

## Vpliv sprostitvenih metod na psiho-fiziološko stanje zdravih nosečnic in nosečnic z visokim tveganjem – pregled literature

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**Uvod:** Zdrave nosečnice in nosečnice z visokim tveganjem se v svoji nosečnosti velikokrat srečajo s stresnimi situacijami, ki povzročijo anksiozno ali depresivno razpoloženje, se počutijo napete, utrujene in se celo sprašujejo, ali bodo zmogle prenesti vse to (1, 2). Sprostitvene metode, ki jih uporabljajo med nosečnostjo, prispevajo k izboljšanju psihičnega stanja in fizioloških sprememb ter zmanjšanju zapletov, ki se lahko pojavijo v nosečnosti (3). Namen pregleda literature je bil na podlagi pregleda domače in tuje strokovne ter znanstvene literature ugotoviti, kakšen vpliv ima sproščanje na psihično stanje in fiziološke spremembe pri zdravih nosečnicah in nosečnicah z visokim tveganjem ter kakšen je vpliv sprostitve na zmanjšanje zapletov pri nosečnicah z visokim tveganjem. **Metode:** Iskanje tuje in domače strokovne ter znanstvene literature je potekalo na internetu z brskalniki ter elektronskimi bazami podatkov in z ročnim iskanjem v knjižnicah Univerze v Ljubljani, Zdravstvene fakultete in Medicinske fakultete. Iskanje literature je bilo omejeno na angleški, hrvaški in slovenski jezik ter na članke med letoma 2005 in 2012. Metodologija raziskovanja je vključevala randomizirane nadzorovane raziskave, randomizirane eksperimentalne raziskave, kvazi eksperimentalne raziskave, eksperimentalne raziskave, nadzorovane klinične raziskave in pilotne randomizirane nadzorovane raziskave, ki so ugotavljale učinke sprostitve na izboljšanje psiho-fizioloških sprememb zdravih nosečnic in nosečnic z visokim tveganjem ter zmanjšanje nosečniških zapletov nosečnic z visokim tveganjem. **Rezultati:** Po iskalni strategiji je merilom izbora ustrezalo trinajst raziskav. Od teh je pet raziskav proučevalo vpliv sprostitvenih metod na psihično stanje in fiziološke spremembe nosečnic brez nosečniških zapletov, štiri raziskave so ugotavljale vpliv sprostitvenih metod na psihično stanje in fiziološke spremembe nosečnic z visokim tveganjem, štiri raziskave pa so raziskovale vpliv sprostitvenih metod na zmanjševanje zapletov pri nosečnicah z visokim tveganjem. V raziskavah so sodelovale ženske v obdobju nosečnosti, med katerimi je bilo skupaj 578 zdravih nosečnic in 764 nosečnic z visokim tveganjem. Preiskovanke so bile deležne različnih sprostitvenih metod, ki so bile zelo preproste, neinvazivne in nizkstroškovne, kar je omogočilo lažji dostop vsem nosečnicam. Uporabljene so bile progresivna mišična relaksacija, vodena imaginacija, preponsko dihanje, glasba in joga. Rezultati raziskav so pokazali, da slednje sprostitvene metode vplivajo na zmanjšanje anksioznega ter depresivnega stanja in izboljšanje počutja. Prav tako so pripomogle k zmanjšanju stresnih hormonov, izboljšanju kardiovaskularnega sistema, podaljšanju nosečnosti ter zmanjšanju zapletov prezgodnjih porodov. **Sklep:** Sprostitvene metode se med seboj razlikujejo predvsem v načinu izvedbe. Njihov osnovni namen je zavestna sprostitvev s pripadajočimi fiziološkimi spremembami in izboljšanim duševnim počutjem. Ukvarjanje s sprostitvijo med nosečnostjo lahko nosečnicam omogoči boljši potek nosečnosti, razvoj ploda, lažji porod in hitrejše okrevanje po porodu. Tako lahko glede na rezultate pregledanih raziskav zaključimo, da je izvajanje različnih sprostitvenih metod med nosečnostjo uspešen način za izboljšanje psihičnega stanja in fizioloških sprememb ter za zmanjšanje zapletov, ki se pojavijo v nosečnosti.

**Ključne besede:** nosečnost, stres, anksioznost, depresija, sprostitvev v nosečnosti.

## Relaxation methods impact on psycho-physiological state in healthy and high-risk pregnant women – literature review

**Introduction:** Healthy and high-risk pregnant women in their pregnancy are often confronted with stressful situations that cause anxiety or depression, they feel tense, tired and even wondering if they are able to handle all of this (1,2). Relaxation methods they use during pregnancy contribute to improving the psychological state and physiological changes and reduce complications that can occur during pregnancy (3). The purpose of the thesis is based on a review of domestic and foreign professional and scientific literature to determine the impact of the release on mental state and physiological changes in healthy and high-risk pregnant women and the influence of relaxation on reducing complications in high-risk pregnant women. **Methods:** Search for domestic and foreign scientific and professional literature was conducted through the internet with web browsers and electronic databases and hand searching in libraries of the University of Ljubljana, Faculty of Health Sciences and the Faculty of Medicine. Literature search was limited to English, Croatian and Slovenian language as well as articles between 2005 and 2012. The Methodology of research included randomised controlled studies, randomised experimental researches etc. Their aim was to determine the effect of relaxation on improvement of psychophysiological changes of healthy pregnant women and high-risk pregnant women as well as on reducing the complications that occur during pregnancy. **Results:** According to the search strategy, 13 studies complied with the inclusion criteria. Five of these studies examined the impact of relaxation methods on the mental condition and the physiological changes of pregnant women with no pregnancy complications, four studies examined the impact of relaxation methods on the mental condition and physiological changes of women having high-risk pregnancies, while the remaining four studies focused on the impact of relaxation methods on the reduction of complications in women having high-risk pregnancies. The studies involved pregnant women, among them 578 healthy pregnant women and 764 women having high-risk pregnancies. The women practiced various simple, non-invasive and low-cost relaxation techniques which made them therefore easier accessible to all pregnant women. The techniques included progressive muscle relaxation, conducted imagination, diaphragmatic breathing, music and yoga. The study results indicated that different forms of relaxation methods contributed to the improvement of the mental condition and the physiological changes of healthy pregnant women as well as women with high-risk pregnancies, and that they also reduced complications that developed during pregnancy. **Conclusion:** Relaxation contributes to bringing the body, mind, emotions and spirit into balance, which improves the course of pregnancy, the development of the foetus and helps make giving birth easier. It also contributes to faster recovery after delivery. On the basis of the results it can therefore be concluded that practising various relaxation methods during pregnancy is a successful way to improve a woman's mental condition, her physiological changes and to reduce complications that might develop during pregnancy.

