differences between groups were analysed using the Mann–Whitney U test, and the internal ranking of inclusive education values was examined using the Friedman test.

Results: TAs who had completed special education preparation demonstrated significantly more positive attitudes toward the inclusion of students with disabilities in PE than those without such preparation (U=1203; p=0.017). Statistically significant differences were found in several inclusive education values, including communication (p=0.049), helping others (p=0.024), tolerance (p=0.035), acquiring knowledge about individuals with disabilities (p=0.042), and cooperation (p=0.012). In both groups, tolerance was identified as the highest-rated inclusive education value, whereas communication received the lowest ratings. However, statistically significant differences among the inclusive education values were observed only in the group of TAs with special education preparation (χ^2=14.11, p=0.015).

Conclusion: The findings highlight the significant role of special education preparation in shaping TAs' positive attitudes toward the inclusion of students with disabilities in PE. The results suggest that strengthening special education content in teaching assistants' qualification training and

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continuing professional development programmes may support more effective inclusive practices, particularly in the areas of communication, cooperation, and fostering positive attitudes toward students with disabilities. The findings should be interpreted with caution due to the cross-sectional design of the study and the reliance on self-reported data.

Keywords: *inclusive education values, physical education, teaching assistant, students with disabilities, special education preparation*

SELF-ESTEEM OF STUDENTS WITH INTELLECTUAL DISABILITIES IN RELATION TO THE DEGREE OF INTELLECTUAL DISABILITIES

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Introduction: Self-esteem represents an important aspect of psychological functioning and a significant indicator of emotional well-being among children and adolescents with intellectual disabilities. Although numerous studies confirm the importance of self-esteem for social adjustment and quality of life, findings regarding the relationship between the severity of intellectual disability and self-esteem remain inconsistent.

Aim: The aim of this study was to determine whether significant differences exist in self-esteem levels among students with intellectual disabilities according to the degree of intellectual disability.

Methods: The study included 86 students with intellectual disabilities attending the Institute for Education and Rehabilitation of Persons with Psychological and Physical Disabilities in Tuzla. Self-esteem was assessed using the Piers-Harris Children's Self-Concept Scale – Second Edition (Piers-Harris 2).

Results: One-way analysis of variance revealed statistically significant differences in overall self-esteem among students with different levels of intellectual disability. Students with mild intellectual disabilities achieved significantly higher scores on the overall self-esteem scale compared to students with moderate and severe intellectual disabilities. Significant differences were also identified in the domains of popularity and happiness and satisfaction.

Conclusion: The findings indicate the need for targeted support programs aimed at strengthening positive self-perception among students with more pronounced intellectual disabilities.

Keywords: *self-esteem, intellectual disabilities, degree of intellectual disability, self-concept, students*

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JEZIČKI PREDIKTORI RANIH MATEMATIČKIH VEŠTINA

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Uvod: Rane matematičke veštine se razvijaju kroz povezivanje numeričkih i jezičkih sistema, naročito pri prelasku sa nesimboličkog na simboličko razumevanje brojeva. Jezičke sposobnosti su važne za usvajanje numeričkih pojmova i ranih aritmetičkih veština.

Cilj: Cilj istraživanja je ispitivanje doprinosa fonološke svesnosti i ekspresivnog rečnika pojmu broja i ranim aritmetičkim veštinama kod dece predškolskog uzrasta.

Metode: U istraživanju je učestvovalo 80 dece tipičnog razvoja. Fonološka svesnost je procenjena FONT testom, ekspresivni rečnik Bostonskim testom imenovanja, a matematičke veštine prvim i drugim suptestom Testa za procenu diskalkulije.

Rezultati: Polne razlike nisu bile statistički značajne ($p>0,05$). Fonološka svesnost je bila umereno povezana sa oba matematička domena ($r=0,529$; $r=0,542$; $p<0,01$), dok je ekspresivni rečnik bio slabije povezan sa pojmom broja ($r=0,255$; $p<0,05$), a izraženije sa ranom aritmetikom ($r=0,562$; $p<0,01$). Fonološka svesnost je bila jedini značajan prediktor pojma broja ($\beta=0,51$; $p<0,01$), dok su za rane aritmetičke veštine oba prediktora bila značajna (BTI: $\beta=0,41$; FONT: $\beta=0,37$; $p<0,01$).

Zaključak: Doprinos jezičkih sposobnosti ranim matematičkim veštinama zavisi od domena. Fonološka svesnost je prediktor pojma broja i rane aritmetike, dok je doprinos ekspresivnog rečnika izraženiji u složenijoj simboličkoj obradi. Nalazi doprinose razumevanju odnosa jezika i matematike u srpskom jeziku i značajni su za ranu procenu i tretman.

Ključne reči*: rane matematičke veštine, fonološka svesnost, ekspresivni rečnik, predškolski uzrast*

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LANGUAGE PREDICTORS OF EARLY MATHEMATICAL SKILLS

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Introduction: Early mathematical skills develop through the interaction of numerical and language systems, particularly during the transition from nonsymbolic to symbolic understanding of numbers. Language abilities play an important role in the acquisition of numerical concepts and early arithmetic skills.

Aim: The aim of this study was to examine the contribution of phonological awareness and expressive vocabulary to number sense and early arithmetic skills in preschool children.

Methods: The study included 80 typically developing children. Phonological awareness was assessed using the FONT test, expressive vocabulary using the Boston Naming Test, and mathematical skills using the first and second subtests of the Dyscalculia Assessment Test.

Results: No statistically significant sex differences were found ($p>0.05$). Phonological awareness was moderately correlated with both mathematical domains ($r=0.529$; $r=0.542$; $p<0.01$), whereas expressive vocabulary showed a weaker correlation with number sense ($r=0.255$; $p<0.05$) and a stronger correlation with early arithmetic ($r=0.562$; $p<0.01$). Phonological awareness was the only significant predictor of number sense ($\beta=0.51$; $p<0.01$), whereas both predictors were significant for early arithmetic skills (BNT: $\beta=0.41$; FONT: $\beta=0.37$; $p<0.01$).

Conclusion: The contribution of language abilities to early mathematical skills varies across domains. Phonological awareness predicts both number sense and early arithmetic, whereas the contribution of expressive vocabulary is more pronounced in tasks involving more complex symbolic processing. The findings contribute to understanding the relationship between language and mathematics in Serbian and have implications for early assessment and intervention.

Keywords*: early mathematical skills, phonological awareness, expressive vocabulary, preschool age*

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SPORT KAO SREDSTVO INKLUZIJE
SPORT AS A MEANS OF INCLUSION

SPORT ZA RAZVOJ KAO METODOLOŠKI OKVIR ZA UNAPREĐENJE KOMPETENCIJA DECE I MLADIH

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Uvod: Sport za razvoj (Sport for Development – S4D) predstavlja interdisciplinarni pristup koji sport pozicionira kao sredstvo za ostvarivanje društvenih i razvojnih ciljeva, uključujući socijalnu inkluziju, obrazovanje, zdravlje i osnaživanje mladih. Zasniva se na pretpostavci da pedagoški strukturisane i kontekstualno utemeljene sportske aktivnosti mogu doprineti razvoju prenosivih kompetencija. Za razliku od pristupa u kojima je primarni fokus na sportskom postignuću, u okviru sporta za razvoj naglasak je na procesu učenja, razvojnim ishodima i transformativnom potencijalu sportskog iskustva.

Cilj: Cilj rada je analiza metodoloških principa pristupa sport za razvoj i njihovih implikacija za razvoj ličnih i socijalnih kompetencija dece i mladih.

Metode: Rad je zasnovan na preglednoj analizi relevantne međunarodne literature iz oblasti pedagogije sporta, razvojne psihologije i omladinskog rada. Analiza je usmerena na identifikaciju i sintezu ključnih metodoloških komponenti, uključujući pristupe usmerene na razvoj životnih veština, participativne pristupe, te iskustveno i refleksivno učenje u okviru sportskih programa.

Rezultati: Nalazi ukazuju da efikasna implementacija ovog pristupa podrazumeva jasno operacionalizovane razvojne ciljeve, strukturisane i svrhovito dizajnirane aktivnosti, kao i facilitatorsku ulogu trenera/edukatora. Ključni elementi uključuju obezbeđivanje bezbednog i inkluzivnog okruženja, podsticanje aktivne participacije, saradnje i preuzimanja odgovornosti, sistematsku primenu refleksivnih tehnika, kao i kontekstualno prilagođavanje programa i uvažavanje specifičnosti ciljnih grupa. Na taj način se omogućava povezivanje sportskog iskustva sa svakodnevnim životnim kontekstima i transfer stečenih kompetencija u različite životne situacije.

Zaključak: Sport za razvoj predstavlja koherentan metodološki okvir za unapređenje kompetencija dece i mladih, naročito u radu sa osetljivim grupama. Njegova vrednost ogleda se u povezivanju sportskih aktivnosti sa obrazovno-razvojnim ciljevima kroz planski osmišljene, refleksivne i participativne prakse, čime se uspostavlja metodološka osnova za planiranje, sprovođenje i evaluaciju razvojno usmerenih sportskih programa. Buduća istraživanja trebalo bi usmeriti na empirijsku validaciju efekata ovih programa, kao i na identifikaciju mehanizama koji doprinose njihovoj održivosti i efikasnosti u različitim društvenim kontekstima.

Ključne reči: *sport za razvoj, razvoj kompetencija, deca i mladi, životne veštine, participativni pristupi*

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SPORT FOR DEVELOPMENT AS A METHODOLOGICAL FRAMEWORK FOR ENHANCING COMPETENCIES IN CHILDREN AND YOUTH

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Introduction: Sport for Development (S4D) is an interdisciplinary approach that positions sport as a means of achieving social and developmental goals, including social inclusion, education, health, and youth empowerment. It is based on the assumption that pedagogically structured and contextually grounded sport activities can contribute to the development of transferable competencies. Unlike approaches primarily focused on sport performance, S4D emphasises learning processes, developmental outcomes, and the transformative potential of sport experiences.

Aim: The aim of this paper is to analyse the methodological principles of the S4D approach and their implications for developing personal and social competencies in children and youth.

Methods: The paper is based on a review of relevant international literature in sport pedagogy, developmental psychology, and youth work. The analysis focuses on the identification and synthesis of key methodological components, including life skills development, participatory approaches, and experiential and reflective learning within sport programmes.

Results: The findings indicate that effective implementation requires clearly operationalised developmental goals, structured and purposefully designed activities, and a facilitative role of coaches/educators. Key elements include providing a safe and inclusive environment, promoting active participation, cooperation, and responsibility, systematically applying reflective techniques, and adapting programmes to their context and the specific characteristics of target groups. These elements enable sport experiences to be linked with everyday life contexts and support the transfer of acquired competencies to different life situations.

Conclusion: S4D represents a coherent methodological framework for enhancing competencies in children and youth, particularly when working with vulnerable groups. Its value lies in linking sport activities with educational and developmental goals through planned, reflective, and participatory practices, thereby providing a methodological basis for planning, implementing, and evaluating development-oriented sport programmes. Future research should focus on empirical validation of programme effects and identifying mechanisms that contribute to their sustainability and effectiveness across different social contexts.

Keywords: *sport for development, competence development, children and youth, life skills, participatory approaches*

PARTICIPACIJA DEVOJČICA SA INVALIDITETOM U SPORTU I FIZIČKIM AKTIVNOSTIMA

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Uvod: Niska stopa učešća i tendencija odustajanja predstavljaju glavne karakteristike učešća devojčica u sportskim i fizičkim aktivnostima Ovi podaci ukazuju na potrebu da se posebna pažnja posveti učešću devojčica sa invaliditetom.

Cilj: Cilj ovog preglednog rada je analiza literature koja se bavi učešćem devojčica sa invaliditetom u sportskim i fizičkim aktivnostima.

Metode: Kako bi se ostvario postavljeni cilj, pretraga publikacija sprovedena je korišćenjem servisa KoBSON. Konačan rezultat pretrage obuhvatio je 28 radova objavljenih u poslednjih deset godina.

Rezultati: Analiza prethodnih istraživanja pokazala je da je učešće devojčica sa motoričkim invaliditetom ređe u fokusu istraživača, da je fizičko vaspitanje devojčica sa oštećenjem vida obeleženo isključivanjem i diskriminacijom, dok se istraživanja o devojčicama sa oštećenjem sluha u fizičkim i sportskim aktivnostima često usmeravaju na njihovu inferiornost u odnosu na dečake.

Zaključak: Potrebna su istraživanja koja se isključivo usmeravaju na iskustva devojčica u sportskim i fizičkim aktivnostima, posebno u našem regionu.

Ključne reči: *motorički invaliditet, oštećenje vida, oštećenje sluha, fizičke aktivnosti, devojčice*

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PARTICIPATION OF GIRLS WITH DISABILITIES IN SPORTS AND PHYSICAL ACTIVITIES

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Introduction: A low participation rate and a tendency to drop out are the main characteristics of girls' participation in sports and physical activities. This makes it imperative and urgent to address the participation of girls with disabilities.

Aim: The aim of this review is to analyze the literature dealing with the participation of girls with disabilities in sports and physical activities.

Methods: To achieve the objective, the search for publications was conducted using the KoBSON service. The final result of the search consists of 28 articles published in the last ten years.

Results: The analysis of previous studies showed that participation of girls with motor disabilities is less often the focus of researchers, physical education of visually impaired girls was found to be exclusionary and discriminatory, and research on girls with hearing impairments in physical and sporting activities often focuses only on their inferiority compared to boys.

Conclusion: Research that focuses exclusively on girls' experiences of sports and physical activities is needed, especially in our region.

Keywords: *physical disability, visual and hearing impairment, physical activities, girls*

RAZVOJ DISCIPLINE PARA DANCE SPORT: POKAZATELJI RAZVOJA I MEĐUNARODNE ZASTUPLJENOSTI

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Uvod: Para Dance Sport je takmičarska plesna disciplina namenjena osobama sa fizičkim oštećenjima koja utiču na funkciju donjih ekstremiteta. Takmičari nastupaju u različitim kategorijama: u paru sa partnerom bez invaliditeta, u paru koji čine dve osobe u invalidskim kolicima, grupno ili samostalno. Disciplina povezuje sportske, estetske i izražajne elemente i predstavlja značajan oblik inkluzije u plesnom sportu. Iako se Para Dance Sport kontinuirano razvija, pokazatelji njegovog razvoja i međunarodne zastupljenosti nedovoljno su sistematizovani u stručnoj literaturi.

Cilj: Cilj rada je analiza trendova razvoja i internacionalizacije discipline Para Dance Sport kroz promene u broju sportista i zemalja učesnica na svetskim prvenstvima.

Metode: Primenjena je deskriptivna longitudinalna analiza sekundarnih podataka. Kao osnovni indikatori posmatrani su broj sportista i broj zemalja učesnica na svetskim prvenstvima. Podaci su prikupljeni iz dostupnih zvaničnih izvora i sistematizovani prema godini održavanja prvenstva, mestu održavanja, broju sportista i broju zemalja učesnica. Komparativnim prikazom podataka po vremenskim tačkama sagledane su promene u obimu učešća i međunarodnoj zastupljenosti discipline.

Rezultati: Analizom dostupnih podataka utvrđeno je da su broj sportista i broj zemalja učesnica na svetskim prvenstvima u Para Dance Sportu rasli od 1998. godine do danas. Posebno se izdvaja period nakon 2010. godine, kada je zabeležena izraženija međunarodna zastupljenost i kontinuitet učešća većeg broja sportista. Na Svetskom prvenstvu 2019. godine učestvovalo je 225 sportista iz 26 zemalja, dok je 2025. godine prijavljeno gotovo 230 sportista iz 24 zemlje.

Zaključak: Na osnovu analiziranih indikatora može se zaključiti da je Para Dance Sport ostvario značajan razvoj i međunarodno širenje. Rast broja učesnika i zemalja učesnica ukazuje na kontinuiranu internacionalizaciju discipline i njenu sve veću afirmaciju u okviru para sporta na globalnom nivou.

Ključne reči: *para dance sport, ples u invalidskim kolicima, međunarodna zastupljenost, razvoj discipline, para sport*

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DEVELOPMENT OF THE PARA DANCE SPORT DISCIPLINE: INDICATORS OF GROWTH AND INTERNATIONAL REPRESENTATION

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Introduction: Para Dance Sport is a competitive dance discipline for individuals with physical impairments affecting lower-limb function, who compete with a non-disabled partner, with another wheelchair user, in a group, or individually. The discipline combines sporting, aesthetic, and expressive elements and represents an important form of inclusion in dance sport. Indicators of its development and international representation have not been sufficiently systematized in the literature.

Aim: To analyze developmental and internationalization trends in Para Dance Sport through changes in the number of athletes and participating countries at World Championships.

Methods: A descriptive longitudinal analysis of secondary data was applied. The number of athletes and participating countries at World Championships were treated as the basic development indicators, collected from official sources and organized by year, host city, number of athletes, and number of countries.

Results: The number of athletes and countries at Para Dance Sport World Championships increased from 1998 to date, particularly after 2010. At the 2019 World Championship, 225 athletes from 26 countries competed, while in 2025 nearly 230 athletes from 24 countries were registered.

Conclusion: Para Dance Sport has achieved significant development and international expansion, indicating continuous internationalization and growing recognition of the discipline within para sport globally.

Keywords: *Para Dance Sport, wheelchair dance, international representation, discipline development, para sport*

PROMENE KARAKTERISTIKA SNAGE DECE OMETENE U RAZVOJU KOJA TRENIRAJU DŽUDO

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Uvod: Džudo predstavlja sportsku aktivnost koja može značajno doprineti razvoju motoričkih sposobnosti kod dece ometene u razvoju, posebno u domenu snage, koordinacije i funkcionalnih sposobnosti. Za ostvarenje uspešnosti u džudou važna je eksplozivna snaga nogu i snaga mišića trupa.

Metode: Uzorak ispitanika činilo je 40 dece ometene u razvoju, uzrasta od 10 do 13 godina, podeljenih u eksperimentalnu (n=20) i kontrolnu grupu (n=20). Za procenu snage primenjeni su testovi skok udalj iz mesta, za procenu eksplozivne snage nogu i trbušnjaci za 15 sekundi, za procenu repetitivne snage trupa. Eksperimentalna grupa bila je uključena u program džudo treninga, dok je kontrolna grupa imala uobičajene aktivnosti.

Cilj: Cilj ovog istraživanja bio je da se utvrde promene karakteristika snage kod dece ometene u razvoju nakon primene programa džudo treninga.

Rezultati: S obzirom na uzrasne razlike između grupa (kontrolna 13 godina, a eksperimentalna 10 godina) ispitanici kontrolne grupe ostvarili su bolje rezultate u oba testa na inicijalnom merenju (85,00±36,22cm naspram 62,09±30,22cm, odnosno 5,55±3,16 naspram 4,22±2,16 ponavljanja). Nakon primenjenog programa ispitanici eksperimentalne grupe ostvarili su bolje rezultate u skoku udalj i trbušnjacima (71,57±33,35cm i 6,04±2,35 ponavljanja, respektivno) dok kod kontrolne grupe nije bilo poboljšanja. Rezultati komparativne statistike primenom ANOVA sa ponovljenim merenjem ukazuju na statistički značajne razlike kod eksperimentalne grupe ($p<0,001$) čime je pokazan pozitivan efekat treninga na eksplozivnu i repetitivnu snagu.

Zaključak: Rezultati potvrđuju da programiran džudo trening može pozitivno uticati na razvoj snage kod dece ometene u razvoju, što je u skladu sa nalazima prethodnih istraživanja. Na osnovu ovoga može se zaključiti da džudo predstavlja efikasan oblik fizičke aktivnosti za unapređenje snage dece ometene u razvoju, te da može imati važnu ulogu u njihovom fizičkom razvoju, rehabilitaciji i socijalnoj inkluziji.

Ključne reči: *džudo, ometenost u razvoju, eksplozivna snaga, repetitivna snaga*

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CHANGES IN POWER CHARACTERISTICS OF CHILDREN WITH DEVELOPMENTAL DISABILITIES WHO TRAIN JUDO

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Introduction: Judo is a sports activity that can significantly contribute to the development of motor skills in children with developmental disabilities, especially in the areas of strength, power, coordination and functional abilities. Explosive leg power and trunk muscle power are important for achieving success in judo.

Methods: The sample of participants consisted of 40 children with developmental disabilities, aged 10 to 13 years, divided into an experimental (n=20) and a control group (n=20). The standing jump test was used to assess the leg explosive power and the 15-second sit-ups were used to assess repetitive trunk power. The experimental group was included in the judo training program, while the control group had usual activities.

Aim: The objective of this study was to determine changes in power characteristics in children with developmental disabilities after the implementation of the judo training program.

Results: Given the age differences between the groups (control 13 years, and experimental 10 years), the subjects in the control group achieved better results in both tests at the initial measurement in both tests (85.00±36.22cm versus 62.09±30.22cm, or 5.55±3.16 versus 4.22±2.16 repetitions). After the applied program, the subjects of the experimental group achieved better results in the long jump and sit-ups (71.57±33.35 cm and 6.04±2.35 repetitions, respectively), while there was no improvement in the control group. The results of comparative statistics using ANOVA with repeated measures indicate statistically significant differences in the experimental group ($p<0.001$), which shows a positive effect of training on explosive and repetitive power.

Conclusion: The results confirm that programmed judo training can positively influence the development of power in children with developmental disabilities, which is in line with the findings of previous research. Based on this, it can be concluded that judo is an effective form of physical activity for improving the power of children with developmental disabilities, and that it can play an important role in their physical development, rehabilitation and social inclusion.

Keywords: *judo, developmental disability, explosive power, repetitive power*

RAZLIKE U JAČINI STISKA ŠAKE IZMEĐU DECE SA INTELEKTUALNOM OMETENOŠĆU KOJA TRENIRAJU DŽUDO I DECE KOJA NE TRENIRAJU

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Uvod: Jačina stiska šake predstavlja važan indikator funkcionalne jačine ruku i predstavlja jedan od najčešće korišćenih pokazatelja opšteg motoričkog statusa dece i adolescenata. Kod dece sa intelektualnom ometenošću mišićna jačina ima poseban značaj zbog njenog uticaja na svakodnevno funkcionisanje, samostalnost i kvalitet života. Džudo, kao sport koji podrazumeva brojne hvatove, vučenja i kontrolu protivnika, može značajno doprineti razvoju jačine stiska šake i funkcionalnih sposobnosti ruku.

