

Pelvic floor physiotherapy for women with urogenital dysfunction: indications and methods

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Pelvic floor physiotherapy (PFPT) is considered to be a salient component of the conservative management of women with urogenital dysfunction including urinary incontinence and pelvic organ prolapse (POP). PFPT is an important adjunct to the management of female pelvic and sexual pain disorders which are often associated with bothersome bladder symptoms. Physiotherapists utilize a variety of treatment methods which include behavioral therapy, exercise instruction, manual therapy, biofeedback and electrical stimulation. This review article provides a literature-based update describing and highlighting current indications and methods for pelvic floor physiotherapy intervention.

Key words: Female urogenital - Urinary incontinence - Pelvic floor Physiotherapy - Sexual dysfunctions, psychological - Dyspareunia.

Urinary incontinence, frequency, urgency, and pelvic organ prolapse are associated with significant bother, distress and decreased quality of life (QoL).¹ Bladder symptoms affect social and recreational activities, limit exercise and physical activity, and have a negative impact on mental health, affecting self esteem and mood.² Urogenital symptoms are particularly associated with distress related to sexual activ-

ity.³ Women with sexual distress are more likely to report sexual difficulty related to pelvic floor symptoms, including sexual avoidance due to vaginal prolapse or sexual activity restriction due to fear of urinary incontinence.⁴ Overactive bladder (OAB) with or without incontinence negatively affects women's sexual health, reducing sexual desire and ability to achieve orgasm.⁵ Pelvic and genital pain syndromes are commonly associated with bladder symptoms, and are also highly correlated with decreased QoL and sexual dysfunction.⁶

Interstitial cystitis/Painful bladder syndrome (IC/PBS) is characterized by a constellation of symptoms including urgency, frequency, dyspareunia, nocturia, and pelvic pain in the absence of bacterial infection or other definable pathologic characteristics.⁷

Pelvic floor rehabilitation has demonstrated efficacy in the treatment of urinary stress incontinence⁸ and has an important role in the treatment of pelvic floor related sexual dysfunction in men and women.⁹

Rehabilitation intervention has been conceptualized according to functional definitions of the pelvic floor as normal, over-

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active, underactive, or non-functioning.¹⁰ Accordingly, rehabilitation aims are to increase pelvic floor strength and function in conditions of weakness contributing to stress urinary incontinence (SUI), mixed incontinence and prolapse, and to reduce and normalize increased pelvic floor activity associated with conditions such as pelvic and genital pain and vaginismus,¹¹ and IC/PBS.¹² Whereas underactive pelvic floor muscles imply contractile weakness, overactivity is not necessarily indicative of strength. The presence of combined muscle overactivity with sphincter weakness is a common finding. As such, overactive bladder (OAB) with or without urge incontinence is often noted clinically to be associated with sphincter closure insufficiency and overactive pelvic floor muscle tone.

Physiotherapy methods of evaluation and treatment

While nurses and technicians are involved in providing bladder training exercises, may apply modalities such as biofeedback and electrical muscle stimulation and instruct in pelvic floor exercises, physiotherapists provide a unique perspective in urogynecological rehabilitation. Physiotherapists view the human body functionally and dynamically, and consider the pelvic floor as part of an integrated unit as opposed to an isolated entity.¹³ Therefore, physiotherapists are skilled in assessing how factors such as breathing, posture, joint mobility, trunk and extremity strength and length may affect intra-abdominal pressure, continence, prolapse and pelvic pain. As such, treatment methods unique to physiotherapy include postural reeducation, and manual therapy.

The comprehensive physiotherapy evaluation includes: history taking, posture and musculoskeletal assessment, observation of gait and movement patterns, evaluation of muscle strength and endurance, and of joint and soft tissue mobility. Assessment of the pelvic floor focuses on the function, balance, mobility, and integrity of the muscular, fascial, and connective tissue com-

ponents. The pelvic floor muscles (PFMs) are palpated for ability to contract, ability to relax, tightness and trigger points. PFM strength testing is performed through subjectively assessing the force of contraction felt around the palpating finger, the presence of a perceivable lift of the palpating finger, the number of contractions performed, and the duration of the contractions.¹⁴ In assessing the pelvic floor muscle tone, important markers include the ability to isolate muscles, muscle length, muscle tension, muscle stiffness, presence of trigger points, and pelvic floor synergy or presence of dyssynergy.