**Key words:** pregnancy, stress, anxiety, depression, relaxation during pregnancy.

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## Učinkovitost medeničnega pasu in fizioterapevtskih nasvetov pri nosečnicah z bolečino v medeničnem obroču

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**Uvod:** Bolečina v medeničnem obroču (BMO) je posebna oblika bolečine v križu, ki se lahko pojavi ločeno ali v povezavi z bolečino v križu. Približno 20 odstotkov žensk med nosečnostjo občuti bolečino v medeničnem obroču (1). Take nosečnice lahko varno zdravimo v kateri koli višini nosečnosti (2). V literaturi je za bolečino v medeničnem obroču navedenih veliko različnih vrst zdravljenja, namenjenih obvladovanju bolečine in zmanjšanju nezmožnosti žensk s tovrstno bolečino (3). Namen: Namen raziskave je bil ugotoviti učinkovitost medeničnega pasu in fizioterapevtskih nasvetov pri nosečnicah z bolečino v medeničnem obroču. **Metode:** Raziskava je potekala v Porodnišnici Ljubljana. Od 83 nosečih prostovoljk je bilo v raziskavo glede na vključitvena in izključitvena merila vključenih 43 nosečih prostovoljk z bolečino v medeničnem obroču med 18. in 37. tednom nosečnosti. Tri nosečnice so od raziskave odstopile. Nosečnice so bile z žrebom naključno razdeljene v skupino s fizioterapevtskimi nasveti in medeničnim pasom (N = 21) in v skupino z nasveti (N = 19). Podatke o nosečnici in bolečini v medeničnem obroču smo pridobili s strukturiranim vprašalnikom, intenzivnost bolečine pa smo ocenjevali z vizualno analognost lestvico (4). Ocenjevanje smo izvedli na začetku raziskave in ga ponovili čez dva tedna. Uporabili smo statistične metode Anova, Pearsonov Hi-kvadrat, Pearsonovo korelacijo, test t za odvisna vzorca in Wilcoxonov test vsote rangov. **Rezultati:** Medenični pas se je v kombinaciji s fizioterapevtskimi nasveti pri lajšanju povprečne bolečine v medeničnem obroču v nosečnosti izkazal kot statistično pomembno bolj učinkovit kot samo fizioterapevtski nasveti ( $p = 0,009$ ). Ugotovljeno je bilo, da pri lajšanju tovrstne bolečine v nosečnosti, ko je ta najhujša, medenični pas v kombinaciji s fizioterapevtskimi nasveti ni bolj učinkovit kot samo fizioterapevtski nasveti. Medenični pas v kombinaciji s fizioterapevtskimi nasveti ni vplival na večje zmanjšanje števila bolečih predelov in števila dnevni aktivnosti kot samo fizioterapevtski nasveti. V skupini z medeničnim pasom in fizioterapevtskimi nasveti se je število pozitivnih kliničnih testov statistično pomembno zmanjšalo ( $p = 0,003$ ), v skupini s fizioterapevtskimi nasveti pa je ostalo nespremenjeno. **Zaključki:** Rezultati so pokazali, da je medenični pas v kombinaciji s fizioterapevtskimi nasveti pri lajšanju povprečne bolečine v medeničnem obroču v nosečnosti bolj učinkovit kot samo fizioterapevtski nasveti. Na podlagi pridobljenih rezultatov in visoke prevalence bolečine v medeničnem obroču v nosečnosti so potrebne nadaljnje randomizirane kontrolirane raziskave s področja učinkovitosti različnih fizioterapevtskih postopkov za zdravljenje bolečine v medeničnem obroču v nosečnosti, s katerimi bi lahko pripomogli k nadaljnjemu razvoju smernic za njeno zdravljenje v nosečnosti.

**Ključne besede:** bolečina v medeničnem obroču, nosečnost, medenični pas, nasveti, fizioterapija.

## Effect of pelvic belt and physiotherapy advice on pain in pregnant women with pelvic girdle pain

**Background:** Pelvic girdle pain (PGP) is a specific form of low back pain that can occur separately or in conjunction with low back pain. Estimates of the prevalence of PGP in pregnancy suggest that at least 20% of women experience PGP during pregnancy (1). It can be treated safely at any stage during pregnancy (2). A number of research studies have attempted to identify best intervention and prevention practices for these dysfunctions (3). The purpose of the study was to determine the efficacy of pelvic belt and physiotherapy advice in pregnant women with PGP. **Purpose:** The purpose of the study was to determine the efficacy of pelvic belt and physiotherapy advice in pregnant women with PGP. **Methods:** The study was conducted in the Maternity hospital in Ljubljana. The eligibility criteria ruled in 43 participants out of the cohort of 83 women in their 18 to 37 weeks of pregnancy. Three pregnant women declined their participation in the study. The participants were randomly assigned to physiotherapy advice plus non-rigid pelvic belt (N=21), and to physiotherapy advice alone (N=19). The data about the pregnant women and PGP were recovered through a structured questionnaire and the pain intensity was assessed with visual analogue scale. The assessment was carried out at the beginning of the study and repeated after two weeks. Statistical analysis included Anova, Pearson's chi-squared test, Pearson's correlation, paired samples t-test and Wilcoxon signed-ranks test. **Results:** Results of the study show that physiotherapy advice plus non-rigid pelvic belt was statistically significantly more effective in the treatment of the average PGP in pregnancy than physiotherapy advice alone ( $p=0.009$ ). In cases of worst PGP in pregnancy, the pelvic girdle belt in conjunction with physiotherapy advice was not statistically significantly more effective than physiotherapy advice alone. The combination of therapeutic approaches also did not statistically significantly decrease the number of painful areas and the amount of daily living activities as compared to physiotherapy advice alone. In the group treated with physiotherapy advice plus non-rigid pelvic belt, the number of positive clinical tests was statistically significantly reduced in the second assessment ( $p=0.003$ ), while in the physiotherapy advice group it remained the same. **Conclusions:** Results of the study show that the pelvic belt in conjunction with physiotherapy advice is more efficient in alleviating the average PGP in pregnancy than physiotherapy advice alone. Taking into consideration the results of the study and the high prevalence of the PGP in pregnancy, further randomised controlled trials need to be undertaken to determine the efficacy of different physiotherapeutic approaches in the treatment of PGP in pregnancy and to further develop the guidelines for its management during pregnancy.