Cilj: Cilj ovog istraživanja bio je da se utvrde razlike u jačini stiska šake između dece sa intelektualnom ometenošću koja treniraju džudo i dece koja nisu uključena u organizovani sportski trening.

Metode: Uzorak ispitanika predstavlja 40 dece sa intelektualnom ometenošću podeljenih u eksperimentalnu (n=20; uzrast 10,0 godina) i kontrolnu grupu (n=20; uzrast 13,0 godina). Ispitanici su praćeni kroz dva merenja, inicijalno i finalno, pri čemu je jačina stiska šake procenjivana posebno za levu i desnu ruku pomoću dinamometra.

Rezultati: Na inicijalnom merenju eksperimentalna grupa, u kojoj su mlađi ispitanici, ostvarila je prosečno niže vrednosti za levu i desnu ruku, u odnosu na ispitanike kontrolne grupe. Rezultati dobijeni primenom ANOVA sa ponovljenim merenjem pokazuju da postoji značajna razlika između grupa na inicijalnom merenju, što je posledica razlika u uzrastu. Međutim, nakon finalnog merenja uočene su statistički značajne razlike kod eksperimentalne grupe ($p<0,001$) kod koje je došlo do povećanja jačine stiska obe šake, dok kod kontrolne grupe nisu uočene statistički značajne razlike ($p=0,23-0,40$). Ovi nalazi su u skladu sa prethodnim istraživanjima koja ukazuju da specifični zahtevi džudoa, zasnovani na kontinuiranoj upotrebi različitih hvatova i vučnih aktivnosti, doprinose razvoju jačine podlaktice i šake.

Zaključak: Pozitivne promene uočene kod eksperimentalne grupe potvrđuju značaj uključivanja dece sa intelektualnom ometenošću u adekvatno programirane sportske aktivnosti, odnosno da džudo trening predstavlja efikasno sredstvo za razvoj funkcionalne jačine ruku dece ometene u razvoju i da primena džudoa može da doprinese unapređenju njihovih motoričkih sposobnosti.

Ključne reči: *džudo, mentalna ometenost, dinamometrija šake, motoričke sposobnosti*

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DIFFERENCES IN GRIP STRENGTH BETWEEN CHILDREN WITH INTELLECTUAL DISABILITIES WHO TRAIN JUDO AND CHILDREN WHO DO NOT TRAIN

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Introduction: Hand grip strength is an important indicator of functional hand strength and is one of the most common used indicators of the general motor status of children and adolescents. In children with intellectual disabilities muscle strength is of particular importance due to its influence on daily functioning, independence and quality life. Judo, as a sport that involves numerous grips, pulls and control of the opponent, can contribute significantly development of hand grip strength and functional abilities of the hands.

Aim: The aim of this research was to determine the differences in hand grip strength between children with intellectual disabilities who train judo and children who are not involved in organized sports training.

Methods: The sample of respondents represents 40 children with intellectual disabilities divided into experimental (n=20; age 10.0 years) and the control group (n=20; age 13.0 years). The subjects were monitored through two measurements, initially and finally, hand grip strength was assessed separately for the left and right hand using a dynamometer.

Results: At the initial measurement, the experimental group, in which there are younger subjects, achieved an average lower score values for the left and right hand, in relation to the subjects of the control group. Results obtained using ANOVA with repeated measurements show that there is a significant difference between the groups at the initial measurement, which is a consequence age difference. However, after the final measurement, statistically significant differences were observed with the experimental one group ($p<0.001$) in which there was an increase in the grip strength of both hands, while in the control group no statistically significant differences ($p=0.23-0.40$). These findings are consistent with previous research indicating that the specific demands of judo, based on the continuous use of various grips and pulling activities, contribute development of forearm and hand strength.

Conclusions: The positive changes observed in the experimental group confirm the importance of including children with intellectual disability in adequately programmed sports activities, i.e. that judo training represents an effective tool for developing the functional strength of the hands of developmentally disabled children and that the application of judo can contribute to the improvement of their motor skills.

Keywords: *judo, mental retardation, hand dynamometry, motor abilities*

PERCEPCIJA ODRASLIH OSOBA SA INVALIDITETOM O UČEŠĆU U FIZIČKIM AKTIVNOSTIMA – PREGLED LITERATURE

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Uvod: Redovna fizička aktivnost ima značajnu ulogu u očuvanju zdravlja, mentalnog blagostanja i socijalnog funkcionisanja odraslih osoba sa invaliditetom. Razumevanje iskustava odraslih osoba sa invaliditetom o učešću u fizičkim aktivnostima može pružiti značajne informacije za delovanje u skladu sa njihovim interesovanjima i potrebama.

Cilj: Cilj rada je bio da se na temelju teorijske analize utvrde faktori koji, prema mišljenju osoba sa invaliditetom, predstavljaju prepreke ili im olakšavaju učešće u fizičkim aktivnostima.

Metode: U radu je primenjen sistemski, konfigurativni pregled. Analizirani su naučni radovi relevantni za istraživanje, objavljeni u poslednjih 20 godina, dostupni u elektronskim bazama časopisa.

Rezultati: Analizom 23 naučna rada (12 istraživačkih studija, 9 kvalitativnih studija i dve studije sa kombinovanim metodama) utvrđeno je da osobe sa invaliditetom imaju nizak nivo fizičke aktivnosti, pri čemu su osobe sa senzornim oštećenjima fizički aktivnije i nailaze na manje barijera u odnosu na osobe sa fizičkim invaliditetom i intelektualnim smetnjama. Kao najčešće barijere za bavljenje fizičkim aktivnostima, navođeni su faktori poput nepristupačnosti sportsko-rekreativnih objekata, nedovoljne prilagođenosti programa i sadržaja fizičkih aktivnosti, negativnih stavova okruženja i finansijskih izazova. Uprkos postojećim barijerama, faktori koji olakšavaju učešće u fizičkim aktivnostima su poboljšanje zdravstvenog blagostanja, unutrašnja motivacija i socijalna podrška.

Zaključak: Nivo učešća u fizičkim aktivnostima kod osoba sa invaliditetom zavisi od višestrukog i međusobno povezanog skupa prepreka i olakšavajućih faktora. Prvenstveno treba delovati na njihovu motivaciju za učešće u fizičkim aktivnostima. Pored toga, kreiranje ciljanih i sveobuhvatnih programa fizičkih aktivnosti za odrasle osobe sa invaliditetom preporučuje se kao značajan mehanizam za prevazilaženje barijera i ostvarivanje kvalitetnijih i inkluzivnijih uslova za učešće u fizičkim aktivnostima.

Ključne reči: *osobe sa invaliditetom, fizička aktivnost, barijere, motivi*

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PERCEPTIONS OF ADULTS WITH DISABILITIES ABOUT PARTICIPATION IN PHYSICAL ACTIVITIES – LITERATURE REVIEW

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Introduction: Regular physical activity plays a significant role in preserving the health, mental well-being and social functioning of adults with disabilities. Understanding the experiences of adults with disabilities regarding participation in physical activities can provide important information for responding appropriately to their interests and needs.

Aim: The objective of the paper was to determine, based on a theoretical analysis, the factors that, according to the views of persons with disabilities, represent obstacles to or facilitators of their participation in physical activities.

Method: A systematic, configurational review was applied. Scientific papers relevant to the research, published in the last 20 years and available in electronic journal databases, were analysed.

Results: An analysis of 23 scientific papers (12 research studies, nine qualitative studies and two studies using mixed methods) found that people with disabilities have a low level of physical activity, while people with sensory impairments are more physically active and encounter fewer barriers than people with physical disabilities and intellectual disabilities. Factors such as the inaccessibility of sports and recreational facilities, insufficient adaptation of the programmes and content of physical activities, negative attitudes in the environment and financial challenges were cited as the most common barriers to engaging in physical activities. Despite existing barriers, factors that facilitate participation in physical activities include improved health and well-being, intrinsic motivation, and social support.

Conclusion: The level of participation in physical activities among persons with disabilities depends on multiple, interconnected barriers and facilitating factors. It is therefore essential to address their motivation to participate in physical activities. In addition, the creation of targeted and comprehensive physical activity programmes for adults with disabilities is recommended as an important mechanism for overcoming barriers and achieving better and more inclusive conditions for participation in physical activities.

Keywords: *people with disabilities, physical activity, barriers, motives*

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GOVOR, JEZIK I KOMUNIKACIJA: OD PROCENE DO TERAPIJE

SPEECH, LANGUAGE AND COMMUNICATION: FROM ASSESSMENT TO THERAPY

VERBALNA PRODUKCIJA IMENICA I GLAGOLA KOD OSOBA SA BROKINOM I TRANSKORTIKALNOM MOTORNOM AFAZIJOM

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Uvod: Jedan od karakterističnih simptoma većine klasičnih afazičkih sindroma jeste teškoća u pronalaženju leksičkih jedinica. Pokazano je da osobe sa Brokinom i transkortikalnom motornom afazijom imaju veće teškoće pri verbalnoj produkciji glagola nego imenica.

Cilj: Cilj ovog rada jeste detaljniji prikaz sposobnosti verbalne produkcije imenica i glagola kod osoba sa Brokinom i transkortikalnom motornom afazijom.

Metode: Pretraga relevantne literature izvršena je na osnovu baza naučno istraživačkih radova PubMed, KoBSON, ScienceDirect, Google Scolar, kao i radova dostupnih u papirnoj verziji. Analizirani su radovi objavljeni u periodu od 2000. godine do danas, koji su posvećeni sposobnosti verbalne produkcije imenica i glagola kod osoba sa Brokinom i transkortikalnom motornom afazijom.

Rezultati: Rezultati pokazuju da osobe sa Brokinom afazijom, ali i osobe sa transkortikalnom motornom afazijom ispoljavaju značajno veće teškoće pri produkciji glagola nego imenica. Nešto bolja sposobnost produkcije imenica je prisutna prilikom zadataka konfrontacionog imenovanja nego tokom narativnog diskursa. Verbalna produkcija glagola kod ova dva afazička sindroma zavisi od vrste glagola, i tipa zadatka. Pacijenti ispoljavaju najveće teškoće pri produkciji tranzitivnih glagola. Teškoće u produkciji glagola uočavaju se kako tokom diskursa, tako i na zadacima konfrontacionog imenovanja.

Zaključak: Zaključeno je da teškoće u produkciji imenica i glagola predstavljaju značajan aspekt kliničke slike Brokine i transkortikalne motorne afazije.

Ključne reči: *Brokina afazija, transkortikalna motorna afazija, verbalna produkcija, imenice, glagoli*

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NOUN AND VERB PRODUCTION IN INDIVIDUALS WITH BROCA'S AND TRANSCORTICAL MOTOR APHASIA

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Introduction: One of the characteristic symptoms of most classical aphasic syndromes is the difficulty in retrieving lexical items. It has been shown that people with Broca's and transcortical motor aphasia have more difficulties in the verbal production of verbs than nouns.

Aim: The objective of this work is a more detailed presentation of the ability to verbally produce nouns and verbs in people with Broca's and transcortical motor aphasia.

Methods: The search of relevant literature was performed with the use of scientific research databases PubMed, KoBSON, ScienceDirect, Google Scholar, as well as publications available in paper version. Papers published in the period from 2000 to present, which are devoted to the ability of verbal production of nouns and verbs in people with Broca's and transcortical motor aphasia, were analyzed.

Results: The results show that people with Broca's aphasia, as well as people with transcortical motor aphasia, exhibit significantly greater difficulties in the production of verbs than nouns. A slightly better ability to produce nouns is present during confrontation naming tasks than during narrative discourse. The verbal production of verbs in these two aphasic syndromes depends on the type of verb and the type of task. Patients show the greatest difficulties in the production of transitive verbs. Difficulties in verb production are observed both during discourse and in confrontation naming tasks.

Conclusion: It was concluded that difficulties in the production of nouns and verbs represent a significant aspect of the clinical presentation of Broca's and transcortical motor aphasia.

Keywords: *Broca's aphasia, transcortical motor aphasia, verbal production, nouns, verbs*

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PROCENA U LOGOPEDSKOJ PRAKSI – AKTUELNI TRENDOVI

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Uvod: U zavisnosti od karakteristika procedura i načina nihove upotrebe, procena se može podeliti na formalnu i neformalnu. Kako bi se dobila potpunija slika o sposobnostima deteta/osoba i njihovo funkcionisanje u različitim kontekstima, preporučuje se korišćenje i formalnih i neformalnih procedura procene tako da se međusobno dopunjuju.

Cilj: Cilj je bio ispitati koje vrste procene logopedi najčešće koriste u svojoj praksi, kao i da li postoje razlike u odabiru u odnosu na tip ustanove u kojoj su zaposleni.

Metode: Uzorak je obuhvatao 31 logopeda zaposlenog u različitim tipovima ustanova (ustanove zdravstvene i socijalne zaštite, vaspitno-obrazovne ustanove i privatni sektor). Najveći procenat logopeda (25,8%) zaposlen je u vaspitno-obrazovnim, a najmanji (6,5%) u ustanovama zdravstvene zaštite. Podaci su prikupljani putem onlajn ankete koja je obuhvatala pitanja vezana za demografske podatke i iskustva u vezi sa vršenjem procene u praksi.

Rezultati: Dobijeni rezultati ukazuju na to da 54,8% logopeda u svojoj praksi najčešće koristi neformalne procedure procene, dok formalne procedure u svojoj praksi koristi 45,2% logopeda. Nije uočena statistički značajna povezanost između tipa ustanove u kojoj su logopedi zaposleni i odabira procedura procene.

Zaključak: Rezultati ukazuju na češće korišćenje procedura neformalne procene u logopedskoj praksi, ali i na potrebu za većom dostupnošću standardizovanih instrumenata i obuka za njihovo korišćenje. Iako nije ustanovljena statistički značajna povezanost između vrste ustanove u kojoj je stručnjak zaposlen i odabira procedura procene, važno je obezbediti institucionalnu podršku kako bi se unapredila praksa procene u logopediji.

Ključne reči: *formalna procena, neformalna procena, logopedska procena, tip ustanove*

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ASSESSMENT IN SPEECH THERAPY PRACTICE – CURRENT TRENDS

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Introduction: Depending on the characteristics of the procedures and the way they are used, assessment can be divided into formal and informal. To get a more complete picture of a child/person's abilities and functioning in different contexts, it is recommended to use both formal and informal assessment procedures, so they complement each other.

Aim: The objective was to examine which types of assessment speech therapists most often use in practice, as well as whether selection differs by the type of institution where they are employed.

Methods: The sample included 31 speech therapists employed in different types of institutions (health and social care institutions, educational institutions and the private sector). The largest percentage of speech therapists (25.8%) is employed in educational institutions, and the smallest (6.5%) in health care institutions. Data were collected through an online survey that included questions on demographic data and assessment experiences in practice.

Results: The results indicate that 54.8% of speech therapists use informal assessment procedures in practice, while 45.2% use formal procedures. No statistically significant association was observed between the type of institution where speech therapists are employed and the selection of assessment procedures.

Conclusion: The results indicate a more frequent use of informal assessment procedures in speech therapy practice, but also the need for greater availability of standardized instruments and training for their use. Although no statistically significant association was found between the type of institution where the expert is employed and the selection of assessment procedures, institutional support is important to improve assessment practice in speech therapy.

Keywords: *formal assessment, informal assessment, speech therapy assessment, type of institution*

OD SIMPTOMA DO FUNKCIJE U INTEGRATIVNOJ PROCENI OROFACIJALNE REGIJE

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Uvod: Orofacijalna regija predstavlja funkcionalno povezan sistem u kome položaj i pokretljivost oralnih struktura, mišićni tonus, senzorna obrada i motorna kontrola učestvuju u disanju, hranjenju, žvakanju, gutanju i govoru. Isti govorni simptom ne mora imati istu funkcionalnu osnovu kod svakog deteta, zbog čega procena treba da obuhvati i funkcionalni kontekst u kome se simptom javlja.

Cilj: Cilj rada bio je da se opišu orofacijalni nalazi kod dece različitih govorno-jezičkih i razvojnih profila i razmotri klinički značaj integrativne procene orofacijalne regije pri određivanju terapijskih prioriteta.

Metode: Sprovedena je retrospektivna deskriptivna analiza podataka iz procenskih lista 63 dece uzrasta od 1,5 do 12 godina tokom dvanaestomesečnog perioda. Kod sve dece primenjena je ista klinička baterija procene, sa istim domenima i kriterijumima beleženja nalaza; kod jednog deteta moglo je biti registrovano više odstupanja. Podaci su prikazani frekvencijama i procentima.

Rezultati: Najbrojnija su bila deca sa kašnjenjem govorno-jezičkog razvoja, 19 (30,2%), artikulacionim teškoćama, 14 (22,2%), i poremećajem iz spektra autizma, 11 (17,5%). Najzastupljeniji orofacijalni nalaz bio je atipičan položaj jezika, 26 (41,3%), zatim odstupanje mandibularne kontrole, 10 (15,9%), odstupanje mišićnog tonusa, 9 (14,3%), senzorne teškoće, 8 (12,7%), i oralno ili mešovito disanje, 7 (11,1%).

Zaključak: Rezultati ukazuju da orofacijalni nalaz treba tumačiti u odnosu na funkciju i celokupan govorno-jezički i razvojni profil deteta. Integrativna procena omogućava prelazak sa izolovanog simptoma ka sagledavanju njegove moguće funkcionalne osnove i može doprineti preciznijem određivanju terapijskih prioriteta.

Ključne reči: *orofacijalna procena, orofacijalna funkcija, govorni poremećaji, senzomotorna kontrola, terapijski prioriteti*

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FROM SYMPTOM TO FUNCTION IN INTEGRATIVE OROFACIAL ASSESSMENT

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Introduction: The orofacial region is a functionally interconnected system in which the position and mobility of oral structures, muscle tone, sensory processing, and motor control contribute to breathing, feeding, chewing, swallowing, and speech. The same speech symptom may have a different functional basis in different children; therefore, assessment should consider the functional context in which it occurs.

Aim: To describe orofacial findings in children with different speech, language, and developmental profiles and examine the clinical significance of integrative orofacial assessment in determining treatment priorities.

Methods: A retrospective descriptive analysis was conducted using assessment records of 63 children aged 1.5 to 12 years over a 12-month period. The same clinical assessment battery, with identical domains and criteria for recording findings, was applied to all children; more than one orofacial deviation could be recorded in the same child. Data were presented as frequencies and percentages.

Results: The largest groups were children with delayed speech and language development, 19 (30.2%), articulation difficulties, 14 (22.2%), and autism spectrum disorder, 11 (17.5%). The most frequent orofacial finding was atypical tongue posture, 26 (41.3%), followed by deviations in mandibular control, 10 (15.9%), muscle tone, 9 (14.3%), sensory difficulties, 8 (12.7%), and oral or mixed breathing, 7 (11.1%).

Conclusion: Orofacial findings should be interpreted in relation to function and the child's overall speech, language, and developmental profile. Integrative assessment supports a shift from an isolated symptom toward its possible functional basis and may contribute to more precise treatment priorities.

Keywords: *orofacial assessment, orofacial function, speech disorders, sensorimotor control, treatment priorities*

INTEGRACIJA DIGITALNIH TERAPIJSKIH ZADATAKA I ODLOŽENE AUDITIVNE POVRATNE INFORMACIJE U TRETMAN MUCANJA KOD DECE

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Uvod: Mucanje predstavlja poremećaj fluentnosti govora koji može uticati na svakodnevnu komunikaciju i učešće deteta u socijalnim situacijama. Savremena logopedska praksa prepoznaje značaj digitalnih sadržaja koji mogu povećati motivaciju dece za rad i unaprediti dostupnost terapijskih aktivnosti. Poseban izazov predstavlja kreiranje sadržaja koji prate terapijske principe i odgovaraju interesovanjima dece različitog uzrasta.

Cilj: Cilj rada je predstavljanje koncepta i strukture novih digitalnih zadataka namenjenih tretmanu mucanja, kreiranih u okviru logopedske aplikacije Mobilić, kao i mogućnosti njihove primene uz odloženu auditivnu povratnu informaciju.

Metode: Kreiran je set digitalnih zadataka zasnovan na principima postepenosti i hijerarhijske organizacije terapijskih sadržaja. Zadaci su realizovani kroz animirane likove prilagođene dečjem uzrastu, animirane pesme i auditivno-vizuelno vođene aktivnosti. Sadržaji su organizovani kroz nivoe složenosti i obuhvataju vežbe pravilnog, dijafragmalnog (abdominalnog) disanja, relaksacije i smanjenja telesne napetosti, ritmizacije govora, koordinacije disanja i govora, kao i zadatke strukturisanog i spontanog govornog izražavanja. Aktivnosti su praćene vizuelnim prikazima i instrukcijama logopeda. Zadaci se mogu primenjivati samostalno ili uz korišćenje programa za digitalnu obradu govora. Pojedini sadržaji uključuju roditelje radi primene usvojenih tehnika u svakodnevnoj komunikaciji.

Rezultati: Razvijen je digitalni terapijski modul zasnovan na postepenom usvajanju veština značajnih za tretman mucanja. Zadaci su organizovani od vežbi disanja i relaksacije, preko ritmičkih i strukturisanih govornih aktivnosti, do zadataka koji podstiču spontano govorno izražavanje i razvoj komunikacione sigurnosti. Modul omogućava primenu sa ili bez dodatne auditivne podrške.

Zaključak: Integracija digitalnih terapijskih zadataka i odložene auditivne povratne informacije predstavlja savremen pristup logopedskom radu sa decom koja mucaju. Struktura zadataka omogućava primenu u terapijskom procesu i kućnim uslovima, uz aktivno uključivanje roditelja u proces vežbanja.

Ključne reči: *mucanje, digitalna logopedija, fluentnost govora, odložena auditivna povratna informacija, Mobilić*

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INTEGRATION OF DIGITAL THERAPEUTIC TASKS AND DELAYED AUDITORY FEEDBACK INTO THE TREATMENT OF STUTTERING IN CHILDREN

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Introduction: Stuttering is a speech fluency disorder that can affect a child's everyday communication and social participation. Contemporary speech-language pathology recognizes the value of digital content for increasing children's motivation and improving access to therapeutic activities. A particular challenge is developing content that follows therapeutic principles and appeals to children of different ages.

