NICOLAUS COPERNICUS UNIVERSITY IN TORUŃ

Journal of Education, Health and Sport. eISSN 2391-8306.

Journal Home Page
https://apcz.umk.pl/JEHS/index

PARUSZEWSKI, Szymon, DYBCIO, Aleksandra, JOŃCA, Mikołaj, KAZACHOK, Mikhail, KUBISA, Adam, KUPCZAK, Julia, KUPCZYK, Katarzyna, KURYS, Natasza, MILUSKI, Mateusz and SZYDŁOWSKA, Dorota. Role Of Pelvic Floor Muscle Training In Women's Health And Quality Of Life A Narrative Review. Journal of Education, Health and Sport. 2026;91:70726. eISSN 2391-8306. https://doi.org/10.12775/JEHS.2026.91.70726

The journal has had 40 points in Minister of Science and Higher Education of Poland parametric evaluation. Annex to the announcement of the Minister of Education and Science of 05.01.2024 No. 32318. Has a Journal's Unique Identifier: 201159. Scientific disciplines assigned: Physical culture sciences (Field of medical and health sciences); Health Sciences (Field of medical and health sciences).
Punkty Ministerialne 40 punktów. Załącznik do komunikatu Ministra Nauki i Szkolnictwa Wyższego z dnia 05.01.2024 Lp. 32318. Posiada Unikatowy Identyfikator Czasopisma: 201159. Przypisane dyscypliny naukowe: Nauki o kulturze fizycznej (Dziedzina nauk medycznych i nauk o zdrowiu); Nauki o zdrowiu (Dziedzina nauk medycznych i nauk o zdrowiu).
The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 10.04.2026. Revised: 04.05.2026. Accepted: 05.05.2026. Published: 07.05.2026.

Role Of Pelvic Floor Muscle Training In Women's Health And Quality Of Life: A Narrative Review

Szymon Paruszewski (SP)
ORCID: https://orcid.org/0009-0005-1822-244X
paruszewskiszymon@gmail.com
Mazovian Bródno Hospital
ul. Ludwika Kondratowicza 8, 03-242 Warsaw, Poland

Aleksandra Dybcio (AD)
ORCID: https://orcid.org/0009-0006-7840-3290
dybcio.aleksandra@gmail.com
Independent Public Health Care Complex in Wyszków
ul. Komisji Edukacji Narodowej 1, 07–200 Wyszków, Poland

Mikołaj Jońca (MJ)
ORCID: https://orcid.org/0009-0006-4435-1138
joncamikolaj@gmail.com
Pomeranian Medical University
ul. Rybacka 1, 70-204 Szczecin, Poland

Mikhail Kazachok (MK)
ORCID: https://orcid.org/0009-0006-2764-3710
mikimashrik@gmail.com
Medical University of Warsaw
ul. Żwirki i Wigury 61, 02-091 Warsaw, Poland

Adam Kubisa (AK)
ORCID: https://orcid.org/0009-0003-1320-9890
adam.kubisa183@gmail.com
District Hospital in Sochaczew
ul. Batalionów Chłopskich 3/7, 96-500 Sochaczew, Poland

Julia Kupczak (JK)
ORCID: https://orcid.org/0009-0002-3423-8685
klodzinskaj00@gmail.com
District Hospital in Sochaczew
ul. Batalionów Chłopskich 3/7, 96-500 Sochaczew, Poland

Katarzyna Kupczyk (KK)
ORCID: https://orcid.org/0009-0004-7532-7769
kasia25021@gmail.com
Warsaw Southern Hospital
ul. Rotmistrza Witolda Pileckiego 99, 02-781 Warsaw, Poland

Natasza Kurys (NK)
ORCID: https://orcid.org/0009-0005-7090-259X
natasza.dzieza@gmail.com
Medical University of Lodz
Aleja T. Kościuszki 4, 90-419 Łódź, Poland

Mateusz Miluski (MM)
ORCID: https://orcid.org/0009-0003-5744-3291
mateusz.miluski@gmail.com
Pomeranian Medical University
ul. Rybacka 1, 70-204 Szczecin, Poland

Dorota Szydłowska (DS)
ORCID: https://orcid.org/0000-0001-6763-6124
dorotaszydlowska1008@gmail.com
County Medical Center in Nowy Dwór Mazowiecki
ul. Miodowa 2, 05-100 Nowy Dwór Mazowiecki, Poland

Corresponding Author
Szymon Paruszewski, paruszewskiszymon@gmail.com

Abstract

Introduction: Pelvic floor muscle dysfunction disorders are a widespread and frequently undiagnosed health problem among women across all age groups. They can result in urinary and fecal incontinence, pelvic organ prolapse, and chronic pain, significantly reducing women's quality of life. Conservative treatment, particularly pelvic floor muscle training (PFMT), is currently recognized as a highly effective first-line therapy.

Purpose: This review aims to present the role of pelvic floor muscle training (PFMT) in improving women's health and quality of life, with a particular focus on the effectiveness of this form of therapy in the prevention and treatment of pelvic floor muscle dysfunction disorders.
A brief description of the state of knowledge: The pelvic floor muscles are crucial for holding urine and stool, keeping the pelvic organs in place, and supporting sexual function. Their dysfunction is linked to many risk factors, such as age, vaginal delivery, obesity, and lifestyle. Pelvic floor muscle training (PFMT) improves muscle tone and strength, leading to reduced symptoms, most commonly urinary incontinence. Pelvic floor muscle training (PFMT) also contributes to improving quality of life in physical, mental, and social dimensions. Biofeedback or electrostimulation are supportive methods, which can further enhance the effectiveness of therapy.
Conclusions: Pelvic floor muscle training (PFMT) is an effective and safe method for the prevention and treatment of pelvic floor dysfunction disorders in women. It contributes to a significant improvement in symptoms and quality of life. An individualized and holistic approach to the patient is recommended, incorporating education and a supervised exercise program to ensure the effectiveness of therapy.
Keywords: pelvic floor muscles, pelvic floor muscle dysfunction, pelvic floor muscle training, urinary incontinence, quality of life, women's health

1. Introduction:

The importance of the pelvic floor muscles is a topic that is increasingly discussed in the literature. They perform a wide range of functions – they hold the pelvic organs in place, are responsible for urinary and fecal continence, and are involved in sexual function. Their function can be disrupted by several factors, including advancing age, increased number of vaginal deliveries, previous instrumental deliveries, episiotomies, prior pelvic surgeries, fetal macrosomia, presence of gastrointestinal diseases, chronic cough, obesity, ethnicity, positive family history, and genetic predisposition [1,2,3,4]. Disorders of their function can cause urinary incontinence, pelvic organ prolapse, fecal incontinence, and pelvic-perineal pain syndrome, and their prevalence is high [1]. A key aspect of preventing and treating conditions resulting from pelvic floor muscle dysfunction disorders is performing appropriate exercises to strengthen pelvic floor muscle tone, as a first-line, low-risk, minimally invasive therapy [5].