**Key words:** pelvic girdle pain, pregnancy, pelvic belt, advice, physiotherapy.

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## **Pojavnost stresne urinske inkontinence med fizioterapevti v Univerzitetnem kliničnem centru Maribor**

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**Uvod:** Stresna urinska inkontinenca (SUI) je nehoteno uhajanje urina pri fizičnih aktivnostih, kot so dvigovanje bremen in športne aktivnosti, ter pri kihanju ali kašljanju (1). Z izvajanjem vaj za krepitev mišic medeničnega dna (MMD) kot preventiva pred stresno urinsko inkontinenco, se lahko bistveno izboljša kakovost življenja (2). Z našo raziskavo smo želeli ugotoviti pojavnost stresne urinske inkontinence med fizioterapevti v primerjavi z medicinskimi sestrami, zaposlenimi v UKC Maribor. **Metode:** Uporabili smo anketni vprašalnik, ki je obsegal 20 vprašanj večinoma zaprtega tipa. Raziskovalni vzorec je vključeval 48 fizioterapevtov in fizioterapevtek, starih od 20 do 60 let, zaposlenih v UKC Maribor. **Rezultati:** Dobljene rezultate smo primerjali z raziskavo, opravljeno o pojavu stresne urinske inkontinence pri medicinskih sestrah v UKC Maribor, iz leta 2008 (3). Glede na dejavnik tveganja pri opravljanju poklica, kot je opravljanje težjih fizičnih opravil, smo z raziskavo ugotovili, da se stresna urinska inkontinenca pogosteje pojavlja pri medicinskih sestrah kot pri fizioterapevtih. Med drugim smo ugotovili tudi, da so fizioterapevti v primerjavi z medicinskimi sestrami bolje seznanjeni in ozaveščeni glede pomena in učinkov izvajanja vaj za krepitev mišic medeničnega dna. **Zaključek:** Tako fizioterapevti kot medicinske sestre bi si morali prizadevati za večjo promocijo kontinence in širjenje ustreznih informacij o preprečevanju pojavnosti inkontinence. Večji poudarek bi moral biti namenjen izvajanju vaj za krepitev mišic medeničnega dna, ki se svetujejo kot prvi izbor v konzervativnem zdravljenju stresne in drugih tipov urinske inkontinence.

**Ključne besede:** stresna urinska inkontinenca, dejavniki tveganja, mišice medeničnega dna, fizioterapevti.

## Occurrence of urinary stress incontinence in physiotherapists in University clinical center Maribor

**Introduction:** Stress urinary incontinence (SUI) is involuntary urinary leakage, which occurs with physical activity such as lifting heavy objects, sports activities, sneezing and coughing (1). Regular exercising of pelvic floor muscles (PFM) as a preventive measure of SUI may aid to improvement of quality of life (2). The aim of our research was to examine the occurrence of SUI among physiotherapists employed at UKC Maribor. **Methods:** For this purpose, a questionnaire with 20 questions, of mainly closed type, was used. 48 physiotherapists, aged 20-60 years and employed at UKC Maribor were included. **Results:** Our results were compared with results of the research on occurrence of SUI among nurses at UKC Maribor made in 2008 (3). Taking into account the risk factors of the profession, SUI at the work place occurs more common in nurses than in physiotherapists. Results also confirm, that physiotherapists, compared to nurses, are more familiar with the purpose and effect of exercises for PFM strengthening. **Discussion:** As health professionals, both professions should strive for the promotion of continence, dissemination of relevant information on the prevention of incontinence. Bigger emphasis should be put to the importance of PFM exercises, which are recommended as first-line treatment in conservative management programs for women with stress and other types of urinary incontinence.

**Key words:** stress urinary incontinence, risk factors, pelvic floor muscles, physiotherapists.

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## Fizioterapevtska obravnava pri disfunkciji odvajanja blata – poročilo o primeru

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**Uvod:** Zaprtje je subjektiven izraz, ki se uporablja za opis težav pri odvajanju blata, bodisi zaradi nerednega odvajanja majhnih količin trdega blata bodisi zaradi čezmernega napenjanja med odvajanjem ali obojega (1). Prevalenca zaprtja pri odraslih ženskah je med 3 in 17 odstotki. Številni dejavniki, ki so povezani z zaprtjem, so povezani tudi s slabšo funkcijo mišic medeničnega dna. Ponavljajoče se čezmerno napenjanje med odvajanjem blata lahko poslabša že prisotno slabšo funkcijo, kar ima lahko za posledico šibkost mišic medeničnega dna, čezmeren spust presredka med napenjanjem in sekundarne anatomske spremembe (2). **Prikaz primera:** 32-letna pacientka je bila napotena na fizioterapijo z napotno diagnozo zaprtje. Težave so se začele pred nekaj leti, ko je nekega dne zavrla poziv na blato in po tem dogodku deset dni ni odvajala. Neredno odvajanje blata se je občasno še ponovilo. Pred dvema letoma pa so se težave začele stopnjevati do te mere, da je blato odvajala samo enkrat na teden, in še to le z vbrizganjem vode v rektum. Konsistenca blata je bila navadno trda (ocena 1 po lestvici Bristol) (3), zato je bilo pri odvajanju blata prisotno čezmerno napenjanje. Pacientka je predhodno že opravila kolonoskopijo in ultrazvok abdomna, ki nista pokazala posebnosti. Opravila je tudi magnetnoresonačno dinamično slikanje medeničnega dna, ki je pokazalo relaksacijo medeničnega dna prve stopnje (blaga), prolaps rektuma druge stopnje (zmeren) in blago anteriorno rektokelo. Fizioterapevtski pregled je obsegal oceno perineja, anusa, vagine in anorektuma v mirovanju, med kontrakcijo mišic medeničnega dna in med napenjanjem navzdol. Pri napenjanju se je pojavil spust perineja, večji od 2 do 3 cm. Pri rektalnem pregledu smo ugotovili blago paradokšno kontrakcijo mišic medeničnega dna. Pri oceni vzorca odvajanja blata smo ugotovili nepravilen vzorec z nepravilnim položajem telesa in čezmerno koncentrično aktivnostjo mišice rectus abdominis. Fizioterapevtska obravnava je vključevala učenje pravilnega vzorca odvajanja blata, katerega namen je bil povečati anorektalni kot in zmanjšati čezmerno napenjanje. Za učenje relaksacije mišic medeničnega dna smo uporabili biološko povratno zvezo z rektalno EMG-sondo. Za simulacijo odvajanja blata smo uporabili rektalni balon, napolnjen z vodo. Pri tem smo pacientko naučili tehnik za stabilizacijo perineja in korekcijo rektokele med napenjanjem. Fizioterapevtska obravnava traja pol leta, enkrat na mesec in še ni končana. Pacientka zdaj poroča o občasnem odvajanju tudi dvakrat na teden, pri odvajanju ji ni treba vedno vbrizgavati vode v rektum. Paradokсна kontrakcija mišic medeničnega dna je ob poskusu odvajanja navzoča le še občasno, koncentrična kontrakcija mišice rectus abdominis pa ne več. Pri večini poskusov odvajanja blata rektalni balon, napolnjen z vodo, pacientki izpade iz rektuma. Pacientka je na zbirniku za oceno zaprtja (4) pred fizioterapijo zbrala 25 točk (od možnih 30 točk), po pol leta pa 19 točk (nad 15 točk je zaprtje). **Zaključki:** Zaradi večletnega čezmernega napenjanja med odvajanjem blata so pri pacientki verjetno nastale anatomske spremembe medeničnega dna, ki so bile ugotovljene s preiskavami. Posledica je bil spremenjen vzorec odvajanja. Cilj fizioterapevtske obravnave je bil vzpostaviti pravilen vzorec odvajanja z namenom učinkovite izpraznitve rektuma in preprečevanja nastanka sekundarnih anatomskih sprememb. V pol leta je pacientka vzpostavila pravilen vzorec odvajanja, ki se kaže tudi v učinkovitejšem in pogostejšem odvajanju blata.