Aim: This paper presents the concept and structure of new digital tasks for stuttering treatment, developed within the Mobilić speech therapy application, and their potential use with delayed auditory feedback.

Methods: A set of digital tasks was created according to the principles of gradual progression and hierarchical organization of therapeutic content. Using age-appropriate animated characters, songs, and audiovisual guidance, the content progresses across levels of complexity and includes proper and diaphragmatic (abdominal) breathing, relaxation and reduction of bodily tension, speech rhythm, breathing–speech coordination, and structured and spontaneous speech. Activities include visual displays and instructions from a speech-language pathologist. Tasks can be used alone or with digital speech-processing software. Some activities involve parents in applying acquired techniques in everyday communication.

Results: A digital therapeutic module was developed to support gradual acquisition of skills relevant to stuttering treatment. Tasks progress from breathing and relaxation exercises, through rhythmic and structured speech activities, to tasks encouraging spontaneous speech and communication confidence. The module can be used with or without additional auditory support.

Conclusion: Integrating digital therapeutic tasks and delayed auditory feedback represents a contemporary approach to speech therapy for children who stutter. The task structure supports use in therapy and at home, with parents actively involved in practice.

Keywords: *stuttering, digital speech-language pathology, speech fluency, delayed auditory feedback, Mobilić*

BODY-MEDIATED LANGUAGE DEVELOPMENT MODEL IN CHILDREN WITH DEVELOPMENTAL LANGUAGE DISORDER: A PSYCHOMOTOR PERSPECTIVE

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Introduction: Developmental Language Disorder (DLD), previously referred to as Specific Language Disorder (SLD), is a neurodevelopmental condition characterized by persistent difficulties in language acquisition and use, significantly affecting communication, learning and social participation. Contemporary research increasingly demonstrates that language difficulties extend beyond linguistic functioning and are closely associated with impairments in motor organization, body schema, executive functions, emotional regulation and interpersonal relationships.

Aim: The aim of this paper is to introduce the Body-Mediated Language Development Model (BMLD Model), a theoretical framework that conceptualizes language acquisition as an embodied and relational developmental process emerging through the dynamic interaction of psychomotor, emotional, cognitive and social functions. Developed within the theoretical framework of psychomotor reeducation and the integrative approach implemented at the Center for Speech and Early Intervention Dr Nestorov and the Institute for Psychomotor Reeducation, the model understands language not as an isolated cognitive function but as the developmental outcome of bodily experience, movement organization, affective attunement and interpersonal interaction.

Results: The BMLD Model is founded on Professor Svetomir Bojanin’s concept of the tonic-emotional dialogue, which describes the infant’s earliest communication with the caregiver through reciprocal modulation of muscle tone and emotional exchange. This primary relational experience constitutes the developmental foundation upon which psychomotor organization progressively evolves through sensory-motor integration, body schema, spatial-temporal orientation, emotional regulation, joint attention, symbolic play, communication and ultimately language. Within this perspective, movement is regarded as the developmental domain that integrates sensory, motor, cognitive and linguistic functions, while affectivity represents the motivational force that initiates and organizes developmental change.

The proposed model integrates theoretical and empirical knowledge from developmental neuroscience, developmental psychology, embodied cognition, psychomotor theory and contemporary research on Developmental Language Disorder with the principles of psychomotor reeducation established by Professor Svetomir Bojanin and further

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developed within the French psychomotor tradition, particularly at the Institut Supérieur de Rééducation Psychomotrice (ISRP), Paris.

The originality of the BMLD Model lies in explicitly describing the developmental mechanisms linking psychomotor organization with language acquisition. Unlike intervention models primarily focused on linguistic performance, the proposed framework positions psychomotor development – and particularly the tonic-emotional dialogue – as the developmental substrate from which communication and language emerge. By providing a coherent interdisciplinary framework for assessment and intervention, the model offers a novel perspective for understanding and supporting children with Developmental Language Disorder.

Conclusion: The proposed framework highlights the reciprocal relationship between movement, affective regulation and language development, supporting psychomotor reeducation as a complementary therapeutic modality that contributes not only to linguistic competencies but also to social participation, adaptive functioning and quality of life.

Keywords: *developmental language disorder, psychomotor reeducation, Body-mediated language development model, tonic-emotional dialogue, embodied cognition, affective regulation, sensory-motor integration*

EVALUATING A RAPID AUDITORY TONE DISCRIMINATION TASK IN STUDENTS WITH DEVELOPMENTAL DYSLEXIA

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Introduction: Developmental dyslexia has been associated with deficits in auditory processing across both temporal and frequency domains. These deficits extend beyond speech perception to non-linguistic auditory processing and may lead to unstable phonological representations. They have also been associated with phonological skills, working memory, and reading outcomes.

Aim: This study examined performance in a rapid auditory tone discrimination task and its associations with selected cognitive measures related to dyslexia.

Methods: The study used a quasi-experimental repeated-measures design with 42 Slovenian students aged 12–13, including 21 with developmental dyslexia and 21 typically developing peers. Participants completed six auditory tone discrimination sessions over two weeks and assessments of reading fluency, phonological awareness, verbal working memory, and picture naming speed. Group differences were analysed using Mann–Whitney U tests and t-tests, and associations using Spearman’s rho.

Results: High accuracy was observed in the auditory tone discrimination task, with minimal improvement across trials and no significant group differences, with small effect sizes. Statistical power was low (0.07–0.43). In the dyslexia group, performance was strongly associated with verbal working memory (r_s=0.71, p=0.001), while no significant associations were observed in typically developing peers.

Conclusion: The task showed limited sensitivity to group differences but was strongly related to verbal working memory among students with dyslexia, suggesting its relevance for dyslexia assessment. More sensitive tasks and larger samples are needed to confirm these findings.

Keywords: *developmental dyslexia, auditory processing, tone discrimination, verbal working memory*

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KOMORBIDITET POREMEĆAJA SENZORNE INTEGRACIJE I MOTORIČKIH POREMEĆAJA GOVORA

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Uvod: Govorna produkcija je visokospecijalizovano motoričko ponašanje koje uključuje precizno koordinisane pokrete mišića artikulatora, a oslanja se na integraciju senzornih povratnih informacija u govorne motoričke sisteme.

Cilj: S obzirom na mogućnost komorbidne prezentacije poremećaja senzorne integracije i motoričkih poremećaja govora, svrha ovog preglednog rada je dvostruka: 1) da se ispitaju perspektive motoričkih poremećaja govora (dizartrije i dečje govorne apraksije) i poremećaja senzorne integracije u vezi sa komorbidnom prezentacijom i 2) da se razumeju percepcije ovih poremećaja kako bi se unapredio klinički rad logopeda i poboljšao kvalitet života porodica dece sa motoričkim poremećajima govora.

Metode: Pri pregledu literature pretraga je obavljena preko pretraživača Google Scholar Advanced Search i Konzorcijuma biblioteka Srbije za objedinjenu nabavku – KoBSON.

Rezultati: Istraživanja pokazuju da loša motorna kontrola artikulacionih mišića kod dizartrije često dovodi do hipersalivacije i nestabilnosti vilice (nehotično ispuštanje vilice). Proprioceptivna i vestibularna obrada, takođe mogu biti narušene, što dodatno narušava kvalitet govora. Deficiti senzorne obrade utiču na sposobnost izvođenja finih, kinetičkih kretanja koji su karakteristična simptomatologija dečje govorne apraksije. Ovo utiče na sposobnost razumevanja govora od strane okoline kod dece sa govornom apraksijom. Decu sa apraksijom često karakteriše i nemogućnost da imitiraju oralni pokret što u korelaciji sa povećanom senzornom osetljivošću dodatno narušava uspešnost tokom izvođenja oralnih pokreta.

Zaključak: Motorički poremećaji govora se retko javljaju kao izolovani poremećaj i mogu imati simptomatologiju koja odražava poremećaje senzorne obrade. Na osnovu toga možemo zaključiti da je od velike važnosti da logopedi koji rade sa motoričkim poremećajima govora pristupaju holistički, jačajući funkcije senzomotorne obrade.

Ključne reči: *poremećaji senzorne integracije, motorički poremećaji govora, dizartrija, apraksija, kvalitet života*

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COMORBIDITY OF SENSORY INTEGRATION DISORDERS AND MOTOR SPEECH DISORDERS

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Introduction: Speech production is a highly specialized motor behavior that involves precisely coordinated movements of the articulatory muscles, and relies on the integration of sensory feedback into speech motor systems.

Aim: Given the possibility of comorbid presentation of sensory integration disorders and motor speech disorders, the purpose of this review is twofold: 1) to examine the perspectives of motor speech disorders (dysarthria and childhood speech apraxia) and sensory integration disorders in relation to comorbid presentation and 2) to understand the perceptions of these disorders in order to improve the clinical work of speech therapists and improve the quality of life of families of children with motor speech disorders.

Methods: During the review of the literature, the search was performed using Google Scholar Advanced Search and the Consortium of Serbian Libraries for Unified Procurement – KoBSON.

Results: Research shows that poor motor control of articulatory muscles in dysarthria often leads to hypersalivation and jaw instability (involuntary jaw dropping). Proprioceptive and vestibular processing can also be impaired, which further impairs the quality of speech. Deficits in sensory processing affect the ability to perform fine, kinetic movements that are a characteristic symptom of childhood apraxia of speech. This affects the ability to understand speech from the environment in children with apraxia of speech. Children with apraxia are often characterized by the inability to imitate oral movements, which, in correlation with increased sensory sensitivity, further impairs success during the performance of oral movements.

Conclusion: Motor speech disorders rarely occur as an isolated disorder and may have symptomatology that reflects sensory processing disorders. Based on this, we can conclude that it is of great importance that speech therapists working with motor speech disorders approach holistically, strengthening the functions of sensorimotor processing.

Keywords: *sensory integration disorders, motor speech disorders, dysarthria, apraxia, quality of life*

DECA I MLADI U RIZIKU: OD PREVENCIJE DO INTERVENCIJE

CHILDREN AND YOUTH AT RISK: FROM PREVENTION TO INTERVENTION

TRANZICIONA PODRŠKA MLADIMA NAKON NAPUŠTANJA ALTERNATIVNOG STARANJA: KONCEPTUALIZACIJA INTEGRISANOG PRISTUPA

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Uvod: U Republici Srbiji postoji razvijen normativni okvir u oblasti socijalne zaštite i prevencije socijalne isključenosti, ali podrška mladima nakon napuštanja alternativnog staranja nije sistemski uređena kroz jedinstven i koherentan pristup, već se realizuje kroz parcijalna prava i usluge ograničenog trajanja i obuhvata. Ovakva organizacija ukazuje na postojanje strukturne praznine između sistema alternativnog staranja i samostalnog života, koja povećava rizik od nepovoljnih ishoda tranzicije.

Cilj: Cilj rada je da analizira ograničenja postojećih oblika podrške mladima nakon napuštanja alternativnog staranja i da, kroz primenu integrativnog analitičkog okvira, konceptualizuje tranzicionu podršku kao integrisani pristup koji može predstavljati osnovu za razvoj posebne usluge u okviru sistema socijalne zaštite.

Metode: Rad je zasnovan na konceptualno-analitičkom pristupu i interpretativnoj sintezi relevantne međunarodne i nacionalne naučne i stručne literature. Analiza je vođena principima tematske analize, uz fokus na tri međusobno povezane dimenzije podrške: vremensku (kontinuitet), strukturnu (međusektorska integracija) i normativno-programsku (postojanje definisanih usluga i standarda).

Rezultati: Nalazi ukazuju na izražen jaz između normativnog okvira i organizacije podrške u praksi, koji se manifestuje kroz diskontinuitet nakon izlaska iz sistema socijalne zaštite, nedovoljnu povezanost između sektora i izostanak sveobuhvatnosti postojećih rešenja. Ova ograničenja ne javljaju se izolovano, već čine obrazac sistemske fragmentacije u tranzicionom periodu. Na osnovu ovih nalaza, tranziciona podrška konceptualizuje se kao pristup koji objedinjuje kontinuitet podrške, međusektorsku koordinaciju i jasno definisane usluge i standarde.

Zaključak: Unapređenje odgovora sistema na potrebe mladih u tranziciji zahteva razvoj integrisanog pristupa koji obezbeđuje kontinuitet, koordinaciju i dugoročnu usmerenost intervencija. Tranziciona podrška se u tom kontekstu može razumeti kao konceptualna osnova za normativno utemeljenje posebne usluge u okviru sistema socijalne zaštite, usmerene na koordinisano i kontinuirano vođenje procesa osamostaljivanja radi unapređenja socijalne uključenosti i ostvarivanja povoljnijih razvojnih ishoda mladih.

Ključne reči: *tranziciona podrška, mladi koji napuštaju sistem alternativnog staranja, tranzicija u odraslo doba, socijalna zaštita, socijalna uključenost*

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TRANSITIONAL SUPPORT FOR YOUNG PEOPLE LEAVING ALTERNATIVE CARE: TOWARD AN INTEGRATED FRAMEWORK

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Introduction: The Republic of Serbia has a well-developed regulatory framework in social protection and the prevention of social exclusion. However, support for young people leaving alternative care is not systematically organised through a coherent approach, but is provided through fragmented entitlements and services of limited duration and coverage. This creates a structural gap between alternative care and independent living, increasing the risk of adverse transition outcomes.

Aim: This paper analyses the limitations of existing support for young people leaving alternative care and conceptualises transitional support as an integrated approach that could provide a basis for developing a distinct service within the social protection system.

Methods: The paper adopts a conceptual-analytical approach and an interpretative synthesis of relevant international and national academic and professional literature. The analysis focuses on three interconnected dimensions of support: temporal (continuity), structural (cross-sectoral integration), and normative and programmatic (defined services and standards).

Results: The findings indicate a gap between the regulatory framework and the organisation of support in practice, reflected in discontinuity after leaving alternative care, insufficient cross-sectoral coordination, and the limited comprehensiveness of existing arrangements. Together, these limitations form a pattern of systemic fragmentation during the transition period. Transitional support is therefore conceptualised as an approach integrating continuity of support, cross-sectoral coordination, and clearly defined services and standards.

Conclusion: Improving support for young people in transition requires an integrated approach ensuring continuity, coordination, and a long-term orientation. Transitional support may provide a conceptual basis for establishing a distinct social protection service aimed at coordinating and continuously supporting the transition to independent living, thereby enhancing social inclusion and promoting more favourable developmental outcomes.

Keywords: *transitional support, care leavers, transition to adulthood, social protection, social inclusion*

PRISTUPI I TEHNIKE U RADU SA DECOM SA PROBLEMIMA PONAŠANJA U OKVIRU USLUGE SMEŠTAJA U PRIHVATILIŠTE

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Uvod: Imajući u vidu sve veći broj dece i adolescenata kod kojih se ispoljavaju problemi u ponašanju, značajno je ispitati stručne pristupe i postupke koji se primenjuju u radu sa ovom populacijom. Poseban značaj imaju multidisciplinarni i rehabilitativni pristupi usmereni na podršku dobrobiti dece i odgovaranje na njihove razvojne, emocionalne i socijalne potrebe.

Cilj: Cilj rada je da se analizom dokumentacije korisnika identifikuju i opišu pristupi, tehnike i stručni postupci koji se primenjuju u radu sa decom i adolescentima sa problemima u ponašanju tokom boravka u Prihvatilištu za decu Beograda.

Metode: Istraživanjem je obuhvaćeno 50 dosijea korisnika koji su bili na smeštaju u Prihvatilištu za decu Beograda u periodu od 2023. do 2025. godine. Analiza dokumentacije obuhvatila je podatke iz strukturisanih LOBI intervjua, polustrukturisanih intervjua koje su sprovodili stručni radnici, primenjene tehnike, procene vaspitnog i psihološkog statusa, planove zaštite korisnika, individualne planove usluge, izveštaje o funkcionisanju i upitnike zadovoljstva korisnika. Analiza je bila usmerena na probleme u ponašanju, postupke procene, stručne intervencije, uočene promene i ishode planirane podrške.

Rezultati: Analizom dokumentacije izdvojeni su individualizovani i multidisciplinarni pristup u radu sa decom i adolescentima sa problemima u ponašanju. Među primenjenim stručnim postupcima i tehnikama posebno se izdvajaju kontinuirana opservacija ponašanja, strukturisani LOBI intervju, polustrukturisani i individualni razgovori, sveobuhvatna procena potreba, rizika, snaga i protektivnih faktora, individualno planiranje podrške, praćenje promena u funkcionisanju korisnika i prilagođavanje intervencija. Njihova primena razmatrana je kroz tri povezane oblasti stručnog rada: opservaciju i rano prepoznavanje problema u ponašanju, procenu i planiranje individualizovane podrške, kao i sprovođenje intervencija i praćenje promena u funkcionisanju korisnika.

Zaključak: Rezultati ukazuju na značaj individualizovanog i multidisciplinarnog pristupa, kao i kontinuirane opservacije, sveobuhvatne procene, individualnog planiranja i praćenja promena u radu sa decom

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i adolescentima sa problemima u ponašanju. Jasno povezivanje uočenih potreba i problema sa primenjenim stručnim postupcima omogućava bolje razumevanje ponašanja korisnika, pravovremeno prilagođavanje podrške i uključivanje drugih relevantnih sistema. Sistematska analiza dokumentacije može doprineti unapređenju stručne prakse u okviru usluge smeštaja u prihvatilište.

Ključne reči: *deca, problemi ponašanja, opservacija, procena, intervencije*

APPROACHES AND TECHNIQUES IN WORKING WITH CHILDREN WITH BEHAVIORAL PROBLEMS WITHIN SHELTER ACCOMMODATION SERVICE

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Introduction: Given the growing number of children and adolescents who exhibit behavioral problems, it is important to examine professional approaches and procedures applied in working with this population. Special importance is given to multidisciplinary and rehabilitative approaches aimed at supporting children's well-being and responding to their developmental, emotional, and social needs.

Aim: The objective of this paper is to identify and describe, through documentation analysis, the approaches, techniques, and professional procedures applied in work with children and adolescents with behavioral problems, based on the analysis of case files of children placed at the Shelter for Children in Belgrade.

Methods: The study will include 50 case files that have been active in the last two years. Documentation analysis will include data from structured LOBI interviews, semi-structured interviews conducted by professional staff, applied techniques, assessments of educational and psychological status, User Protection Plans, Individual Service Plans, Functioning Reports, and User Satisfaction Questionnaires. The analysis will focus on behavioral problems, assessment procedures, professional interventions, observed changes, and outcomes of planned support.

Results: The analysis will focus on three key segments of professional work: observation and early identification of behavioral problem indicators; assessment of children's needs, risk and protective factors, and planning of individual support; and professional interventions, applied methods and techniques, and observed changes in users' functioning. Special attention will be given to the connection between identified behavioral problems, implemented interventions, user satisfaction, and achievement of planned discharge goals.

Conclusion: The paper highlights the importance of systematic documentation analysis in understanding the needs of children and adolescents with behavioral problems and in improving professional practice, individualized planning, and multidisciplinary support in shelter-based care.

Keywords*: children, behavioral problems, observation, assessment, intervention*

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PRIMENA PORODIČNIH KONFERENCIJA U SISTEMU SOCIJALNE ZAŠTITE

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Uvod: Porodične konferencije u sistemu socijalne zaštite predstavljaju model odlučivanja o mehanizmima zaštite dece i mladih, u kom se fokus sa stručnjaka pomera na članove porodice i socijalnog okruženja. Zasniva se na ideji da je porodica ta koja najbolje poznaje sopstvene probleme, zbog čega upravo ona može doneti najpovoljnije rešenje, uz adekvatnu pomoć stručnjaka. Kompleksnost porodičnih konferencija i njihova široka primena predstavljaju izazov u evaluaciji efekata intervencije.

Cilj: Utvrđivanje efektivnosti porodičnih konferencija u socijalnoj zaštiti dece i mladih na osnovu analize rezultata dostupnih sistematskih pregleda.

Metode: Tokom maja i juna 2026. godine izvršena je pretraga dostupne literature u relevantnim elektronskim bazama korišćenjem ključnih reči „family group conference", „child and youth welfare" i „systematic review or meta-analysis". Obuhvaćene su studije objavljene u poslednjih 10 godina. U skladu sa postavljenim ciljem, za analizu su izdvojena dva sistematska pregleda.

Rezultati: Nalazi sugerišu da porodične konferencije nisu pokazale veću efektivnost u odnosu na standardne intervencije socijalne zaštite u pogledu smanjenja zlostavljanja i zanemarivanja dece, izdvajanja dece iz porodice i uključenosti u usluge socijalne zaštite. Istovremeno, identifikovani su pozitivni efekti u domenu jačanja osećaja pripadnosti među članovima porodice, preuzimanja kontrole nad procesom i stvaranja prilika za učenje kod korisnika.

Zaključak: Iako nalazi o efektivnosti intervencije sugerišu da porodične konferencije uglavnom ne ostvaruju pozitivnije efekte u odnosu na druge usluge socijalne zaštite, očigledan je njihov doprinos osnaživanju porodice, većoj uključenosti i pozitivnim izveštavanjima korisnika i stručnjaka. Potrebna su dalja istraživanja koja bi pružila detaljnije sagledavanje potencijalnih koristi ovog modela, identifikovanje moderatorskih faktora i preciznije definisanje ciljne populacije u kojoj bi porodične konferencije ostvarile najbolje efekte.

Ključne reči: *porodične konferencije, socijalna zaštita, deca, mladi, efektivnost*

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FAMILY GROUP CONFERENCE IN THE CHILD AND YOUTH WELFARE SYSTEM

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Introduction: Family Group Conference (FGC) in the child and youth welfare system represent a decision-making model in which the focus shifts from professionals to family members and their social network when determining measures for the protection of children and young people. The model is based on the premise that families are best positioned to understand their own circumstances and are therefore capable of identifying the most appropriate solutions, with adequate professional support. Due to its complexity and broad implementation, evaluating the effectiveness of FGC remains a significant challenge.

Aim: Assessing the effectiveness of FGC in child and youth welfare by synthesizing the findings of available systematic reviews.

Methods: A literature search was conducted during May and June 2026 in relevant electronic databases using the keywords “family group conference”, “child and youth welfare” and “systematic review or meta-analysis”. Studies published within the past ten years were considered. In accordance with the study objective, two systematic reviews were selected for analysis.

