Physiotherapy in Voiding Dysfunctions in Women Treated for Pelvic Cancers: Literature Systematic Review

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Fisioterapia nas Disfunções Miccionais em Mulheres Tratadas de Cânceres Pélvicos: Revisão Sistemática da Literatura

Fisioterapia en las Disfunciones Miccionales en Mujeres Tratadas por Cánceres Pélvicos: Revisión Sistemática de la Literatura

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ABSTRACT

Introduction: Surgical or adjuvant treatments of gynecological cancers may cause various sequelae, and, among them, urination disorders: urinary incontinence, retention and overactive bladder. The first line of treatment for voiding disorders consists in conservative treatments, including physiotherapy, therefore, it is important to review the current literature on the theme. **Objective:** To review the literature on physiotherapeutic treatments for urination disorders in women who have been treated of genital neoplasms. **Method:** A systematic review has been conducted with specific search strategies applied in the databases PubMed, Embase and Cochrane, utilizing the PICO strategy: P – women who have been treated for their genital neoplasms, I – physiotherapy or electrotherapy, C – "none/doesn't apply", and O – pelvic dysfunctions. **Results:** 93 studies were found. Of these, seven were selected for full text reading and data extraction. Of the three studies that discuss how to deal with UI, all utilized pelvic floor exercises with at least one of the physiotherapy procedures with similar methodology. Four studies discussed urinary retention and two of them utilized transcutaneous electrical stimulation and the other two, functional pelvic floor training. The studies showed a betterment of the symptoms related to urinary incontinence and retention; however, the methodological quality of a few studies was low. **Conclusion:** Physiotherapy is a promising form of treatment for urination disorders post-female genital neoplasm treatment. Nevertheless, current evidence must be seen cautiously due to the methodological quality of the studies.

Key words: genital neoplasms, female; physical therapy modalities; urinary incontinence; urinary retention.

RESUMO

Introdução: Os tratamentos cirúrgicos ou adjuvantes dos cânceres ginecológicos podem desencadear sequelas, entre elas, as disfunções miccionais: incontinência urinária, retenção urinária e bexiga hiperativa. A primeira linha de tratamento dessas disfunções consiste em tratamentos conservadores, incluindo a fisioterapia, o que torna importante revisar a literatura vigente sobre o tema. **Objetivo:** Revisar na literatura a atuação do fisioterapeuta nas disfunções miccionais em mulheres tratadas de cânceres pélvicos. **Método:** Revisão sistemática, com estratégias de busca nas bases de dados PubMed, Embase e Cochrane, utilizando a ferramenta PICO: P – mulheres tratadas de cânceres pélvicos, I – fisioterapia ou eletroterapia, C – "nenhum/não se aplica", e O – disfunções pélvicas. **Resultados:** Foram encontrados 93 estudos. Destes, selecionaram-se sete para leitura do texto completo e extração de dados. Dos três artigos que abordam o manejo da incontinência urinária, todos utilizaram o treinamento da musculatura do assoalho pélvico como pelo menos um dos procedimentos fisioterapêuticos, tendo metodologia semelhante. Dos quatro artigos que abordam a retenção urinária, em dois, houve utilização de estimulação elétrica transcutânea e, nos outros dois, treinamento funcional da musculatura do assoalho pélvico. Os estudos mostraram uma melhora dos sintomas relacionados à incontinência e retenção urinária, no entanto, a qualidade metodológica de alguns estudos foi baixa. **Conclusão:** A fisioterapia é um tratamento promissor no manejo de disfunções miccionais no pós-tratamento de cânceres pélvicos. Todavia, a evidência atual deve ser vista com parcimônia em razão da qualidade metodológica dos estudos.

Palavras-chave: neoplasias dos genitais femininos; modalidades de fisioterapia; incontinência urinária; retenção urinária.