**Ključne besede:** disfunkcija odvajanja blata, zaprtje, ocena vzorca odvajanja blata, vadba, biološka povratna zveza.

## Physiotherapy treatment in bowel dysfunction – case report

**Introduction:** Constipation is a subjective term used to describe difficulty in defecation, either because of the infrequent passage of small hard stools, or because of straining at defecation, or both (1). The prevalence of constipation in adult women is between 3 and 17%. Many of the factors that are associated with constipation are also linked to dysfunction of the muscles of the pelvic floor. Repeated straining at stool is thought to exacerbate the damage, and can result in weakness of the pelvic floor, perineal descent during straining, and secondary anatomical changes (2). **Case report:** A 32-year-old nulliparous patient was referred to physiotherapy due to constipation. The problems started a few years ago when she voluntarily restrained a call to stool and has then not defecated for 10 days. Her irregular bowel movements repeated occasionally. Two years ago the issue escalated to the point that she could only defecate once a week with the help of injecting water into the rectum. The consistency of the stool was usually hard (Type 1 on the Bristol scale) (3), which caused excessive straining while passing stools. The patient previously underwent a colonoscopy and abdominal ultrasonography, which were both unremarkable. The patient had a dynamic MRI scan that showed a Stage 1 pelvic floor relaxation (mild), Stage 2 rectal prolapse (moderate) and a mild anterior rectocele. Physiotherapy examination included an assessment of the perineum, anus, vagina and anorectum at rest, during a contraction of the pelvic floor muscles and during straining. The following is a summary of our findings: during straining there is an occurrence of perineal descent of more than 2 to 3 cm; rectal examination revealed a mild paradoxical contraction of the pelvic floor muscles; assessment of her defecation pattern revealed an incorrect pattern of bowel movements with an incorrect body position and excessive concentric activity of rectus abdominis muscle. Physiotherapy treatment included teaching the patient the correct pattern of bowel movements, the purpose of which was to increase the anorectal angle and reduce excessive straining. We taught relaxation of the pelvic floor muscles using biofeedback with an EMG rectal probe. For the stimulation of the bowel movements, we used a rectal balloon filled with water. At the same time we taught the patient techniques for stabilizing the perineum and correcting the rectocele during straining. We have been treating the patient for half a year now, with once a month visits, the treatment is still ongoing. The patient reports that now occasionally she defecates twice a week and it is not always necessary to inject water into the rectum. Paradoxical contraction of the pelvic floor muscles is only present occasionally during bowel movements; concentric contractions of rectus abdominis muscle are not present any more. During most bowel movements the rectal balloon, filled with water, falls out of the rectum. The Constipation System Score improved from 25 (out of a possible 30) to 19 (4). **Conclusions:** Due to several years of excessive straining during bowel movements there were anatomical changes of the pelvic floor, which were established through various diagnostic procedures. The changes led to a changed pattern of bowel movements. The aim of the physiotherapy treatment was to establish a correct pattern of bowel movements for the purpose of efficiently emptying the rectum and to prevent the occurrence of secondary anatomical changes. In a period of six months, the patient has established the correct pattern of defecation, which also reflected in more efficient and more frequent bowel movements.

**Key words:** dysfunctional defecation, constipation, assessment of defecation pattern, training, biofeedback.

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## Vadba mišic medeničnega dna pred zaporo sigmoidstome – dvojno poročilo o primeru

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**Uvod:** Vadba mišic medeničnega dna se uporablja za ohranjanje in izboljšanje funkcije mišic medeničnega dna (1). Prikazana sta dva primera, v katerih je bila vadba mišic medeničnega dna indicirana za izboljšanje funkcije mišic medeničnega kot priprava na odstranitev sigmoidstome, po poškodbi oziroma abscesu anusa. **Prikaz primera 1:** Petnajstletni fant je zbolel za akutno T-celično limfoblastno levkemijo. Zdravljen je bil s kemoterapijo. Ko je bila levkemija že v remisiji, se je razvil perianalni absces, zaradi katerega je prišlo do septičnega šoka, ob tem gangrena perineja. Vstavljen je bila sigmoidstoma. Zaradi dolgotrajne potrebe po mehanski ventilaciji je bila nato opravljena perkutana traheostoma. Začel je prejemati oralno vzdrževalni odmerek kemoterapevtika. Po stabilizaciji kliničnega stanja in ozdravitvi okužbe so opravili kožno kritje rektosakralnega predela. Po kemoterapiji je prišlo tudi do nevropatije in parapareze. Po enomesečni rehabilitaciji je bil pacient sposoben samostojne hoje z berglami. Bil je napoten na fizioterapijo zaradi vadbe mišic medeničnega dna pred odstranitvijo sigmoidstome. Jakost kontrakcije mišic medeničnega dna je bila 2 (ocenjeno po lestvici Oxford (2)), vzdržljivost kontrakcije je bila 2 (ocenjena po shemi Perfect). V začetku je pacient izvajal vadbo mišic medeničnega dna z biološko povratno zvezo ambulantno in doma, pozneje samo ambulantno (3). V pol leta je imel pacient deset obravnav. Po končanih obravnavah je bila ocena jakosti kontrakcije mišic medeničnega dna 4, vzdržljivost kontrakcije pa 10. Po kirurški zapori sigmoidstome je bil pacient kontinenten, prav tako ni imel težav z odvajanjem blata. **Prikaz primera 2:** Trinajstletni fant je padel iz 12. nadstropja in utrpel številne notranje poškodbe. Potrebno je bilo operativno zdravljenje raztrganja aorte, poškodbe pljuč in jeter, odstranjena je bila vranica. Operativno so korigirali avulzijo anusa, narejena je bila sigmoidstoma. Poškodba mehkih tkiv v glutealnem predelu je bila prekrita z režnjem. Operativno so bili zdravljeni zlomi medenice in stegenice. Ugotovljena je bila huda okvara živcev spodnjih udov. Po stabilizaciji kliničnega stanja je bil vključen v program rehabilitacije, nato pa napoten na fizioterapijo zaradi vadbe mišic medeničnega dna pred odstranitvijo sigmoidstome. Pacient je med obravnavo še vedno potreboval pomoč pri dnevni opravih. Jakost kontrakcije mišic medeničnega dna je bila 1 (ocenjeno po lestvici Oxford (2)), vzdržljivost kontrakcije 2 (ocenjena po shemi Perfect). Pacient je v začetku ambulantno in doma izvajal vadbo mišic medeničnega dna z biološko povratno zvezo (3). V štirih mesecih je imel pet obravnav. Fizioterapevtska obravnava je bila nato prekinjena zaradi operativnega posega na sapniku. Pričakujemo, da bosta funkcija in zmogljivost mišic medeničnega dna v dveh mesecih na taki stopnji, da bo pacient pripravljen na zaporo stome in da ne bo imel težav z inkontinenco in/ali odvajanjem blata. **Zaključki:** Vzrok nastanka težav v perinealnem predelu je bila pri naših pacientih različna, vendar z enako posledico, in sicer vstavitvijo sigmoidstome. Cilj fizioterapevtske obravnave v obeh primerih je bil izboljšati funkcijo mišic medeničnega dna in tako zagotoviti kontinenco po zapori stome.