Traditional pelvic floor measurement tools include visual and digital assessment and surface electromyography (sEMG). However, valid and reliable measuring instruments are lacking. Manual examination has been criticized for being subjective and difficult to standardize¹⁵ particularly when tone is increased due to anxiety.¹⁶ sEMG also lacks reliability: Contact mucosa, degree of lubrication and thickness of the vaginal tissue can all greatly affect signal detection.¹⁷ Most recently the dynamometric speculum has demonstrated reliability and validity¹⁸ and there is a growing interest in the use of ultrasound in assessing muscle morphology and function.¹⁹

The physiotherapy treatment plan is generally determined in accordance with the needs of the individual patient as determined by the assessment. Physical therapy treatment modalities include behavioral therapy and education, therapeutic exercise, manual therapy, sEMG or pressure biofeedback, and electrical stimulation.

Indications and evidence for pelvic floor physiotherapy

SUI and mixed incontinence

Pelvic floor muscle training (PFMT) to enhance continence and sexual function was pioneered by Arnold Kegel in the mid 1900s,²⁰ yet there is evidence that prior to Kegel these exercises were introduced in

the UK²¹ and were apparently part of ancient Chinese Taoist teachings.²² Current research suggests several rationales for PFMT. PFM contraction affects urethral position,²³ clamps the urethra closed and increases urethral pressure.²⁴ Training patients in the *timing* of a PFM contraction during an increase in intra-abdominal pressure as in a cough, laugh or sneeze, prevents urethral descent and assists in functional continence.²⁵ Finally, PFMT over time has been demonstrated to improve resting pelvic floor muscle tone and stiffness,²⁶ and may facilitate more effective automatic motor unit firing of the PFM.²⁷ Thus, the objective in PFMT for SUI and mixed incontinence is to improve the timing of the contraction, and the strength, and stiffness of the PFMs.²⁸

Urge incontinence is also addressed with physiotherapy. PFMT in combination with behavioral techniques has demonstrated efficacy in decreasing symptoms of urgency and leakage due to detrusor irritability. Shafik has demonstrated that contraction of the striated urethral sphincter affected vesical contraction and suppressed the need to urinate, a reaction mediated through the "voluntary urinary inhibition reflex".²⁹ Earlier³⁰ as well as more recent reports³¹ have described that electrical stimulation of the PFMs inhibits bladder contractions. There are little data evaluating effect of PFMT on urinary frequency. Nonetheless, behavioral therapy including bladder training, advice regarding fluid intake, and avoidance of urinary irritants are common interventions.

It is beyond the scope of this article to provide a comprehensive critical review of the evidence-based literature in support of PFMT for UI. There is a great deal of variation in regards to treatment protocols, intervention modalities and outcome measures. The literature includes editorials, individual case histories, single group with single or nonrandomized multiple treatments, and studies not meeting criteria for patient evaluation or not using objective operationally defined independent and dependant variables. However, despite these limitations, several comprehensive systemic reviews have analyzed the available randomized

controlled trials meeting inclusion criteria and have concluded that PFMT should be included in first-line conservative management programs for women with stress, urge, or mixed urinary incontinence. They appear to have a greater treatment effect in women with SUI alone, who participate in a supervised PFMT program for at least three months.³²⁻³⁴

In addition to improving symptoms of UI, at least five randomized controlled trials (RCTs) have demonstrated that women who underwent PFMT and improved their pelvic floor strength, also reported an improved sexual response. In early studies, Bo reported results of an RCT in which PFMT was demonstrated to improve QoL and sexual function in women with urinary stress incontinence.³⁵ In a Turkish study, improvement in sexual desire, performance during coitus and achievement of orgasm were reported in women (N=42) who received PFM rehabilitation which included biofeedback (BF) and electrical stimulation (ES).³⁶ Three more recent studies utilizing standardized sexuality outcome measures including the Female Sexual Function Index (FSFI) have substantiated these earlier studies. Of these three studies, one treatment intervention included only pelvic floor ES,³⁷ one studied PFM exercise only,³⁸ and one utilized several modalities including PFMT, BF, ES and vaginal cones concluding that the effectiveness of a complete pelvic floor rehabilitation (PFR) scheme, makes it a suitable approach to sexual dysfunction that is associated with UI.³⁹