Pelvic floor muscle dysfunction disorders and their associated symptoms have a negative impact on women's health-related quality of life (HRQoL). Factors that may impact the final HRQoL outcome have been identified, suggesting the need for a holistic approach. Factors that reduce the decline in HRQoL include age between 30 and 50 years and physical activity, while factors that increase the decline in HRQoL include a high BMI, poor sleep quality, musculoskeletal conditions, cancer, or other health disorders. Women with pelvic floor muscle dysfunction disorders have a lower perception of quality of life across all aspects, with organ prolapse symptoms having the greatest negative impact; the most affected subdimension of HRQoL is the emotional component [1,2,6]. In at least half of the cases, the impact of pelvic floor muscle dysfunction disorders on HRQoL is generally small or negligible, leading to a lack of motivation for consultation and further treatment. Unfortunately, symptom normalization is observed in young women, as reported in the latest literature [2].

Studies aim to determine the prevalence of these disorders, the most common of which appears to be urinary incontinence. It was observed that a significant number of the women surveyed did not consider isolated episodes of urine leakage to be actual urinary incontinence. These results suggest that statistical data obtained in studies are often underestimated, not only because women with urinary incontinence may delay seeking medical consultation, but also because of their inability to recognize concerning symptoms [4,7]. The results show variations in the prevalence of any subtype of urinary incontinence, which may occur in 36%,3–45%, up to approximately 55% of study participants [1,2,4,6,7]. Two disorders may affect approximately 12.7–17% of women, three disorders approximately 6%, and four disorders approximately 2% of women [1,8]. A significant factor in pelvic floor muscle dysfunction disorders is the cohort of participants who have undergone vaginal delivery, where this problem may affect up to 45% of women in the postpartum period; although its frequency decreases significantly afterwards, urinary incontinence significantly reduces the quality of life of the women surveyed [2,4,7,9,10]. There is evidence that only 10.34% of pregnant women, 16.7% in the postpartum period, and 23.81% within 12 months after delivery report urinary incontinence to a gynecologist or midwife. Women commonly reported the following reasons for not reporting this problem during pregnancy and the postpartum period: urinary incontinence as a physiological phenomenon during this period and the sporadic character of the symptoms [7]. Women who have had a cesarean section statistically experience fewer symptoms of pelvic organ prolapse, and physical exercise, even at low intensity, correlates with the presence of symptoms of pelvic organ prolapse [1], although some studies seem to contradict the notion that cesarean section acts as a preventive factor against fecal incontinence

[8]. Age at the time of delivery appears to be a significant factor nowadays – there is an increase in the age of women becoming pregnant, and a statistical analysis of urinary incontinence prevalence in a female population, conducted by age group in one study, showed statistical significance for the group aged over 35 compared to the group aged under 30; it was also observed that age at delivery was significantly higher in the group of women who experienced fecal incontinence [2].

Symptoms of pelvic floor muscle dysfunction disorder tend to normalize – some data suggest that only about one-third of women may consider themselves to be suffering from this condition, a fact confirmed by the low percentage of women who report seeking specialized medical care [1]. In summary, pelvic floor muscle dysfunction disorder in women is a common and underdiagnosed problem.

In a meta-analysis including more than 23 articles and a total of 24,983 participants, Pizzol et al. found that urinary incontinence was significantly associated with a low quality of life across various aspects. Among the most important were physical health, emotional health, energy, emotions, social activity, and overall health [11]. Furthermore, pelvic floor muscle dysfunction disorder has a significant impact on quality of life, sleep, sexual function, and mental health. Pelvic floor muscle dysfunction disorder in younger women is strongly associated with postpartum depression and anxiety [2,3,4].

Table 1. Pelvic floor dysfunction disorders in women [12].

Urological	Gynecological	Colorectal	General
Difficulty urinating: delay in urination, weak urine stream.	Dyspareunia: pain during or after sexual intercourse.	Constipation: paradoxical contractions or insufficient relaxation of the pelvic floor muscles during attempts to defecate (dyssynergic defecation).	Pelvic pain: chronic pain lasting longer than three to six months, not associated with other specific conditions.
Cystocele: protrusion or herniation of the	Uterine prolapse: herniation of the uterus through the vagina	Fecal incontinence: involuntary leakage of	Levator spasm: another term for chronic pelvic pain

bladder into the vagina (anterior).	beyond the vaginal opening.	stool (not related to sphincter dysfunction).	associated with the levator ani muscles.
Urethral prolapse (urethral prolapse): protrusion of the urethra into the vagina (anterior).	Vaginal prolapse: protrusion of the vaginal fornix beyond the vaginal opening.	Rectal prolapse: protrusion of the rectum beyond the anal margin (Procedentia) or near the anus (Occult).	Proctalgia fugax: transient spastic pain associated with the levator ani muscles.
Urinary incontinence: involuntary leakage of urine.	Intestinal prolapse: bulging or protrusion of the intestine into the vagina (apical/posterior).		Perineal prolapse – protrusion of the perineum below the bony outlet of the pelvis.
	Rectal prolapse: protrusion or prolapse of the rectum into the vagina (posterior).		

1.1. Aim of the study:

The aim of this study is to evaluate the role of pelvic floor muscle training (PFMT) in the prevention and treatment of pelvic floor muscle dysfunction disorders in women. The study is focused on analyzing the effectiveness of PFMT in reducing symptoms such as urinary incontinence, fecal incontinence, pelvic organ prolapse, and chronic pain, which significantly decrease the quality of life for women. Furthermore, the aim is to assess the impact of this form of therapy on women's quality of life in physical, psychological, and social aspects. A review of various training protocols and supportive methods applied in pelvic floor rehabilitation was also performed. Additionally, the limitations of current research and directions for further analysis were identified.

2. MATERIAL AND METHODS:

2.1. Data collection

This study is a narrative review that synthesizes current scientific data on the role of pelvic floor muscle training (PFMT) in improving women's health and quality of life. The review was conducted using the PubMed, Scopus, and Google Scholar databases, as well as current guidelines from international scientific societies. The search strategy was based on the use of Boolean operators and terms from the Medical Subject Headings (MeSH) database, as well as keywords such as: "pelvic floor muscles," "PFMT," "urinary incontinence," "pelvic floor dysfunction," "quality of life," and "women's health." Publications from 2015 to 2025 were included, with a focus on randomized controlled trials, systematic reviews, meta-analyses, observational studies, and current clinical guidelines. A total of 45 studies were selected for analysis based on their relevance to the study's objective, methodological quality, and clinical significance. Due to the narrative nature of the review, no formal risk assessment of systematic error or quantitative analysis was performed. The aim was to present a structured and up-to-date summary of the available scientific evidence, with particular emphasis on its practical application in physical therapy and clinical care for women.

2.2. AI

During the preparation of this work, the authors used ChatGPT (OpenAI), DeepL and Grammarly to improve grammar and language correction. After using this tools, the authors reviewed and edited the text as needed and accept full responsibility for the publication's substantive content.

3. Research results.

3.1. Anatomy and Function of the Pelvic Floor Muscles

The pelvic floor consists of muscles, ligaments, and fascia that hold up the bladder, reproductive organs, and rectum, which are surrounded by the skeletal structure of the pelvis, formed by two bones – each composed of the ilium, ischium, and pubis – that join at the back via the sacrum. The coccyx, extending from the sacrum, performs an important function of the ligamentous and tendinous connection. The superficial muscles of the pelvic floor are the bulbospongiosus muscle, the ischiocavernosus muscle, and the superficial and deep transverse perineal muscles. The deep pelvic floor muscles, covering the inner walls of the pelvis, are the levator ani muscle and the piriformis muscle, which, together with the intra-pelvic fascia, form the pelvic diaphragm. With an increase in intra-abdominal pressure, the pelvic floor muscles contract reflexively, causing upward movement and closure of the vagina and the urethral and anal sphincters. This action is important for maintaining control over urination. Relaxation of the pelvic floor occurs only briefly and sporadically during normal urination and defecation [13].