Results: The findings suggest that FGC was not more effective than standard child and youth welfare interventions in reducing child abuse and neglect, preventing out-of-home placement, or increasing engagement with child welfare services. At the same time, positive outcomes were identified in terms of strengthening family members’ sense of belonging, enhancing participants’ sense of control over the decision-making process, and creating opportunities for learning and personal development.

Conclusion: Although the evidence indicates that FGC in general is not more effective than conventional child and youth welfare services, they appear to make a meaningful contribution to family empowerment, greater participant involvement, and more positive experiences reported by both service users and professionals. Further research is needed to provide a more comprehensive understanding of the potential benefits of this model, identify moderating factors, and more precisely define the target populations for whom FGC is most effective.

Keywords: *family group conference, welfare services, children, youth, effectiveness*

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MEASURING CHILD SEXUAL VICTIMIZATION: CURRENT METHODOLOGICAL CHALLENGES AND POSSIBLE DIRECTIONS

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Introduction: Child sexual victimization is a serious violation of children's rights and a global public health, criminological, and victimological concern. Reliable prevalence data are essential for prevention, victim support, criminal justice responses, and policy development; however, methodological differences may affect prevalence estimates and limit comparability across studies.

Aim: This systematic review examines the methodologies used in child sexual victimization prevalence studies, critically assesses their methodological and ethical limitations, and identifies opportunities to improve data quality, comparability, and research practice.

Methods: Following PRISMA guidelines, a systematic search of the Web of Science database was conducted in July 2026. Eligible studies were peer-reviewed articles published between 2016 and 2016 in English or Croatian that reported the prevalence of child sexual victimization. Of 1.272 records screened, 27 studies met the inclusion criteria. Data were extracted on research design, procedures, sampling strategies, measurement instruments, and ethical frameworks.

Results: All included studies employed quantitative cross-sectional designs, with two incorporating mixed-method approaches. Most surveys were school-based and relied on self-administered questionnaires. Considerable variation was found in recall periods, sampling strategies, response rates, and modes of administration. The Juvenile Victimization Questionnaire and ISPCAN Child Abuse Screening Tool were the most frequently used instruments, although many studies relied on modified or researcher-developed measures. Reporting of privacy conditions, referral procedures, anonymity, and other ethical safeguards was inconsistent. Substantial heterogenity was also observed in the operationalization and measurement of child sexual victimization.

Conclusion: The findings highlight the critical importance of rigorous and ethically sound methodology in child sexual victimization prevalence research. Greater methodological consistency, transparent reporting of research procedures and ethical safeguards, and wider use of validated instruments are needed to improve data quality, enhance cross-study comparability, and strengthen the evidence base for prevention, intervention, and policy development.

Keywords: *child sexual victimization, prevalence, measurement, methodology, ethics*

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OBRAZOVANJE TOKOM IZVRŠENJA KRIVIČNIH SANKCIJA – SRBIJA I STANDARDI IZ PRAKSE EVROPSKOG SUDA ZA LJUDSKA PRAVA

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Uvod: Obrazovanje je od izuzetnog značaja za resocijalizaciju, jer se posredstvom njega obezbeđuju uslovi za suzbijanje kriminološkog, krivičnopravnog i penološkog povrata. Osim toga, pravo na obrazovanje je i jedno od osnovnih ljudskih prava.

Cilj: Cilj rada je da se ukaže na probleme sa kojima se osuđena lica, kako maloletna tako i punoletna, suočavaju tokom izvršenja krivičnih sankcija u kontekstu ostvarivanja prava na obrazovanje, te predlože načini za njihovo prevazilaženje.

Metode: Korišćeni su normativno-logički i komparativni metod, uz analitičko sintetički pristup. Izvršen je pregled relevantne naučne literature u oblasti obrazovanja osuđenih, uz sumarnu analizu normativnog okvira i slučajeva iz prakse Evropskog suda za ljudska prava.

Rezultati: Autori ukazuju na formalnopravnu usaglašenost srpskog Zakona o izvršenju krivičnih sankcija sa relevantnim međunarodnim standardima. Ipak, postoji neusaglašenost sa standardima iz prakse Evropskog suda za ljudska prava, imajući u vidu da ova institucija insistira ne samo na formalnom, već i suštinskom uvažavanju prava na obrazovanje. Pri tome, jedan od ključnih standarda jeste usklađenost kvaliteta obrazovanja unutar penalnog sistema sa kvalitetom zastupljenim u standardnom sistemu obrazovanja date države.

Zaključak: Autori konstatuju da u Srbiji, i pored adekvatnog normativnog okvira, postoji potreba za obogaćivanjem dostupnih obrazovnih sadržaja u penalnom sistemu, te za omogućavanjem upotrebe savremene tehnologije u edukativne svrhe.

Ključne reči: *obrazovanje, izvršenje krivičnih sankcija, Evropski sud za ljudska prava*

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EDUCATION AND EXECUTION OF CRIMINAL SANCTIONS – SERBIA AND THE STANDARDS FROM THE CASE LAW OF THE EUROPEAN COURT OF HUMAN RIGHTS

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Introduction: Education plays a crucial role in the resocialization of convicts, as it contributes to reducing criminological, criminal and penitentiary recidivism by providing opportunities for personal development and social reintegration. Furthermore, the right to education is recognized as one of the fundamental human rights.

Aim: The aim of this paper is to identify the challenges that convicted persons encounter in exercising their right to education during the execution of criminal sanctions and to propose possible measures for overcoming these challenges.

Methods: The study applies the normative-logical and comparative methods, combined with an analytical-synthetic approach. It includes a review of the relevant literature on the education of convicted persons, accompanied by a summary analysis of the applicable legal framework.

Results: The authors demonstrate that the Serbian Law on the Execution of Criminal Sanctions is formally harmonized with the relevant international standards. Particular attention is devoted to the standards developed through the case law of the European Court of Human Rights, given that the Court requires not only the formal recognition but also the effective enjoyment of the right to education. One of the key standards established in the Court's jurisprudence is that the quality of education provided within the prison system should be comparable to that available within the general education system.

Conclusion: The authors conclude that, despite the existence of an adequate legal framework in Serbia, there remains a need to expand the range of educational opportunities available to convicted persons and to facilitate the use of modern technologies for educational purposes.

Keywords: *education, execution of criminal sanctions, European Court of Human Rights*

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ZNAČAJ RANIH MALADAPTIVNIH ŠEMA U PREDVIĐANJU SEKSUALNOG PRESTUPNIŠTVA

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Uvod: Seksualno prestupništvo podrazumeva „čitav spektar ponašanja, počevši od bezkontakne seksualne nasilne aktivnosti do kontaktne seksualne nasilne aktivnosti kao što su nasilan seksualni odnos bez pristanka druge osobe, ili seks sa maloletnicima”. Predstavlja kompleksan fenomen uzrokovan međuzavisnim i recipročnim uticajem brojnih faktora rizika. U literaturi se sve češće potvrđuje da averzivna razvojna iskustva oblikuju rane maladaptivne šeme koje mogu predstavljati faktor ranjivosti pojedinca za vršenje seksualnih prestupa. Definišu se kao samougrožavajući obrasci razmišljanja, emocionalnog i telesnog reagovanja, koji su se razvili tokom detinjstva ili adolescencije, a koji se mogu zadržavati i ponavljati tokom odraslog doba. Stoga, rane maladaptivne šeme mogu pružiti okvir za razumevanje razvojnih putanja seksualnog prestupništva.

Cilj: Cilj ovog rada jeste da se kroz prizmu rezultata istraživanja sprovedenih u svetu analizira veza između ranih maladaptivnih šema i seksualnog prestupništva, korišćenjem Jangovog teorijskog okvira.

Metode: U radu se koriste analiza i sinteza teorijskih i empirijskih nalaza kroz proučavanje relevantne literature u različitim naučnim izvorima podataka.

Rezultati: Različiti obrasci ranih maladaptivnih šema su prisutni kod seksualnih prestupnika. Silovatelji imaju izražene šeme iz domena isključenja/odbacivanja, narušene autonomije i performansi i usmerenosti ka drugima i preterane budnosti i inhibicije. Seksualni prestupnici nad decom i to pedofilni seksualni prestupnici dva puta intenzivnije izražavaju šeme defektnosti/sramote. Pojedinci koji čine nepedofilne seksualne prestupe imaju izraženije šeme socijalne izolacije, upletenosti/nerazvijenog ja i neumoljivih standarda.

Zaključak: Identifikacija ranih maladaptivnih šema kod seksualnih prestupnika može imati značajne implikacije u osmišljavanju protokola u tretmanu ovih prestupnika i smanjenju stope recidiva.

Ključne reči: *rane maladaptivne šeme, seksualno prestupništvo, podtipovi seksualnih prestupnika*

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THE SIGNIFICANCE OF EARLY MALADAPTIVE SCHEMAS IN PREDICTING SEXUAL OFFENDING

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Introduction: Sexual crime includes "a whole spectrum of behavior, starting from non-contact sexual violent activity to contact sexual violent activity such as violent sexual intercourse without the consent of another person, or sex with minors". It represents a complex phenomenon caused by the interdependent and reciprocal influence of numerous risk factors. In the literature, it is increasingly confirmed that aversive developmental experiences shape early maladaptive schemas that can be a factor in an individual's vulnerability to committing sexual offenses. They are defined as self-threatening patterns of thinking, emotional and physical response, which developed during childhood or adolescence, and which can be maintained and repeated during adulthood. Thus, early maladaptive schemas may provide a framework for understanding the developmental trajectories of sex offending.

Aim: The aim of this paper is to analyze the connection between early maladaptive schemas and sexual delinquency through the prism of research results conducted in the world, using Young's theoretical framework.

Methods: The paper uses the analysis and synthesis of theoretical and empirical findings through the study of relevant literature in various scientific data sources.

Results: Different patterns of early maladaptive schemas are present in sex offenders. Rapists have expressed schemas in the domains of exclusion/rejection, impaired autonomy and performance, and orientation towards others, and excessive vigilance and inhibition. Sexual offenders against children, particularly pedophilic sex offenders, express schemas of defect/shame twice as intensely. Individuals who commit non-pedophilic sexual offenses have more pronounced schemes of social isolation, entanglement/underdeveloped self, and inexorable standards.

Conclusion: The identification of early maladaptive schemas in sex offenders can have significant implications in designing treatment protocols for these offenders and reducing the rate of recidivism.

Keywords: *early maladaptive schemas, sexual offending, subtypes of sex offenders*

SAVREMENI REHABILITACIONI KONTEKST

CONTEMPORARY REHABILITATION CONTEXT

MUZIKA, MENTALNO ZDRAVLJE I NEURORAZVOJNI POREMEĆAJI: NEUROBIOLOŠKI MEHANIZMI INTERAKCIJA

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Uvod: Muzika aktivira široko raširene moždane mreže i autonomni nervni sistem, modulirajući emocije, kogniciju i socijalne interakcije, čime predstavlja moćnu intervenciju kod neurorazvojnih poremećaja.

Cilj: Cilj rada je analiza literature o neurobiološkim mehanizmima uticaja muzike na mentalno zdravlje osoba sa neurorazvojnim poremećajima (intelektualna ometenost, poremećaj iz spektra autizma i poremećaj pažnje sa hiperaktivnošću).

Metode: Izvršen je pregled literature objavljene u recenziranim akademskim publikacijama. Uključene su studije koje se bave neurobiološkim mehanizmima muzičkih intervencija u neurorazvojnim poremećajima.

Rezultati: Na neurobiološkom nivou, muzika aktivira specifične neuralne mreže kroz slušanje ili aktivno izvođenje muzike, angažujući anatomske strukture i neurotransmitere koji su implicirani u neurorazvojnim poremećajima. Ključni mehanizmi obuhvataju: (1) oslobađanje dopamina u putevima za nagradu, što pojačava motivaciju i smanjuje anhedoniju; (2) modulaciju serotonina i oksitocina, što poboljšava socijalnu afilijaciju i poverenje; (3) parasimpatičku aktivaciju sa supresijom hiperaktivacije stres odgovora, što smanjuje anksioznost i fiziološki arauzal; (4) podsticanje neuroplastičnosti putem pojačanja izražaja neurotropnog faktora izvedenog iz mozga, što podržava reorganizaciju senzomotorne, auditivne i jezičke mreže i podstiče neurogenezu. Naučni dokazi ukazuju na to da uticaj muzike zavisi od harmonijske strukture, autobiografske relevantnosti, multimodalnih stimulusa i nivoa muzičkog obrazovanja. Muzička terapija uspešno targetira psihomotorne, kognitivne, emocionalne i socijalne aspekte kod osoba sa intelektualnom ometenošću, poboljšavajući socijalizaciju, emocionalno blagostanje, verbalnu komunikaciju, kognitivnu funkciju i emocionalnu regulaciju, kao i kontrolu stresa. Kod osoba sa poremećajem

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iz spektra autizma, muzika poboljšava socijalnu komunikaciju, smanjuje repetitivne obrasce ponašanja i pojačava emocionalnu regulaciju. Kod poremećaja pažnje sa hiperaktivitetom, muzičke intervencije poboljšavaju pažnju, inhibitornu kontrolu i egzekutivne funkcije.

Zaključak: Muzičke intervencije kod neurorazvojnih poremećaja su zasnovane na dokazima, bezbedne i efikasne, podržavajući kognitivne, psihosocijalne, bihevioralne i motoričke funkcije. Međutim, nedostatak standardizovanih protokola i nedovoljni podaci o neurofiziološkim mehanizmima, ograničavaju puno realizovanje terapeutskog potencijala muzike. Buduća istraživanja treba da utvrde poziciju muzičkih intervencija kao relevantnu neuroterapijsku strategiju u okvirima mentalnog zdravlja.

Ključne reči: *muzika, neurorazvojni poremećaji, intelektualna ometenost, mentalno zdravlje, neurobiologija*

MUSIC, MENTAL HEALTH AND NEURODEVELOPMENTAL DISORDERS: NEUROBIOLOGICAL MEHANISMS OF INTERACTIONS

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Introduction: Music activates widely distributed bilateral brain networks and the autonomous nervous system, modulating emotions, cognition, and social interaction; this makes it a powerful intervention for neurodevelopmental disorders.

Aim: The aim of the review is to synthesize the evidence on neurobiological mechanisms underlying music's effects on mental health in individuals with neurodevelopmental disorders, including intellectual disability, autism spectrum disorder, and attention-deficit/hyperactivity disorder.

Methods: A review of peer-reviewed academic publications was conducted. Studies examining neurobiological mechanisms of music intervention in neurodevelopmental disorders were included.

Results: Neurobiologically, music engages specific neural networks through listening or active music-making, activating anatomical structures and neurotransmitters systems implicated in neurodevelopmental disorders. Key mechanisms include: (1) dopamine release in reward pathways, enhancing motivation and reducing anhedonia; (2) serotonin and oxytocin modulation, improving social affiliation and trust; (3) parasympathetic activation with suppression of stress response hyperactivation, reducing anxiety and physiological arousal; (4) promotion of neuroplasticity through brain-derived neurotrophic factor upregulation, supporting sensorimotor, auditory, and language network reorganization, and promoting neurogenesis. Clinical evidence indicates that music's impact depends on harmonic structure, autobiographical relevance, multimodal stimuli, and music training level. Music therapy effectively targets psychomotor, cognitive, emotional, and social aspects in people with intellectual disabilities, improving socialization, emotional well-being, verbal communication, cognitive function, and emotional regulation, while also facilitating stress control. In individuals with autism spectrum disorder, music improves social communication, reduces repetitive behaviors, and enhances emotional regulation. In those with attention-deficit/hyperactivity disorder, music intervention improves attention, inhibitory control, and executive functions.

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Conclusion: Music-based interventions are evidence-based, safe, and cost-effective, supporting cognitive, psychosocial, behavioral, and motor functions in neurodevelopmental disorders. However, the lack of standardized protocols and insufficient data on neurophysiological mechanisms hinder the full realization of music’s therapeutic potential. Future research should establish music-based interventions as a relevant neurotherapeutic strategy within mental health frameworks.

Keywords: *music, neurodevelopmental disorders, intellectual disability, mental health, neurobiology*

PRIMENA VOKALNE TERAPIJE KOD TRANSRODNIH ŽENA

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Uvod: Transseksualizam predstavlja želju osobe da promeni pol usled nelagodnog i neadekvatnog doživljavanja sopstvenog pola. Hormonska terapija kao jedan od pristupa u procesu tranzicije utiče na karakteristike glasa transrodnih osoba, ali kod transrodnih žena taj uticaj nije značajan zbog pubertetskih promena izazvanih testosteronom.

Cilj: Cilj ovog preglednog rada je analiza publikacija koje su izučavale primenu vokalne terapije kod transrodnih žena.

Metode: Do izabrane literature došlo se korišćenjem KoBSON servisa i sledećih ključnih reči, i na srpskom i na engleskom jeziku: vokalna terapija, glas, trans žene. Izbor radova izvršen je na osnovu sledećih kriterijuma: radovi ispituju vrste i ishod vokalnih terapija kod transrodnih žena, radovi procenjuju nivo zadovoljstvo transrodnih žena vokalnom terapijom, i publikacije nisu starije od pet godina.

Rezultati: Krajnji rezultat pretrage sastoji se od 11 naučnih radova. Studije objavljene u prethodnih pet godina govore da se za terapiju glasa najčešće primenjuje Trening za rodno afirmativno prilagođavanje glasa (Gender Affirming Voice Training), da akustička analiza glasa pokazuje da su dostignute ženske karakteristike glasa u različitim akustičkim parametrima, kao i da su ispitanice zadovoljne postignutim rezultatima vokalne terapije, uz pozitivnu samopercepciju sopstvenog glasa.

Zaključak: Navodi se potreba za standardizacijom protokola, a nedostatak domaćih radova ukazuje na važnost analize kliničke prakse kroz istraživanja u ovoj oblasti u Srbiji.

Ključne reči: *vokalna terapija, glas, transrodnost*

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APPLICATION OF VOCAL THERAPY IN TRANSGENDER WOMEN

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Introduction: Transsexualism represents a person’s desire to change gender due to an uncomfortable and inadequate experience of their own gender. Hormone therapy, as one of the approaches in the transition process, affects the voice characteristics of transgender persons, but in transgender women this effect is not significant due to puberty changes caused by testosterone.

Aim: The objective of this review is to analyze publications that have examined the application of vocal therapy in transgender women.

Methods: The selected literature was obtained using the KoBSON service and the following keywords, in both Serbian and English: vocal therapy, voice, trans women. Papers were selected based on the following criteria: studies examining the types and outcomes of vocal therapy for transgender women, studies assessing the level of satisfaction of transgender women with vocal therapy, and publications not older than five years.

Results: The final search result consists of 11 scientific papers. Studies published in the past five years report that Gender Affirming Voice Training is most often used in voice therapy, that acoustic analysis of the voice shows that female voice characteristics have been achieved across various acoustic parameters, and that participants are satisfied with the results of vocal therapy, with a positive self-perception of their own voice.

Conclusion: The need for protocol standardization is emphasized, and the lack of domestic work highlights the importance of analyzing clinical practice through research in this area in Serbia.

Keywords: *vocal therapy, voice, transgender*

DEVELOPMENTAL AND PSYCHOSOCIAL FACTORS IN ORIENTATION AND MOBILITY REHABILITATION OF CHILDREN WITH BLINDNESS AND VISUAL IMPAIRMENTS

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Introduction: Orientation and mobility skills are essential for the safety, independence, and daily participation of children with blindness and visual impairments. Their development is influenced by age, emotional readiness, family support, and the child's previous perceptual experiences.

Aim: This qualitative study aimed to explore how itinerant educational rehabilitation professionals in Croatia perceive developmental, motivational, and methodological factors in the orientation and mobility rehabilitation of children with blindness and visual impairment.

Methods: Data were collected through semi-structured interviews with eleven educational rehabilitation professionals experienced in working with children with blindness and visual impairments. The interviews were transcribed and analysed using thematic analysis.

Results: The findings indicate that rehabilitation challenges vary across developmental periods. Preschool children were generally described as more cooperative, but their learning often requires play-based and experiential activities. In school-aged children, mobility-related work may be affected by academic demands and limited time for additional rehabilitation. Adolescence was identified as the most demanding period due to identity formation, peer comparison, emotional adjustment to visual impairment, and resistance to visible assistive devices such as the white cane. Motivation was seen as closely related to self-acceptance, perceived success, family support, and readiness for independent movement. Participants also emphasised the importance of early intervention, while noting that parental fear, overprotection, and difficulties in accepting the diagnosis may slow the development of independence. Differences between congenitally blind children and those with later onset of blindness or visual impairment were linked mainly to spatial concepts and previous visual experiences.

Conclusion: Orientation and mobility rehabilitation should be flexible, individualised, and developmentally sensitive, combining functional skill development with emotional support and the gradual promotion of independence.

Keywords: *visual impairment, orientation and mobility, motivation, early intervention, adolescence*

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SENSORY INTEGRATION IN NATURAL CONTEXTS: PREVALENCE OF SENSORY PROCESSING DIFFERENCES IN TODDLERS AND IMPLICATIONS FOR CONTEMPORARY SUPPORT MODELS

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Introduction: Sensory experiences during the first three years of life are critical for neural development, with sensory integration providing the foundation for attention, self-regulation, and learning. Sensory processing differences have been reported in approximately 10–20% of children in the general population and are more frequently observed in children with neurodevelopmental disorders. Mainstream nursery settings provide a unique opportunity for the early identification of sensory processing differences and timely support.

Aim: To determine the prevalence of sensory processing differences in toddlers attending mainstream nursery groups and examine associations between sensory processing patterns, everyday functioning, parental perceptions of child demandingness, and digital media use.

Methods: The study included 164 children aged 12–35 months attending mainstream nursery groups. Parents completed the Sensory Profile 2 Toddler (SP2) questionnaire and an additional questionnaire addressing daily habits, digital media use, and perceived child demandingness. Nursery teachers completed an observation questionnaire assessing developmental and behavioural challenges.

Results: Sensory Seeking was the most prominent pattern, with 6.71% of children scoring above the normative range (“More Than Others” or “Much More Than Others”). Difficulties were most frequently observed in visual processing and behavioural responses associated with sensory input. Nursery teachers reported high rates of challenges in self-regulation (18.65%), attention (16.82%), communication (14.37%), and motor skills (13.46%). Correlation analyses revealed weak positive associations between parental perceptions that their child was more demanding than other children and both sensory sensitivity (r=0.269) and sensory avoidance (r=0.254). Sensory sensitivity and sensory avoidance were also weakly positively associated with time spent using digital media (r=0.160 and 0.172, respectively). These findings indicate associations between sensory processing patterns, everyday functioning, parental perceptions, and digital media use in early childhood.

