

Integrative Use of Pelvic Floor Muscle Training and Traditional Chinese Medicine Rehabilitation for Postpartum Pelvic Floor Dysfunction

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Abstract. Pelvic Floor Dysfunction (PFD) is highly prevalent in postpartum women, with 40%-91% of primiparas having symptoms within one year post-delivery. It is associated with urinary incontinence, pelvic organ prolapses, and psychosocial issues such as anxiety and depression, leading to considerable health and quality-of-life burdens. Pelvic floor muscle training is widely regarded as the first-line conservative intervention, as it strengthens pelvic support structures and improves continence. Nevertheless, its effectiveness is often constrained by poor adherence, limited supervision, and difficulty in sustaining long-term training intensity. Rehabilitation approaches within the framework of Traditional Chinese Medicine (TCM), such as acupuncture, tuina, and Baduanjin exercise, have been reported to improve local blood perfusion, regulate neuromuscular pathways, and relieve pelvic discomfort, although high-quality evidence and standardized protocols remain insufficient. Emerging studies indicate that combining pelvic floor muscle training with TCM rehabilitation achieves greater reductions in urine leakage, better continence-related quality-of-life scores, and shorter recovery time compared with either approach alone. This review aims to evaluate the combined effects and synergistic mechanisms of pelvic floor muscle training and TCM rehabilitation in postpartum pelvic floor dysfunction, thereby informing future clinical strategies.

1 Introduction

Pelvic Floor Dysfunction (PFD) is a highly prevalent functional disorder among women, mainly caused by mechanical traction, nerve damage, and soft tissue relaxation during pregnancy and childbirth, which ultimately leads to pelvic floor muscle injury or functional abnormalities. Its common clinical manifestations include stress urinary incontinence, pelvic organ prolapse, and defecatory dysfunction [1]. Epidemiological data show that 40% to 91% of primiparous women will experience PFD-related symptoms within the first year after delivery [2]. The clinical manifestations of this disorder seriously affect the physical health and quality of life of most postpartum women; in severe cases, it may even trigger negative emotions such as anxiety and depression in postpartum women. With the increased social attention to women's health and the growth in the number of deliveries, the prevention and treatment of postpartum pelvic floor dysfunction have gradually become important issues in public health and clinical rehabilitation. The purpose of effective intervention is not only to restore physiological functions but also to promote women's overall health and social reintegration [3].

Pelvic Floor Muscle Training (PFMT) is one of the commonly used methods for postpartum pelvic floor rehabilitation at present. Through pre-training and post-

training exercises, it can improve and restore the tension of pelvic floor muscles, promote the rehabilitation of pelvic floor muscle function, effectively reduce the risk of early organ descent, and alleviate stress urinary incontinence [4]. Its advantages are non-invasiveness and the ability to be implemented at home for a long time. However, due to the single form of training, patients' compliance will decrease, leading to reduced training intensity and failure to achieve good therapeutic effects.

Traditional Chinese Medicine (TCM) rehabilitation starts with overall regulation, and holds that postpartum deficiency of qi and blood as well as local supporting structure damage are the key etiologies. Acupuncture can improve local circulation through neural regulation; tuina (Chinese massage) helps relax tense tissues and promote metabolism; and exercises such as Baduanjin (Eight-Section Brocade) and Tai Chi can enhance the whole-body circulation of qi and blood and muscle coordination [5]. Nevertheless, TCM rehabilitation is relatively insufficient in local muscle strength enhancement and lacks evidence-based support from large-scale randomized controlled trials.

In recent years, the model of combined therapy has gradually gained attention in relevant research. Both Pelvic Floor Muscle Training (PFMT) and Traditional Chinese Medicine (TCM) rehabilitation can improve postpartum pelvic floor dysfunction. Their synergy not only directly enhances pelvic floor muscle strength but

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also enables intervention in the early postpartum stage—regulating qi and blood, dredging meridians through traditional rehabilitation techniques, relieving pelvic floor muscle tension, and assisting in the implementation of PFMT. However, current related studies remain limited, and further accumulation of mechanism exploration and high-quality evidence is still needed. This review aims to evaluate the effect of the combined application of PFMT and TCM rehabilitation in the treatment of postpartum pelvic floor dysfunction and explore the mechanism of their synergistic effect. By analyzing existing clinical studies and integrating the latest theories and practices, it comprehensively assesses the efficacy of combined therapy for postpartum PFD, so as to provide a scientific basis for future clinical treatment.