The puborectalis muscle surrounds the junction of the anus and rectum, accentuating the angle between the anus and rectum during contraction, and is the primary factor in maintaining bowel control. The elevation and suspension of the pelvic organs are associated with the pubococcygeus and iliopsoas muscles. The pubococcygeus muscle is the most medial element, which separates to form the levator muscle fissure with openings for the urethra, vagina (in women), and anus. The bulbospongiosus and ischiocavernosus muscles are the primary factors influencing the superficial part of the anterior pelvic floor. The more superficial muscles of the posterior pelvic floor form the external anal sphincter. The transverse perineal muscles cross the central part of the superficial pelvic floor and connect with the bulbospongiosus and external anal sphincter muscles, forming the perineal body [12].

There are many different conditions associated with pelvic floor muscle dysfunction, including hypertonicity, hypotonicity, loss of pelvic support, or mixed problems.

3.2. Physiological Changes of the Pelvic Floor Across the Lifespan

The pathophysiological cause of age-related pelvic floor muscle dysfunction disorders remains unclear, which explains the lack of causal preventive methods, while existing treatments are limited to rehabilitation, which is less effective in older women, and surgery, which has a high rate of failure and adverse effects. Aging, independent of vaginal deliveries, results in a significant reduction in the physiological cross-sectional area of the muscles – a predictor of maximum force-generating capacity. Pelvic floor muscles undergo degenerative changes rather than atrophic changes. Fibrotic and fatty degeneration of the muscles are likely mechanisms causing the deterioration of pelvic floor muscle function with age, despite unchanged total muscle volume. Furthermore, in older pelvic floor muscles, there is a marked increase in total collagen content, which negatively impacts their mechanical properties [14]. Muscle aging occurs through loss of muscle mass (sarcopenia), increased intramuscular collagen (fibrosis), fat infiltration, and a reduction in the number of resident muscle stem cells. Sarcopenia is mainly caused by progressive loss of motor neurons, which is associated with a reduction in the number and size of muscle fibers and impaired response to rehabilitation. At the intracellular level, crucial factors include qualitative changes in post-translational modifications of muscle proteins and the loss of coordinated control between the expression of contractile, mitochondrial, and sarcoplasmic reticulum proteins [15].

Furthermore, the problem of stress urinary incontinence also affects physically active women who are considered healthy and physically fit, and who are perceived as having a low risk of developing conditions related to pelvic floor muscle dysfunction. Excessive training may not provide protective effects but instead contribute to an increased risk of stress urinary incontinence. In intensely training athletes, the development of stress urinary incontinence may be influenced by many interacting mechanisms, including overloading of the pelvic floor support structures, insufficient muscle strength and coordination, increased intra-abdominal pressure, and – in some individuals – adverse hormonal conditions [16].

3.3. Protocols of Pelvic Floor Muscle Training (PFMT) and Outcomes.

The literature on pelvic floor muscle disorders describes several exercise protocols. Most of them are based on exercises performed over several to over a dozen weeks, at specific intervals, repeated in sets of several repetitions. They involve continuously and alternately contracting and relaxing the pelvic floor muscles and levator ani muscles [10,17,18,19,20,21,22,23]. Self-directed exercises are preceded by education provided by a physical therapist, and, in some studies and guidelines, supervised exercises performed on an ambulatory basis are identified as more effective [22,24,25,26,27,28]. In some protocols, participants were educated about the correct contraction of the pelvic floor muscles through digital palpation [29] or received one supervised session at the beginning [28]. Considering the various protocols and training schedules aimed at strengthening the pelvic floor muscles, Curillo-Aguirre et al. concluded that in most cases, a 12-week program is an appropriate length of therapy [30]. Molina-Torres et al. proposed hypopressive postures following the same postural indications (axial elongation, neutral pelvis, center of gravity projection, ankle dorsiflexion, and activation of the shoulder girdle) [31]. In some studies, the effectiveness of exercises is enhanced by biofeedback [6,18,20,21,24,32,33]. Biofeedback training can boost confidence in performance, improve motivation, and enhance adherence to training [18]. In addition to exercises, methods such as electrical stimulation, biofeedback, and vaginal dilators or weighted vaginal cones can be used to help isolate the pelvic floor muscles and improve their contractions [24,33].

The literature also discusses the role of electrical stimulation in improving pelvic floor muscle function [21]. The main outcomes used to assess efficacy were the POP-Q stage [10,19,20]. Another common method was the assessment of pelvic organ position and hiatus area via ultrasound [18,20,21]. A significant increase in the anterior-posterior hiatal distance can be interpreted as an improvement in pelvic floor muscle function and, consequently, the potential to relieve certain symptoms associated with pelvic organ prolapse [19]. Yin P et al. found that ultrasound images processed by an artificial intelligence algorithm were clearer than unprocessed images, with more visible lesions and significantly improved image quality, providing a reference and basis for postpartum pelvic floor rehabilitation training and the management of pelvic organ prolapse in parturients in clinical practice [21]. Other methods included digital assessment, vaginal manometry, pelvic floor muscle contraction assessed using the Modified Oxford Scale (MOS), surface electromyography (EMG), and pelvic floor muscle sensation graded using the visual analog scale (VAS) and the UDI-6 score.

3.4. PFMT and Quality of Life Measures

Several validated questionnaires are available for measuring quality of life. One of them is the International Consultation on Incontinence Questionnaire (ICIQ) and its modifications – the International Consultation on Incontinence Questionnaire – Short Form for Urinary Incontinence (ICIQ-UI SF), the ICIQ Quality of Life Module "Lower Urinary Tract Symptoms" (ICIQ-LUTSQoL), as well as others: the King's Health Questionnaire (KHQ), the Incontinence Quality of Life Questionnaire (I-QoL), and the Five-Dimensional European Quality of Life Questionnaire (EQ5D) [30,31,34]. The ICIQ-UI SF questionnaire has been identified as the optimal tool for screening, diagnosing, and assessing the severity of urinary incontinence. Furthermore, it is widely used as a tool for estimating quality of life before, during, and after interventions, as demonstrated in most of the studies included in this review [30].

Three questionnaires (EQ-5D-3L, ICIQ-UI SF, and POP-SS) were compared in a study performed by Fenocchi et al., which used data from the OPAL (Optimal Pelvic floor muscle training for Adherence Long-term) study [35]. The EQ-5D-3L is appropriate for use in patients with stress urinary incontinence or mixed (stress and urge) urinary incontinence. The ICIQ-UI SF questionnaire was found to be effective in identifying a decline in quality of life, particularly in severe cases of urinary incontinence. The ICIQ-UI SF questionnaire is widely used as a tool for assessing quality of life before, during, and after interventions, as well as for screening, diagnosing, and evaluating the severity of urinary incontinence [35,36].

Table 2. Questionnaires used to assess urinary incontinence symptoms and quality of life in women.