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Conclusion: The findings support the need for early identification of sensory processing differences and transdisciplinary support in natural environments.

Keywords: *sensory processing, self-regulation, attention, toddlers, early intervention*

RAZLOZI ZA RANU INTERVENCIJU – KAKO MOŽEMO UTICATI NA DUGOROČNE ISHODE NEUROMOTORNOG RAZVOJA DECE SA RAZVOJNIM POREMEĆAJEM KOORDINACIJE?

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Uvod: Razvojni poremećaj koordinacije (RPK) je neurorazvojni poremećaj, koji se ispoljava u ranom uzrastu, ali se u praksi najčešće dijagnoza ne postavlja pre pete godine života deteta. Zakasnela dijagnostika i intervencija, doprinose održavanju teškoća vezanih za razvojni poremećaj koordinacije, kao i posledičnih teškoća u akademskim veštinama. Među decom sa dijagnozom RPK četvrtina je identifikovana u predškolskom, a ostatak tokom školskog perioda, kada se slika poremećaja značajno usložnjava i komplikuje kompromitujući razvoj školskih veština.

Cilj: Cilj istraživanja je da se ispita prisustvo znaka neuromotorne nezrelosti i pridruženih teškoća u akademskim veštinama kod učenika sa RPK tokom prva četiri razreda.

Metode: Uzorak je činilo 58 dece sa RPK, učenika iste osnovne škole uzrasta 7 to 11 godina. Motorička koordinacija je procenjena Ozeretski testom, neuromotorna zrelost (sinkinezija prstiju, disdijadohokineza, imperzistencija, diferenciranost okulomotorike, pokretljivost jezika, dominantna lateralizovanost) Levinovom baterijom testova, akademske veštine (čitanje, pisanje, računanje) su ocenjene od strane nastavnika.

Rezultati: Prisustvo tri i više od šest posmatranih pokazatelja neuromotorne nezrelosti utvrđeno je kod 84,6% učenika prvog, 66,7% drugog, 44,4% trećeg i 50,0% četvrtog razreda. Pridružene teškoće u akademskim veštinama su evidentirane kod 46,2% učenika prvog, 26,7% drugog, 72,2% trećeg i 33,3% četvrtog razreda.

Zaključak: Učestalost prisustva pokazatelja neuromotorne nezrelosti i pridruženih teškoća u akademskim veštinama, koja se održava u visokim procentima i u starijim razredima, implicira potrebu za delovanjem prema deci sa RPK u dva pravca: kroz rehabilitacione programe u različitim oblastima razvoja i planiranjem podrške u obrazovanju. U skladu sa tim,

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smatramo da je potrebno usvojiti model rane intervencije prema deci sa RPK koji bi se zasnivao na principima pravovremenosti, preventivnog delovanja, sveobuhvatnosti, interdisciplinarnosti, individualizaciji, kontinuiranosti. Ranom intervencijom se obezbeđuju veće mogućnosti korišćenja prirodnih maturacionih resursa, delovanje na dete i okruženje, a postižu se pozitivni efekti na nižim nivoima intervencije i doprinosi sprečavanju nepoželjne evolucije poremećaja.

Ključne reči: *razvojni poremećaj koordinacije, akademske veštine, neuromotorni razvoj, rana intervencija*

RATIONALE FOR EARLY INTERVENTION: HOW CAN WE INFLUENCE LONG-TERM NEUROMOTOR DEVELOPMENTAL OUTCOMES IN CHILDREN WITH DEVELOPMENTAL COORDINATION DISORDER?

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Introduction: Developmental Coordination Disorder (DCD) is a neurodevelopmental disorder evident from early childhood; however, in clinical practice, diagnosis is often not established before the age of five years. Delayed diagnosis and intervention may contribute to the persistence of DCD-related difficulties and subsequent academic difficulties. Although early signs may be present in preschool years, many children are recognized only after entering formal education, when functional demands increase.

Aim: This study aimed to examine the presence of signs of neuromotor immaturity and associated academic difficulties among children with DCD during the first four years of primary school.

Methods: The sample included 58 children with DCD, aged 7–11 years, attending the same primary school. Motor coordination was assessed using the Oseretsky Motor Proficiency Test. Indicators of neuromotor immaturity (finger synkinesis, dysdiadochokinesia, motor impersistence, oculomotor control difficulties, tongue mobility, and lateral dominance) were assessed using Levine’s battery of neurological soft-sign tests. Academic skills (reading, writing, and mathematics) were evaluated by classroom teachers.

Results: Three or more neuromotor immaturity indicators were identified in 84.6% of first-grade, 66.7% of second-grade, 44.4% of third-grade, and 50.0% of fourth-grade students. Associated academic difficulties were reported in 46.2%, 26.7%, 72.2%, and 33.3% of students, respectively.

Conclusion: The persistence of neuromotor immaturity indicators and associated academic difficulties throughout the early primary school years highlights the need for early and comprehensive support for children with DCD. We therefore advocate the adoption of an early intervention model for children with DCD based on the principles of timeliness, prevention, comprehensiveness, interdisciplinarity, individualization, and continuity of care. Early intervention maximizes opportunities to harness children’s natural maturational potential, supports interventions targeting both the child and the environment, and promotes positive developmental outcomes through less intensive interventions delivered within the child’s

natural environment, thereby reducing the risk of adverse developmental trajectories associated with DCD.

Keywords: *Developmental Coordination Disorder (DCD), academic skills, neuromotor development, early intervention*

MEDICINSKI ASPEKTI U SPECIJALNOJ EDUKACIJI I REHABILITACIJI

MEDICAL ASPECTS IN SPECIAL EDUCATION AND REHABILITATION

CONTINUOUS POSITIVE AIRWAY PRESSURE THERAPY IN THE REHABILITATION OF PATIENTS WITH OBSTRUCTIVE SLEEP APNEA: A REPORT OF TWO CLINICAL CASES

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Introduction: Obstructive sleep apnea is a chronic disorder characterized by recurrent episodes of upper airway obstruction during sleep, accompanied by intermittent hypoxia and sleep fragmentation. Obstructive sleep apnea is associated with an increased risk of arterial hypertension, cardiac arrhythmias, coronary artery disease, heart failure, and cerebrovascular disorders. Continuous positive airway pressure (CPAP) therapy is the gold standard for the treatment of moderate and severe obstructive sleep apnea and represents the cornerstone of rehabilitation in these patients.

Aim: To demonstrate the importance of cardiorespiratory polygraphy in diagnosing obstructive sleep apnea and the effectiveness of CPAP therapy as the key rehabilitation modality in patients with cardiovascular comorbidities.

Results: Case Reports: The first patient, a 66-year-old man (BMI 34.2 kg/m²), presented with daytime sleepiness, fatigue, snoring, and witnessed apneas during sleep. Cardiorespiratory polygraphy revealed severe obstructive sleep apnea (AHI 33.7 events/h), while Holter ECG monitoring demonstrated sinus pauses of up to 4.8 seconds, sinus bradycardia, and myocardial ischemic changes during sleep. Following initiation of CPAP therapy, these abnormalities were no longer observed during sleep. The second patient, a 65-year-old man (BMI 34.7 kg/m²) with atrial fibrillation, dilated cardiomyopathy, and heart failure (left ventricular ejection fraction 30–35%), was referred because of fatigue, dyspnea, and excessive daytime sleepiness. Cardiorespiratory polygraphy confirmed severe obstructive sleep apnea (AHI 33.1 events/h). CPAP therapy resulted in improved sleep quality, reduced daytime symptoms, and provided favorable conditions for more effective management of the associated cardiovascular disorders.

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Conclusion: CPAP therapy is the mainstay of rehabilitation in patients with obstructive sleep apnea. Early diagnosis and timely initiation of treatment contribute to improved nocturnal oxygenation, reduced daytime sleepiness, and beneficial effects on cardiovascular disorders. These cases confirm the important role of CPAP therapy in improving quality of life and facilitating the rehabilitation of patients with obstructive sleep apnea.

Keywords: *obstructive sleep apnea, CPAP therapy, rehabilitation, cardiorespiratory polygraphy, cardiovascular diseases*

FLAVONOIDI I MOZAK

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Uvod: Flavonoidi su ujedinjenja biljnog porekla sa antikancerogenim, kardioprotektivnim i neuroprotektivnim svojstvima koja su potencijalno i primenjivana kod hroničnih bolesti. Postoji sedam osnovnih klasa flavonoida: 1. Flavoni (apigenin i luteolin), 2. Flavonoli (kvercetin, galangin, kemferol i miricetin), 3. Flavononi (naringenin i hesperetin), 4. Flavonoli (katehin-5) (genistein, daidzein i glicitein), 6. Antocijanini (cijanidini, delfinidini, malvkdini, pelargonidini i peonidini) i 7. Halkoni (floretin, halkonaringenin). Od posebnog interesa su neuroprotektivna i kardioprotektivna dejstva flavonoida. Kvercetin i makluraksanton inhibiraju enzim acetilholinesterazu (AChE) povećavajući nivo acetilholina koji je snižen u Alchajmerovoj bolesti i demencijama sa Levijevim telima. Flavonoidi deluju zaštitino i na kardivaskularni sistem tako što poboljšavaju funkciju endotela. Flavonodi deluju neuroprotektivno delom zato što mogu da prođu hematoincefalnu barijeru i ispolje mnoga biološka destva u nervnom sistemu. Patogeneza neurodegenerativnih bolesti je složena i od uticaja su mnogi faktori. Između ostalog oksidativni stres, neuroinflamacije, nakupljanje patoloških proteina, poremećaj funkcija mitohondrija i pojačana apoptoza, način života, genetska predispozicija i faktori okoline.

Cilj: Ispituje se primena flavonoida u Alchajmerovoj bolesti, Parkinsonovoj bolesti, amiotrofičkoj lateralnoj sklerozi, Hantingtonovoj bolesti, anksioznosti, depresiji.

Rezultati: Istraživanja sprovedena tokom trudnoće pokazala su da je raznovrsna hrana koja sadrži flavonoide povezana sa većim obimom glave i višim IQ u desetoj godini deteta. Plavo bobičasto voće poboljšava odloženo prisećanje kod dece uzrasta 8-10 godina.

Zaključak: Primena flavonoida ima povoljne efekte na mozak od trudnoće i tokom razvojnog i odraslog perioda, a takođe omogućava i kvalitetnije starenje. Ovo je još uvek veliko nedovoljno istraženo područje i dalja istraživanja će dovesti do cilja primene ovih jedinjenja ali i sinteze molekula sa boljim dejstvom.

Ključne reči: *flavonoidi, mozak, kvercetin, kemferol*

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FLAVONOIDS AND THE BRAIN

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Introduction: Flavonoids are plant-derived compounds with antioxidant, anti-inflammatory, antimicrobial, anticarcinogenic, cardioprotective, and neuroprotective properties that are potentially applicable in the prevention and treatment of chronic diseases. There are seven main classes of flavonoids: 1. Flavones (apigenin and luteolin), 2. Flavonols (quercetin, galangin, kaempferol, and myricetin), 3. Flavonones (naringenin and hesperetin), 4. Flavanols (catechin, epicatechin), 5. Isoflavones – phytoestrogens (genistein, daidzein, and glycitein), 6. Anthocyanins (cyanidins, delphinidins, malvoxydins, pelargonidins, and peonidins), and 7. Chalcones (phloretin, chalconaringenin). Of particular interest are the neuroprotective and cardioprotective effects of flavonoids. Quercetin and macluraxanthin inhibit the enzyme acetylcholinesterase (AChE), increasing the level of acetylcholine, which is reduced in Alzheimer’s disease and dementia with Lewy bodies. Flavonoids also have a protective effect on the cardiovascular system by improving endothelial function. Flavonoids are neuroprotective in part because they can cross the blood-brain barrier and exert many biological effects in the nervous system. The pathogenesis of neurodegenerative diseases is complex and is influenced by many factors, including oxidative stress, neuroinflammation, accumulation of pathological proteins, impaired mitochondrial function and increased apoptosis, lifestyle, genetic predisposition and environmental factors.

Aim: The use of flavonoids is being investigated in Alzheimer’s disease, Parkinson’s disease, amyotrophic lateral sclerosis, Huntington’s disease, anxiety, depression.

Results: During pregnancy research has shown that a variety of foods containing flavonoids are associated with larger head circumference and higher IQ at the age of ten. Blue berries improve delayed recall in children aged 8-10 years.

Conclusion: The use of flavonoids has beneficial effects on the brain from pregnancy and during the developmental and adult periods, and also allows for better aging. This is still a large, under-researched area and further research will lead to the targeted use of these compounds as well as the synthesis of molecules with improved effects.

Keywords: *flavonoids, brain, quercetin, kaempferol*

KLINIČKI I GENETIČKI PRISTUP KOD DECE SA INTELEKTUALNIM TEŠKOĆAMA

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Uvod: Intelektualne teškoće, odnosno intelektualni razvojni poremećaji, obuhvataju deficite u intelektualnom i adaptivnom funkcionisanju u sva tri domena - konceptualnom, socijalnom i praktičnom, još od detinjstva. Intelektualne teškoće su prisutne kod 1-3% opšte populacije, u okviru sindroma ili izolovano, a razlozi za njihov nastanak leže u genetičkim i/ili sredinskim faktorima koji mogu delovati u prenatalnom, perinatalnom i postnatalnom periodu. Dok su neki od sindromskih oblika prepoznatljivog fenotipa rano postnatalno, većina stanja koja su praćena razvojnim zaostajanjem i intelektualnim teškoćama zahtevaju sveobuhvatni pristup.

Cilj: Cilj rada je bio da se prikažu koraci u analizi stanja kod dece koja su praćena intelektualnim teškoćama.

Metode: Pregledom relevantne literature sagledan je klinički i genetički pristup kod dece sa intelektualnim teškoćama.

Rezultati: Klinički pristup kod deteta sa intelektualnim teškoćama podrazumeva detaljnu ličnu i familijarnu anamnezu, fizikalni pregled, metabolički skrining i odgovarajuće specijalističke preglede, kao i sagledavanje ponašanja deteta. Takođe je potrebno pregledati roditelje deteta, ali i druge članove porodice kako bi se isključilo prisustvo sličnog fenotipa. Sumnja na postojanje nekog od sindromskih oblika uglavnom se potvrđuje genetičkim testom, dok je kod nesindromskih stanja potrebna analiza genoma nekom od savremenih molekularno-genetičkih metoda, kao što su Molekularni kariotip i Sekvenciranje nove generacije. Ove metode su, osim potvrde do sada poznatih gena uključenih u nastanak intelektualnih teškoća, dovele do otkrića novih odgovornih gena, ali i činjenice da su najčešći razlog za stanja praćena intelektualnim teškoćama promene u broju kopija u genomu tj. mikrodelecije i mikroduplikacije.

Zaključak: Kliničko i genetičko ispitivanje dece sa intelektualnim teškoćama omogućuje pojašnjenje etiologije poremećaja, predviđanje kliničkog toka, prevenciju mogućih komplikacija ili njihovog lečenja, kao i sagledavanje rizika ponovnog javljanja sličnih stanja u porodici.

Ključne reči: *intelektualne teškoće, kliničko ispitivanje, genetičko testiranje*

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CLINICAL AND GENETIC APPROACH IN CHILDREN WITH INTELLECTUAL DISABILITIES

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Introduction: Intellectual difficulties, i.e. intellectual developmental disorders, include deficits in intellectual and adaptive functioning in all three domains - conceptual, social and practical, since childhood. Intellectual difficulties are present in 1-3% of the general population, as part of a syndrome or isolated, and the reasons for their occurrence lie in genetic and/or environmental factors that can act in the in the prenatal, perinatal and postnatal period. While some of the syndromic forms have a recognizable phenotype in the early postnatal period, most conditions accompanied by developmental delay and intellectual disability require a comprehensive approach.

Aim: The goal was to show the steps in analyzing the condition of children with intellectual disabilities.

Methods: A review of the relevant literature examined the clinical and genetic approach in children with intellectual disabilities.

Results: The clinical approach to a child with intellectual disabilities involves a detailed personal and family history, physical examination, metabolic screening and appropriate specialist examinations, as well as observing the child’s behavior. It is also necessary to examine the child’s parents and other family members in order to rule out the presence of a similar phenotype. Suspicion of the existence of one of the syndromic forms is generally confirmed by a genetic test, while non-syndromic conditions require genome analysis using one of the modern molecular genetic methods, such as Molecular Karyotype and Next Generation Sequencing. These methods led to the discovery of new responsible genes, but also the fact that the most common reason for conditions accompanied by intellectual difficulties are changes in the number of copies in the genome, i.e. microdeletions and microduplications.

Conclusion: Clinical and genetic examination of children with intellectual disabilities enables clarification of the etiology of the disorder, prediction of the clinical course, prevention of possible complications or their treatment, as well as assessment of the risk of recurrence of similar conditions in the family.

Keywords: *intellectual disabilities, clinical examination, genetic testing*

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WHAT DETERMINES FIDGETY MOVEMENT QUALITY IN PRETERM INFANTS? THE ROLE OF BIOLOGICAL MATURATION AND NEONATAL MORBIDITY

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Introduction: The quality of spontaneous motor behaviour reflects the functional integrity and maturation of the developing nervous system. Although absent or abnormal fidgety movements are more common among preterm infants, it remains unclear whether early motor organization is primarily influenced by biological immaturity or neonatal morbidity.

Aim: To investigate whether markers of biological maturity and neonatal morbidity differ among preterm infants with different fidgety movement categories.

Methods: This cross-sectional study included 34 preterm infants with no evident or mild brain injury, assessed using the General Movements Assessment and classified as having normal, abnormal, or absent fidgety movements. Markers of biological maturity included gestational age and birth weight. Neonatal morbidity was assessed using respiratory support duration, mechanical ventilation duration, and a cumulative neonatal risk score calculated as the sum of neonatal morbidities (bronchopulmonary dysplasia, sepsis, necrotizing enterocolitis, and retinopathy of prematurity). Group differences were analysed using the Kruskal–Wallis test, with exploratory Spearman rank correlation analyses performed.

Results: A statistically significant difference among fidgety movement groups was observed only for gestational age ($p=0.049$), with the lowest median gestational age in infants with absent fidgety movements. No significant group differences were found for birth weight ($p=0.322$), respiratory support ($p=0.081$), mechanical ventilation ($p=0.109$), or cumulative neonatal risk ($p=0.469$). Exploratory correlation analysis demonstrated a significant negative association between gestational age and fidgety movement classification ($\rho=-0.348$, $p=0.044$), whereas no significant associations were found for birth weight or cumulative neonatal risk.

Conclusion: Among preterm infants with no evident or only mild brain injury, gestational age was the only factor consistently associated with fidgety movement quality. These findings suggest that biological immaturity may influence early motor organization more than neonatal morbidity, even in the absence of major brain injury.

Keywords: *preterm infants, fidgety movements, gestational age, neonatal morbidity*

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JEDNA DIJAGNOZA ILI VIŠE AUTIZAMA? FENOTIPSKA, GENETIČKA I NEUROBIOLOŠKA HETEROGENOST POREMEĆAJA IZ SPEKTRA AUTIZMA

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Uvod: Poremećaji iz spektra autizma (PSA) su neurorazvojni poremećaji koji su decenijama posmatrani kao zasebna dijagnostička kategorija. Ipak, savremena istraživanja ukazuju na neuniformnost PSA, što je podstaklo razvoj novih modela koji pokušavaju da objasne da li postoji više podtipova PSA ili se radi o međusobno preklapajućem kontinuumu.

Cilj: Cilj ovog rada bio je da se kroz sistematski pregled literature objedine savremena empirijska saznanja koja ispituju fenotipsku, genetičku i neurobiološku heterogenost poremećaja iz spektra autizma.

Metode: Analizirana je literatura objavljena u periodu između januara 2020. i maja 2026. godine sa ciljem identifikacije istraživanja koja primenjuju savremene neurobiološke, genetičke i računarske pristupe u proučavanju varijabilnosti autizma. Pregled literature sproveden je u skladu sa PRISMA smernicama prema unapred definisanim kriterijumima uključivanja i isključivanja. Pretraživane su elektronske baze podataka PubMed, Scopus i Web of Science na osnovu ključnih reči koje su se odnosile na autizam, njegove podtipove i multimodalne pristupe. Nakon uklanjanja duplikata, pregleda apstrakata i analize radova u punom tekstu, odabrano je 14 studija koje odgovaraju kriterijumima uključivanja.

Rezultati: Većina studija ukazuju na postojanje više fenotipskih i bioloških obrazaca unutar poremećaja iz spektra autizma (PSA). Genetičke analize identifikovale su različite skupove naslednih i de novo varijanti povezanih sa specifičnim kliničkim profilima, neuroimaging studije ukazuju na značajnu interindividualnu varijabilnost obrazaca moždane organizacije bez jasnog konsenzusa o jedinstvenom neuralnom profilu autizma, a studije zasnovane na mašinskom učenju jasno izdvajaju nekoliko mogućih podtipova autizma.

Zaključak: Savremeni dokazi odustaju od shvatanja PSA kao jedinstvenog biološkog entiteta, smatrajući da se pre radi o više nezavisnih, ali istovremeno delimično preklapajućih formi. Viđenje autizma kao heterogenog stanja ne ogleda se samo u preciznijem razumevanju etiologije poremećaja, već i u mogućnosti objašnjavanja različitih rezultata intervencija. Buduća istraživanja trebalo bi usmeriti na ispitivanje uticaja raznovrsnosti etioloških faktora na nekonzistentne terapijske ishode kod navedenih poremećaja.

Ključne reči: *poremećaj iz spektra autizma, heterogenost, podtipovi autizma*

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A SINGLE DIAGNOSIS OR MULTIPLE FORMS? PHENOTYPIC, GENETIC AND NEUROBIOLOGICAL HETEROGENEITY OF AUTISM SPECTRUM DISORDER

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Introduction: Autism spectrum disorder (ASD) is a neurodevelopmental condition which has been regarded as a distinct diagnostic category for decades. However, present-day research points to the heterogeneity of ASD, which has prompted the development of new models seeking to explain whether multiple ASD subtypes exist or whether ASD represents an overlapping continuum.