**Ključne besede:** mišice medeničnega dna, sigmoidstoma, ocena, vadba, izboljšanje funkcije.

## Pelvic floor muscle training before a sigmoid colostomy reversal – two case reports

**Introduction:** Pelvic floor muscle training is indicated to maintain and improve the function of the pelvic floor muscles (1). Two case reports are presented where pelvic muscle floor training is indicated to improve the function of the pelvic muscles in preparation for the removal of sigmoid colostomy after an injury or anal abscess. **Case report 1:** A 15-year-old boy suffered from acute T-cell lymphoblastic leukemia and was treated with chemotherapy. As the leukemia was already in remission, he developed a perianal abscess, causing septic shock due to perineum gangrene. He underwent sigmoid colostomy surgery. Due to the long-term need for mechanical ventilation a percutaneous tracheostomy was made. He began to receive a maintenance dose of the chemotherapeutic agent orally. After stabilization of the clinical status and infections a skin graft was placed to cover the recto-sacral defect. He also suffered from paraparesis due to the chemotherapy. After one month of rehabilitation he was able to walk with crutches independently. He was referred to physiotherapy in order to exercise the pelvic floor muscles before reversing the sigmoid colostomy. The strength of muscle contractions was measured as 2 (according to the Oxford scale) (2) and contraction endurance with a value of 2. At first the patient performed pelvic floor muscle training with biofeedback at the outpatient clinic and at home, later on just at the outpatient clinic. He had 10 treatments in a half-year period. At the end of the treatment the strength of the pelvic floor muscle's contractions was evaluated at 4 and the endurance with a 10. After the reversal of the sigmoid colostomy the patient had no continence problems and normal bowel movements. **Case report 2:** A 13-year-old boy fell from the 12th floor resulting in numerous internal injuries. He underwent surgical treatment of a rupture of the aorta, lung damage and liver, the spleen was removed. Anorectal avulsion was performed along with a sigmoid colostomy. Soft tissue defect in the gluteal area was covered with a flap. Fractures in the area of the pelvis and femur were treated surgically. There was evidence of severe damage to the nerves of the lower limbs. After stabilization of the clinical status he was included in the rehabilitation program and then underwent physiotherapy in order to exercise the pelvic floor muscles before reversing the sigmoid colostomy. At the time of treatment the patient still needed help with his daily tasks. For the assessment of the function of the pelvic floor muscles the same method was used as in the first case. The strength of muscle contractions was 1 (according to the Oxford scale) (2) and endurance of the contractions was 2. In this case the patient also performed pelvic floor muscle training with biofeedback both at the outpatient clinic and at home in the beginning (3). Within four months the patient had 5 treatments. The strength of the pelvic floor muscles has improved. Physiotherapy treatment was then suspended due to surgery on the trachea. We expect that the function and strength of the pelvic floor muscles to be, in two months, at a level that the patient will be able to undergo sigmoid colostomy reversal and he will not have any problems with incontinence and / or bowel movement. **Conclusions:** The etiology of the occurrence of issues in the perianal area was different in both cases, but with the same result, i.e. the insertion of a sigmoid colostomy. The aim of physiotherapy treatment in both cases was the same, to improve the function of the pelvic floor muscles and provide continence after the reversal of a sigmoid colostomy, which we succeeded in the first case.

**Key words:** pelvic floor muscles, sigmoid colostomy, assessment, training, improve the function.

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## Preventiva porodnih poškodb presredka – pregled literature

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**Uvod:** Podaljšanje pričakovane življenjske dobe žensk je privedlo do večjega zanimanja za dejavnike tveganja, ki dolgoročno vplivajo na kakovost življenja starejših žensk, zlasti na prolaps medeničnih organov (1). To je obudilo ponovno zanimanje raziskovalcev za poškodbe medeničnega dna, povezane s porodom, in njihove dolgoročne posledice (1). Vaginalni porod lahko poškoduje medenično dno, zlasti mišico levator ani (2). Stopnja in razsežnost poškodb vplivata na možnost spontane obnove in uspešnost poporodnih intervencij za preprečevanje nadaljnjih posledic oslabiljenega delovanja podpornega sistema medeničnega dna, torej urinske in fekalne inkontinence (2). Poškodbe presredka med porodom so povezane z različnimi dejavniki (3). Tudi carski rez se kaže kot neučinkovit poseg pri varovanju medeničnega dna, zlasti če je izveden po dolgi drugi porodni dobi (4). Namen pregleda literature je bil ugotoviti, ali so fizioterapevtske tehnike učinkovite za preprečevanje in/ali zmanjšanje pojavnosti poškodb presredka med porodom. **Metode:** Pregled strokovne in znanstvene literature, objavljene med januarjem 2005 in marcem 2014 v angleškem jeziku v bazah podatkov Springer Link, Science Direct, Ovid, Pubmed, Medline, Web of science in Willey na temo nefarmakoloških fizioterapevtskih intervencij za preprečevanje poškodb presredka med porodom. Vključene randomizirane kontrolirane ali klinične raziskave in prospektivne kontrolirane raziskave so na PEDrovi lestvici dosegle vsaj osem točk. Retrospektivne deskriptivne raziskave in sistematični pregledi literature Cochrane zaradi svoje zasnove niso bile ocenjevane po tej lestvici. Raziskave drugih tipov so bile vključene, če sta vključitvena merila izpolnjevali vsaj dve raziskavi, ki sta obravnavali enako intervencijo, da bi njihove rezultate lahko primerjali med seboj. **Rezultati:** Sedem študij je obravnavalo vpliv intervencij v nosečnosti: ena masaža presredka, štiri vadbo oziroma zmerno telesno dejavnost in dve trening s pripomočkom EPI-NO®. Dvanajst študij je obravnavalo vpliv intervencij med porodom na porodne poškodbe presredka: dve tople obkladke, dve masaže presredka in osem položaj v fazi iztisa. Statistično pomembne rezultate za preprečevanje poškodb presredka med porodom dosega le masaža presredka od 35. tedna nosečnosti naprej. Tehnike, uporabljene na presredku v fazi iztisa, ne dosejajo statistične pomembnosti. Vadba mišic medeničnega dna in telesna dejavnost v nosečnosti ter pokončni porodni položaji niso pomembno povezani s tveganjem poškodb presredka med porodom. **Zaključki:** S fizioterapevtskega stališča lahko poškodbe presredka pred in med porodom preprečujemo z obveščenostjo nosečnic in uporabo fizioterapevtskih tehnik za boljše raztezanje in sproščanje presredka. Opravljeni pregled literature podpira učinkovitost masaže presredka v nosečnosti in izogibanje prerezu presredka. Dodatno kaže, da pokončni položaji niso vzročno povezani s povečanim tveganjem za porodne poškodbe presredka, prispevajo k boljši porodni izkušnji in sami po sebi delujejo varovalno proti prerezu presredka. Intervencije v drugi porodni dobi na predelu presredka niso pomembno povezane z zmanjšanjem poškodb, vendar jih porodnice večinoma dobro sprejemajo. Opravljeni pregled literature je pokazal tudi, da vadba mišic medeničnega dna in jakost mišic medeničnega dna nista dejavnika tveganja za poškodbe presredka med porodom in slabše porodne izide pri materi in otroku.