Questionnaire	Full name	Main purpose	Assessed domains
ICIQ-UI SF	International Consultation on Incontinence Questionnaire – Urinary Incontinence Short Form	Screening and assessment of urinary incontinence severity	Frequency of urine leakage, amount of leakage, impact on daily life

ICIQ-LUTSqol	International Consultation on Incontinence Questionnaire – Lower Urinary Tract Symptoms Quality of Life	Evaluation of quality of life related to urinary symptoms	Limitations in daily activities, emotional impact, social functioning
KHQ	King's Health Questionnaire	Quality of life in women with urinary incontinence	Physical limitations, social limitations, emotional well-being
I-QoL	Incontinence Quality of Life Questionnaire	Assessment of quality of life in patients with urinary incontinence	Psychological impact, social embarrassment, avoidance behaviors
EQ-5D	EuroQol 5-Dimension Questionnaire	General health-related quality of life assessment	Mobility, self-care, usual activities, pain/discomfort, anxiety/depression
UDI-6	Urogenital Distress Inventory – Short Form	Assessment of symptom distress related to urogenital problems	Irritative symptoms, stress symptoms, obstructive/discomfort symptoms
VAS	Visual Analogue Scale	Measurement of subjective symptoms of urinary incontinence intensity	Perceived severity of symptoms on a visual scale

Symptoms specific to urinary incontinence and quality of life (QoL) at the end of treatment: compared with no treatment or inactive control therapies, women with urinary incontinence in the PFMT group were more likely to report a significant improvement in urinary incontinence symptoms and reported a significant improvement in quality of life related to urinary incontinence. For each type of urinary incontinence, women in the PFMT group more often reported significant improvement in urinary incontinence symptoms and reported significant improvement in quality of life related to urinary incontinence [37].

The results suggest that urinary incontinence is more common in women who have had vaginal delivery. They experience more severe symptoms and have a lower health-related quality of life. Not only is the frequency of urinary incontinence higher, but symptoms associated with urinary incontinence are also more severe among women who have had a vaginal delivery than among women who have not. Furthermore, PFMT appears to be effective in alleviating symptoms of urinary incontinence and improving health-related quality of life in both women who had vaginal delivery and those who have not [9].

Randomized controlled trials have consistently demonstrated that PFMT relieves pain and enhances sexual function - training improves sexual function, whereas surgical interventions have variable effects: native tissue prolapse repair generally enhances sexual outcomes, while posterior repair with levatorplasty or vaginal mesh may increase postoperative dyspareunia [38].

3.5. PFMT and Women's Physical Health Outcomes

Zarawski et al. demonstrated that patients who performed PFMT during pregnancy reported urinary incontinence significantly less frequently ($p = 0.036$). The correlation between performing exercises during pregnancy and the occurrence of urinary incontinence during this period is negative, proving the positive role of exercise in preventing urinary incontinence during pregnancy. Dividing the women into exercising and non-exercising groups revealed that physical exercise during pregnancy significantly reduces the discomfort associated with urinary incontinence during physical activity, both during pregnancy (1.39 ± 0.42 vs. 2.31 ± 0.43) and 12 months postpartum (1.23 ± 0.48 vs. 1.69 ± 0.35). A significant effect of exercise was also observed in reducing discomfort associated with lower abdominal or genital pain within 12 months postpartum (0.93 ± 0.38 vs. 0.72 ± 0.54). Women who performed PFMT during pregnancy reported significantly lower limitations in daily life than physically inactive women (41.8 ± 5.23 vs. 57.19 ± 6.98). A statistically significant effect of exercise on physical activity and recreation was observed. It was also noted that training reduces feelings of depression, anger, or frustration. A follow-up survey conducted 12 months after delivery confirmed that increasing exercise frequency reduces limitations in physical activity and recreation and also improves emotional well-being. Overall, pelvic floor muscle activation during pregnancy correlates with women's functional capabilities. It was found that training during pregnancy allows women to maintain full independence until delivery [7]. Marcellou et al.'s analysis shows a 92% chance of a significant improvement in pregnant women receiving PFMT compared with controls. Furthermore, it was established that PFMT has a substantial and significant effect on urinary incontinence across the entire patient population. A second analysis, after excluding studies that combined PFMT with electrical stimulation or biofeedback, yielded similar results [33].

A Cochrane review demonstrated that PFMT in women with and without urinary incontinence (combined primary and secondary prevention) during pregnancy reduced the risk of urinary incontinence by 26% during pregnancy and in the mid-postpartum period. Furthermore, pregnant women with urinary incontinence (primary prevention) who exercised their pelvic floor muscles during pregnancy were 62% less likely to develop urinary incontinence in late pregnancy and had a 29% lower risk of urinary incontinence three to six months postpartum. [23]

Hagen et al. observed greater early efficacy of PFMT in the PFMT with biofeedback group, which confirms the hypothesized effect of biofeedback. However, the results did not show a statistically significant or clinically significant difference in the severity of urinary incontinence after 24 months between women randomly assigned to the group treated with electromyographic biofeedback (in the clinic and at home), PFMT, or to the group treated exclusively with PFMT [32].

Al Belushi et al. suggest that improvements in symptoms did not correlate positively with the pelvic floor muscle assessment tools used in the study (MOGS, endurance, and perineometer). Furthermore, nearly half of the women in the intervention group reported a significant improvement compared to the control group in terms of both frequency (47% vs. 16%; P = 0.009) and volume (41.7% vs. 10.841%; P = 0.005) of urinary leakage, and thus in the ICIQ-SF score after 12 weeks compared to baseline, indicating a significant improvement in quality of life [39]. These findings correlate with reports in the literature [9].

In their study, Gagnon et al. first offered standard group sessions in the form of workshops, followed by the option to choose additional individual physical therapy sessions. The program was offered to all postpartum women, regardless of whether they experienced symptoms of urinary or fecal incontinence. The study confirmed the potential benefits of PFMT for women with and without urinary incontinence in the postpartum period and suggests that a two-stage, self-selected approach to PFMT contributes to significant improvements in pelvic floor function and quality of life for patients. The two-tiered approach enabled the program to reach more women seeking postpartum PFMT education and then to continue with individualized physical therapy sessions for those who self-selected for further education and training. The results indicate a statistically significant improvement in pelvic floor function, as measured by the PFDI-20 questionnaire. Scores on the PFIQ-7 questionnaire also improved significantly [25].

In a randomized controlled trial, Fitz et al. demonstrated higher efficacy of supervised ambulatory PFMT compared to self-directed PFMT in the short-term treatment of stress urinary incontinence in women. The proposed approach to PFMT included individualized, supervised weekly follow-up for patients. The control group performed an identical PFMT program at home, in accordance with international PFMT standards, and had the option of individual monthly monitoring and adjustment of the training program. Both the ambulatory and home groups showed significant improvement in primary and secondary clinical efficacy outcomes. However, the results of the comparison at the end of the study favored the intervention group in the short term, as reflected primarily in objective measures: recovery from stress urinary incontinence and pelvic floor muscle strength. When considering only the participants who completed the 3-month treatment, which best reflects the differences in treatment, objective recovery reached 75% for ambulatory PFMT, confirming the high efficacy rate for stress urinary incontinence described in the literature (60–75%), while for home training alone, it was 35% [26].