RESUMEN

Introducción: Los tratamientos quirúrgicos o adyuvantes de los cánceres ginecológicos pueden desencadenar secuelas, entre ellas trastornos de la micción: incontinencia, retención urinaria y vejiga hiperactiva. La primera línea de tratamiento de los trastornos de la micción consiste en tratamientos conservadores, incluida la fisioterapia, por lo que es importante revisar la literatura actual sobre el tema. **Objetivo:** Revisar en la literatura la actuación del fisioterapeuta en las disfunciones miccionales en mujeres tratadas por cáncer pélvico. **Método:** Revisión sistemática, con estrategias de búsqueda en PubMed, Embase y Cochrane, utilizando la estrategia PICO: P – mujeres tratadas por cáncer pélvico, I – fisioterapia o electroterapia, C – "ninguna/no aplicable", y O – disfunciones pélvicas. **Resultados:** Se encontraron 93 estudios. De ellos, se seleccionaron siete para la lectura del texto completo y la extracción de datos. De los tres que abordan el manejo de la IU, todos utilizaron el entrenamiento muscular del piso pélvico como al menos uno de los procedimientos fisioterapéuticos, utilizando una metodología similar. De los cuatro artículos que abordan la retención urinaria, dos utilizaron estimulación eléctrica transcutánea y dos utilizaron entrenamiento funcional del piso pélvico. Los estudios mostraron mejoría en los síntomas relacionados con la incontinencia y la retención urinaria, sin embargo, la calidad metodológica de algunos estudios fue baja. **Conclusión:** La fisioterapia es un tratamiento prometedor en el manejo de la disfunción miccional después del tratamiento del cáncer pélvico. No obstante, la evidencia actual debe verse con parsimonia debido a la calidad metodológica de los estudios.

Palabras clave: neoplasias de los genitales femeninos; modalidades de fisioterapia; incontinencia urinaria; retención urinaria.

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INTRODUCTION

Cancer is characterized by the disordered growth of rapidly multiplying cells, with the ability to invade adjacent tissues and spread at a distance. According to the National Cancer Institute (INCA)[1], the most prevalent pelvic cancers in the female population in Brazil are: cervix, colon and rectum, ovary, and body of the uterus.

Treatments of pelvic cancers consist of radiotherapy, chemotherapy, hormone therapy and/or surgery, the indications of which depend on the site, histological profile and staging of the disease. In cervical cancer, surgery is only indicated as the main treatment in the initial staging, and the extent of surgery depends on the size of the tumor, and conization, trachelectomy, simple or enlarged total hysterectomy can be performed, with removal of parametria, upper third of vagina and lymphadenectomy. In locally advanced tumors, radiotherapy with sensitizing chemotherapy is performed and, in metastatic tumors, systemic chemotherapy[2]. Due to the aggressive profile of the main type of ovarian cancer – epithelial –, the treatment consists of removal of the uterus and annexes (tubes and ovaries) and all visible implants (carcinomatoses), a procedure called cytoreduction, with adjuvant or neoadjuvant chemotherapy[3]. Surgery for endometrial cancer is total hysterectomy with bilateral salpingo-oophorectomy, associated or not with pelvic and para-aortic lymphadenectomy, and adjuvant therapies such as radiotherapy, chemotherapy and/or hormone therapy may be performed depending on the risk ofrecurrence[4]. Surgery for colorectal cancer is colon resection, and chemotherapy and radiotherapy can be administered pre- and postoperatively[5].

Surgical or adjuvant treatments of pelvic cancers can trigger sequelae, including voiding dysfunctions: urinary incontinence or urinary retention[3,4]. Urinary incontinence is characterized by involuntary loss of urine, with a negative impact on physical, mental, social and economic well-being. Stress urinary incontinence is related to loss of urine due to increased abdominal pressure, for example, when coughing, laughing or picking up some heavy object. Urge urinary incontinence is defined by the sudden urge to urinate followed by urinary loss, usually associated with an increased urinary frequency and nocturia[6,7].

Urinary retention is characterized by the inability to properly empty the bladder on a voluntary basis. It is a multi-causal condition, which can be classified as: obstructive (for example, due to organ prolapse, pelvic mass, among others), infectious and inflammatory, pharmacological (due to the use of antidepressants, antihistamines or antipsychotics) [8] and neurological (for example, after radical pelvic surgeries, which can cause pelvic nerve injuries) [9].

The first line of treatment for voiding disorders consists of conservative treatments, including physiotherapy. Thus, it is extremely important to review the current literature on the role of physical therapists in the management of female urinary dysfunctions related to the treatment of pelvic cancers. The aim of this study was to review in the literature the evidence on the role of the physiotherapist in voiding dysfunctions in women treated for pelvic cancers.