**Ključne besede:** presredka, porod, faza iztisa, poškodbe porodne poti.

## Prevention of birth related perineal trauma – literature review

**Background:** Improvements in women's life expectancy have led to an increasing focus on chronic conditions that adversely affect quality of life in older women, such as female pelvic organ prolapse (1). This has triggered renewed interest in childbirth related injuries of the pelvic floor and their consequences. (1). For certain women changes that occur as a result of vaginal delivery during the reproductive years can lead to increased problems later in their life span that result in prolapse of the pelvic organs and urinary incontinence; problems referred to as pelvic floor dysfunction (2). Perineal trauma is influenced by various risk factors, some of which (e.g. nutritional status, maternal body mass index, ethnic origin, birth weight, foetal position) cannot be altered by obstetricians at the time of delivery (3). Other factors (e.g. maternal position) can be altered, thus possibly reducing perineal damage (3). Muscle and nerve damages of the pelvic floor have been reported to be a consequence of vaginal childbirth (4). Caesarean section performed for obstructed labour or after the onset of labour has been reported to be ineffective in protecting the pelvic floor, especially after a long second stage of labour (4). The purpose of the literature review was to research, whether physiotherapeutic techniques used during labour are effective in preventing/decreasing birth-related perineal trauma. **Methods:** Professional literature published between January 2005 and March 2014 in databases: Springer Link, Science Direct, Ovid, Pubmed, Medline, Web of science and Willey on non-pharmacological prevention of birth-related trauma to the perineum was reviewed. The included randomized, clinical and prospective trials reached at least 8 points on PEDro scale; not randomized studies were included if the same intervention was studied in at least two trials, so their results can be compared. **Results:** Significance of interventions during pregnancy was studied in 7 articles: 1 regarded perineal massage, 4 physical activity and 2 training with EPI-NO® device. Significance of interventions during labour and birth was studied in 12 articles: 2 regarded warm compresses on the perineum, 2 perineal massage and 8 maternal position during the birth. Only antenatal perineal massage from 35 weeks of gestation reaches statistical significance; techniques applied on the perineum during the birth do not reach statistical significance. Pelvic floor muscle training and/or physical activity in pregnancy as well as supine birthing positions and birth-related perineal trauma are not significantly correlated. **Conclusions:** From a physiotherapist's point of view, birth-related perineal trauma can be prevented with information delivered to pregnant women and with the use of physiotherapeutic techniques for improving extensibility and relaxation of the perineum. Cited literature review proves significant effectiveness of antenatal perineal massage and restrictive use of episiotomy. Furthermore, it shows that supine positions during birth are not correlated with perineal damage and are an independent protective factor against episiotomy. Interventions on the perineum in the second stage are not significantly protective against perineal damage but are generally well accepted by birthing women. Cited literature review also shows that pelvic floor exercises/physical activity in pregnancy and pelvic floor muscle strength do not have negative impact on the perineum as well as maternal and foetal birth outcomes.

**Key words:** perineum, birth, expulsion phase, genital tract trauma.

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## Ugotavljanje zanesljivosti merjenja zmogljivosti mišic medeničnega dna z napravo Myomed 632

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**Uvod:** Mišice medeničnega dna so na dnu medenične votline. Dobra zmogljivost mišic medeničnega dna je pomembna za njihovo pravilno funkcijo (1). Zmogljivost teh mišic je mogoče izmeriti z različnimi instrumenti, ki imajo različno stopnjo zanesljivosti, svoje posebnosti in različne metrične značilnosti (2). Aktivacija mišic medeničnega dna je zaradi svoje lege znotraj medenice težje merljiva, zato je pri postopkih merjenja zmogljivosti mišic medeničnega dna z ustreznimi napravami potrebna doslednost (3). **Namen:** Namen raziskave je bil ugotoviti zanesljivost meritev med dvema preiskovalkama in zanesljivost meritev ene preiskovalke za meritve zmogljivosti mišic medeničnega dna z napravo Myomed 632. **Metode:** V raziskavi je sodelovalo 20 zdravih preiskovank. Za pridobivanje preiskovank je bila uporabljena metoda priložnostnega vzorčenja. K sodelovanju so bile povabljene zdravstvene delavke. Testiranje sta izvajali dve fizioterapevki tako, da je prva najprej izvedla meritve na desetih preiskovankah. Čez 24 ur je bilo deset istih preiskovank ponovno testiranih, in sicer tako, da je prva fizioterapevka izvedla meritve na prvih petih preiskovankah, druga pa na drugih petih preiskovankah. Za preostalih deset preiskovank je bil postopek enak, le da je meritve začela druga fizioterapevka. Za ugotavljanje zanesljivosti je bil uporabljen medrazredni korelacijski koeficient (ICC). **Rezultati:** Pri meritvah maksimalnega pritiska med kontrakcijo mišic medeničnega dna je pri prvi preiskovalki vrednost ICC znašala 0,968, pri drugi pa 0,962. Pri meritvah povprečnega pritiska med kontrakcijo mišic medeničnega dna je pri prvi preiskovalki vrednost ICC znašala 0,991, pri drugi pa 0,975. Pri meritvah v mirovanju preiskovanke je pri prvi preiskovalki vrednost ICC znašala 0,853, pri drugi pa 0,171. Pri ugotavljanju zanesljivosti med preiskovalkama pri meritvah maksimalnega pritiska med kontrakcijo mišic medeničnega dna je vrednost ICC znašala 0,952, pri povprečnem pritisku med kontrakcijo pa 0,976. Pri meritvah v mirovanju preiskovanke je vrednost ICC znašala -0,253. **Razprava in sklep:** Ugotovljena je bila zelo dobra zanesljivost obeh preiskovalk in med obema preiskovalkama za merjenje maksimalnega in povprečnega pritiska med kontrakcijo mišic medeničnega dna, na napravi Myomed 632, za merjenje zmogljivosti mišic medeničnega dna pri zdravih preiskovankah.

