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Original Article

Comparative Effectiveness of Supervised versus Home-Based Pelvic Floor Muscle Training in Women with Postpartum Urinary Incontinence: An OPD-Based Study

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Author`s Contribution

[1]Final approval of the study to be published, [2,6]Substantial contributions to the conception or design of the work; or the acquisition, analysis, drafting, [3,5]Drafting the work or revising it critically for important intellectual content, analysis, or interpretation of data for the work, [4]Active participation in active methodology,

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A B S T R A C T

Objective: To compare the improvement in urinary incontinence symptoms between supervised pelvic floor muscle training (PFMT) and home-based PFMT in postpartum women.

Methodology: This prospective comparative interventional study was conducted on 70 postpartum women with urinary incontinence, equally divided into two groups of 35 each, at Gynae and Obs department of QAMC Bahawalpur from March 2023 to August 2024. The group A received supervised PFMT sessions conducted by a trained physiotherapist, while group B performed a standardized home-based PFMT program following written and verbal instructions. Both groups were followed for duration of 8–12 weeks. Outcome measures included incontinence severity assessed by the International Consultation on Incontinence Questionnaire (ICIQ-UI SF), pelvic floor muscle strength, and health-related quality of life scores, measured at baseline and post-intervention.

Results: Overall 50 postpartum women were enrolled particularly 25 women in each group. Both groups were almost matched at baseline across most demographic and clinical variables. However following intervention, the supervised PFMT group showed significantly higher overall improvement compared to the home-based group (56.19 ± 19.85% vs. 29.58 ± 11.80%) p = 0.000. Strength of PFM was significantly greater in the supervised group, with 32% achieving good muscle contraction versus 12% in the home-based group (p = 0.039). Additionally, the clinical cure rate 32% in supervised PFMT group compared to 16.0% in the home-based group (p = 0.002). The score of the QoL improved significantly in both groups; however, the supervised group found with higher post-intervention scores (8.10 ± 1.27 vs. 6.42 ± 1.30) p = 0.001. Moreover, the both interventions were well tolerated with minimal adverse events, and the satisfaction levels of the patients were comparable across the groups (p >0.05)

Conclusion: Both supervised and home-based PFM training interventions observed to be effective and safe for postpartum UI, with supervised PFMT consistently some superior outcomes across all the clinical measures, with home-based PFMT remains as a feasible and accessible alternative specifically where supervised care is inaccessible.

Keywords: Postpartum UI, Supervised PFMT, Home-Based PFMT, Physiotherapy, QOL.

Introduction

Postpartum urinary incontinence (PUI) remains a significantly distressing and a common condition reported among 31% of women after childbirth, which affects their overall quality of life.[1] It generally refers to involuntary leakage of urine occurring after child birth.

Although often resolves in less than a year, urinary incontinence (UI) after delivery can persist for years in up to 20% of cases.[2] Regardless of higher prevalence of postpartum urinary incontinence, many women do not seek treatment. Urinary incontinence among these women has been linked to belief that the condition will resolve on its own, confusion, anxiety, social isolation, and depression. Consequently, postpartum urinary incontinence often remains underreported and undertreated.[3] Several risk factors have been identified to increase the likelihood of PUI, including prolonged pushing stage of labor, caesarean delivery, macrosomia, episiotomy, perineal tears, multi-parity, obesity, advanced maternal age, chronic cough, constipation, and previous pelvic floor dysfunction.[4]

Stress urinary incontinence in postpartum period is one of the most prevalent and multifactorial subtype of UI, while some women may also experience urgency UI or mixed UI. Stress UI refers to urine leakage caused by activities that promote intra-abdominal pressure. These activities include,

coughing, sneezing, laughing, lifting weight, or workout.[5,6] The symptoms of urinary incontinences can negatively affect a woman's quality of life by limiting physical activity, disrupting psychosocial and emotional behavior, disturbing sleep, and negatively affecting sexual health. Persistent urinary symptoms in the postpartum phase may pose considerable burden to child bearing women. [7]