METHOD

A systematic review was conducted with inclusion of articles (case studies/series, uncontrolled intervention studies and controlled clinical trials) published that specifically address the physiotherapeutic management of voiding dysfunctions in patients treated for pelvic cancers, without limitation of publication interval or language. Study protocols, studies registered in clinical trial platforms not yet published, reviews and opinion studies, as well as articles evaluating other pelvic dysfunctions, other than urinary, voiding dysfunctions not related to the treatment of pelvic cancers or other types of treatments for these dysfunctions other than physiotherapy were excluded. Search strategies were conducted for PubMed, Embase and Cochrane databases, using the PICO tool: P – women treated for pelvic cancers, I – physiotherapy or electrotherapy, C – "none/not applicable", and O – pelvic dysfunctions. After eliminating duplicates, the studies were selected first by title, then by abstract and then by full text, according to the inclusion and exclusion criteria of the review. The selection was made blindly by two people and the differences of choice were resolved by a third person, which occurred in all the selection phases described. After defining the included studies, the authors extracted the data, which were described in tables and separated according to the dysfunction researched – urinary incontinence or urinary retention. The protocol of this systematic review was registered in the *International Prospective Register of Systematic Reviews* (PROSPERO) platform under CRD number 42022328573 on April 27, 2022, with the title *Physiotherapy interventions for urinary symptoms in women treated for pelvic cancers*.

The methodological quality of the controlled clinical trials included in this review was evaluated by the PEDro10 scale, described in the *Physiotherapy Evidence Database*, composed of 11 items: (1) eligibility; (2) randomization; (3) secret allocation; (4) initial similarity between groups; (5) blinding of subjects; (6) blinding of therapists; (7) masking of evaluators; (8) losses; (9) analysis of intention to treat; (10) intergroup

statistical comparisons; and (11) measures of precision andvariability10. The uncontrolled studies were evaluated for methodology using the *Critical Appraisal Checklist for Case Series* tool of the *Joanna Briggs Institute* (JBI)[11], which contains ten items: (1) inclusion criteria; (2) evaluation measures; (3) methods of identifying the health condition; (4) consecutive inclusion of participants; (5) complete inclusion of participants; (6) clarity in the reporting of demographic data of participants; (7) clarity of clinical information of participants; (8) clarity of results and *follow-up*; (9) reporting of demographic information and study location; and (10) adequacy of statistical analysis. Both analyzes were performed by two reviewers independently, with consensus of divergences guided by a third evaluator.

RESULTS

In total, 93 studies were found, 14 in PubMed, 24 in Cochrane and 55 in Embase, with the exclusion of duplicates, leaving 80 studies. After eliminating the duplicates, the exclusion method was performed by title, which was not related to the theme or study design provided for in the inclusion criteria, leaving only 24 articles to read the abstract. When searching for the abstracts of these studies, 17 were excluded, since seven were only titles registered in the Clinical Trials Platform (*Clinical Trials* of the *U.S. National Library of Medicine* or *Brazilian Registry of Clinical Trials*), and not published articles. Namely: (1) free theme presented in Annals of scientific event, (1) study protocol, (1) opinion article, (5) observational studies on the prevalence of voiding dysfunctions and their impact, (1) that evaluated surgical intervention and (1) that investigated the effect of acupuncture – and not physiotherapy – on urinary incontinence. Only seven studies remained for full-text reading and data extraction (Figure 1).

Of the seven articles selected, three were on urinary incontinence and four on urinary retention, with five randomized clinical trials, one case study and one clinical study. Data from the included studies are in Tables 1 and 2.

Tables 3 and 4 describe the methodological quality of the studies included in this review. The PEDro10 scale was used to evaluate controlled clinical trials and, for studies without a control group, the JBI11 case series scale was considered.

DISCUSSION

The treatment of urinary incontinence is well established in the literature, with several publications