Aim: The aim of this paper was to consolidate recent empirical findings on the phenotypic, genetic, and neurobiological variability of autism spectrum disorder through a systematic review of the literature.

Methods: The literature published between January 2020 and May 2026 was analyzed with the aim of identifying studies that apply contemporary neurobiological, genetic, and computational approaches to investigating variability in autism. The literature review was conducted in accordance with PRISMA guidelines using predefined inclusion and exclusion criteria. Electronic databases, including PubMed, Scopus, and Web of Science, were searched using keywords related to autism, its subtypes, and multimodal approaches. After the removal of duplicates, screening of abstracts, and full-text assessment of articles, 14 studies meeting the inclusion criteria were selected.

Results: Most studies indicate the existence of multiple phenotypic and biological patterns within autism spectrum disorder (ASD). Genetic analyses have identified distinct sets of inherited and de novo variants associated with specific clinical profiles, neuroimaging studies suggest substantial interindividual variability in patterns of brain organization without a clear consensus regarding a single neural profile of autism, and machine learning studies have distinguished several potential subtypes of autism.

Conclusion: Current evidence challenges the notion of ASD as a unitary biological entity, instead suggesting that it includes multiple independent yet partially overlapping forms. Conceptualizing autism as a heterogeneous condition contributes not only to a more precise understanding of its etiology but also to explaining the variability in intervention outcomes. Future research should focus on examining how the diversity of etiological factors contributes to inconsistent treatment outcomes in individuals with ASD.

Keywords: *autism spectrum disorder, heterogeneity, autism subtypes*

PRAVA DETETA U ZDRAVSTVENOJ ZAŠTITI: STANDARDI I SAVREMENI IZAZOVI U PRAKSI

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Uvod: Prava deteta u zdravstvenoj zaštiti predstavljaju važan segment savremene pedijatrijske prakse i zasnivaju se na međunarodnim standardima koji naglašavaju pravo deteta na zdravlje, informisanost i participaciju u skladu sa uzrastom i razvojnim sposobnostima. Savremeni zdravstveni sistemi sve više prelaze sa tradicionalnog medicinski dominantnog modela odlučivanja na participativni model odlučivanja u cilju unapređenja kvaliteta zdravstvene zaštite.

Cilj: Cilj rada je analiza implementacije prava deteta u zdravstvenoj zaštiti u okviru preventivne pedijatrije, sa fokusom na nivo informisanosti i primenu prava deteta u kliničkoj praksi.

Metode: Metod rada obuhvata originalno istraživanje sprovedeno u okviru Dečije bolnice na uzorku od 173 ispitanika, od kojih je 104 roditelja dece pacijenata i 69 zdravstvenih radnika i saradnika. Podaci su obrađeni primenom deskriptivne statistike.

Rezultati: Rezultati pokazuju da 77,9% roditelja nema adekvatne informacije o pravima deteta u zdravstvenom sistemu, dok 91,3% smatra da je edukacija o pravima deteta neophodna. Među zdravstvenim radnicima i saradnicima 78,3% navodi nedovoljno poznavanje prava deteta pacijenata. Dobijeni rezultati ukazuju na značajnu diskrepanciju između normativno definisanih prava deteta i njihove praktične implementacije u zdravstvenoj zaštiti. Savremena međunarodna istraživanja potvrđuju slične nalaze, ukazujući da je participacija dece u zdravstvenoj zaštiti često ograničena institucionalnim i komunikacionim barijerama, uprkos jasno definisanim pravima deteta u globalnim zdravstvenim standardima. Ostvarivanje sveobuhvatne zdravstvene zaštite dece zahteva promociju prava deteta operativnim povezivanjem teorijskih koncepata sa specifičnim aktivnostima usmerenim na decu, roditelje i profesionalce.

Zaključak: Zaključak ukazuje da unapređenje prava deteta zahteva sistemski pristup, kontinuiranu edukaciju zdravstvenih radnika i unapređenje komunikacije sa roditeljima i decom, uz doslednu primenu savremenih međunarodnih standarda u svakodnevnoj kliničkoj praksi.

Ključne reči*: prava deteta, zdravstvena zaštita, preventivna pedijatrija*

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CHILDREN'S RIGHTS IN HEALTH CARE: STANDARDS AND MODERN CHALLENGES IN PRACTICE

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Introduction: Children's rights in health care represent an important segment of modern pediatric practice and are based on international standards that emphasize the child's right to health, information and participation in accordance with age and developmental abilities. Modern healthcare systems are increasingly moving from a traditional medically dominant decision-making model to a participatory decision-making model in order to improve the quality of health care.

Aim: The aim of the work is to analyze the implementation of children's rights in health care within preventive pediatrics, with a focus on the level of information and application of children's rights in clinical practice.

Methods: The work method includes original research conducted within the Children's Hospital on a sample of 173 respondents, of which 104 are parents of patient children and 69 are health workers and associates. Data were processed using descriptive statistics.

Results: The results show that 77.9% of parents do not have adequate information about children's rights in the health system, while 91.3% believe that education about children's rights is necessary. Among healthcare workers and associates, 78.3% state insufficient knowledge of patients' child rights. The obtained results indicate a significant discrepancy between the normatively defined rights of the child and their practical implementation in health care. Contemporary international research confirms similar findings, indicating that children's participation in health care is often limited by institutional and communication barriers, despite clearly defined child rights in global health standards. Achieving comprehensive health care for children requires the promotion of children's rights by operationally linking theoretical concepts with specific activities aimed at children, parents and professionals.

Conclusion: The conclusion indicates that the improvement of children's rights requires a systemic approach, continuous education of health workers and improvement of communication with parents and children, with consistent application of modern international standards in daily clinical practice.

Keywords: *children's rights, health care, preventive pediatrics*

OKRUGLI STO
ROUND TABLE

(DIS)ABLING ENVIRONMENTS FOR AUTISM: FROM DELIGNY TO MILTON

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Introduction: One of the core problems autistic individuals, especially during childhood and adolescence, face is the disabling environment in which they live, develop, and receive education. Fernand Deligny (1913–1996) and his co-workers organized residential communes in France for autistic children and young adults who might otherwise have been institutionalized. From the 1950s onward, Deligny lived alongside autistic people in supportive, close-to-nature communities. One of his central concepts was the *network as a mode of being* ("Arachnean"), reflected in the wandering lines he mapped by tracing autistic people's movements within the commune. Deligny used the notion of *topos or milieu* to describe the local environment and its affordances, emphasizing that such an environment is created together with caregivers and can therefore have therapeutic value.

Aim: Using Deligny's residential communes as a positive example, I examine how modern institutions might be designed to better support autistic people's well-being and what lessons his experiment offers for special education and living alongside autistic people.

Methods: I bring Deligny's work into dialogue with Damian Milton's neurodiversity approach through a conceptual analysis of embodied and ecological frameworks in contemporary philosophy of cognitive science.

Results: Deligny observed that certain "tasks to be fulfilled," simple gestures, and actions supported caregivers and engaged autistic youth within the commune's milieu. He treated repetitive actions and relationships with material objects as meaningful rather than pathological. Crucially, his interventions did not aim to make autistic individuals neurotypical. This non-pathologizing approach resonates with the later neurodiversity movement and contemporary autistic scholarship.

Conclusion: Further empirical phenomenological research is needed to better understand autistic individuals' relationships with their living environments and to inform the design of more supportive and nourishing environments.

Keywords: *autism, environments, Fernand Deligny, network, neurodiversity*

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ALL WITHIN REASON? AN ETNOGRAPHY OF THE IMAGE OF THOUGHT IN A THIRD-YEAR LEARNING ENVIRONMENT

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Introduction: This presentation introduces the educational theory perspective of transcendental-praxeological noology, which is currently being developed in my forthcoming doctoral thesis, *Demonstration and Thought. Noological Aspects of (Special) Education's Operativity* (courtesy translation). Noology is a central and often implicit pedagogical concept, that delivers norms of thought, which can be utilized to explain why and how education functions. The following discussion then examines why such norms were rejected during the practice turn within educational science, how this rejection constitutes a major dividing line in current discourse and how transcendental-praxeological noology seeks to mediate between these positions: Drawing upon the French poststructuralist Gilles Deleuze, it will then be argued that norms of thought should not be understood as a foundation of education, but as a necessary consequence of demonstration and intrinsic processes of subjectivation therein.

Aim: Building upon these foundational explanations, the presentation will then discuss a novel heuristic of pedagogical processes and their exclusive tendencies, which will be used to interpret previously unpublished ethnographic accounts from everyday school life in a third-grade in Germany. In doing so, I will analyse how students are made out to be specific subjects, that are dis/abled in relation to these noologic norms.

Methods: This analysis is inspired by prior poststructuralist Studies in Ableism-approaches to dis/ability. Additionally, it relies on prior reconstructive methods for analysing how subjects are addressed as specific subjects. Data was gathered by utilizing participatory observation and ethnographic interviews.

Results: These discussions aim to present a novel perspective on subjectivation, ability and the genesis of dis/ability in educational practices.

Conclusion: Additionally, they will conclude that noology should again be considered an important conceptual part of educational theory and special education.

Keywords: *noology, ethnography, demonstration, subjectivation*

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POSTER SESIJA
POSTER SESSION

CHALLENGES AND OPPORTUNITIES FOR THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN THE LEARNING PROCESS IN SECONDARY SCHOOLS

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Introduction: Artificial intelligence is gradually becoming part of everyday practice in secondary education. Teachers encounter such tools when organising classroom work. They may also use them to provide feedback or adapt learning activities. As their use expands, their educational value needs to be examined through the decisions teachers make before using them in class.

Aim: The paper examines how secondary education teachers perceive the opportunities and challenges of artificial intelligence use in the learning process. It focuses on teachers’ views about classroom use in secondary education, where students differ in how quickly they progress and in how readily they participate in lessons.

Methods: The study follows a qualitative research design. Data will be collected through semi-structured interviews with secondary education teachers. Participants will be selected purposely in order to include variation in teaching subject, school level, years of experience, and familiarity with artificial intelligence tools. The sample may include teachers with different levels of classroom experience with these tools, including participants who have not used them in teaching. A short background questionnaire may be used before the interviews to record descriptive information. The interview material will be analysed through thematic analysis.

Results: As this is an ongoing doctoral research project, empirical findings are not yet available. The analysis is expected to show where teachers find these tools useful and what they consider before using material generated by artificial intelligence with students.

Conclusion: The study is expected to show how secondary education teachers decide whether material generated by artificial intelligence can be used in a particular classroom. Its scientific contribution lies in examining the reasoning behind these decisions, rather than describing teachers’ attitudes towards artificial intelligence in general.

Keywords: *artificial intelligence, secondary education, teachers’ perspectives, varied learning needs, qualitative research*

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EMPLOYERS' VIEWS ON HIRING INDIVIDUALS WITH INTELLECTUAL DISABILITY BASED ON PRIOR CONTACT

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Introduction: Employers play a key role in hiring individuals with intellectual disability into competitive integrated employment, with many factors influencing their decisions.

Aim: This study aims to explore employers' perspectives on hiring individuals with intellectual disability in relation to their prior experience with them.

Methods: The sample included 358 employers, comprising 183 (51.1%) males and 175 (48.9%) females, with an average age of 43.22±10.30. They managed companies ranging from microenterprises to large corporations, measured by the number of employees (M=35.54, SD=174.88), across various sectors (e.g., service, industrial, engineering, legal/economic). Among the respondents, 211 (58.9%) did not have contact with individuals with intellectual disabilities in their immediate environment, whereas 147 (41.1%) did. Employers' views on hiring these individuals were assessed using the Work for People with Disability scale.

Results: Employers with prior experience of working with individuals with intellectual disability had more positive views on their employment, $t(356)=4.21$, $p<0.001$. Differences were observed based on age, with younger employers expressing more favourable views, $F(1, 354)=4.43$, $p=0.013$. However, older employers who had prior contact with individuals with intellectual disability also showed more positive opinions, $F(1, 354)=3.22$, $p=0.041$. No significant differences were found between genders, including in the interaction analysis of gender and prior contact, $F(1, 354)=0.98$, $p=0.323$.

Conclusion: Previous contact with individuals with intellectual disability leads to more favourable views on their employment. Therefore, it is essential for government institutions and relevant organizations to focus on creating strategies that highlight the work potential of these individuals and develop programs that support their employment.

Keywords: *individuals with intellectual disability, employers, opinions, prior contact*

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EFIKASNOST MUZIKOTERAPIJE U UNAPREĐENJU KOMUNIKACIONIH I SOCIJALNIH VJEŠTINA KOD DJECE SA AUTIZMOM: PREGLED LITERATURE

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Uvod: Komunikacione i socijalne vještine ključne su za razvoj djece sa poremećajem iz spektra autizma (PSA), dok izazovi u ovim oblastima zahtijevaju prilagođene terapijske pristupe. Muzikoterapija se istražuje kao potencijalno efikasan metod za unapređenje komunikacije i socijalnih interakcija.

Cilj: Cilj ovog pregleda literature bio je da se utvrdi efikasnost muzikoterapije u poboljšanju komunikacijskih i socijalnih veština kod dece sa poremećajem iz spektra autizma.

Metode: Pregled literature sproveden je pretragom baza PubMed, Scopus i Web of Science, kao i akademskih platformi Google Scholar i Oxford Academic. Korišćeni su ključni pojmovi music therapy, autism, communication skills i social interaction. Uključene su studije koje su ispitivale uticaj muzikoterapije na komunikacione i socijalne vještine kod djece sa poremećajima iz spektra autizma, dok su isključeni radovi koji nisu obuhvatali dječju populaciju, nisu analizirali muzikoterapiju kao primarnu intervenciju ili nisu sadržali mjerljive komunikacione i socijalne ishode. U konačnu analizu uključeno je 13 studija različitog metodološkog dizajna.

Rezultati: Analizirane studije ukazuju na obećavajuće efekte muzikoterapije na unapređenje verbalne i neverbalne komunikacije, socijalne interakcije i zajedničke pažnje kod djece sa PSA. Na efikasnost intervencije utiču trajanje tretmana, uzrast djece i primijenjeni terapijski pristup, dok pojedine velike randomizovane studije nisu utvrdile značajnu prednost muzikoterapije u odnosu na standardne tretmane.

Zaključak: Muzikoterapija predstavlja obećavajuću dopunsku intervenciju za unapređenje komunikacionih i socijalnih vještina kod djece sa PSA. Potrebna su dodatna metodološki rigorozna istraživanja sa standardizovanim protokolima i većim uzorcima kako bi se preciznije procijenila njena efikasnost i dugoročni efekti.

Ključne riječi*: muzikoterapija, djeca sa autizmom, komunikacione vještine, socijalne vještine, pregled literature*

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THE EFFECTIVENESS OF MUSIC THERAPY IN IMPROVING COMMUNICATION AND SOCIAL SKILLS IN CHILDREN WITH AUTISM SPECTRUM DISORDER: A LITERATURE REVIEW

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Introduction: Communication and social skills are crucial for the development of children with autism spectrum disorder (ASD), while challenges in these areas require individualized therapeutic approaches. Music therapy has been increasingly explored as a potentially effective method for improving communication and social interactions.

Aim: The aim of this review was to examine the effectiveness of music therapy in improving communication and social skills in children with ASD.

Methods: A literature review was conducted by searching the PubMed, Scopus, and Web of Science databases, as well as the Google Scholar and Oxford Academic platforms. The following keywords were used: *music therapy*, *autism*, *communication skills*, and *social interaction*. Studies examining the effects of music therapy on communication and social skills in children with ASD were included, while studies that did not involve child populations, did not analyze music therapy as the primary intervention, or did not report measurable communication and social outcomes were excluded. A total of 13 studies with different methodological designs were included in the final analysis.

Results: The analyzed studies indicate promising effects of music therapy on improving verbal and non-verbal communication, social interaction, and joint attention in children with ASD. The effectiveness of interventions appears to be influenced by treatment duration, participants' age, and the applied therapeutic approach, while some large randomized studies have not demonstrated a significant advantage of music therapy compared to standard treatments.

Conclusion: Music therapy represents a promising complementary intervention for improving communication and social skills in children with ASD. Further methodologically rigorous studies with standardized protocols and larger samples are needed to more precisely evaluate its effectiveness and long-term effects.

Keywords: *music therapy, children with autism spectrum disorder, communication skills, social skills, literature review*

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TEACHERS' SELF-EFFICACY IN WORKING WITH STUDENTS WITH DEVELOPMENTAL DISABILITIES

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Introduction: Self-efficacy is a person's assessment of their own abilities in the context of organizing and implementing activities to achieve a goal. It is also defined as a person's belief in their own abilities, which are influenced by feelings, thoughts and reactions. In modern society, teacher self-efficacy is becoming increasingly important. Teacher self-efficacy is a teacher's belief in their own ability to provide a quality educational process, positively influence students and encourage them to learn.

The importance of teachers' self-efficacy is particularly explored in working with students with developmental disabilities. The characteristics of highly effective teachers such as work motivation for work, perseverance, enthusiasm, self-confidence and openness to using new teaching methods are emphasised. Teachers' sense of self-efficacy when working with students with developmental disabilities may be influenced by students' characteristics and specific needs of the students, experience, education and available resources for work.

Aim: The aim of this article is to review the literature to highlight the importance of teachers' self-efficacy in working with students with developmental disabilities.

Methods: The analysis included 56 research papers, comprising meta-analyses, review papers, and empirical studies on the self-efficacy of teachers working in inclusive and special schools.

Results: High levels of teachers' self-efficacy in working with students with developmental disabilities positively impact the quality and efficiency of the instructional process as well as the achievement of positive academic performance and encourages students to engage in learning.

Conclusion: Teacher self-efficacy is a key predictor of quality work with students with disabilities. Strengthening teachers' self-efficacy requires systemic support, access to resources, ongoing education, and the development of specific professional competencies.

Keywords: *self-efficacy, teachers, students with developmental disabilities*

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MODEL AKTIVNE INFERENCIJE KAO TEORIJSKI OKVIR ZA RAZUMEVANJE DIJADNE EMOCIONALNE REGULACIJE IZMEĐU STRUČNJAKA I DETETA SA POREMEĆAJEM IZ SPEKTRA AUTIZMA

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Uvod: Deca sa poremećajem iz spektra autizma često pokazuju izmenjenu autonomnu regulaciju, koju karakteriše redukovana varijabilnost srčanog ritma i pojačana reaktivnost na senzorne i socijalne stimuluse. U kliničkoj praksi se dosledno zapaža da regulatorno stanje stručnjaka (autonomna aktivacija, intonacija glasa, motorička stabilnost) direktno utiče na detetovu emocionalnu stabilnost, ali nedostaje adekvatan teorijski okvir koji bi objasnio ovaj efekat izvan deskriptivnog nivoa.

Cilj: Predložiti model aktivne inferencije kao teorijski okvir za razumevanje dijadne emocionalne regulacije između stručnjaka i deteta sa poremećajem iz spektra autizma sa izraženijim razvojnim potrebama.

Metode: Izvršen je narativni pregled literature iz oblasti psihologije, neuronauka i filozofije uma, sintetizovan sa kliničkom opservacijom intenzivnog individualnog rada sa jednim detetom sa poremećajem iz spektra autizma. Posebna pažnja posvećena je integraciji modela aktivne inferencije sa polivagalnom teorijom.

Rezultati: Model aktivne inferencije omogućava posmatranje dijade kao sistema dva spregnuta generativna modela koji minimizuju predikcionu grešku kroz fiziološku sinhronizaciju. Regulatorno stabilno ponašanje stručnjaka može delovati kao spoljašnja regulatorna osnova, što dovodi do redukcije dezorganizovanih odgovora deteta. Ova zapažanja su u skladu sa nalazima istraživanja neuralne sinhronizacije u socijalnoj interakciji i koregulacije u majka-dete dijadama.

Zaključak: Aktivna inferencija pomera fokus sa stručnjaka kao pasivnog konteksta ka njegovom regulatornom stanju kao aktivnoj intervencijskoj varijabli. Emocionalna regulacija se dešava između sistema, a ne samo unutar deteta. Ovaj okvir pruža teorijsku osnovu za unapređenje prakse specijalne edukacije i otvara pravce za buduća empirijska istraživanja fiziološke sinhronizacije u terapeutskim dijadama. Interpretacija je preliminarna i ograničena na jedan slučaj.

Ključne reči: *aktivna inferencija, dijadna regulacija, emocionalna koregulacija, poremećaj iz spektra autizma, fiziološka sinhronizacija*

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ACTIVE INFERENCE MODEL AS A THEORETICAL FRAMEWORK FOR UNDERSTANDING DYADIC EMOTIONAL REGULATION BETWEEN A PROFESSIONAL AND A CHILD WITH AUTISM SPECTRUM DISORDER

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Introduction: Children with autism spectrum disorder often exhibit altered autonomic regulation, characterized by reduced heart rate variability and heightened reactivity to sensory and social stimulation. In clinical practice, it is consistently observed that the professional’s regulatory state (autonomic activation, vocal intonation, motor stability) directly influences the child’s emotional stability, yet an adequate theoretical framework explaining this effect beyond the descriptive level is lacking.

Aim: To propose the active inference model as a theoretical framework for understanding dyadic emotional regulation between a professional and a child with autism spectrum disorder with more pronounced developmental needs.

Methods: A narrative review of literature from psychology, neuroscience, and philosophy of mind was conducted and synthesized with clinical observation from intensive individual work with one child with autism spectrum disorder. Particular attention was given to integrating the active inference model with polyvagal theory.

Results: The active inference model allows the dyad to be viewed as a system of two coupled generative models that minimize prediction error through physiological synchronization. The professional’s regulatorily stable behavior may function as an external regulatory basis, leading to a reduction in the child’s disorganized responses. These observations are consistent with findings from research on neural synchronization in social interaction and co-regulation in mother-child dyads.

Conclusion: Active inference shifts the focus from the professional as passive context toward their regulatory state as an active intervention variable. Emotional regulation occurs between systems, not only within the child. This framework provides a theoretical basis for advancing special education practice and opens directions for future empirical research on physiological synchronization in therapeutic dyads. The interpretation is preliminary and limited to a single case.