OAB

Symptoms of OAB include urinary frequency and uncomfortable urgency with or without leakage. Inciting events for symptoms include ingestion of dietary bladder irritants, increased anxiety, auditory stimuli, and sexual intercourse. As with treatment for POP and urge incontinence, combining PFMT with behavioral therapy appears to be of greatest value in assisting patients with OAB. There are little data evaluating effect of PFMT on urinary frequency. None-

theless, behavioral therapy including bladder training, advice regarding fluid intake, and avoidance of urinary irritants are common interventions.

POP

POP is associated with symptoms of bulging and heaviness in the vagina and is highly correlated with lower urinary tract symptoms LUTs, predominantly mixed UI.⁴⁰ Presence of prolapse is associated with both urinary⁴¹ and sexual dysfunction⁴²⁻⁴⁴ though it is unclear to what extent sexual function is affected by the prolapse itself or associated incontinence. Presence of prolapse may negatively affect sexuality by altering body image perception, as evidenced by improvement in this area reported by women who underwent surgical repair.⁴⁵ As bladder symptoms and POP often exist together, PFPT is a common conservative intervention. The extent to which PFPT may reverse or improve prolapse is unclear. A 2009 Cochrane review of three RCTs concluded that insufficient evidence was available to demonstrate this.⁴⁶ Although a recent RCT demonstrated elevation of bladder prolapse in 19% of the intervention group subjects,⁴⁷ the ability of PFMT to correct advanced prolapse remains questionable. The value of physiotherapy for these clients appears to be greatly behavioral. Objectives of PFPT intervention are to decrease the frequency and severity of symptoms through awareness and avoidance of valsalva to prevent worsening of the prolapse; increase trunk and pelvic stability to improve associated symptoms of back pain and incontinence; and avert or delay the need for surgery, particularly in women who wish to continue childbearing.

The overactive pelvic floor/pelvic and genital pain syndromes

Symptoms of pelvic floor overactivity may include urinary retention, frequency, urgency, dyspareunia and constipation. PF overactivity has been closely associated with pelvic and genital pain syndromes.

PFM overactivity has been demonstrated to contribute to bladder and dyspareunia symptoms connected to IC/PBS⁴⁸ and provoked vestibulodynia (PVD).⁴⁹ The role of PFPT in the management of pelvic and genital pain syndromes has been reviewed in the literature.⁵⁰ PFM overactivity may be involved either as causal to dyspareunia or reactive. Sexual intercourse occurring with overactive pelvic floor muscles may lead to increased friction and mechanical trauma to the urethra, increasing urinary symptoms of pain, urgency and frequency. This is a common presentation in postmenopausal dyspareunia as well.

Physical therapy is a recognized intervention for conditions related to pelvic floor overactivity although there is lack of research demonstrating this. Manual therapy, specifically the application of trigger point massage in the pelvic area and transvaginally has been described in the treatment of pelvic pain and IC/PBS.⁵¹ Manual therapy techniques have been reported to facilitate muscle relaxation, normalize tone, and improve circulation and mobility in the pelvic and genital region.^{52, 53} Transvaginal manual therapy treatment was evaluated in 21 women with IC/PBS and was helpful in improving irritative bladder symptoms and decreasing PFM tone.⁵⁴ Manual therapy has also been reported to improve orgasmic capacity while decreasing dyspareunia.⁵⁵ Case reports⁵⁶⁻⁵⁸ and one pilot study⁵⁹ examining the effectiveness of physiotherapy on women with vulvodynia are noted in the literature. In a recent prospective study involving 11 women with PVD, Gentilcore-Saulnier *et al.*⁶⁰ demonstrated that a physical therapy program resulted in lower pelvic floor response to pain, lower pelvic floor tone, improved vaginal flexibility, and improved pelvic floor relaxation capacity. Electrical stimulation has also reported efficacy in reducing symptoms of pelvic pain and dyspareunia.^{61, 62}

Postsurgical rehabilitation

Patients with bothersome symptoms of urinary incontinence and/or prolapse

choose surgical intervention with the aim of improving QoL.