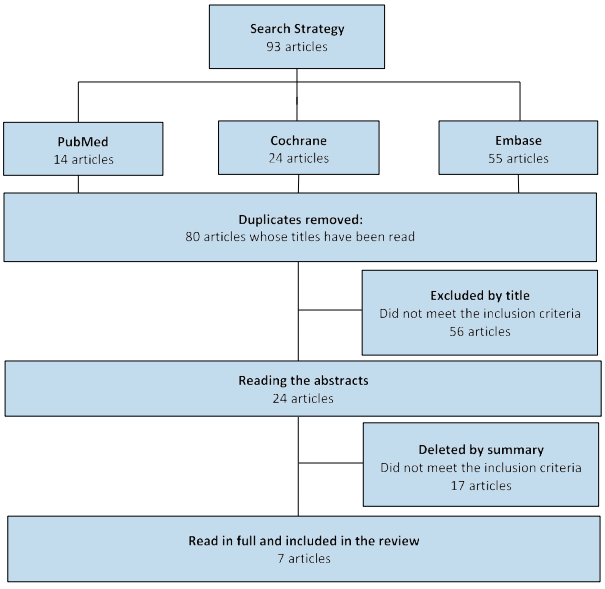

Figure 1. Flowchart of articles found in databases

on the management of this dysfunction when there is no association with a specific health condition, such as sequelae of pelvic cancers. The gold standard is conservative treatment, in which the importance of physical therapy and, more specifically, functional pelvic floor training, is quite evident[19,20].

Regarding urinary retention, there is a gap in the literature on the most appropriate treatment, one of the features described being catheterization for bladder emptying. However, the use of transcutaneous electrical nerve stimulation (TENs) and percutaneous tibial nerve stimulation (PTNS) is also recommended. Despite the evidence of beneficial results related to the use of electrostimulation in patients with urinary retention, there are still few studies on the subject[21].

In the present review, the study designs are: five randomized clinical trials, a case series and an uncontrolled clinical study. Of the five randomized clinical trials, four are on urinary retention and one on urinary incontinence, the uncontrolled study and the case series discuss urinary incontinence. The methodological quality of the articles found was low, which made it difficult to extract data.

Overall, the sample size was a total of 526 women with a previous diagnosis of gynecological cancer and who underwent surgical and/or radiotherapy treatment. Of these, 76 were included in studies that discussed the role of the physiotherapist in urinary incontinence and 450 in studies that evaluated the effects of physiotherapy on urinary retention related to cancer treatment.

Of the three articles found[12-14] that address the management of urinary incontinence, all used pelvic floor muscle training as at least one of the physiotherapeutic procedures, with a similar methodology, with contractions

sustained for six seconds, rest of ten seconds and training of rapid contractions. Results indicate that most women showed improvements in symptoms related to urinary incontinence. Of the four[15-18] articles that address urinary retention, in two, transcutaneous electrical stimulation was used and, in the other two, functional training of the pelvic floor muscles.

Regarding pelvic floor functional exercises for incontinence, Rutledge et al.[12] performed a pelvic floor functional training (PFFT) exercise protocol with ten

Table 1. Data from studies on urinary incontinence

Author/year	Study Design	Purpose	Methodology	Results
Rutledge et al., 2014[12]	Pilot randomized clinical trial	To evaluate the efficacy and feasibility of a simple intervention, pelvic floor exercise training and behavioral therapy, for the treatment of urinary incontinence in gynecologic cancer survivors	A total of 40 women, over 30 years of age, treated for gynecological cancer, free of the disease for at least one year, and with urinary incontinence, were randomized into two groups: Experimental: A booklet with instructions on behavioral management for urinary incontinence and pelvic floor exercises was given to the patients. In addition, they also received a 15-minute pelvic floor contraction training session, grading the contraction using the Brink scale. They were then instructed to perform ten sustained contractions for five seconds, three times a day, during the two weeks of the study Control: no intervention All patients in the experimental and control groups were evaluated at randomization and 12 weeks after the end of the exercise protocol, with the following questionnaires: ISI, QUID, UDI-6 and IIQ-7	Stress urinary incontinence was more common, present in 70% of the sample, followed by mixed (25%). After three months, 80% of the experimental group and 40% of the control group reported improvement of urinary incontinence symptoms in the subjective assessment ($p=0.02$) Regarding nuisance related to urinary incontinence, after 12 weeks, 70% of patients in the experimental group and 50% of patients in the control group reported no nuisance ($p=0.62$), with no difference pre- and post-intervention in both groups in quality of life The experimental group demonstrated improvement in ISI score after three months. Before treatment, seven women reported mild urinary incontinence and 13 reported moderate/severe incontinence; after, eight women reported moderate/severe urinary incontinence and 12, mild urinary incontinence. In the Brink score, which assesses pelvic floor strength, there was also improvement in the experimental group, with an average of three points above the control group in the three-month evaluation
Sacomori et al., 2020[13]	Pilot uncontrolled clinical study	To evaluate the influence of PFFT intervention before pelvic radiotherapy on pelvic floor function (strength, electrical activity and incontinence) in the short term (one month after radiation)	We included 49 women with cervical cancer, referred for pelvic radiotherapy treatment (external and/or brachytherapy). However, only 28 returned for reassessment The intervention included a 30-minute session to teach patients how to perform PFM functional training: eight sustained six-second contractions with ten seconds of relaxation; eight rapid contractions and pre-contraction exercise before activities that involve increased intra-abdominal pressure. The primary outcome was assessment of pelvic floor strength, using the modified Oxford scale (from 0 to 5) Secondary outcomes included PFM activation by electromyography, symptoms of urinary incontinence by specific questionnaire, and adherence to the PFFT regimen by completing the exercise diary	There was no significant change with respect to map strength, pelvic floor electromyography, and urinary incontinence until approximately one month after radiation ($p>0.05$) Adherence to the post-home exercises was high. All patients reported having performed the exercises, although six did not deliver the journal proving it. Among those who delivered the diary, the exercises were performed on average 4.9 (± 1.5) days per week