Similarly, Bø et al. found that after PFMT, 60% of the supervised group and 17% of the home-exercise group reported maintaining or nearly maintaining continence ($p < 0.01$), and only the supervised group showed a significant reduction in the severity of urine leakage in the pad test [2]. All patients in the study reported an improvement in quality of life, and there was no difference between groups in any of the assessed areas. However, the likelihood of patient satisfaction was twice as high in the ambulatory PFMT group as in the home PFMT group, which may have clinical significance and warrant further exploration in future studies with a longer follow-up period [26].

The Cochrane review found that women in PFMT groups for urinary incontinence treatment, compared with women receiving no treatment or inactive control therapies, were eight times more likely to report recovery (56% in the PFMT group compared with 6% in the control group; RR 8.38, 95% CI 3.68 to 19.07; 4 studies, 165 women; high-quality evidence). In women with any type of urinary incontinence, the PFMT groups were five times more likely to report recovery (35% in the PFMT group compared with 6% in the control group; RR 5.34, 95% CI 2.78 to 10.26; 3 studies; 290 women; moderate-quality evidence), although with substantial statistical heterogeneity ($I^2 = 74\%$). PFMT reduced the number of leakage episodes by 1 within 24 hours in women with urinary incontinence (MD 1.23 lower, 95% CI 1.78 lower to 0.68 lower; 7 studies, 432 women; moderate-quality evidence) and in women with all types of urinary incontinence (MD 1.00 lower, 95% CI 1.37 lower to 0.64 lower; 4 studies, 349 women; moderate-quality evidence). Women assigned to PFMT also had less urine leakage during short clinical pad tests, less frequent daytime urination, and better sexual outcomes [37].

Study results show that high-intensity exercise combined with physical activity affects the number of urinary incontinence episodes across all types of urinary incontinence in older adults not requiring constant care. This effect is rated as moderately strong and statistically significant ($P < 0.0001$). Exercise combined with other physical activities reduced the number of urinary incontinence episodes across all types of urinary incontinence in older adults, compared with bladder training and education alone. Physical exercise combined with other physical activities improved symptom-related quality of life compared with bladder training and education alone. However, no difference in overall quality of life was observed. Among older adults requiring nursing home care, there was a significant objective improvement in the frequency of urinary incontinence episodes and in the frequency of successful toilet visits for urination. The intervention also had a positive effect on successful toilet visits for bowel movements. Patients improved their ability to walk, stood independently without assistance more easily, and increased their arm strength. Those who were unable to walk increased their ability to operate a wheelchair. It is unclear whether the interventions had any impact on quality of life [40].

Another Cochrane review found that women randomly assigned to the PFMT group were about 62% less likely to report urinary incontinence in late pregnancy compared with the control group (RR 0.38; 95% CI 0.20-0.72). In this comparison of the two subgroups, a statistically significant difference was observed (PFMT vs no PFMT, PFMT vs standard care). Compared with the control group, women receiving PFMT reported urinary incontinence in the early postpartum period approximately 62% less frequently (RR 0.38; 95% CI 0.17–0.83). In women receiving PFMT, the risk of urinary incontinence was slightly lower than in the control group in the mid-postpartum period (three to six months), although the difference in risk decreased to 29% (RR 0.71; 95% CI 0.54–0.95). In contrast, among women with urinary incontinence randomly assigned to the PFMT group, the likelihood of urinary incontinence after treatment completion was approximately 22% lower in comparison with the control group during the period from more than six to twelve months postpartum (RR 0.78; 95% CI 0.69–0.87) [23].

Shafaq et al. described Iyengar yoga therapy, a program consisting of a two-day supervised group yoga course and a one-day home yoga course each week for 8 weeks, with each session lasting 75 minutes [41]. The researchers concluded that yoga improved pelvic muscle strength and quality of life. The study by Lausen et al. combined a modified Pilates method (MP) with standard physical therapy care. The program consisted of standard physical therapy sessions prior to MP classes, in which women participated in six one-hour group sessions for six to eight people conducted at weekly intervals by a Pilates specialist over 24 months [42]. The results revealed numerous benefits, such as improved self-worth ($p = 0.032$) and reduced social embarrassment ($p = 0.026$), while women with more severe symptoms showed improvement in their personal relationships ($p = 0.017$). Qualitative analysis confirmed these findings and indicated that MP sessions may positively influence attitudes toward exercise, diet, and well-being.

Dornowski et al. demonstrated that symptomatic pregnant women in the study had the lowest pelvic floor muscle electrical activity in most measured parameters compared to the remaining participants. During pelvic floor muscle contraction, the value of pelvic floor muscle electrical activity after 6 weeks of training shows an upward trend in the symptomatic group with PFMT and the control group (asymptomatic with PFMT); in the second group (asymptomatic), it remains virtually unchanged. The symptomatic group achieved pelvic floor muscle activity values of 12.36±6.01 μV before training, and after 6 weeks of training, this value increased to 14.03±6.78 μV. The asymptomatic group reached 12.43 ± 6.29 μV, and after training, 12.88 ± 5.64 μV. The results achieved by pregnant women in the control group showed a similar trend to those in the symptomatic group. The values of electrical activity from the first measurement were 12.49 ± 7.38 μV in the initial test and 13.74 ± 7.2 μV after 6 weeks. A comparison of the baseline electrical potential of the pelvic floor muscles at baseline and after 6 weeks of training, as well as the averaged resting electrical potential values after five 10-second contractions, showed an increase in baseline and a decrease in resting levels. In symptomatic women, the baseline value before training was 3.26 ± 2.48 μV, and the post-training value was 3.95 ± 4.53 μV. The resting values before and after training were 4.55 ± 2.51 μV and 4.25 ± 2.93 μV. In asymptomatic women, baseline pelvic floor muscle activity before and after training was 2.88±1.52 μV and 3.52±3.34 μV, respectively, while resting values were 7.16±18.56 μV and 3.92±3.17 μV, respectively. In women from the control group, the measured values before and after the training process were 3.05±2.32 μV and 4.11±4.94 μV, respectively, for baseline activity, and 7.82±19.45 μV and 4.39±3.89 μV for resting activity [22].

Peinado Molina et al. found that women with mixed urinary incontinence may have higher benefits from PFMT compared to women with stress urinary incontinence. Women with mixed urinary incontinence had lower maximum pressure during prolonged levator ani muscle contractions than women with stress urinary incontinence (16.7 [8.1] vs 25 [9.1] mmHg; p = 0.004), lower mean pressure during sustained contractions (9.2 [4.8] vs 12.9 [5.3]; p = 0.03), and lower maximum force during rapid contractions (15.5 [7.6] vs. 21.4 [5.3]; p = 0.02), with no differences in mean pressure during rapid contractions. Eight PFMT sessions with biofeedback and electrical stimulation were conducted, of which 70.9% of the women (22/31) completed. After treatment, women with mixed urinary incontinence had higher UDI-6 scores than women with stress urinary incontinence (44.1 [25.3] vs 20.2 [19.3]; p < 0.001), a higher reduction in symptoms (−29.2 [27.5] vs −6.8 [20.3]; p = 0.003), and a higher improvement in maximum isometric strength of the levator ani muscle (15.6 [9.4] vs 8.1 [9.2]; p = 0.01). Improvement on the VAS scale was reported by 93.8% of women with mixed urinary incontinence (15/16) and 92.6% with stress urinary incontinence (25/31) [24].