As such, several validated measurement scales have been established to assess outcomes. Data regarding surgical outcomes are not conclusive, however, it is generally anticipated that urogynecological surgery improves QoL and sexual function. However, undesirable outcomes are a recognized risk and they may include vaginal shortening, dyspareunia, and/or urinary retention.⁶³ The exact incidence of sexual dysfunction following urogynecological surgical procedures is not known and there are few randomized controlled studies comparing different surgical techniques with evaluation of sexual function. Postoperative dyspareunia is most likely due to vaginal shortening and narrowing following excessive vaginal excision, however, simple adhesive scarring can be a source of pain during intercourse. Pain, restricted mobility and decreased sensation are common side effects of surgery.

Physiotherapists possess the modalities and skills required to facilitate enhanced circulation, improve soft tissue mobility, and increase muscle strength and stability to improve the overall surgical outcome.

OTHER CLINICAL APPLICATIONS

Several additional conditions have been reported to benefit from PFPT intervention, however, these have been demonstrated only by single studies, individual case reports, or descriptive accounts. A study of biofeedback treatments for women with recurrent UTI reported a decrease in recurrent UTI episodes and a decrease in residual voiding volume.⁶⁴ Physiotherapy, in particular the use of therapeutic ultrasound, has been reported to be beneficial in the treatment of postpartum dyspareunia secondary to episiotomy scarring.⁶⁵ PFPT including manual therapy has a reported role in the treatment of symptoms related to postmenopausal dyspareunia,⁶⁶ endometriosis,⁶⁷ and persistent genital arousal disorder.⁶⁸ Dorey has published a case report on the successful treatment of anorgasmia with PFME.⁶⁹ While manual physical thera-

py may have an important role in treating pudendal neuralgia according to articles in the lay literature, no peer reviewed journal articles were found reporting on this.

Conclusions

PFPT has an important role in decreasing urogenital symptoms and in improving QoL and sexual function in patients with urogynecological complaints. The main aims of PFPT are to increase PFM strength and function in conditions of weakness contributing to SUI, mixed incontinence and prolapse, and reduce and normalize increased PF activity associated with conditions such as pelvic and genital pain and vaginismus. PFPT includes a postural and musculoskeletal assessment and genital and pelvic floor examination. Treatment modalities include behavioral therapy, therapeutic exercise, manual therapy, biofeedback and electrical stimulation. Evidence-based indications for PFPT for weakness associated with stress and mixed incontinence and POP are well established. Further research is necessary to substantiate the role of PFPT in post-surgical rehabilitation, pelvic and genital pain and other related conditions.

Riassunto

Fisioterapia del pavimento pelvico nelle donne con disfunzione urogenitale: indicazioni e metodi

La fisioterapia del pavimento pelvico (FTPP) è considerata una delle componenti principali del trattamento conservativo delle donne con disfunzione urogenitale, tra cui l'incontinenza urinaria e il prolasso degli organi pelvici (POP). La FTPP rappresenta un'aggiunta importante al trattamento dei disordini del pavimento pelvico e del dolore sessuale nelle donne, che sono spesso associati a fastidiosi sintomi vescicali. I fisioterapisti utilizzano diversi metodi di trattamento che includono la terapia comportamentale, esercizi, il biofeedback e la stimolazione elettrica. Questa revisione fornisce un aggiornamento basato sui dati della Letteratura descrivendo e sottolineando le attuali indicazioni e metodi della fisioterapia del pavimento pelvico.

Parole chiave: Malattie urogenitali femminili - Incontinenza urinaria - Pavimento pelvico - Fisioterapia.

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