Pelvic Floor Muscle Training is widely recommended and first-line treatment for postpartum urinary incontinence. It can improve muscle building, strength, structural support to pelvic floor and normalize intra-abdominal pressure.[8,9] PFMT is economical and safe and can be used as a home-based or supervised program. Although, supervised PFMT is usually superior to home-based intervention, some postpartum women may feel it difficult to adhere to supervised program due to travel constraints, childcare responsibilities, financial limitations, or limited access to specialist services,[10] specifically in low- and middle-income regions. Conversely the home-based PFMT offers convenience and scalability but raises concerns regarding technique accuracy and long-term compliance. However, the existing literature, direct comparative evidence between these two delivery modes in the postpartum population remains inconsistent and methodologically varied. Some studies suggest that supervised PFMT yields better outcomes due to guided technique and adherence, whereas others propose that home-based PFMT programs can be more effective with adequate education and motivation.[10,11]

To determine that which approach more superior or possess equivalent clinical outcomes very important to directly explore the evidence-based rehabilitation protocols, optimize resource allocation within the systems of healthcare, and to support clinicians in adapting individualized postpartum care. Therefor this study is conducted to identifying the most effective and supportable PFMT delivery strategy for the postpartum women.

Methodology

A prospective comparative interventional study was carried out on 50 women with postpartum urinary incontinence (PUI) at the Department of Gynecology and Obstetrics, Quaid-e-Azam Medical College (QAMC), Bahawalpur. The study was conducted over a period of 18 months, from March 2023 to August 2024. Ethical approval was obtained from the Institutional Review Board (Ref. No. 217/DME/QAMC, Bahawalpur), and informed consent was obtained from all participants. Additionally, the confidentiality of data was strictly maintained, and participants retained the right to withdraw at any stage of the study.

All postpartum women aged 18 to 45 years, diagnosed with urinary incontinence (stress, urge, or mixed) within 6 weeks to 6 months following vaginal delivery or cesarean section, and who were able to voluntarily contract pelvic floor muscles, regardless of parity, were included. However, women with any neurological disorder, active urinary tract infection (UTI), pelvic organ prolapse, history of pelvic floor surgery, severe obstetric complications, or postpartum comorbidities were excluded. Participants who declined to take part in the study, failed to follow instructions, or were lost to follow-up were also excluded.

All participants were equally allocated into two groups of 25 each using simple randomization. Group A received supervised pelvic floor muscle training (PFMT) sessions led by a trained and experienced physiotherapist. Each session followed a standardized protocol, including both slow-twitch endurance contractions and fast-twitch "quick flicks," with progressive increases in intensity and duration throughout the intervention period. Sessions were conducted three times per week for 8 to 12 weeks, with real-time feedback to improve technique, monitor adherence, and ensure individualized progression.

In contrast, Group B underwent a home-based PFMT program. Participants performed the same standardized exercises independently at home, following structured written and verbal instructions provided at enrollment, along with a detailed illustrated exercise booklet. They were advised to perform the exercises daily. Compliance was monitored through self-reported exercise diaries, with brief follow-ups conducted via telephone at fortnightly intervals to reinforce adherence and address any concerns.

Study outcomes were evaluated at two time points: baseline (week 0) and post-intervention (8 to 12 weeks). The severity of urinary incontinence was measured using the International Consultation on Incontinence Questionnaire–Urinary Incontinence Short Form (ICIQ-UI SF), a validated self-reported tool assessing the frequency, volume, and impact of urine leakage. Pelvic floor muscle strength was assessed using the Modified Oxford Scale (MOS) through digital palpation performed by the treating physiotherapist, grading muscle strength from 0 to 5 (0 = no contraction, 1 = flicker, 2 = weak contraction, 3 = moderate contraction, 4 = good contraction, and 5 = strong contraction).

Furthermore, health-related quality of life (HRQoL) was assessed using the relevant domain of the ICIQ-UI SF or an additional validated HRQoL instrument, reflecting the functional and psychosocial impact of

incontinence on daily activities. Patient satisfaction was evaluated using the Patient Global Impression of Improvement (PGI-I) scale, where participants rated their perceived improvement on a 7-point Likert scale. All data were entered and analyzed using SPSS version 23.