Virtual reality rehabilitation (VRR) is a treatment method that uses video games to increase motivation and improve functionality [17]. Exercises performed using gametherapy (GT) can increase pelvic floor muscle strength and reduce urinary symptoms in women with a predominance of stress incontinence [29]. A comparison of the efficacy of PFMT alone versus PFMT combined with gametherapy in the treatment of mixed urinary incontinence showed that both interventions improved pelvic floor muscle pressure and perception of the intervention and reduced urinary leakage [17,36]. Although no significant differences were found between the groups, a significant improvement was observed in the within-group analysis (both groups) regarding pelvic floor muscle manometry. In the PFMT group, a 28.75% increase in muscle pressure was observed, and in the PFMT + GT group, a 16.74% increase was observed after the intervention [36].

3.6. Current Guidelines and Recommendations for PFMT

Pelvic floor muscle training (PFMT) is widely discussed in numerous well-recognised guidelines and recommendations from international medical societies.

The guidelines of the European Association of Urology (EAU) clearly emphasize that intensive and regular PFMT over the long term increases the strength and endurance of pelvic floor muscle contractions and modifies the morphology of these muscles, which may lead to more effective inhibition of the detrusor muscle and help to stabilise the proximal urethra and improve urethral function in cases of overactive bladder (level of evidence 1b). The EAU guidelines on stress urinary incontinence identify PFMT as a tool that improves functional and morphological parameters of the pelvic floor, thereby enhancing urethral stability. Contraction of the pelvic floor muscles causes narrowing of the levator muscle gap, increased urethral closure pressure, and elevation of the bladder and rectum. PFMT can be used for the prevention of urinary incontinence, e.g., in pregnant women before delivery or as part of a planned postpartum recovery program. More intensive, supervised treatment programs provide greater benefits for women undergoing PFMT (level of evidence 1a). There is evidence that PFMT is more effective than urinary incontinence pessaries in reducing urinary symptoms, as well as evidence that adding PFMT to treatment with a urological pessary improves overall assessment of treatment outcomes in patients (level of evidence 1a). Topically applied estrogen (ES) appears to be less effective than PFMT; conflicting evidence exists regarding whether adding

ES enhances the effectiveness of PFMT alone (level of evidence 2a). The use of a mid-urethral sling is more effective than PFMT in women with moderate or severe urinary incontinence (level of evidence 1b) [43].

According to the ICI [44] and the IUC [45], there is level 1a evidence from eleven randomized controlled trials that PFMT is effective in reducing symptoms of pelvic organ prolapse and/or improving the severity of pelvic organ prolapse (by one grade) in women with stage I, II, and III POP-Q in the general female population. Furthermore, regular PFMT as part of primary prevention of pelvic organ prolapse would probably be the most effective strategy to reduce the prevalence of pelvic floor muscle disorders in the female population and prevent a decline in their quality of life due to this condition. However, there is a lack of evidence from solid randomised controlled trials regarding the prevention of pelvic organ prolapse [28,45].

According to the literature review included in the NICE guidelines, PFMT is as effective as surgery in about half of women with stress urinary incontinence. Given the risk of surgical complications and the absence of side effects, NICE recommends three months of supervised PFMT as first-line treatment for stress or mixed urinary incontinence. PFMT programs should include at least 8 contractions performed 3 times a day. PFMT reduces lower urinary tract symptoms for up to 6 months in patients with uterine prolapse who do not use an additional pessary or undergo surgical treatment (level of evidence 1b). If pessary therapy or surgical intervention is used for pelvic organ prolapse, PFMT does not provide additional benefits. Electrical stimulation should not be routinely used in combination with PFMT. For women who are unable to actively contract their pelvic floor muscles, the use of electrical stimulation and/or biofeedback should be considered to increase motivation and adherence to treatment recommendations. A supervised PFMT program lasting at least 16 weeks should be considered a first-line option for women with symptomatic stage 1 or 2 pelvic organ prolapse [27,39].

4. Conclusion

Pelvic floor muscle dysfunction disorders and their associated symptoms have a negative impact on women’s quality of life. Additional factors known to influence the final outcome of quality of life in women with pelvic floor muscle dysfunction disorders suggest the need for a holistic treatment approach. Conservative treatment remains the primary therapeutic option and includes comprehensive pelvic floor muscle training; it is effective for conditions caused by pelvic floor muscle dysfunction, thereby improving women's quality of life. Surgical treatment may be considered when conservative therapy does not result in satisfactory improvement.

5. Discussion

A limitation in determining the effectiveness of PFMF and its impact on quality of life is the significant heterogeneity of protocols and outcome measures. Most studies are based on small groups of participants and have relatively short follow-up periods, and many are prone to systematic error. Some studies involved unsupervised, self-directed training, which complicates the estimation of exercise effectiveness. Some protocols were supported by biofeedback, while others were combined with electrostimulation. A common limitation of the cited publications is the lack of urodynamic tests.

This review is narrative in nature, which carries the risk of subjective selection of the available literature. The included publications differ in methodology, the populations of women studied, the number of participants, the exercise programs, and the diagnostic tools, hindering direct comparison and limiting the ability to draw quantitative conclusions.

6. Disclosure

Authors' contribution:

Conceptualization: SP

Methodology: SP, AD, MJ, MK, AK, JK, KK, NK, MM, DS

Software: Not applicable

Validation: SP, AD, MJ, MK, AK, JK, KK, NK, MM, DS

Formal Analysis: SP, MJ, AK, KK, MM

Investigation: SP

Resources: AD, MK, JK, NK, DS

Data Curation: SP, AD, AK, JK, MM

Writing – original draft preparation: SP

Writing – review and editing: SP, AD, MJ, MK, AK, JK, KK, NK, MM, DS

Visualization: SP, AD, MK, JK, NK, DS

Supervision: SP, MJ, AK, KK, MM

Project Administration: SP, MJ, MK, KK, NK

Funding acquisition: Not applicable

All authors have read and agreed with the published version of the manuscript.

Funding: The Study Did Not Receive Special Funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

[1]. Peinado-Molina RA, Hernández-Martínez A, Martínez-Vázquez S, Rodríguez-Almagro J, Martínez-Galiano JM. Pelvic floor dysfunction: prevalence and associated factors. BMC Public Health. 2023 Oct 14;23(1):2005. doi: 10.1186/s12889-023-16901-3. PMID: 37838661; PMCID: PMC10576367. https://doi.org/10.1186/s12889-023-16901-3

[2]. González-Timoneda A, Valles-Murcia N, Muñoz Esteban P, Torres López MS, Turrión Martínez E, Errandonea Garcia P, Serrano Raya L, Nohales Alfonso F. Prevalence and impact of pelvic floor dysfunctions on quality of life in women 5-10 years after their first vaginal or caesarian delivery. Heliyon. 2025 Jan 21;11(3):e42018. https://doi.org/10.1016/j.heliyon.2025.e42018

[3]. Fedorchenko Y, Usen A. 2025. PELVIC FLOOR DYSFUNCTION AND REHABILITATION IN WOMEN: AGE-SPECIFIC CONSIDERATIONS ACROSS THE LIFESPAN.Anti-Aging Eastern Europe. 4, 3 (Sep. 2025), 156-165. https://doi.org/10.56543/aaeeu.2025.4.3.03.