2 Role of Pelvic Floor Muscle Training in Postpartum Pelvic Floor Dysfunction

Pelvic floor muscle relaxation can lead to the descent of the bladder neck and a decrease in urethral closure pressure, thereby causing urinary incontinence. During pregnancy and childbirth, excessive stretching of the pelvic floor muscles damages muscle fibers, resulting in relaxation of the pelvic floor muscles and reduced support, which in turn triggers organ prolapse. Pelvic floor muscle training is currently the basic intervention for stress urinary incontinence and pelvic organ prolapse. Through regular contraction and relaxation of the pelvic floor muscles, pelvic floor muscle training enhances their support and improves the function of pelvic organs [6]. A study shows that pelvic floor muscle training can effectively improve pelvic floor muscle strength and significantly alleviate postpartum stress urinary incontinence. Compared with surgical and drug treatments, pelvic floor muscle training requires no invasive procedures and has no drug-related side effects; moreover, postpartum women can perform rehabilitation at home without being restricted by time or space [7]. This characteristic enables it to have strong accessibility even in resource-limited areas, making it one of the most popular rehabilitation measures. In addition, some patients reported increased social participation and reduced anxiety levels after training, indicating its positive psychological effects.

Kegel exercise is the most classic and safe method for pelvic floor muscle exercise in pelvic floor function training, whose core lies in strengthening the pelvic floor muscle group through regular voluntary contraction and relaxation. Before training, patients are usually advised to empty their bladders to reduce discomfort and avoid incomplete movements caused by a full bladder. Training postures can be supine, sitting, or standing; the supine position is mostly preferred in the early stage to reduce the gravitational load on the pelvic floor and help patients grasp muscle contraction more accurately. The correct force-exerting method should focus on the perineum and levator ani muscle area, similar to the action of interrupting urination or lifting the anus. Each contraction is held for about 5 to 10 seconds, followed by complete relaxation for the

same duration, thus forming a complete contraction-relaxation cycle. It is routinely recommended to perform 10 to 15 repetitions as one set, and complete 2 to 3 sets per day. During the operation, special emphasis should be placed on breathing and synergistic muscle group control. Many beginners inadvertently hold their breath or use the rectus abdominis, gluteal muscles, and thigh muscles during training, which not only reduces the training effect of the pelvic floor muscles but also may increase abdominal pressure, thereby increasing the risk of urinary incontinence or organ descent. Therefore, clinical guidance often requires patients to maintain stable breathing and confirm the accuracy of force application through palpation or biofeedback. For postpartum women who have difficulty distinguishing pelvic floor contractions, auxiliary methods such as vaginal weights or surface electromyography monitoring can help establish muscle awareness and improve training efficiency.

However, insufficient compliance is the main obstacle restricting the training effect. Pelvic floor function training requires patients to perform it consciously and actively; the rehabilitation process is relatively long and boring, and some patients cannot persist in long-term single-item training, leading to reduced compliance [8]. The causes of poor compliance include physical discomfort during the puerperium, childcare pressure, and lack of professional guidance. Incorrect movement is also a problem. Some patients use abdominal or gluteal muscles during contraction, which weakens the targeting of pelvic floor muscles. Limited by other postpartum physical issues such as unhealed wounds in some patients, forced active contraction of pelvic floor muscles at this time may further aggravate muscle tension, resulting in counterproductive effects. Individual differences also affect the therapeutic effect. For patients who are elderly, obese, or accompanied by severe lacerations, standardized training is often insufficient to meet their needs. In the early puerperium, low-intensity isometric contraction should be the main focus to avoid additional pressure on unhealed tissues. After entering the middle and late stages of rehabilitation, the number and duration of contractions can be gradually increased. This phased and hierarchical individualized strategy can better match the recovery trajectory of different patients. To sum up, pelvic floor muscle training has clear value in improving postpartum PFD. Its low cost and operability make it the preferred intervention. However, problems such as low compliance, single training mode, and large individual differences limit its wide application. The focus in the future lies in the formulation of individualized plans and the integration of digital technology. Combining with other rehabilitation methods, especially TCM rehabilitation approaches, may provide a more comprehensive and sustainable solution for postpartum rehabilitation.

3 Role of Traditional Chinese Medicine Rehabilitation in Postpartum Pelvic Floor Dysfunction

In the field of postpartum rehabilitation, traditional medicine has proposed a series of non-pharmacological intervention methods, providing a different approach from modern rehabilitation for the treatment of PFD. In the rehabilitation of postpartum pelvic floor dysfunction within the framework of Traditional Chinese Medicine, approaches such as acupuncture, tuina, and movement-based practices including Baduanjin or Tai Chi are frequently employed. Their common goal is to assist in restoring urinary control and pelvic stability by improving nerve function, promoting local blood flow, and relieving tissue tension. As one of the most widely used methods, acupuncture can regulate neural activity and local circulation through the stimulation of specific acupoints. For example, acupuncture applied to the sacral foramina region, commonly referred to as the Baliao points, has been reported to modulate pelvic nerve activity, improve bladder control, and support uterine function [9]. A study found that acupuncture can accelerate local pelvic floor circulation, promote metabolism, enhance pelvic floor muscle strength, reduce stress urinary incontinence, and improve pelvic organ prolapse. Tuina mainly relieves tense muscles and ligaments through mechanical stimulation, improves blood flow and nerve reflexes in the lumbosacral and pelvic floor regions, thereby alleviating spasm and promoting the recovery of tissue function [10]. Although existing studies suggest its effectiveness, there are significant differences in intervention frequency, course design, and evaluation criteria, which limit the comparability of results. Studies have shown that TCM tuina techniques can release spasmodic and tense pelvic floor muscle tissues, regulate qi and blood, dredge meridians, and improve pelvic organ prolapse [11].