Results

This study enrolled the 50 postpartum women, and equally divided into two groups, with mean age of supervised PFMT group's women was 29.96 ± 4.68 years and 30.32 ± 4.30 years of the home-based group, without significant p = 0.778. Likewise, durations of postpartum were comparable across groups (13.04 ± 4.08 weeks vs. 13.40 ± 3.62 weeks) p = 0.743, as were BMI values (27.80 ± 2.62 kg/m^2 vs. 27.08 ± 2.70 kg/m^2) p = 0.341, indicating adequate baseline homogeneity. According to the birth weight, a statistically significant difference was observed between the groups (3.39 ± 0.53 kg versus 3.12 ± 0.39 kg) with the supervised group having infants of slightly higher birth weight (p = 0.043). The mode of delivery and parity were also almost similar across the groups, with SVD being the predominant delivery mode in both groups (p = 0.480). Additionally, the educational status and employment status distributions were approximately similar, with the majority of participants in both groups having completed graduate or secondary level education and most participants were housewives, (p>0.05), as presented in table I.

Table I: Demographic and clinical characteristics. (n=50)

Demographic variables	Supervised PFMT (n=25)	Home-Based PFMT (n=25)	P-value
Age (years)	29.96±4.68	30.32±4.30	0.778
Weeks Postpartum	13.04±4.08	13.40±3.62	0.743
Birth Weight (kg)	3.39±0.53	3.12±0.39	0.043
BMI (kg/m²)	27.80±2.62	27.08±2.70	0.341
Improvement	56.19±19.85	29.58±11.80	0.000
Education Level			
Graduate	11 (44.0%)	11 (44.0%)	0.446
Postgraduate	0 (0.0%)	2 (8.0%)	
Primary	4 (16.0%)	2 (8.0%)	
Secondary	10 (40.0%)	10 (40.0%)	
Employment			
Employed	6 (24.0%)	12 (48.0%)	0.077
Housewife	19 (76.0%)	13 (52.0%)	
Parity			
1	6 (24.0%)	7 (28.0%)	0.702
2	8 (32.0%)	6 (24.0%)	
3	1 (4.0%)	3 (12.0%)	
4	10 (40.0%)	9 (36.0%)	
Delivery Mode			
C-Section	4 (16.0%)	6 (24.0%)	0.480
SVD	21 (84.0%)	19 (76.0%)	

The PFM strength was approximately similar between both groups (p = 0.569) at baseline, with the majority of participants in both the supervised and home-based groups presenting with either flicker-level or weak muscle contractions. Subsequent to the intervention, a statistically significant change observed between the groups, particularly in the supervised PFMT group, 32% of women achieved good muscle contraction post-intervention, compared to only 12% in the home-based group, likewise, 16% of women in the home-based group showed no detectable contraction at follow-up, indicating that the supervised PFMT produced higher consistent improvement in PFM strength compared to home-based training (p = 0.039). Table II

Table II: PFM strength comparison in both groups (n=50)

PFM Strength	Supervised PFMT (n=25)	Home-Based PFMT (n=25)	P-value
PFM strength baseline			
Flicker or pulsation felt	9 (36.0%)	6 (24.0%)	0.569
Weak muscle contraction felt	9 (36.0%)	9 (36.0%)	
Moderate muscle contraction felt	7 (28.0%)	10 (40.0%)	
PFM Strength Post			
No contraction	0 (0.0%)	4 (16.0%)	0.039
Flicker or pulsation felt	3 (12.0%)	3 (12.0%)	
Weak muscle contraction felt	8 (32.0%)	5 (20.0%)	
Moderate muscle contraction felt	6 (24.0%)	10 (40.0%)	
Good muscle contraction	8 (32.0%)	3 (12.0%)	

Overall average number of urinary leakage episodes per day was almost equivalent between the supervised PFMT group (5.64 ± 1.705) and the home-based PFMT group (5.08 ± 1.847) p = 0.271, which was decreased following the intervention, in both groups, particularly more decreased in supervised PFMT group (2.26 ± 0.731) compared to the home-based group (3.01 ± 1.010) p =0.004. Table III

According to the clinical cure, in the supervised PFMT group, 32% of participants achieved clinical cure following the intervention, whereas 16.0% in the home-based PFMT group out of 25 cases in each group, indicating the superiority of supervised training in achieving complete symptom resolution (p=0.002). However the most of the women in both groups reported no adverse events, only few reported the mild pelvic discomfort and muscle fatigue (p>0.05).