[4]. Al-Badr A, Saleem Z, Kaddour O, Almosaieed B, Dawood A, Al-Tannir M, AlTurki F, Alharbi R, Alsanea N. Prevalence of pelvic floor dysfunction: a Saudi national survey. BMC Womens Health. 2022 Feb 4;22(1):27. doi: 10.1186/s12905-022-01609-0. Erratum in: BMC Womens Health. 2023 May 19;23(1):274. https://doi.org/10.1186/s12905-023-02432-x

[5]. Wallace SL, Miller LD, Mishra K. Pelvic floor physical therapy in the treatment of pelvic floor dysfunction in women. Curr Opin Obstet Gynecol. 2019 Dec;31(6):485-493. https://doi.org/10.1097/gco.0000000000000584

[6]. Peinado Molina RA, Hernández Martínez A, Martínez Vázquez S, Martínez Galiano JM. Influence of pelvic floor disorders on quality of life in women. Front Public Health. 2023 Oct 24;11:1180907. https://doi.org/10.3389/fpubh.2023.1180907

[7]. Zarawski M, Kołomańska D, Maj M, Panicz D, Opławski M, Mazur-Bialy AI. The Impact of Pelvic Floor Exercises on the Quality of Life of Women with Urinary Incontinence – Analysis of Pregnancy and the Postpartum Period. Journal of Novel Physiotherapy and Physical Rehabilitation. 035-041. 2017. https://doi.org/10.17352/2455-5487.000044

[8]. Nelson RL, Go C, Darwish R, Gao J, Parikh R, Kang C, Mahajan A, Habeeb L, Zalavadiya P, Patnam M. Cesarean delivery to prevent anal incontinence: a systematic review and meta-analysis, Tech. Coloproctol. 23 (9) (2019 Sep) 809–820, https://doi.org/10.1007/s10151-019-02029-3. Epub 2019 Jul 4. Erratum in: Tech Coloproctol. 2020 Oct;24(10):1107. https://doi.org/10.1007/s10151-020-02320-8

[9]. Szatmári É, Balla BJ, Simon-Ugron Á, Hock M. (2020). Efficacy of pelvic floor muscle training in improving symptoms of urinary incontinence and health related quality of life among parous and nulliparous women.Timisoara Physical Education and Rehabilitation Journal,13(25), 36-45.https://doi.org/10.2478/tperj-2020-0014

[10]. Bø K, Hilde G, Stær-Jensen J, Siafarikas F, Tennfjord MK, Engh ME. Postpartum pelvic floor muscle training and pelvic organ prolapse--a randomized trial of primiparous women. Am J Obstet Gynecol. 2015 Jan;212(1):38.e1-7. https://doi.org/10.1016/j.ajog.2014.06.049

[11]. Pizzol D, Demurtas J, Celotto S, Maggi S, Smith L, Angiolelli G, Trott M, Yang L, Veronese N. Urinary incontinence and quality of life: a systematic review and meta-analysis. Aging Clin Exp Res. 2021 Jan;33(1):25-35. https://doi.org/10.1007/s40520-020-01712-y

[12]. Grimes WR, Stratton M. Pelvic Floor Dysfunction. 2023 Jun 26. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan–. https://www.ncbi.nlm.nih.gov/books/NBK559246/

[13]. Eickmeyer SM. Anatomy and Physiology of the Pelvic Floor. Phys Med Rehabil Clin N Am. 2017 Aug;28(3):455-460. https://doi.org/10.1016/j.pmr.2017.03.003

[14]. Rieger M, Duran P, Cook M, Schenk S, Shah M, Jacobs M, Christman K, Kado DM, Alperin M. Quantifying the Effects of Aging on Morphological and Cellular Properties of Human Female Pelvic Floor Muscles. Ann Biomed Eng. 2021 Aug;49(8):1836-1847. https://doi.org/10.1007/s10439-021-02748-5

[15]. Larsson L, Degens H, Li M, Salviati L, Lee YI, Thompson W, Kirkland JL, Sandri M. Sarcopenia: Aging-Related Loss of Muscle Mass and Function. Physiol Rev. 2019 Jan 1;99(1):427-511. https://doi.org/10.1152/physrev.00061.2017

[16]. Ściążko-Gancarczyk S, Gancarczyk M, Węgrzyn J. Stress urinary incontinence in physically active women – current evidence, risk factors and clinical relevance.Journal of Education, Health and Sport. Online. 6 December 2025. Vol.85, p.66678. [Accessed10March2026]. https://doi.org/10.12775/JEHS.2025.85.66678

[17]. Martinho NM, Silva VR, Marques J, Carvalho LC, Iunes DH, Botelho S. The effects of training by virtual reality or gym ball on pelvic floor muscle strength in postmenopausal women:

a randomized controlled trial. Braz J Phys Ther. 2016 Mar 22;20(3):248-57. https://doi.org/10.1590/bjpt-rbf.2014.0148

[18]. Takaoka S, Kobayashi Y, Taniguchi T. Effect of pelvic floor muscle training program in reducing postpartum levator hiatus area in Japanese women: A prospective cohort study using three-dimensional ultrasonography. Jpn J Nurs Sci. 2020 Oct;17(4):e12346. https://doi.org/10.1111/jjns.12346

[19]. Ouchi M, Kitta T, Suzuki S, Shinohara N, Kato K. Evaluating pelvic floor muscle contractility using two-dimensional transperineal ultrasonography in patients with pelvic organ prolapse. Neurourol Urodyn. 2019 Jun;38(5):1363-1369. https://doi.org/10.1002/nau.23987

[20]. Zhao H, Liu XN, Liu LN. Effect of structured pelvic floor muscle training on pelvic floor muscle contraction and treatment of pelvic organ prolapse in postpartum women: ultrasound and clinical evaluations. Arch Gynecol Obstet. 2024 May;309(5):2177-2182. https://doi.org/10.1007/s00404-023-07226-y

[21]. Yin P, Wang H. Evaluation of Nursing Effect of Pelvic Floor Rehabilitation Training on Pelvic Organ Prolapse in Postpartum Pregnant Women under Ultrasound Imaging with Artificial Intelligence Algorithm. Comput Math Methods Med. 2022 Apr 25;2022:1786994. https://doi.org/10.1155/2022/1786994

[22]. Dornowski M, Sawicki P, Wilczyńska D, Vereshchaka I, Piernicka M, Błudnicka M, Worska A, Szumilewicz A. Six-Week Pelvic Floor Muscle Activity (sEMG) Training in Pregnant Women as Prevention of Stress Urinary Incontinence. Med Sci Monit. 2018 Aug 14;24:5653-5659. https://doi.org/10.12659/MSM.911707

[23]. Woodley SJ, Lawrenson P, Boyle R, Cody JD, Mørkved S, Kernohan A, Hay-Smith EJC. Pelvic floor muscle training for preventing and treating urinary and faecal incontinence in antenatal and postnatal women. Cochrane Database Syst Rev. 2020 May 6;5(5):CD007471. https://doi.org/10.1002/14651858.CD007471.pub4

[24]. Richmond CF, Martin DK, Yip SO, Dick MA, Erekson EA. Effect of Supervised Pelvic Floor Biofeedback and Electrical Stimulation in Women With Mixed and Stress Urinary Incontinence. Female Pelvic Med Reconstr Surg. 2016 Sep-Oct;22(5):324-7. https://doi.org/10.1097/SPV.0000000000000279