In addition to acupuncture and tuina, traditional movement-based practices such as Tai Chi and Baduanjin (Eight-Section Brocade) have gradually been applied in postpartum rehabilitation. Centered on breath control, posture adjustment, and core muscle group training, these exercises are believed to improve systemic circulation and core stability, thereby indirectly enhancing pelvic floor support function. Moreover, practices such as Tai Chi and Baduanjin have been associated with improvements in psychological well-being, including reduced symptoms of anxiety and depression in postpartum women, which may in turn enhance adherence to rehabilitation programs. However, most existing studies adopt observational or non-randomized controlled designs with small sample sizes, resulting in limited evidence strength. Moxibustion, another common TCM method, promotes local blood flow and metabolism through thermal stimulation, and may play a role in reducing the frequency of urinary incontinence and alleviating postpartum fatigue. Nevertheless, due to significant variations in intervention sites, treatment duration, and frequency across different studies, the lack of unified standards, and the scarcity of high-quality randomized controlled trials, its evidence base remains insufficient. Overall, these traditional rehabilitation methods show certain potential in improving symptoms, enhancing quality of life, and boosting compliance. They are particularly suitable for postpartum women who cannot tolerate

high-intensity active training or are accompanied by significant psychological stress.

In conclusion, traditional medical rehabilitation methods can provide a beneficial supplement to modern rehabilitation in the management of PFD. Their advantages lie in holistic intervention, safe operation, and low risk of side effects, while also taking into account both the recovery of physiological functions and the improvement of psychological status. However, the lack of standardized operating procedures and large-scale clinical trials are key issues restricting their development. Future research needs to further integrate these methods with modern rehabilitation approaches under an evidence-based framework, clarify their mechanism of action, and establish unified standards. This direction will not only help improve the reliability of therapeutic effects but also lay a foundation for the combined application with pelvic floor muscle training.

4 Role of Combined Pelvic Floor Muscle Training and TCM Rehabilitation in Postpartum Pelvic Floor Dysfunction

With the deepening understanding of postpartum PFD, the limitations of single rehabilitation methods have gradually become apparent. Pelvic floor muscle training, which can directly enhance the strength and coordination of muscle fibers, is a first-line recommended intervention. However, its effectiveness is limited by insufficient compliance, single training mode, and early intolerance in some patients [3]. On the other hand, TCM rehabilitation methods such as acupuncture, tuina (massage), and traditional exercise therapy have unique advantages in improving local blood flow, relieving tissue tension, and regulating nerve function, but they lack the effect of directly strengthening muscle strength [12, 13]. Therefore, the combined application of the two has gradually attracted attention and is considered to make up for their respective shortcomings, providing a more comprehensive rehabilitation model for postpartum women. For example, acupuncture combined with pelvic floor functional training for muscle contraction exercises can improve local microcirculation and provide nutritional support for muscle repair [14].

Clinical evidence shows that combined intervention is superior to single methods in symptom relief and functional improvement. Randomized controlled trials have demonstrated that patients receiving acupuncture at bilateral pelvic floor acupoints combined with Kegel exercises showed significant reductions in one-hour urine leakage volume and International Consultation on Incontinence Questionnaire-Short Form (ICI-Q-SF) scores after eight weeks of treatment, compared with those undergoing pelvic floor muscle training alone [15]. Observational studies have reported that combining tuina or low-intensity traditional exercise with active pelvic floor training may shorten the rehabilitation period and reduce symptoms of stress urinary incontinence [16]. More importantly, combined intervention seems to help improve compliance. Patients

are more likely to maintain a sense of participation and enthusiasm when receiving multi-dimensional rehabilitation, which may be related to faster symptom improvement and increased physical and mental comfort during the training process. These results indicate that the combined application not only improves physiological indicators but also has a positive impact on patients' experience and long-term rehabilitation behavior.