Keywords: *active inference, dyadic regulation, emotional co-regulation, autism spectrum disorder, physiological synchronization*

HYPERSENSITIVITY TO SOUNDS: HYPERACUSIS, MISOPHONIA AND PHONOPHOBIA

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Introduction: Hypersensitivity to sounds manifested through hyperacusis, misophonia and phonophobia represents a complex challenge for diagnosticians and for patients a problem that can significantly impair the quality of life. Hyperacusis is a chronic condition of reduced tolerance or hypersensitivity to ordinary environmental sounds, due to which they are perceived as abnormally loud or even painful. Misophonia is an under-researched multi-sensory condition that causes extreme sensitivity to certain sounds (loud breathing, swallowing, sipping, chewing, clock ticking) that manifests itself in intense emotional, physiological and behavioral reactions. Phonophobia is an irrational and persistent fear of certain sounds.

Aim: The aim of the paper is to provide a comprehensive overview of hypersensitivity to sounds by reviewing contemporary literature, focusing on hyperacusis, misophonia and phonophobia.

Methods: Literature search via electronic database within the Serbian Library Consortium for Coordinated Acquisition with key words: hyperacusis, misophonia, phonophobia, diagnosis and therapy.

Results: Hypersensitivity to sounds can occur at any age, regardless of gender. Based on the studies published so far, there is no definitive evidence on the cause and diagnosis of hypersensitivity to sound. Therapy requires a multidisciplinary (psychologist, otorhinolaryngologist, audiologist, sensory integration therapist) and individual approach to each patient.

Conclusion: Understanding the subtle differences between hyperacusis, misophonia, and phonophobia is key for establishing an accurate diagnosis and implementing appropriate therapeutic approaches.

Keywords: *hypersensitivity to sounds, hyperacusis, misophonia, phonophobia*

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QUALITY OF LIFE PERCEPTION AMONG DEAF AND HARD-OF-HEARING ADOLESCENTS ATTENDING SPECIAL SCHOOL

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Introduction: Adolescence is a developmental period marked by significant physical, psychological, and social changes that may influence an individual’s quality of life perception. In the process of identity formation, deaf and hard-of-hearing individuals often face challenges related to the unique characteristics of communication development and socio-emotional maturation, which may further shape their perceptions of quality of life. Previous studies have shown that deaf and hard-of-hearing youth tend to rate their quality of life lower than their hearing peers. Furthermore, perceived quality of life has been associated with factors such as age, gender, primary language, type of amplification, and school placement; however, the findings reported in the literature remain inconsistent.

Aim: This study aimed to examine perceived quality of life among deaf and hard-of-hearing adolescents attending a special school and to investigate its relationship with selected clinical and sociodemographic factors.

Methods: The study included 20 adolescents aged 14 to 19 years. Perceived quality of life was assessed using the *Youth Quality of Life Instrument for Youth who are Deaf or Hard-of-Hearing (YQOL-DHH)*.

Results: The findings indicate that participants perceived their quality of life as good. No significant association was found between quality of life perception and age. In addition, no significant differences in perceived quality of life were observed with respect to amplification use or communication model.

Conclusion: The results suggest that deaf and hard-of-hearing adolescents perceive their quality of life as good despite the specific challenges they encounter during adolescence. The examined factors (age, amplification use, and communication model) did not emerge as significant indicators of perceived quality of life in the study sample.

Keywords: *quality of life, deaf and hard of hearing individuals, adolescents, special school*

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SPEECH-IN-NOISE PERCEPTION IN CHILDREN WITH HEARING LOSS AND CHILDREN WITH DEVELOPMENTAL LANGUAGE DISORDER

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Introduction: Background noise is an increasingly prevalent factor that interferes with speech and language development. Despite advances in rehabilitation, children with disorders affecting verbal communication development continue to experience difficulties in noisy environments. Examining speech-in-noise perception in children with hearing loss and those with developmental language disorder may help identify factors and mechanisms relevant to improving auditory perception and speech-language development. Comparing these clinical groups provides insight into the contribution of auditory, cognitive, and linguistic factors to speech-in-noise perception.

Aim: This paper reviews research findings on speech-in-noise perception in children with hearing loss (hearing aid and cochlear implant users) and children with developmental language disorder, with a particular focus on factors contributing to this process.

Methods: A literature review was conducted using electronic databases (KoBSON, PubMed, and ResearchGate). Studies published within the last ten years were included in the analysis.

Results: Findings confirm difficulties in speech-in-noise perception in both groups. Factors associated with speech-in-noise perception vary according to the type of developmental disorder, while language abilities consistently emerge as a significant predictor in both clinical populations. The contribution of nonverbal intelligence, verbal memory, and signal-to-noise ratio has not been consistently demonstrated across studies. In children with hearing loss, the influence of these factors appears to depend on the type of amplification used. Shared difficulties include deficits in frequency discrimination, voicing perception, and temporal processing. However, differences are observed in the relative contribution of auditory, cognitive, and linguistic factors to speech-in-noise perception.

Conclusion: Speech-in-noise perception is a complex process influenced by auditory, cognitive, and linguistic factors, whose contribution varies across clinical populations. Further research in the Serbian-speaking context is needed to improve understanding of the mechanisms underlying successful speech-in-noise perception and to identify protective factors that may be targeted in the rehabilitation of children with disorders of verbal communication development.

Keywords: *speech-in-noise perception, hearing loss, hearing aids, cochlear implant, developmental language disorder*

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PREDICTORS OF COMPLEX SYNTACTIC PROCESSING IN CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT: CONTRIBUTIONS OF SYNTACTIC COMPREHENSION, EXPRESSIVE GRAMMAR, AND ORGANIZATIONAL SKILLS

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Introduction: Morphosyntactic deficits are a hallmark of specific language impairment. Grammaticality judgement is a metalinguistic ability that involves evaluating whether a sentence is grammatically correct or incorrect. It requires the integration of linguistic knowledge, syntactic processing, and working memory. Given its complexity, it is important to examine the contribution of different linguistic and cognitive abilities to individual differences in grammaticality judgement.

Aim: This study examined the contributions of syntactic comprehension, expressive grammatical competence, and organizational and visuoconstructive abilities to grammaticality judgement in children with SLI.

Methods: The sample included 24 children with SLI, aged 6 years 1 month to 8 years 11 months. Grammaticality judgement was assessed using a Grammaticality Judgement Task developed by the authors. Syntactic comprehension was measured using the Token Test, expressive grammatical competence using The Children’s Grammar Test, and organizational and visuoconstructive abilities using the Rey–Osterrieth Complex Figure Test. Data were analyzed using Spearman correlation and multiple regression analyses.

Results: Grammaticality judgement showed moderate positive correlations with syntactic comprehension (r_s=0.57, p<0.01) and expressive grammatical competence (r_s=0.54, p<0.01). The regression model explained 37.9% of the variance in grammaticality judgement (F(3, 20)=4.08, p<0.05, R^2=0.379). Only expressive grammatical competence was a significant unique predictor (β=0.54, p<0.05), whereas syntactic comprehension and organizational and visuoconstructive abilities were not significant predictors.

Conclusion: The findings suggest that grammaticality judgement in children with specific language impairment is more closely related to expressive grammatical competence than to syntactic comprehension or organizational and visuoconstructive abilities. These results indicate that grammaticality judgement may primarily reflect the development of

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the grammatical system rather than broader cognitive processes. From a clinical perspective, the findings highlight the importance of assessing and strengthening expressive grammatical competence to support individualized assessment and intervention. However, the relatively small sample size limits the generalizability of the findings; therefore, the results should be interpreted with caution, and replication in larger, more representative samples is warranted.

Keywords: *grammaticality judgement, specific language impairment, expressive grammar, syntactic comprehension, cognitive abilities*

CLINICAL AND COGNITIVE PREDICTORS OF AUDITORY BEHAVIOR DOMAINS IN CHILDREN WITH AUTISM SPECTRUM DISORDER

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Introduction: Auditory processing deficits are among the most common sensory characteristics of individuals with autism spectrum disorder, with atypical auditory behavior across different domains reported in up to 90% of cases. However, the determinants of specific auditory behavior domains remain underexplored.

Aim: This study aimed to examine whether autism symptom severity, verbal and nonverbal intelligence, sex, and age predict auditory behavior and its individual domains in children with autism spectrum disorder.

Methods: The sample included 30 children with autism spectrum disorder aged 3.5–6.11 years. Auditory behavior, autism symptom severity, and verbal and nonverbal intelligence were assessed using the Questionnaire on Auditory Behavior for Children with Autism Spectrum Disorder, the Gilliam Autism Rating Scale-Third Edition, and the Brunet–Lézine Scale and the Wechsler Intelligence Scale for Children – Serbian version, respectively.

Results: Spearman’s correlation analysis revealed a moderate negative association between autism symptom severity and auditory behavior (r_s=−0.54, $p<0.01$), as well as all domains except auditory sensitivity. Multiple regression analysis showed that the model explained 39% of the variance in auditory behavior ($F(5, 24)=4.66$, $p<0.01$, $R^2=0.39$); autism symptom severity was the only significant predictor (β=−0.46, $p<0.01$). At the domain level, autism symptom severity predicted sound localization (β=−0.57, $p<0.01$) and auditory attention (β=−0.50, $p<0.01$); verbal intelligence predicted sound detection (β=0.48, $p<0.05$) and comprehension (β=0.42, $p<0.05$). No significant predictors were identified for auditory sensitivity.

Conclusion: The findings suggest that auditory behavior does not represent a unitary construct but rather a set of distinct domains with different clinical and cognitive determinants, and auditory sensitivity may represent a distinct domain. These findings highlight the importance of individualized assessment and rehabilitation of auditory functioning in children with autism spectrum disorder.

Keywords: *autism spectrum disorder, auditory behavior, autism symptom severity, verbal intelligence*

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THE RELATIONAL BODY IN PSYCHOMOTOR THERAPY: REVISITING SVETOMIR BOJANIN'S LEGACY

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Introduction: The concept of the body as a relational and developmental entity represents one of the fundamental principles of psychomotor therapy. Inspired by the French psychomotor tradition and the work of Professor Svetomir Bojanin, founder of psychomotor reeducation in Serbia, this paper revisits his theoretical legacy from a contemporary perspective. Professor Bojanin integrated developmental neuropsychiatry, psychomotor therapy and relational approaches into a comprehensive model that emphasizes the inseparable unity of movement, affectivity, cognition and communication.

Aim: The aim of this paper is not only to explore the concept of the relational body as a central element of psychomotor intervention, but also to demonstrate the continuing scientific relevance of Bojanin's theoretical framework in the light of contemporary developmental neuroscience, embodied cognition, relational developmental theories and current psychomotor research. Within this framework, body experience is not regarded merely as a motor phenomenon, but as the basis for the development of identity, emotional regulation, symbolic functioning and interpersonal relationships.

Results: Drawing upon the principles of psychomotor reeducation and the integrative approach implemented at the Center for Speech and Early Intervention Dr Nestorov, the paper highlights the therapeutic significance of movement, play, rhythm and shared experiences in fostering developmental processes. Particular attention is given to the therapist–child relationship, where emotional attunement, trust and affective exchange constitute the developmental context through which psychomotor functions, communication and symbolic capacities emerge. The body is therefore understood not merely as a motor structure but as the primary relational medium through which the child experiences self, others and the surrounding world.

Conclusion: The original contribution of this paper lies in establishing a theoretical bridge between Bojanin's psychomotor model and contemporary international psychomotor practice, particularly the French psychomotor tradition represented by the „Institut Supérieur de Rééducation Psychomotrice"- ISRP Paris. Rather than viewing Bojanin's work as a historical contribution, this paper proposes that it represents a forward-looking theoretical framework whose core principles are

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increasingly corroborated by contemporary developmental science and international psychomotor research. Many concepts introduced by Bojanin several decades ago, including the developmental significance of body experience, movement, affective attunement and interpersonal relationships, are now supported by current evidence from developmental psychology, developmental neuroscience and embodied cognition. Revisiting Bojanin’s ideas therefore demonstrates not only their continuing relevance but also their scientific validity, supporting the understanding of psychomotor therapy as a holistic, evidence-informed and interdisciplinary approach to promoting child development, participation and well-being.

Keywords: *psychomotor therapy, relational body, Svetomir Bojanin, psychomotor reeducation, movement, affectivity, child development*

SUPPORTING ENGLISH FOR SPECIFIC PURPOSES (ESP) LEARNING IN SPECIAL EDUCATION AND REHABILITATION: DEVELOPING A LEARNER-ORIENTED GLOSSARY OF SPECIALIZED TERMINOLOGY

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Introduction: As a multidisciplinary field, Special Education and Rehabilitation is characterized by complex and highly specialized terminology. Previous research highlighted the scarcity of English–Serbian dictionaries and glossaries in this domain and emphasized the need for comprehensive resources that facilitate students' access to discipline-specific knowledge through professional literature in English. A needs analysis survey conducted with FASPER students in November 2025 confirmed that professional vocabulary is perceived as the most important component of their academic and professional development in English. In response to these findings and building on previous terminological work, a student-oriented English–Serbian glossary of Special Education and Rehabilitation terminology was developed and integrated into ESP teaching materials. The glossary currently contains around 240 entries with learner-friendly English definitions and Serbian equivalents, while the broader terminology index includes over 300 technical terms. These entries were selected based on their relevance to FASPER study programs and their frequency in ESP teaching materials. The glossary aims to support students' understanding of specialized concepts and facilitate access to professional literature in English.

Results: The poster presents the rationale, structure, and key features of the glossary, while also discussing terminological challenges encountered during its development, including the absence of direct Serbian equivalents, overlapping and context-dependent translation equivalents, differences between general and specialized meanings of common English words, and false friends.

Conclusion: It shows that a carefully designed bilingual glossary can serve as an effective ESP learning resource in interdisciplinary fields such as Special Education and Rehabilitation and may constitute an important step towards the development of a more comprehensive two-way English–Serbian dictionary of specialized terminology through interdisciplinary collaboration.

Keywords: *Special Education and Rehabilitation, ESP, specialized terminology, bilingual glossary, terminological challenges*

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IZAZOVI TRANZICIJE U ODRASLO DOBA ZA MLADE S INVALIDITETOM: PREGLED LITERATURE

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Uvod: Dosadašnja istraživanja ukazuju da prelazak u odraslo doba za mlade s invaliditetom ili smetnjama u razvoju predstavlja individualan i kompleksan proces. Nema univerzalnog pristupa koji bi odgovarao svima, stoga je ključna kontinuirana i otvorena saradnja između osoba s invaliditetom, njihovih porodica i pružalaca usluga iz različitih sektora kao što su zdravstvo, obrazovanje i socijalna zaštita kako bi se osigurala uspešna tranzicija u odraslo doba.

Cilj: Ovaj rad ima za cilj da putem analize dostupne literature izdvoji i prikaže uobičajene izazove s kojima se osobe s invaliditetom i njihove porodice suočavaju tokom procesa prelaska u odraslo doba.

Metode: Pretragom je obuhvaćena literatura objavljena u prethodne dve decenije koja sadrži sledeće ključne reči na engleskom jeziku u naslovu ili apstraktu rada: tranzicija, odraslo doba i ometenost/invaliditeti. Odabrana su empirijska istraživanja koja istražuju iskustva mladih s invaliditetom ili članova njihovih porodica tokom perioda odrastanja, koristeći analizu sadržaja.

Rezultati: Rezultati istraživanja ukazuju na pet glavnih oblasti poteškoća: 1. Obrazovanje: Mladi s invaliditetom suočavaju se sa ograničenim pristupom visokom obrazovanju i problemima napuštanja daljeg školovanja. 2. Samostalnost i zapošljavanje: Postoji teškoća u ostvarivanju samostalnosti i započinjanju nezavisnog života. Nedostatak podrške tokom traženja posla, diskriminacija na radnom mestu i nedostatak veština za donošenje odluka i samostalno funkcionisanje su izazovi. 3. Zdravstvena tranzicija: Nagli prelazak iz pedijatrijskog sistema zdravstvene zaštite u sistem za odrasle stvara poteškoće, poput izostanka odgovarajuće, individualizirane podrške od strane zdravstvenih radnika i nedostatak odgovarajućih programa, kao što je edukacija o seksu. 4. Socijalna izolacija: Mladi se suočavaju sa smanjenim učestvovanjem u društvenim aktivnostima i problemima u uspostavljanju međuljudskih odnosa, što je često posledica nedostupnosti aktivnosti i negativnih društvenih stavova. 5. Zdravstveno stanje: Postoji rizik od pogoršanja zdravstvenog stanja i gubitka funkcionalnih sposobnosti, što može biti povezano sa prekidom kontinuiteta nege.

Zaključak: Istraživanja naglašavaju potrebu za ciljanim intervencijama i individualnom podrškom tokom perioda prelaska u odsraslo doba mladih s invaliditetom.

Ključne reči: *tranzicija, odraslo doba, mladi s invaliditetom, odrastanje, ometenost, ciljane intervencije*

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CHALLENGES OF THE TRANSITION TO ADULTHOOD FOR YOUTH WITH DISABILITIES: A LITERATURE REVIEW

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Introduction: Previous research indicates that the transition to adulthood for young people with disabilities or developmental disabilities is an individual and complex process. There is no one-size-fits-all approach, so continued and open collaboration between people with disabilities, their families, and service providers from different sectors such as health, education, and social care is essential to ensure a successful transition to adulthood.

Aim: The aim of this paper is to analyse the available literature and present the common challenges that people with disabilities and their families face during the transition to adulthood.

Methods: The search included literature published in the previous two decades that contained the following keywords in English in the title or abstract of the paper: transition, adulthood, and disability. Empirical studies that investigate the experiences of young people with disabilities or their family members during the period of growing up, using content analysis, have been selected.

Results: The research results point to five main areas of difficulty: 1. Education: Young people with disabilities face limited access to higher education and dropout problems. 2. Independence and employment: There is difficulty in achieving independence and starting an independent life. Lack of support during the job search, discrimination in the workplace, and lack of decision-making skills and independent functioning are challenges. 3. Health transition: The sudden transition from the paediatric health care system to the adult system creates difficulties, such as the lack of appropriate, individualised support from health professionals and the lack of appropriate programs, such as sex education. 4. Social isolation: Young people face reduced participation in social activities and problems in establishing interpersonal relationships, which is often a consequence of the unavailability of activities and negative social attitudes. 5. Health condition: There is a risk of deterioration of health condition and loss of functional abilities, which may be related to interruption of continuity of care.

Conclusion: In conclusion, studies emphasise the need for targeted interventions and individual support during the period of transition to adulthood of young people with disabilities.

Keywords: *transition, adulthood, youth with disabilities, growing up, disability, targeted interventions*

COPING STRATEGIES AS PREDICTORS OF PSYCHOLOGICAL WELL-BEING AMONG SPECIAL EDUCATION AND REHABILITATION STUDENTS

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Introduction: Within modern mental health frameworks, psychological well-being is central to empirical research. Given the diverse academic and personal pressures they face, university students represent a vulnerable population; thus, understanding their stress-coping mechanisms and their impact on mental health is critical.

Aim: This study investigated the predictive power of specific coping strategies on the psychological well-being of university students.

Methods: The sample comprised 233 special education and rehabilitation students from the University of Belgrade. Psychological well-being was assessed using the Warwick-Edinburgh Mental Well-being Scale (WEMWBS), while coping strategies were measured via the 15-subscale COPE Inventory.

Results: Multiple linear regression analysis revealed that the set of coping strategies explained 34.3% of the variance in psychological well-being ($F(15, 217)=7.55$, $p<0.001$). Positive reinterpretation and growth ($\beta=0.302$, $p<0.001$), emotional social support ($\beta=0.245$, $p<0.01$), active coping ($\beta=0.166$, $p<0.05$), and suppression of competing activities ($\beta=0.141$, $p<0.05$) emerged as significant positive predictors. Conversely, venting ($\beta=-0.247$, $p<0.001$) and substance use ($\beta=-0.168$, $p<0.01$) significantly predicted lower psychological well-being.

Conclusion: The results underscore the critical role of adaptive coping strategies in safeguarding student well-being. These findings carry practical implications for higher education frameworks in special education and rehabilitation, highlighting the need for systemic curricular and extracurricular enhancements that promote psychological empowerment and the systematic development of adaptive coping resources.

Keywords: *coping strategies, wellbeing, students*

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CURRENT INSIGHTS INTO THE ROLE OF NRXN1 VARIANTS IN NEURODEVELOPMENTAL DISORDERS: A LITERATURE REVIEW

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Introduction: Genes from the neurexin family (*NRXN1*, *NRXN2*, *NRXN3*) encode presynaptic cell adhesion molecules critical for neurotransmission and differentiation of synapses. At the molecular level, CNVs in *NRXN1* gene, can disturb synaptic organization and reduce stability of neuronal connections, leading to synaptic dysfunction in the brain and increase vulnerability to conditions affecting brain development and function. Although relatively rare, CNVs in *NRXN1* gene are among the strongest single-gene genetic risk factors for neurodevelopmental disorders (NDDs).

Aim: The aim of this narrative review paper is to summarize current scientific knowledge regarding the contribution of neurexin gene variations to the pathogenesis of NDDs.

Methods: A structured search of PubMed/MEDLINE, Scopus, Web of Science, and APA PsycINFO was performed from database inception to 01 June 2026 using combinations of free-text terms related to neurexin and NDDs.

Results: Current data indicate that structural variations in neurexins (particularly *NRXN1* deletions) are consistently associated with a clinical phenotype encompassing severe deficits in verbal communication, stereotypical behaviors, speech delay, intellectual disability, and even late-onset neuropsychiatric manifestations such as schizophrenia. The phenotypic variability in severity and neurodevelopmental manifestations indicates that clinical consequences of *NRXN1* deletions depend on size and specific genomic localization of the deleted segment. The remarkable clinical variability and incomplete penetrance associated with *NRXN1* deletions, even among closely related individuals, suggest that *NRXN1*-associated phenotypes cannot be predicted solely based on genotype, and further support the need for individualized diagnostic and therapeutic approaches.

Conclusion: Understanding the precise role of neurexins provides a deeper insight into the biological and genetic heterogeneity of NDDs. This intersection is crucial for modern special education and neurorehabilitation, as it allows for a more accurate prognosis and provides a baseline for timely, personalized therapeutic, psychological, and logopedic interventions.

Keywords: *neurodevelopmental disorders, neurexin, synaptic dysfunction, phenotypic variability*

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POSITIVE EFFECTS OF SWIMMING IN ADOLESCENTS WITH DOWN SYNDROME: A LITERATURE REVIEW

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Introduction: Down syndrome (DS) is the most common chromosomal aneuploidy, resulting from the presence of an extra copy of chromosome 21. DS is characterized by anatomical, physiological, cognitive, and psycho-social features that reduce physical fitness and limit participation in physical activity. These attributes increase the risk of overweight, cardiovascular disease, and reduced quality of life in young people with DS. Due to the unique hydrostatic and hydrodynamic properties of water, aquatic exercise, particularly swimming, represents a safe and effective form of exercise that can improve physical fitness, motor function, and overall well-being in this population.