**Ključne besede:** mišice medeničnega dna, merjenje sprememb pritiska v nožnici, zanesljivost, medrazredni korelacijski koeficient, Myomed.

## Determining the reliability of measuring the capacity of the pelvic floor muscles with the Myomed 632 device

**Introduction:** The muscles of the pelvic floor are located at the bottom of the pelvic cavity. Good capacity of the pelvic floor muscles is important for the proper function of the pelvic bottom muscles (1). The capacity of these muscles can be measured with different instruments. These instruments differ in reliability; they have their peculiarities and various psychometric characteristics (2). Due to its location within the pelvis, the activation of the pelvic floor muscles is more difficult to measure therefore consistency is needed in the processes of measuring the pelvic floor muscles capabilities with appropriate devices (3). **Objectives:** The purpose of this thesis was to determine the reliability of measurements between two individual investigators. At the same time, we intended to determine the reliability of one investigator's measurements for measuring the capacity of the pelvic floor muscles with the Myomed 632 device. **Methods:** The study included 20 healthy subjects. The testing has been carried out by two physiotherapists. Initially, the first physical therapist carried out measurements on 10 subjects. In 24 hours, these subjects were re-tested. The first five subjects were tested by the first therapist and the second five by the second one. For the remaining 10 subjects the procedure was the same, except that the measurements were initiated by the second physical therapist. For the determination of the reliability, we used an interclass correlation coefficient (ICC). **Results:** When determining the maximum pressure during the contraction of the pelvic floor muscles, the first investigator measured ICC = 0.968, while the second investigator measured ICC = 0.962. When measuring the average pressure during the contraction of the pelvic floor muscles the first investigator determined ICC = 0.991, while the second investigator determined ICC = 0.975. During resting, the first investigator got an ICC = 0.853, while the second investigator got an ICC = 0.171. When determining the reliability between the two investigators in measuring the maximum pressure during the contraction of the pelvic floor muscles, we got an ICC = 0.952, for the average pressure during the contraction we got an ICC = 0.976 and during resting we got an ICC = -0.253. **Discussion and conclusion:** With the aim to measure the capacity of the pelvic floor muscles in healthy women with the Myomed 632 device, we established that both investigators were individually very reliable and that there was a precise reliability between the two in measuring the maximum and average pressure during the contraction of the pelvic floor muscles.

**Key words:** pelvic floor muscles, vaginal pressure measurement, reliability, interclass correlation coefficient, Myomed.

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## Primerjava prepoznavnosti pojava urinske inkontinence med študenti fizioterapije in zdravstvene nege na AME-ECM

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**Teoretična izhodišča:** Urinska inkontinenca je zelo moteča motnja, ki ženskam in moškim vseh starostnih skupin bistveno poslabša kakovost življenja (1). Z dobro promocijo in edukacijo treninga mišic medeničnega dna lahko preprečimo nastanek urinske inkontinence, z ustreznim konzervativnim zdravljenjem pa bistveno izboljšamo ali celo popolnoma pozdravimo urinsko inkontinenco (2). **Metoda:** S spletnim anketnim vprašalnikom smo med študenti tretjih letnikov fizioterapije in zdravstvene nege študija na Alma Mater Europaea – Evropskem centru Maribor v Murski Soboti izvedli kvantitativno raziskavo. Anketni vprašalnik je obsegal osemnajst vprašanj zaprtega tipa. Natančna navodila s povezavo do spletne ankete so bila poslana po elektronski pošti vsem študentom, ki so bili v študijskem letu 2013/2014 vpisani v tretji letnik programa fizioterapija in zdravstvena nega na AME – ECM Murska Sobota. V raziskavo je bilo zajetih sedemnajst anket študentov fizioterapije in petnajst anket študentov zdravstvene nege. Zbrane podatke smo grafično obdelali in preverili postavljene hipoteze. **Rezultati:** Rezultati naše raziskave so prikazali poznavanje konzervativnega zdravljenja urinske inkontinence med študenti tretjih letnikov zdravstvene nege in fizioterapije. Z zbranimi podatki, ki smo jih statistično obdelali s programom SPSS, smo dokazali, da je poznavanje konzervativnega zdravljenja urinske inkontinence med študenti fizioterapije natančnejše in bolj poglobljeno kot pri študentih zdravstvene nege. Njihovo delovanje na primarni ravni je namreč le preprečevalno oziroma edukativno, vloga fizioterapevta pri konzervativni obliki zdravljenja UI pa je konkretnjša, saj obsega fizioterapevtsko oceno, edukacijo treninga mišic medeničnega dna ter izvajanje treninga mišic medeničnega dna s pripomočki. **Razprava:** Iz rezultatov raziskave je razvidno, da je poznavanje urinske inkontinence in njenega zdravljenja pri študentih zdravstvene nege in fizioterapije dobro. Študentje zdravstvene nege bi s svojim znanjem o urinski inkontinenci in poznavanjem njenega zdravljenja zmogli zadovoljivo svetovati bolnikom, ki bi jim zaupali težave o uhajanju urina. Študentje fizioterapije pa natančneje poznajo vrste in tehnike konzervativnega zdravljenja UI. Študentje so promocijo urinske inkontinence v Sloveniji ocenili kot slabo. Za natančnejše podatke o promociji urinske inkontinence v Sloveniji bi bilo treba izvesti dodatne raziskave med posamezniki s težavami urinske inkontinence.

**Ključne besede:** konzervativna obravnava UI, trening MMD, nehoteno uhajanje urina, promocija UI, obveščenost fizioterapevtov in diplomiranih medicinskih sester o pojavi UI.