Table IV

Table III: Mean leakage frequency /day comparison in both groups. (n=50)					
Leakage frequency /day	Study groups	N	Mean	Std. Deviation	p-value
Baseline	Supervised PFMT	25	5.64	1.705	0.271
	Home-Based PFMT	25	5.08	1.847	
Post	Supervised PFMT	25	2.26	0.731	0.004
	Home-Based PFMT	25	3.01	1.010	

Likewise, the mean baseline QoL scores was similar between the groups without statistically significant difference (p = 0.468). however following the intervention, QoL scores improved markedly in both groups; particularly the supervised PFMT group showed significantly higher post-intervention QoL score (8.10 ± 1.27) in contrast to the home-based group (6.42 ± 1.30), (p = 0.000), representing supervised PFMT group with substantially greater improvement in health-related QoL. However the patient's satisfaction level was statistically in significant (p = 0.588). Table V

Table IV: Clinical symptoms and cure rate comparison. (n=50)			
Variables	Supervised PFMT (n=25)	Home-Based PFMT (n=25)	P-value
Clinical Cure			
No	17 (68.0%)	21 (84.0%)	0.002
Yes	8 (32.0%)	4 (16.0%)	
Adverse Events			
Mild pelvic discomfort	3 (12.0%)	5 (20.0%)	0.073
Muscle fatigue	1 (4.0%)	2 (8.0%)	
None	21 (84.0%)	18 (72.0%)	

Table V: Mean QOL score and patients satisfaction score comparison in both groups. (n=50)			
Outcomes	Supervised PFMT (n=25)	Home-Based PFMT (n=25)	P-value
QoL Score Baseline	5.21±0.98	4.98±1.18	0.468
QoL post PFMT	8.10±1.27	6.42±1.30	0.000
Satisfaction score	4.36±9.81	3.76±0.97	0.588

Discussion

The postpartum UI is a common yet often neglected condition that significantly undermines the physical comfort, emotional wellbeing, and overall QoL following deliveries. The PFM training remains the most widely suggested conservative intervention for the management of it, with rising interest to identifying the most effective and accessible mode of it. In this study 50 women were studies, after equally divided in two groups of supervised PFMT and Home-Based PFMT with mean age 29.96±4.69 years and 30.32±4.30 years respectively, mean postpartum duration of 13.04 weeks and 13.40 weeks respectively and mean BMI 27.80 kg/m^2 and 27.08 kg/m^2, respectively (p>0.05), while birth weight showed statistically significant difference between the groups (3.39±0.53 vs 3.12±0.39 kg; p=0.043). Similar baseline comparability was reported in the study of Bø K et al[12] who documented mean age of 29.8±4.1 years and mean BMI of 25.7±4.0 kg/m^2, with no significant baseline differences between intervention and control groups. Comparably, the study of Åhlund S et al[13] reported comparable mean age of 33 ± 3.6 years and mean BMI of 23 ± 3.4 kg/m^2 in intervention and control groups.

In our study, majority of patients in both the supervised and home-based PFMT groups were multipara, delivered vaginally, and housewives. Similar participants profile was published in the study of Razak Ozdincler A et al[14] where they reported balanced baseline demographic and obstetric characteristics between their study groups, with no significant difference in mean age, mean BMI, educational status, and mode of delivery (p>0.05).

In present study, stress urinary incontinence (SUI) was the predominant UI type in both the supervised PFMT and Home-Based PFMT groups, affecting 88% of participants in each group, followed by Mixed UI (8% and 12% respectively), and urge UI (4% vs 0%). Aligning with these findings, in the study carried out by Wang X et al[15] SUI was the principal presentation for urinary leakage, reflected predominance of this subtype of UI in treatment-seeking postpartum populations. However, postpartum SUI showed no significant difference between groups at baseline (p=0.30). Constantly, in the study of Dumoulin C et al[16] all the women with SUI were recruited, indicating that stress leakage is the major continence disorder in the postpartum period requiring rehabilitation.