[25]. Gagnon LH, Boucher J, Robert M. Impact of pelvic floor muscle training in the postpartum period.Int Urogynecol J27, 255–260 (2016). https://doi.org/10.1007/s00192-015-2822-6

[26]. Fitz FF, Gimenez MM, de Azevedo Ferreira L, Matias MMP, Bortolini MAT, Castro RA. Pelvic floor muscle training for female stress urinary incontinence: a randomised control trial

comparing home and outpatient training. Int Urogynecol J. 2020 May;31(5):989-998.https://doi.org/10.1007/s00192-019-04081-x

[27]. NICE Guidance - Urinary incontinence and pelvic organ prolapse in women: management: © NICE (2019). Urinary incontinence and pelvic organ prolapse in women: management. BJU Int. 2019 May;123(5):777-803. https://doi.org/10.1111/bju.14763

[28]. Mishra DG, Vaishnav SB, Phatak AG. Comparison of Effectiveness of Home-Based Verses Supervised Pelvic Floor Muscle Exercise in Women with Urinary Incontinence. J Midlife Health. 2022;13(1):74–9. https://doi.org/10.4103/jmh.jmh_83_21

[29]. Nagib ABL, Silva VR, Martinho NM, Marques A, Riccetto C, Botelho S. Can Supervised Pelvic Floor Muscle Training Through Gametherapy Relieve Urinary Incontinence Symptoms in Climacteric Women? A Feasibility Study. Revista brasileira de ginecologia e obstetricia : revista da Federacao Brasileira das Sociedades de Ginecologia e Obstetricia. 2021;43(7):535–44. https://doi.org/10.1055/s-0041-1733979

[30]. Curillo-Aguirre CA, Gea-Izquierdo E. Effectiveness of Pelvic Floor Muscle Training on Quality of Life in Women with Urinary Incontinence: A Systematic Review and Meta-Analysis. Medicina. 2023; 59(6):1004. https://doi.org/10.3390/medicina59061004

[31]. Molina-Torres G, Moreno-Muñoz M, Rebullido TR, Castellote-Caballero Y, Bergamin M, Gobbo S, Hita-Contreras F, Cruz-Diaz D. The effects of an 8-week hypopressive exercise training program on urinary incontinence and pelvic floor muscle activation: A randomized controlled trial. Neurourol Urodyn. 2023 Feb;42(2):500-509. https://doi.org/10.1002/nau.25110

[32]. Hagen S, Elders A, Stratton S, Sergenson N, Bugge C, Dean S, Hay-Smith J, Kilonzo M, Dimitrova M, Abdel-Fattah M, Agur W, Booth J, Glazener C, Guerrero K, McDonald A, Norrie J, Williams LR, McClurg D. Effectiveness of pelvic floor muscle training with and without electromyographic biofeedback for urinary incontinence in women: multicentre randomised controlled trial. BMJ. 2020 Oct 14;371:m3719. https://doi.org/10.1136/bmj.m3719

[33]. Marcellou EG, Stasi S, Giannopapas V, Bø K, Bakalidou D, Konstadoulakis M, Papathanasiou G. Effect of pelvic floor muscle training on urinary incontinence symptoms in postmenopausal women: A systematic review and meta-analysis. Eur J Obstet Gynecol Reprod Biol. 2025 Jan;304:134-140. https://doi.org/10.1016/j.ejogrb.2024.11.040

[34]. Fritel X, de Tayrac R, Bader G, Savary D, Gueye A, Deffieux X, Fernandez H, Richet C, Guilhot J, Fauconnier A. Preventing Urinary Incontinence With Supervised Prenatal Pelvic Floor Exercises: A Randomized Controlled Trial. Obstet Gynecol. 2015 Aug;126(2):370-377. https://doi.org/10.1097/AOG.0000000000000972

[35]. Fenocchi L, Collins M, Elders A, Hagen S. Assessment of the Relative Performance of the EQ-5D-3L, ICIQ-UI SF and POP-SS Using Data from the OPAL Trial. Int J Environ Res Public Health. 2022 Jan 26;19(3):1351. https://doi.org/10.3390/ijerph19031351

[36]. Bezerra LO, de Oliveira MCE, da Silva Filho EM, Vicente da Silva HK, Menezes de Oliveira GF, da Silveira Gonçalves AK, Pegado R, Micussi MTABC. Impact of Pelvic Floor Muscle Training Isolated and Associated with Game Therapy on Mixed Urinary Incontinence: A Randomized Controlled Trial. Games Health J. 2021 Feb;10(1):43-49. https://doi.org/10.1089/g4h.2019.0207

[37]. Dumoulin C, Cacciari LP, Hay-Smith EJC. Pelvic floor muscle training versus no treatment, or inactive control treatments, for urinary incontinence in women. Cochrane Database of Systematic Reviews 2018, Issue 10. Art. No.: CD005654. https://doi.org/10.1002/14651858.CD005654.pub4

[38]. Verbeek M,Hayward L. Pelvic Floor Dysfunction And Its Effect On Quality Of Sexual Life. Sex Med Rev 2019;7(4):559-564. https://doi.org/10.1016/j.sxmr.2019.05.007

[39]. Al Belushi ZI, Al Kiyumi MH, Al-Mazrui AA, Jaju S, Alrawahi AH, Al Mahrezi AM. Effects of home-based pelvic floor muscle training on decreasing symptoms of stress urinary incontinence and improving the quality of life of urban adult Omani women: A randomized controlled single-blind study. Neurourol Urodyn. 2020 Jun;39(5):1557-1566. https://doi.org/10.1002/nau.24404

[40]. Stenzelius K, Molander U, Odeberg J, Hammarström M, Franzen K, Midlöv P, Samuelsson E, Andersson G. The effect of conservative treatment of urinary incontinence among older and frail older people: a systematic review. Age Ageing. 2015 Sep;44(5):736-44. https://doi.org/10.1093/ageing/afv070

[41]. Shafaq S, Khan AA, Kazi M. Effects of Iyengar Yoga on pelvic floor muscle strength and endurance among young females with stress urinary incontinence. Pakistan Armed Forces Medical Journal,72(5), 1518. https://doi.org/10.51253/pafmj.v72i5.7691

[42]. Lausen A, Marsland L, Head S, Jackson J, Lausen B. Modified Pilates as an adjunct to standard physiotherapy care for urinary incontinence: a mixed methods pilot for a randomised controlled trial. BMC Womens Health. 2018 Jan 12;18(1):16.https://doi.org/10.1186/s12905-017-0503-y

[43]. EAU Guidelines on Non-neurogenic Female LUTS - DISEASE MANAGEMENT https://uroweb.org/guidelines/non-neurogenic-female-luts/chapter/disease-management

[44]. Cardozo L, Rovner E, Wagg A, Wein A, Abrams P. (Eds) Incontinence 7th Edition (2023). ICI-ICS. International Continence Society, Bristol UK, ISBN: 978-0-9569607-4-0. https://www.ics.org/ici

[45]. Bø K, Anglès-Acedo S, Batra A, Brækken IH, Chan YL, Jorge CH, Kruger J, Yadav M, Dumoulin C. International urogynecology consultation chapter 3 committee 2; conservative treatment of patient with pelvic organ prolapse: Pelvic floor muscle training. Int Urogynecol J. 2022 Oct;33(10):2633-2667. https://www.ncbi.nlm.nih.gov/pubmed/35980443