## Comparison of recognisability of urinary incontinence occurrence among students of physiotherapy and nursing at the AME-ECM

**Theoretical background:** Urinary incontinence is a very disturbing disorder, which significantly decreases the quality of life of all age groups, both in men and women. With well-targeted promotion and by learning the pelvic floor muscles training we can prevent the emergence of urinary incontinence. Moreover, an appropriate conservative treatment can significantly improve or even cure the urinary incontinence completely. **Method:** A quantitative research was carried out among the students of physiotherapy and health care in their third year of studies, studying at Alma Mater Europaea – the European Centre, Maribor (ECM), located in Murska Sobota, by using an online questionnaire. The questionnaire consisted of eighteen questions of the closed-ended type. Detailed instructions including a link to the online survey were sent via e-mail to all the students enrolled in the third year of the programmes of physiotherapy and health care in the academic year 2013/2014 at the AME - ECM Murska Sobota. The study involved seventeen surveys of students of physiotherapy and fifteen surveys of students of health care. The collected data were processed graphically and the set hypotheses were verified. **Results:** The results of our research demonstrate the knowledge of conservative treatment of urinary incontinence among third year students of nursing and physiotherapy. With the data collected, which were statistically analyzed with SPSS software, it was demonstrated that the knowledge of the conservative treatment of urinary incontinence among students of physiotherapy is more precise and detailed than in students of nursing. The work of the latter at the primary level is namely only preventive or educational, while the role of a physiotherapist in the form of conservative treatment of UI is more concrete, since it includes physiotherapy assessment, education of pelvic floor muscle training and the implementation of pelvic floor muscle training with devices. **Discussion:** The results show a good level of knowledge of urinary incontinence and its treatment in the students of health care and physiotherapy. With their knowledge of urinary incontinence and its treatment, the students of health care meet the needs for good counselling to patients, who would entrust them with their problems of leaking urine. However, the students of physiotherapy are more familiar with the types and methods of conservative treatment of urinary incontinence. The promotion of urinary incontinence in Slovenia was assessed as poor by the students. For more detailed information on the promotion of urinary incontinence in Slovenia, it would be necessary to carry out a further survey among the individuals who have problems with urinary incontinence.

**Key words:** conservative treatment of urinary incontinence, pelvic floor muscles training, uncontrolled leakage of urine, promotion of urinary incontinence, information of physiotherapists and graduate nurses on emergence of urinary incontinence.

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## Učinkovitost treninga mišića zdjeličnog dna prema Filipec-Jadanec metodi kod fekalne inkontinencije – pilot studija

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**Uvod:** Fekalna inkontinencija ima značajan utjecaj na izvođenje aktivnosti svakodnevnog života i na kvalitetu života pacijenata. Incidencija fekalne inkontinencije raste s većom životnom dobi (>50 godina) i varira od 2,2 do 8,3% (1). Trening mišića zdjeličnog dna kao konzervativan oblik liječenja ima veliki utjecaj na smanjenje simptoma fekalne inkontinencije te poboljšanje snage mišića zdjeličnog dna (2). **Metode:** Uzorak je odabran metodom slučajnog odabira i obuhvaćao je 136 ispitanika s fekalnom inkontinencijom kronološke dobi od 50 do 65 godine. Svaka skupina, eksperimentalna i kontrolna, obuhvaćala je 68 ispitanika, 42 osobe ženskog i 16 osoba muškog spola. Provedena je procjena mišića zdjeličnog dna putem PERFECT scheme kao pouzdanog i osjetljivog alata procjene mišića zdjeličnog dna prije početka i nakon vježbanja (3). Eksperimentalna skupina provodila je trening mišića zdjeličnog dna po Filipec-Jadanec metodi koja je uključivala aktivaciju izlaza rodnice, mokraćne cijevi i izlaza debelog crijeva kroz spore i brze kontrakcije mišića zdjeličnog dna, vježbe niskog i visokog intenziteta, te vježbe mišića zdjeličnog dna kroz funkcionalne obrasce. Kontrolna skupina provodila je vježbe putem aktivacije glutealne, adduktorne i abduktorne muskulature s i bez pomagala. Eksperimentalna i kontrolna skupina provodila je vježbe 7 dana u tjednu, dva puta dnevno po 30 minuta kroz 7 tjedana. **Rezultati:** Dobiveni rezultati upućuju na poboljšanje snage od 87,2 %, izdržljivosti 85,7%, broja ponovljenih kontrakcija 82,5% i brzih kontrakcija 83,4% mišića zdjeličnog dna kod eksperimentalne skupine. Kod kontrolne skupine je zabilježeno poboljšanje snage od 31,4%, izdržljivosti 27,3%, broja ponovljenih kontrakcija 25,2% i brzih kontrakcija 22,8% mišića zdjeličnog dna. Uočena je statistička značajnost u poboljšanju snage, izdržljivosti, broja ponovljenih kontrakcija i brzih kontrakcija mišića zdjeličnog dna između eksperimentalne i kontrolne skupine ( $p < 0,001$ ). **Zaključak:** Prisutno je poboljšanje snage i izdržljivosti mišića zdjeličnog dna po Filipec-Jadanec metodi što upućuje na mogućnost šire kliničke primjene navedene metode kao konzervativnog oblika liječenja kod fekalne inkontinencije. Ograničenje rada je mali uzorak, pa bi navedene rezultate trebalo provjeriti na većem uzorku.

**Ključne besede:** fekalna inkontinencija, trening mišića zdjeličnog dna, snaga, izdržljivost.

## Effectiveness of pelvic floor muscles training by Filipec-Jadanec method at fecal incontinence – a pilot study

**Background:** Fecal incontinence has significant influence on performing activities of daily living and quality of a patient's life. The incidence of fecal incontinence increases with age (> 50 years) and varies from 2.2 to 8.3% (1). Training pelvic floor muscles as a conservative form of treatment has a major impact on reducing symptoms of fecal incontinence and improves the strength of pelvic floor muscles (2). **Methods:** The sample was selected randomly and included 136 respondents with fecal incontinence, aged 50-65. Each group, the experimental and the control one, included 68 patients, 42 females and 16 males. To assess pelvic floor muscles perfect scheme was used as a reliable and sensitive tool to estimate pelvic floor muscles before and after the exercise (3). The experimental group conducted a pelvic floor muscles training by Filipec-Jadanec method involving the activation of the output of the vagina, urethra and rectum through the slow and fast contraction of pelvic floor muscles, exercises of low and high intensity, and pelvic floor muscles exercise through the functional forms. The control group carried out the exercise by activating the gluteal, adductor and abductor muscles with and without tools. The experimental and control group carried out exercise 7 days a week, twice a day for 30 minutes for 7 weeks. **Results:** The results indicate improvement in strength of 87.2%, endurance of 85.7%, the number of repeated contractions of 82.5% and 83.4% of rapid contraction of pelvic floor muscles in the experimental group. For the control group, improvement was indicated of 31.4% strength, endurance of 27.3%, the number of repeated contractions of 25.2% and rapid contraction 22.8% of pelvic floor muscles. Revealed significant improvement in strength, endurance, number of repeated contraction and rapid contraction of pelvic floor muscles between the experimental and control groups ( $p < 0.001$ ). **Conclusion:** There has been improvement in strength and endurance of pelvic floor muscles by Filipec-Jadnec method, which indicates the possibility of a wider clinical application of the above methods as a conservative form of treatment for fecal incontinence. Limitation of study is a small sample, so the above-mentioned results should be checked on a larger sample.

**Key words:** fecal incontinence, pelvic floor muscle training, strength, endurance.

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