In this study, in the supervised PFMT group, 32% of women achieved good muscle contraction post-intervention, compared to only 12% in the home-based group, likewise, 16% of women in the home-based group showed no detectable contraction at follow-up, indicating that the supervised PFMT produced higher consistent improvement in PFM strength compared to home-based training (p = 0.039). In agreement, in the study of Schütze S et al.[17] Post-treatment PFM strength in intervention

group showed significantly stronger pelvic floor muscle strength at 12 months postpartum on Oxford scale (p= 0.018). Consistent with these findings, in the study of Wang X et al[15] the supervised group had significantly better urinary incontinence outcomes, with stronger pelvic floor muscle strength at 3 months (p<0.05). Likewise clinical cure, was significantly higher in the Supervised group (p=0.002) in this study, highlighting the superior therapeutic effectiveness of supervised PFMT in achieving complete symptom resolution within the 12-week program. Consistent findings were documented in the study by Wang X et al.,[15] who reported a significantly higher cure rate with supervised PFMT (p=0.002). Similarly, in the study of Tim S et al.[18] supervised group showed with rarer urological complaints and significant reduction in urinary incontinence symptoms during follow-up (p < 0.001), reflecting better cure with guided intervention.

In current study, the majority of the women were found without adverse events, only few reported the mild pelvic discomfort and muscle fatigue (p>0.05), indicating overall acceptable safety profile of both interventions. These findings are in line with the study by Wang X et al[15] who reported no serious adverse events related to the intervention during the study period, with high treatment adherence in both groups, indicating that PFMT-based interventions are safe and well tolerated. In line with these findings, in the study of Wang X et al[19] PFMT was identified as a recommended first-line conservative treatment because of favorable risk profile, with no treatment-related serious complications, reflecting the established safety expectations for PFMT interventions.

Additionally according to this study the supervised PFMT group achieved significantly more reduction in urinary incontinence symptoms, (p<0.001). Comparable findings were documented in the study by Wang X et al15 who reported significant improvement in mild SUI (p=0.008) and moderate SUI (p=0.04) with supervised PFMT. Similarly findings were supported by Tim S et al[18] who found significant reduction in urinary incontinence symptoms from 49% in pregnancy to 36.9% in six weeks postpartum in supervised group compared to control (p < 0.001), confirming that therapist-guided rehabilitation may produce superior continence outcomes compared with less supervised models.

However, in this series, post-treatment QoL scores were significantly higher in supervised group (8.10 versus 6.42) p=0.001), indicating superior functional recovery. Aligning with our findings, in the systematic review of Romeikienė KE et al[20] validated QoL instruments showed statistically significant improvements in QoL in PFMT groups compared with controls, particularly in supervised groups. Consistently, in the study of Zare Z et al[21] 8 weeks guided PFMT significantly improved the QoL scores, with positive influence on daily life functioning in postpartum women (p<0.001). Consistently, in the study of Sjöström M et al[22] women undergoing guided PFMT achieved significant improvement in QoL measured by ICIQ-LUTSqol, with reduction in pot-intervention mean score exceeding the 4 points (P < 0.001). Similarly, the study of Firet L et al[23] demonstrated that women with higher engagement in Health PFMT program showed significant improvements in QoL (p < 0.001).

In this study, patient satisfaction levels were not statistically significant (p = 0.588), which is in agreement with the study conducted by Felicíssimo MF et al.[24], who also reported no statistically significant differences in patient-reported outcomes between supervised and unsupervised groups after treatment (p = 0.145). This suggests that both supervised and home-based PFMT can achieve similar patient-perceived benefits when appropriate initial instruction is provided.

Similarly, in the study by Kharaji G et al.[25], supervised programs were more effective in improving quality of life and pelvic floor function; however, patient satisfaction outcomes remained inconclusive due to limited and heterogeneous data across studies.

Overall, the current literature, along with the findings of this study, consistently supports the superiority of supervised PFMT over home-based delivery in the management of postpartum UI. However, this study has several limitations, including the absence of subgroup analysis based on the type and severity of UI, as well as the potential confounding effects of body mass index (BMI) and other important effect modifiers on clinical outcomes. Moreover, the relatively small sample size and short duration of follow-up may limit the generalizability of the findings.

Therefore, further large-scale studies are recommended, incorporating stratification by incontinence subtype, longer follow-up periods, and comprehensive assessment of home-based interventions and adherence-related factors, to generate more robust and widely applicable evidence.