to be continued

Table 1. continuation

Author/year	Study Design	Purpose	Methodology	Results
Bernard et al., 2021[14]	Case study with three-phase repeats	To verify the effects of a home treatment to reduce the severity of urinary incontinence in EC survivors	Eight women treated for at least 12 months, with total hysterectomy and brachytherapy for FB, who were previously continents with reports of at least three episodes of urinary incontinence after treatment, were included The study consisted of three phases (A1-B-A2): pre-intervention A1, lasting two weeks, in which base line assessments were made; intervention B, which lasted 12 weeks, when a home rehabilitation program was carried out; post-intervention A2, lasting two weeks, evaluating the short-term effect The intervention consisted of PFFT, bladder training and counseling. TFAP was performed with *Elvie Trainer*, a *biofeedback* connected to a mobile app. Weekly advice was given on urgency suppression techniques, mindfulness exercises and guidance on lifestyle habits that could affect bladder symptoms. The outcomes evaluated were urinary incontinence, by the pad test (primary outcome) and with the ICIQ-UI SF and three-day voiding diary, pelvic floor musculature, with dynamometer and ultrasound, and adherence and satisfaction	All eight participants had mixed urinary incontinence, the severity of which at *baseline*, evidenced by the pad test, was mild for five participants (<10 g) and moderate in three (between 10 g and 20 g) There was an improvement in the absolute and relative levels of leakage in the pad test in six of the eight participants. There was no improvement evidenced by the ICIQ-UI SF. Regarding the voiding diary, one patient had a reduction of three leaks to one, two women from four to one, and two participants went from no leaks to one Non-parametric analysis showed moderate relative effect for *pad test*, ICIQ-UI SF, number of leaks and urgency Regarding muscle function, there was no difference after intervention in the ultrasound analysis. There was a small but significant improvement in mean strength, with no difference in the peak itself. There was no improvement in the number of contractions in ten seconds and there was little improvement in the resistance curve area, but not in the duration of the contraction Adherence (total number of sessions) ranged from 24 to 124 per participant (on average 5.6 per week). All eight participants were satisfied with the results and said they had all the necessary tools to continue treatment after the end of the study

Captions: ISI = Incontinence Severity Index; QUID = Questionnaire for Diagnosis of Urinary Incontinence; UDI-6 = *Urinary Distress Inventory*; IIQ-7 = *Incontinence Impact Questionnaire*; TFAP = Pelvic Floor Functional Training; MAP = Pelvic Floor Muscles; CE = Endometrial Cancer; ICIQ-UI SF = *International Consultation Incontinence Questionnaire for Urinary Incontinence-Short-Form*.

sustained contractions for five seconds, three times a day, during the two weeks of the study, with improvement in the experimental group in several parameters. The functional training used in the study by Sacomori et al.[13] was eight sustained six-second contractions with ten seconds of relaxation; eight rapid contractions and pre-contraction exercise before activities that involve increased intra-abdominal pressure. The study evaluated adherence to the home protocol, proving to be feasible, due to the high adherence, but found no difference in relation to strength gain. Bernard et al.[14] also performed a protocol for home exercises, but the TFAP was performed with a *biofeedback* called *Elvie Trainer*, connected to a cell phone application. The patients who performed the protocol had improvement of urinary symptoms, also with high adherence to the protocol.