Aim: In this review, we summarize the current data regarding the physical, psychological, and social benefits of swimming and its potential therapeutic applications for adolescents with DS.

Methods: An extensive literature review was carried out across several databases (PubMed/MEDLINE, Scopus, Web of Science, Google Scholar, and ClinicalTrials.gov) using combinations of free-text terms related to swimming and DS. A total of 79 scientific records were identified. After screening the titles, abstracts, and full texts for relevance to the review topic, 8 scientific papers were included in the final analysis.

Results: Several studies have reported positive impact of swimming on body composition parameters within young people with DS. In particular, adolescents involved in swimming training program exhibited significant decreases in body mass, body fat percentage, and BMI, leading to enhanced cardiorespiratory function. Moreover, improvements in static arm strength, trunk strength, endurance, static and dynamic balance, suggest positive effects of swimming on motor skills and physical performance in individuals with DS. In addition to improved physical fitness, swimming has broad range of psychosocial benefits including enhanced self-confidence and independence, improved social interaction and communication skills, as well as emotional well-being.

Conclusion: Despite limited literature, current evidence suggests that swimming provides adolescents with DS a safe and accessible environment that supports physical fitness, and facilitates social inclusion. Incorporating swimming programs into rehabilitation and educational settings may significantly improve health status and overall quality of life in this population.

Keywords: *Down syndrome, swimming, aquatic exercise, rehabilitation, physical activity*

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RADIONICE
WORKSHOPS

MENTALNO ZDRAVLJE POMAGAČA: PUT KA OTPORNOSTI I ZAJEDNIČKOJ PODRŠCI

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Uvod: Profesionalni pomagači i pomagačice, poput socijalnih radnika i radnica, pedagoga i pedagoškinja, specijalnih edukatora i edukatorki, suočavaju se sa brojnim rizicima po mentalno zdravlje, uključujući sagorevanje, zamor osećanja i vikarijsku traumu. Svakodnevni rad sa osobama koje imaju iskustvo traume, visoki intenzitet kriznih situacija i manjak resursa podrške u zajednici dodatno otežavaju njihov položaj. Briga o mentalnom zdravlju često ostaje u senci drugih profesionalnih prioriteta, a traženje podrške može biti percipirano kao znak slabosti. Prema istraživanju udruženja Sociativa (2021), 61% pomagača i pomagačica iz javnog i civilnog sektora u Srbiji nema obezbeđenu kontinuiranu psiho-socijalnu podršku. Ova radionica pruža prostor za osvešćivanje izazova i pronalaženje načina za očuvanje mentalnog zdravlja kroz podršku i zajednički rad.

Cilj: Cilj radionice je da učesnici steknu uvid u faktore koji doprinose profesionalnom sagorevanju, da prepoznaju vlastite resurse i strategije za očuvanje mentalnog zdravlja, kao i da osnaže osećaj međusobne podrške u profesionalnom okruženju.

Metode: Radionica će koristiti sociodramske i psihodramske tehnike kako bi učesnici i učesnice kroz iskustveni rad istražili sopstvene unutrašnje resurse, prepoznali izazove sa kojima se suočavaju i razvili strategije za njihovo prevazilaženje. Kroz interaktivne vežbe i grupnu refleksiju, učesnici će imati priliku da pronađu nove uvide i alate za jačanje otpornosti u svom radu. Trajanje radionice je 90 minuta.

Rezultati: Dublje razumevanje profesionalnih rizika po mentalno zdravlje. Unapređene strategije za prevenciju sagorevanja na poslu. Umrežavanje sa kolegama i koleginicama i međusobna podrška.

Zaključak: Briga o mentalnom zdravlju pomagača ključna je za održivost pomagačkih profesija, kvalitet pružene usluge i predstavlja pravo svakog pomagača.

Ključne reči: *mentalno zdravlje pomagača, sagorevanje na poslu, grupe podrške*

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HELPER'S MENTAL HEALTH: STRENGTHENING RESILIENCE THROUGH MUTUAL SUPPORT

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Introduction: Professional helpers, including social workers, pedagogues, and special educators, face numerous risks to their mental health, including burnout, compassion fatigue, and vicarious trauma. Daily work with people who have experienced trauma, the high intensity of crisis situations, and limited community support resources further compound these challenges. Mental health care often remains secondary to other professional priorities, while seeking support may be perceived as a sign of weakness. According to a 2021 study conducted by Sociativa, 61% of professional helpers working in the public and civil society sectors in Serbia do not have access to continuous psychosocial support. This workshop provides a space to raise awareness of these challenges and explore ways of maintaining mental health through mutual support and collaborative work.

Aim: The aim of the workshop is to enable participants to gain insight into the factors contributing to professional burnout, identify their own resources and strategies for maintaining mental health, and strengthen a sense of mutual support within their professional environment.

Methods: The workshop will use sociodramatic and psychodramatic techniques to enable participants to explore their inner resources through experiential work, identify the challenges they face, and develop strategies for addressing them. Through interactive exercises and group reflection, participants will have the opportunity to gain new insights and develop practical tools for strengthening resilience in their professional work. The workshop will last 90 minutes.

Results: A deeper understanding of professional risks to mental health. Enhanced strategies for preventing burnout in the workplace. Networking with colleagues and strengthening mutual support.

Conclusion: Caring for the mental health of professional helpers is essential for the sustainability of helping professions and the quality of services provided, and represents a fundamental right of every professional helper.

Keywords: *mental health of professional helpers, burnout, support groups*

TERAPIJSKO HRANJENJE

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Uvod: Terapijsko hranjenje predstavlja važan dio intervencije kod osoba s teškoćama hranjenja, pri čemu se pristup razlikuje od uobičajenog hranjenja u svakodnevnom kontekstu. Na ishode hranjenja značajno utječu vrsta i tekstura hrane, ritam i količina obroka te pravilno pozicioniranje tijekom aktivnosti hranjenja.

Cilj: Cilj radionice je osvijestiti sudionike o najčešćim izazovima u terapijskom hranjenju te razlikama između običnog i terapijskog pristupa hranjenju. Dodatno, cilj je unaprijediti razumijevanje i procjenu vještina žvakanja kod sudionika kroz praktično iskustvo.

Metode: Radionica uključuje edukativni i praktični dio. U edukativnom dijelu obrađuju se ključni aspekti terapijskog hranjenja: vrsta i konzistencija hrane, ritam i količina unosa te pozicioniranje tijekom hranjenja, uz usporedbu s običnim hranjenjem. U praktičnom dijelu sudionici procjenjuju vlastite vještine žvakanja kroz konzumaciju namirnica različite tvrdoće. Koristi se kratka check-lista vještina žvakanja koja obuhvaća osnovne komponente oralno-motoričke funkcije.

Rezultati: Očekuje se da će sudionici razviti bolje razumijevanje utjecaja senzomotoričkih i posturalnih čimbenika na uspješnost hranjenja te steći veću sigurnost u prepoznavanju teškoća u žvakanju i prilagodbi hrane individualnim potrebama.

Zaključak: Radionica doprinosi boljem razumijevanju terapijskog hranjenja te naglašava važnost individualiziranog pristupa, adekvatne procjene oralno-motoričkih vještina i prilagodbe okoline i hrane kako bi se unaprijedila funkcionalnost i sigurnost tijekom hranjenja.

Ključne reči: *terapijsko hranjenje, oralno-motoričke vještine, tekstura hrane, individualizirani pristup, edukativna radionica*

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THERAPEUTIC FEEDING

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Introduction: Therapeutic feeding is an essential component of intervention for individuals with feeding and swallowing difficulties. Unlike conventional feeding in everyday contexts, therapeutic feeding requires a structured and individualized approach. Key factors influencing feeding outcomes include food type and texture, feeding rhythm and volume, as well as appropriate positioning during feeding activities.

Aim: The aim of this workshop is to increase participants' awareness of the most common challenges in therapeutic feeding and to highlight the differences between conventional and therapeutic feeding approaches. An additional objective is to enhance participants' understanding and assessment of chewing skills through practical experience.

Methods: The workshop consists of both theoretical and practical components. The theoretical part addresses key aspects of therapeutic feeding, including food consistency, feeding pace and quantity, and proper positioning, with a clear comparison to conventional feeding practices. The practical part involves self-exploration of chewing abilities through the consumption of foods with varying levels of hardness. Participants use a brief chewing skills checklist designed to assess basic oral-motor components such as bite control, chewing efficiency, and food manipulation.

Results: It is expected that participants will develop a deeper understanding of the role of sensory-motor and postural factors in feeding performance. Furthermore, they are expected to improve their ability to identify chewing difficulties and to adapt food texture and feeding strategies according to individual needs.

Conclusion: This workshop contributes to a better understanding of therapeutic feeding and emphasizes the importance of an individualized approach, accurate oral-motor assessment, and appropriate adaptation of both environment and food to improve safety, efficiency, and functional feeding outcomes.

Keywords: *therapeutic feeding, oral-motor skills, food texture, individualized approach, educational workshop*

PHYSICAL AND MENTAL HEALTH OF PEOPLE WITH AUTISM

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Introduction: Extensive research and meta-analytical studies show that the mortality rate of people with autism is at least twice as high as the expected mortality rate of neurotypical individuals. The most common causes of death include epilepsy, chronic medical conditions, suicide, and accidental deaths. The physical and mental health of individuals with autism is generally very poor, and this outcome cannot be fully attributed to intellectual disabilities or other co-occurring conditions. In addition to biological vulnerability, the bleak picture can also be explained by numerous barriers that individuals with autism face in accessing healthcare services. Some of the barriers identified in studies include the lack of knowledge and experience among healthcare professionals.

Aim: This was the motivation behind the project “Improving access to healthcare services for people with autism”, funded by the European Union, which led to the creation of a free platform for training healthcare professionals to work with autistic patients.

Methods: The participants are provided with manuals, presentations, videos, and additional materials covering the following topics: understanding autism; barriers to accessing healthcare; physical, mental, and oral health; preventive activities; emergency care for people with autism; and preparing individuals with autism for medical interventions. Although the platform is primarily intended for healthcare workers, we expect that parents would also greatly benefit from such training.

Results: Therefore, two versions of the manuals have been created that cover the same topics, but the version for parents differs in terminology and includes an enhanced focus on activities that precede medical interventions. All materials are available in English, Greek, Macedonian, Serbian, and Spanish. The content is divided into eight different modules. Each module includes a ten-question test for self-evaluation purposes.

Conclusion: Training healthcare professionals through this platform is an important step toward improving the accessibility of quality healthcare services for people with autism.

Keywords: *autism, health, platform*

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UMETNOST INKLUZIJE – SAVREMENO POZORIŠTE KAO MODEL SOCIJALNE INKLUZIJE

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Uvod: Savremeno pozorište sve češće prevazilazi granice umetničkog izraza i postaje prostor susreta, dijaloga i društvene transformacije. U kontekstu inkluzivnih praksi, pozorište može da predstavlja značajan model socijalne inkluzije jer omogućava ravnopravno učešće osoba različitih sposobnosti, iskustava i društvenih statusa u zajedničkom kreativnom procesu. Kroz metode zasnovane na telesnom izrazu, grupnoj saradnji i neposrednoj komunikaciji, učesnici razvijaju osećaj pripadnosti, samopouzdanje, socijalne veštine i sposobnost međusobnog razumevanja.

Ova radionica zasniva se na dugogodišnjoj praksi PLAVOG pozorišta, pozorišne trupe iz Srbije koja deluje u oblasti socijalne inkluzije kroz kreativno-edukativne projekte, unapređenje pristupačnosti kulturnih sadržaja i profesionalni umetnički rad koji okuplja izvođače sa i bez invaliditeta. Inspirisano tradicijom laboratorijskog pozorišta i radom Jeržija Grotovskog, PLAVO pozorište razvilo je praksu u kojoj se umetnička izvrsnost i socijalna inkluzija ne posmatraju kao suprotstavljeni, već kao međusobno povezani i komplementarni ciljevi. Kroz kontinuirani trening, kreativna istraživanja, edukativne programe i javna izvođenja, učesnici se podstiču da otkrivaju i razvijaju svoje izražajne, komunikacijske i kreativne potencijale.

Cilj: Cilj radionice je da ukaže na potencijal pozorišnih metodologija u oblasti specijalne edukacije i rehabilitacije, kao i da podstakne interdisciplinarni dijalog između stručnjaka iz oblasti obrazovanja, rehabilitacije, umetnosti i socijalne zaštite. Radionica polazi od stava da inkluzija nije samo pitanje pristupa, već stvaranja zajedničkog prostora u kojem različitosti postaju resurs za učenje, lični razvoj, umetničko stvaralaštvo i društveno povezivanje.

Metode: Radionica „Umetnost inkluzije – savremeno pozorište kao model socijalne inkluzije" predstaviće primere i metodologije proistekle iz iskustva PLAVOG pozorišta u društveno angažovanoj i inkluzivnoj umetničkoj praksi, sa posebnim naglaskom na pristupe koji omogućavaju aktivno učešće osoba sa invaliditetom i drugih društveno marginalizovanih grupa. Kroz praktične vežbe i zajedničku refleksiju, učesnici će istraživati na koji način pozorište može doprineti razvoju komunikacije, kreativnosti, empatije, samoizražavanja i socijalne participacije.

Ključne reči: *savremeno pozorište, inkluzivna umetnost, pristupačnost kulture, pozorište zajednice, primenjene pozorišne prakse*

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THE ART OF INCLUSION – CONTEMPORARY THEATRE AS SOCIAL INCLUSION MODEL

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Introduction: Contemporary theatre increasingly transcends the boundaries of artistic expression and becomes a space for encounter, dialogue, and social transformation. In the context of inclusive practices, theatre can serve as a significant model of social inclusion by enabling the equal participation of people with diverse abilities, experiences, and social backgrounds in a shared creative process. Through methods based on physical expression, group collaboration, and direct communication, participants develop a sense of belonging, self-confidence, social skills, and the capacity for mutual understanding.

This workshop is based on the long-standing practice of PLAVO Theatre, a theatre company from Serbia working in the field of social inclusion through creative and educational projects, improving access to cultural content, and professional artistic work that brings together performers with and without disabilities. Inspired by the tradition of laboratory theatre and the work of Jerzy Grotowski, PLAVO Theatre has developed a practice in which artistic excellence and social inclusion are not viewed as opposing concepts, but as interconnected and complementary goals. Through continuous training, creative research, educational programs, and public performances, participants are encouraged to discover and develop their expressive, communicative, and creative potential.

Aim: The aim of the workshop is to highlight the potential of theatre methodologies in the fields of special education and rehabilitation, as well as to encourage interdisciplinary dialogue among professionals from the fields of education, rehabilitation, the arts, and social welfare. The workshop is based on the premise that inclusion is not merely a question of access, but of creating a shared space in which differences become a resource for learning, personal development, artistic creation, and social connection.

Methods: The workshop “The Art of Inclusion – Contemporary Theatre as a Model of Social Inclusion” will present examples and methodologies arising from PLAVO Theatre’s experience in socially engaged and inclusive artistic practice, with particular emphasis on approaches that enable the active participation of people with disabilities and other socially marginalized groups. Through practical exercises and collective reflection, participants will explore how theatre can contribute to the development of communication, creativity, empathy, self-expression, and social participation.

Keywords: *contemporary theatre, inclusive art, cultural accessibility, community theatre, applied theatre practices*

Indeks imena / Author Index

A

Adamović Milosav 16, 18, 22, 23
Al Akkad Aiman 31
Aleksov Aleksandra 25, 26
Alimović Sonja 24, 36
Armacki Danka 152, 153

B

Babac Snežana 85, 86, 137
Bakić Salem 57
Balja Pancirov Lea 108
Baretić Olga 154, 155
Barukčić Borko 110, 112, 122, 123
Bašić Bruna 121
Begić Hurma 40
Bekić Ivana 124, 125
Bogićević Dragana 61, 62, 88, 89
Bohaček Ana-Marija 121
Bratovčić Vesna 40
Braun Elias 128
Brozović Blaženka 11
Buha Nataša 131
Bukvić Lidija 61, 62, 88, 89

C

Cvijetić Vukčević Marija 41, 42

Č

Čaušević Midhat 40
Čolić Petar 90, 92

D

Daničić Maja 107
Dražić Milana 71, 72
Drljan Bojana 58, 59
Drugović Sonja 43, 45
Dučić Bojan 41, 42, 50, 52

Đ

Đoković Sanja 37, 38, 142
Đorđević Jelena 101, 103, 117, 118
Đorđević Magdalena 20, 21
Đorđević Mirjana 156
Đurašinović Milica 76, 77
Đurić-Zdravković Aleksandra 101, 103, 119, 120
Đurov Anđelija 69, 70

E

Eminović Fadilj 63, 64

F

Fulgosi Masnjak Rea 108

G

Gareyev Andrey 31
Gazdić Janković Marina 149, 150
Gilja Blanka 108
Glamočak Sandra 76, 77
Glumbić Nenad 156

I

Ilić-Savić Ivana 85, 86, 137
Ilić-Stošović Danijela 20, 21
Ivančević Otanjac Maja 145
Ivanović Kristina 14, 15, 63, 64
Ivković Staša 115

J

Jablan Branka 134
Janković Aleksandar 149, 150
Janković-Nikolić Marina 53
Japundža-Milisavljević Mirjana 131
Ječmenica Bojana 58, 59
Jelić Maša 157, 158
Jović Olivera 122, 123
Jovović Nevena 58, 59

K

Kabiljo Marija 53
Kaljača Svetlana 41, 42, 50, 52
Kasun Luburić Matea 24
Katušić Ana 121
Kermauner Aksinja 49
Kljajić Danijela 154, 155
Kordić Milena 63, 64, 71, 72
Košević Marija 138, 139
Košir Andrej 84

Košir Janja 84
Kosović Olivera 132, 133
Koštić Lorena 36, 43, 45
Kotseva Gabriela 32
Kovačević Jasmina 71, 72
Kovačević Lepojević Marina 148
Kovačević Milica 96, 97
Kovčo Vukadin Irma 95
Krajčíková Barbora 55
Krajnčan Mitja 9
Krasavina Yulia 31
Krejović Sanja 105, 106
Krstić Danka 146, 147
Krstić Nešić Dragana 115
Kudrić Jelena 78, 79
Kulezić-Stojinović Dragana 53

L

Lalatović Staša 46, 47
Lazić Biljana 53
Lemajić-Komazec Slobodanka 28, 29

LJ

Ljujić Biljana 149

M

Maksić Jasmina 101, 103, 119, 120
Maletić-Sekulić Ivana 137
Mandarić Sanja 65, 66
Manojlović Nino 53
Maoduš Jovana 93, 94
Marić Božidarka 90, 92
Maričić Mina 110, 112, 122, 123
Martać Valentina 134
Matić Ivana 28, 29
Mehmedinović Senad 40
Mijatović Luka 148
Milanović-Dobrota Biljana 131
Milanović Emilija 80, 81
Milanović Ivana 140, 142
Milenković Danica 110, 112
Milićević Milena 146, 147
Milošević Jasmina 124, 125
Milošević Slađana 98, 99
Milutinović Vladan 137
Mirić Filip 96, 97
Mirković Marijana 85, 86

N

Nemček Dagmar 55
Nešić Janko 127
Nešić Vladimir 115
Nestorov Stevan 82, 143
Nestorov Violeta 82, 143
Nikolić Milena 53, 57
Nikolić Mina 28, 29
Nišević Rea 110
Nišević Snežana 112
Njaradi Olja 105, 106

O

Obrenović Ilić Ivana 30, 63, 64
Odović Gordana 39
Ostojić Zeljković Sanja 28, 29

P

Panagiotis Lappas Ioannis 130
Paštar Milena 140, 142
Paulik Andrea 24
Paunović Verica 74, 75
Pavlović Aleksandra 101, 103, 119, 120
Pavlović Dragan 117, 118, 119, 120
Pavlović Jelena 22
Pavlović Jovana 14, 15, 23
Pavlović Rada 139
Petrović Ivan 90, 92
Petrović Jovana 33, 34
Petrović-Lazić Mirjana 85, 86
Petrović Sunčica 156
Podlesek Anja 84
Ponomarenko Ekaterina 31
Popović-Ćitić Branislava 61, 62, 88, 89
Potkonjak Marko 157, 158
Poznanović Mirko 67, 68, 69, 70
Puente Antonio 10

R

Radaković Boris 135, 136
Radovanović Vesna 71, 72
Ranđelović Marina 80, 81
Runjić Tina 43, 45

S

Seratlić Ivana 152, 153
Sikirić Dominik 36, 107

Simikić Vesna 137
Sinanović Samir 40
Skubic Severina 49
Sremčev Miloš 110, 112, 122, 123
Sretenović Ivana 14, 15
Stanimirov Ksenija 37, 38, 46, 47
Stanojević Nina 139
Stekić Đinđić Dunja 30, 134
Stoimenov Nikolay 32
Stojanović Jasmina 137
Stošljević Miodrag 16, 18, 25, 26
Strižak Nevena 46, 47, 148
Suzović Dejan 67, 68
Suzović Katarina 67, 68, 69, 70

Š

Šešum Mia 138
Šljivić Radmila 90, 92
Šuster Jelena 90, 92

T

Tankosić Bojana 76, 77
Todorović Jovana 16, 18
Todorović Vojislav 16, 18, 22, 23
Tomova Margarita 32
Tzvetkova-Arsova Mira 32

U

Urošević Jovana 93, 94
Uzelac Jovana 76, 77

V

Vantić-Tanjić Ibor 57
Vantić-Tanjić Medina 57
Vasiljević Marko 65, 66
Vasiljević-Prodanović Danica 96, 97
Veletić Marija 37, 38
Vidović Radmila 30
Vilotijević Ratković Olivera 33, 34
Vuković Mile 74, 75
Vušović Magdalena-Mia 50, 52, 110, 112

Z

Zećović Emina 105, 106
Zrnić Lana 39

Ž

Živanović Dragana 50, 52
Živković-Marinkov Emilija 137
Žunić-Pavlović Vesna 93, 94
Žunjić Miloš 110, 112

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