Conclusion

Both supervised and home-based pelvic floor muscle training (PFMT) interventions were found to be effective and safe for postpartum urinary incontinence (UI). However, supervised PFMT consistently demonstrated superior outcomes across all clinical measures, including greater reduction in symptoms, higher clinical cure rates, enhanced pelvic floor muscle strength, and improved health-related quality of life (HRQoL).

Although home-based PFMT also produced significant improvements with comparable patient satisfaction, it remains a feasible and accessible alternative, particularly in settings where supervised care is not readily available. Incorporating supervised PFMT as the preferred modality within postpartum rehabilitation protocols is strongly recommended, while home-based interventions may serve as a practical adjunct or follow-up strategy to support long-term outcomes.

References

1. Wang Y, Zhuo Y, Yan H, Zhao R. How important is the timing and duration of pelvic floor muscle training for preventing postpartum urinary incontinence? A meta-analysis. *Int Urol Nephrol.*2026;58(1):147–59. https://doi.org/10.1007/s11255-025-04640-w
2. Kirik B, Yildiz H. Incidence, duration, and related factors of urinary incontinence in women after childbirth: A systematic review. *Rev Assoc Med Bras.* 2024;71(1):e20241054. https://doi.org/10.1590/1806-9282.20241054
3. Gallego-Gómez C, Torres-Costoso A, Martínez-Vizcaíno V, Quezada-Bascuñán CA, Martínez-Bustelo S, Basco-López JÁ, et al. Women's perceptions of urinary incontinence during the postpartum period: Systematic review of qualitative evidence. *BMC Pregnancy Childbirth.* 2026;26:70. https://doi.org/10.1186/s12884-026-08670-9
4. Tsinisizeli N, Bothou A, Gourounti K, Deltsidou A, Lykeridou A, Kyrkou G. Analysis of the multifactorial risks of postpartum urinary incontinence: A systematic review. *Healthcare (Basel).* 2026;14(3):418. https://doi.org/10.3390/healthcare14030418
5. Moris L, Heesakkers J, Nitti V, O'Connell HE, Peyronnet B, Serati M, et al. Prevalence, diagnosis, and management of stress urinary incontinence in women: A collaborative review. *Eur Urol.* 2025;87(3):292–301. https://doi.org/10.1016/j.eururo.2024.12.017
6. Jansson M, Franzén K, Tegerstedt G, Hiyoshi A, Nilsson K. Postpartum urinary incontinence—types, prevalence, and risk factors before, during, and after pregnancy and childbirth: A prospective cohort study. *Authorea Preprints.* 2024. https://doi.org/10.22541/au.170665888.82103374/v1
7. Lopes FD, Henriques C, Lopes MD, Mendes IM. Quality of life of women with urinary incontinence in the postpartum period: An integrative literature review. *Front Glob Womens Health.* 2025;6:1562572. https://doi.org/10.3389/fgwh.2025.1562572
8. Marcellou EG, Stasi S, Giannopapas V, Bø K, Bakalidou D, Konstadoulakis M, et al. 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;304:134–40. https://doi.org/10.1016/j.ejogrb.2024.11.040
9. Gallego-Gómez C, Núñez de Arenas-Arroyo S, Torres-Costoso A, Rodríguez-Gutiérrez E, Martínez-Vizcaíno V, Martínez-Bustelo S, et al. Effects of training interventions to treat postpartum urinary incontinence: A meta-analysis. *BJOG.* 2026;133(2):243–52. https://doi.org/10.1111/1471-0528.70014
10. Kharaji G, ShahAli S, Ebrahimi-Takamjani I, Sarrafzadeh J, Sanaei F, Shanbehzadeh S. Supervised versus unsupervised pelvic floor muscle training in the treatment of women with urinary incontinence: A systematic review and meta-analysis. *Int Urogynecol J.* 2023;34(7):1339–49. https://doi.org/10.1007/s00192-023-05489-2
11. Batool A, Ara G, Fatima N, Fareed HS, Azfar H, Yousaf F. Supervised pelvic floor muscle training vs. yoga-based pelvic exercises on stress urinary incontinence in postpartum women: A randomized controlled trial. *J Health Wellness Community Res.*2025:e698. https://doi.org/10.61919/3ht6db28
12. 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;212(1):38.e1–7. https://doi.org/10.1016/j.ajog.2014.06.049
13. Åhlund S, Nordgren B, Wilander EL, Wiklund I, Fridén C. Is home-based pelvic floor muscle training effective in treatment of urinary incontinence after birth in primiparous women? A randomized controlled trial. *Acta Obstet Gynecol Scand.* 2013;92(8):909–15. https://doi.org/10.1111/aogs.12173
14. Razak Ozdincler A, Korkmaz Dayican D, Ozyurek B. The effects of pelvic floor muscle training applied via telerehabilitation during the postpartum period: A randomized controlled study. *Telemed J E Health.* 2025;31(7):902–13. https://doi.org/10.1089/tmj.2024.0540
15. Wang X, Qiu J, Li D, Wang Z, Yang Y, Fan G, et al. Pressure-mediated biofeedback with pelvic floor muscle training for urinary incontinence: A randomized clinical trial. *JAMA Netw Open.*2024;7(11):e2442925. https://doi.org/10.1001/jamanetworkopen.2024.42925
16. Dumoulin C, Martin C, Elliott V, Bourbonnais D, Morin M, Lemieux MC, et al. Randomized controlled trial of physiotherapy for postpartum stress incontinence: 7-year follow-up. *Neurourol Urodyn.* 2013;32(5):449–54. https://doi.org/10.1002/nau.22330
17. Schütze S, Heinloth M, Uhde M, Schütze J, Hüner B, Janni W, et al. The effect of pelvic floor muscle training on pelvic floor function and sexuality postpartum: A randomized study. *Arch Gynecol Obstet.* 2022;306(3):785–93. https://doi.org/10.1007/s00404-022-06542-z
18. Tim S, Mazur-Bialy A. Online vs. supervised training in relieving urinary incontinence and diastasis recti abdominis in early postpartum. *J Clin Med.* 2024;13(24):7730. https://doi.org/10.3390/jcm13247730
19. Wang X, Sun Z, Xu T, Fan G. Efficacy of supervised pelvic floor muscle training with a home-based biofeedback device for urinary incontinence in postpartum women: Protocol for a multicentre randomized controlled trial. *BMJ Open.* 2023;13(4):e069874. https://doi.org/10.1136/bmjopen-2022-069874
20. Romeikienė KE, Bartkevičienė D. Pelvic-floor dysfunction prevention in prepartum and postpartum periods. *Medicina (Kaunas).*2021;57(4):387. https://doi.org/10.3390/medicina57040387
21. Zare Z, Golmakani N, Khadem N, Shareh H, Shakeri MT. The effect of pelvic floor muscle exercises on sexual quality of life and marital satisfaction in primiparous women after childbirth. *(DOI not available)*