For retention, Zong et al.[17] observed the effects of Kegel exercises, with sustained contractions for ten seconds during inspiration, ten seconds of relaxation on expiration, and a duration of 20 minutes, three times a day, associated with self-catheterization, with better results in the intervention group compared to the control group. Yu et al.[18] observed the effects of Pilates combined with standard nursing communication and pelvic floor muscle training on urinary retention. The exercises consisted of three sets per day, with 50 contractions of five to ten seconds of support and ten seconds of relaxation, in a four-week protocol, with better results in the treatment group compared to the control group.

Regarding the studies that evaluated electrical stimulation, one used TENS for 30 minutes, for 14 days (frequency of 1/4/1 Hz and pulse time of 270/230/270 μs)[16], and the other, a low frequency current, for three days, from 15 to 30 minutes, twice a day (there were two parameters used, one for muscle repair, with 200 μs and 35 Hz, and the other for endorphin analgesia, with 270 μs 1 Hz)[15]. The first study showed no significant difference in urinary retention, but the second showed

a significant improvement compared to the control group.

One of the limitations of this review is that, although there is an extensive amount of articles in the literature addressing the role of the physiotherapist in urinary incontinence, when it is related to the treatment of gynecological cancer, the evidence is still scarce. Regarding urinary retention, the gap in the literature is even greater, as there are few articles related to this dysfunction both in general and specifically due to gynecological cancer. Another limitation is that some of the articles included in this review have low methodological quality, with a confusing

Table 2. Data from studies on urinary retention

Author/year	Study Design	Purpose	Methodology	Results
Li et al., 2019[15]	Randomized clinical trial	To evaluate the clinical significance of low-frequency electrical stimulation in preventing urinary retention after radical hysterectomy	The study included 91 patients with stage IA2-IB2 cervical cancer who underwent extensive panhysterectomy and pelvic lymph node dissection and were randomly divided into two groups: Experimental: use of electrostimulation from the 11th day of surgery for three days, from 15 to 30 minutes, twice a day. There were two parameter profiles, one called muscle repair program, with 200 μs and 35 Hz; another named endorphin analgesia program, with 270 μs and 1 Hz Control: Patients in this group received only one bladder function treatment for three days. Both groups underwent functional bladder training On the 14th day after surgery, the bladder tube of the patients in both groups was removed, with ultrasound to assess residual volume after first urination. Urinary retention was considered when a volume greater than 100 ml remained in the bladder after spontaneous urination. An evaluation of the pelvic floor strength was also performed, which was graded from 0 to V	After removal of the bladder catheter, residual urine volume was significantly lower in patients in the electrostimulation group than in the control group (56.85 ± 29.44 and 95.79 ± 24.07, respectively, $p=0.000$) There was a significantly lower percentage of urinary retention in the intervention group compared to the control group (10.41 vs 46.51, $p=0.000$). However, there was no statistically significant difference when comparing the two groups of different electrostimulation parameters There was no difference between groups in rates of urinary tract infection, postoperative fever, and days of antibiotic use After the intervention, muscle strength levels were statistically higher in the experimental group compared to the control group ($p<0.01$)
Li et al., 2021[16]	Randomized clinical trial	To evaluate the efficacy of TENS in the rehabilitation of patients with cervical cancer after radical hysterectomy	97 patients with cervical squamous cell carcinoma, post radical hysterectomy, were divided into two groups: Intervention: seven days after surgery, they received 30 minutes of TENS twice a day for a total of 14 days (frequency of 1/4/1 Hz and pulse time of 270/230/270 μs). The urethral catheter would be removed after 14 days postoperatively, patients who were unable to urinate on their own or had difficulty emptying their entire bladder would receive an additional seven days of TENS Control: received only routine clinical care throughout the study phase, undergoing the same procedures, except TENS. The catheter was removed 14 days postoperatively, and inserted again for another seven days if any patient was unable to empty the bladder completely. Such procedures would be repeated until residual urine retention became <100 ml The outcomes evaluated were urinary retention after tube removal and recovery of urinary function, and the secondary outcomes were urodynamic examination, muscle electromyography, quality of life and adverse events	There was no difference between the groups in residual volume and functional recovery from urination. At the 28-day evaluation of surgery, urinary flow was higher in the intervention group compared to the control group, but with no significant difference in mean flow, urinary desire, muscle electromyography, and quality of life