At the mechanistic level, pelvic floor muscle training and TCM rehabilitation methods may exert effects through complementary pathways. Pelvic floor muscle training primarily strengthens the contractile capacity and endurance of pelvic floor muscles. Rehabilitation methods within Traditional Chinese Medicine contribute by improving local blood circulation and facilitating muscle fiber repair and regeneration. Acupuncture, in particular, has been reported to enhance pelvic floor nerve excitability and improve the coordination of muscle contractions through neurohumoral regulation. In addition, acupuncture stimulation can increase blood perfusion in the pelvic floor area and enhance nerve excitability, thereby providing a better environment for muscle training. Traditional exercise therapy improves overall body coordination through respiratory rhythm control and core stability training, thus indirectly supporting pelvic floor function. These effects together form a complementary framework centered on muscle strength enhancement, circulation improvement, and nerve regulation, making the rehabilitation process more systematic and comprehensive.

Although combined intervention shows promising prospects, there are still significant shortcomings in existing studies. Most trials have limited sample sizes, uneven research quality, and a lack of long-term follow-up data, which restricts the generalizability of the evidence. There are large variations in training frequency, course duration, and specific rehabilitation methods adopted in different studies, with no unified standardized protocol available. Future research should advance in parallel at both mechanistic and clinical levels. At the mechanistic level, neuroimaging and molecular biology methods can be integrated to explore the impact of intervention on neuroplasticity, hemodynamics, and tissue repair. At the clinical level, multi-center, large-sample randomized controlled trials need to be conducted to determine the optimal intervention combination and time window. In addition, digital and intelligent tools have shown potential in standardized training and compliance management, and their integration with traditional rehabilitation methods deserves in-depth exploration. In general, the combined application of pelvic floor muscle training and traditional rehabilitation methods provides a multi-dimensional solution for postpartum rehabilitation. The two form a complement through different physiological pathways, which not only improves pelvic floor muscle strength and urinary function but also enhances patients' rehabilitation experience and participation. Although the current evidence-based evidence is still limited, the existing results provide strong support for its clinical value.

5 Conclusion

PFD, a highly prevalent condition among postpartum women, not only impairs their physical health and quality of life but also increases the risk of negative emotions such as anxiety and depression. Therefore, it is an important research direction in postpartum rehabilitation. Current intervention methods mainly include pelvic floor muscle training and traditional rehabilitation therapies, each with its own value but also limitations. Pelvic floor functional training can directly enhance the supporting force of pelvic floor muscles and improve the function of pelvic organs through active training; it is also convenient for home-based practice. However, it has drawbacks such as monotonous training, easy reduction of patient compliance, and limited applicability in some postpartum stages. TCM rehabilitation, including acupuncture, tuina, Baduanjin exercise, and moxibustion, has been shown to improve local circulation, modulate neuromuscular activity, and relieve pelvic floor discomfort, thereby contributing to functional recovery. However, it does not provide targeted intensive training to directly strengthen the pelvic floor muscles. In recent years, the combined application of pelvic floor muscle training and traditional TCM rehabilitation therapies has gradually attracted attention. Their combined use can form an effective complementarity: pelvic floor functional training focuses on the active movement of pelvic floor muscles to enhance muscle strength, while TCM rehabilitation provides support by regulating nerve function, promoting blood circulation, and repairing tissue damage. Their synergistic effect is significant: they not only improve pelvic floor muscle strength through pelvic floor functional training but also rely on TCM methods to improve local microcirculation for the repair and regeneration of muscle fibers. Additionally, the neurohumoral regulation of acupuncture can enhance pelvic floor nerve excitability and the coordination of muscle contraction. A number of clinical studies have confirmed that combined therapy is superior to single methods in reducing urine leakage volume, improving urine control ability, and alleviating pelvic organ prolapse. It can be seen that the combination of pelvic floor functional training and TCM rehabilitation shows significant advantages in the treatment of postpartum PFD, providing a scientific and effective idea and basis for the clinical treatment of postpartum PFD, and has positive significance for promoting the research and practice of postpartum PFD rehabilitation.

Although the prospects are promising, the clinical application of combined intervention still faces challenges. Most clinical studies have small sample sizes and lack long-term follow-up data, making it difficult to evaluate the recurrence rate and long-term effects. In addition, differences in intervention frequency, course duration, and operational procedures among different studies limit the generalizability of the results. The syndrome differentiation criteria and operational specifications for TCM rehabilitation programs have not yet been unified, and there is

insufficient research on the optimization of individualized training intensity and frequency for pelvic floor functional training. Moreover, the mechanism of action of combined intervention has not been fully revealed, especially the molecular mechanisms related to neuroplasticity, inflammatory factor regulation, and tissue repair processes, which still require further exploration. In the future, it is necessary to conduct multi-center, large-sample evidence-based medicine studies, and combine modern molecular biology technologies to reveal its mechanism of action. This will provide a more solid theoretical and practical basis for the rehabilitation of postpartum pelvic floor dysfunction, explore and formulate standardized treatment guidelines, and provide better treatment for relevant patients.

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