22. Sjöström M, Umefjord G, Stenlund H, Carlbring P, Andersson G, Samuelsson E. Internet-based treatment of stress urinary incontinence: 1- and 2-year results of a randomized controlled trial. *BJU Int.* 2015;116(6):955–64. https://doi.org/10.1111/bju.13091
23. Firet L, Teunissen TA, Kool RB, Akkermans RP, Lagro-Janssen AL, van der Vaart H, et al. The relation between usage of an eHealth intervention for stress urinary incontinence and treatment outcomes: An observational study. *BMC Prim Care.* 2024;25(1):89. https://doi.org/10.1186/s12875-024-02325-4
24. Felicíssimo MF, Carneiro MM, Saleme CS, Pinto RZ, da Fonseca AM, da Silva-Filho AL. Intensive supervised versus unsupervised pelvic floor muscle training for the treatment of stress urinary incontinence: A randomized comparative trial. *Int Urogynecol J.* 2010;21(7):835–40. https://doi.org/10.1007/s00192-010-1125-1
25. Kharaji G, ShahAli S, Ebrahimi-Takamjani I, Sarrafzadeh J, Sanaei F, Shanbehzadeh S. Supervised versus unsupervised pelvic floor muscle training in the treatment of women with urinary incontinence: A systematic review and meta-analysis. *Int Urogynecol J.* 2023;34(7):1339–49. https://doi.org/10.1007/s00192-023-05489-2