to be continued

Table 2. continuation

Author/year	Study Design	Purpose	Methodology	Results
Zong et al., 2022[17]	Randomized clinical trial	To investigate the effect of Kegel exercise combined with clean intermittent self-catheterization in patients with cervical cancer and to analyze the risk factors affecting urinary retention	166 patients undergoing radical resection of the uterus for cervical cancer were divided into two groups Control: Patients received clean intermittent self-catheterization Intervention: participants performed pelvic floor Kegel exercise associated with clean intermittent self-catheterization They learned the exercises three days before surgery and performed them on the fourth postoperative day. The protocol was sustained pelvic floor contractions for ten seconds on inhalation, with ten seconds of relaxation on exhalation, for 20 minutes, three times a day The patients were instructed to urinate four hours after removal of the bladder tube and the residual volume was evaluated by ultrasound, considering retention when greater than 100 ml. After discharge, they were followed up by telephone, using two questionnaires: SPBS and GCQ	The intervention group had, in relation to the control, lower rates of bladder tube replacement (14 vs 25) $p=0.044$, urinary retention (13 vs 26) $p=0.017$, dysuria (9 vs 19) $p=0.038$ and residual volume (46.79 ± 10.20 vs 67.37 ± 18.47) $p=<0.001$ The postoperative SPBS score of the observation group was significantly lower than that of the control group, and the GCQ score was significantly higher
Yu et al., 2022[18]	Randomized clinical trial	To explore the effects of Pilates combined with standard nursing communication and pelvic floor muscle training on bladder function and family function of patients after cervical cancer surgery	96 postoperative women with cervical cancer were divided into two groups (48 each): Control: patients received nursing care based on the theory of communication compliance and pelvic floor muscle training, with three sets per day, of 50 contractions with five to ten seconds of support and ten seconds of relaxation, for three cycles of four weeks each Note: Participants received Pilates exercises based on the control group Pilates exercise therapy was initiated after removal of the bladder tube after surgery once daily for four weeks of training. Differences in urinary retention, family intimacy and adaptability, bladder function, and family function assessment scores were compared between the two groups	After intervention, the observation group had lower urinary retention, residual volume and interval between urinations and higher rates of self-resolving urination and voiding volume, in addition to better recovery of bladder function, compared to the control ($p<0.05$) Family intimacy, family adaptability, and sexual function scores of the observation group were significantly higher than those of the control group

Captions: TENS = Transcutaneous electrical nerve stimulation; SPBS = *Self-Perceived Burden Scale*; GCQ = *General Comfort Questionnaire* de Kolcaba.

description of the methodology and results, which impacts the conclusion on the effectiveness of physiotherapeutic treatment. Thus, current data show that physical therapy is a promising therapy in the treatment of voiding dysfunctions in women treated for pelvic cancers, such as urinary incontinence and urinary retention. However, studies with better methodological quality are needed.

CONCLUSION

The studies included in this review showed an improvement in symptoms related to urinary incontinence with physical therapy, especially from functional training of the pelvic floor, with similarity in the exercise protocols used. Regarding urinary retention, both pelvic floor functional training and electrostimulation showed positive results. However, the interpretation of these data should be done sparingly, due to the methodological weakness of the studies available to date.

CONTRIBUTIONS

All authors contributed substantially in the design and/or planning of the study; in the analysis and/or interpretation of the data; in the writing and/or critical review; and approved the final version to be published.

Table 3. Description of the methodological quality of the studies according to the PEDro scale score

Studies / PEDro Scale	Rutledge et al., 2014	Li et al., 2019	Li et al., 2021	Zong et al., 2022	Yu et al., 2022
1. Eligibility criteria	S	S	S	S	S
2. Random distribution	S	S	S	S	S
3. Secret allocation of subjects	S	S	S	S	S
4. Initial similarity between groups	S	S	S	S	S
5. "Blinding" of subjects	N	N	N	N	N
6. "Blinding" of therapists	N	S	N	N	N
7. "Blinding" of evaluators	N	S	N	N	N
8. Adequate follow-up	S	S	S	S	S
9. Intention-to-treat analysis	N	S	S	S	S
10. Intergroup Comparison	S	S	S	S	S
11. Measures of accuracy and variability	S	S	S	S	S
Total score	**6/10**	**9/10**	**7/10**	**7/10**	**7/10**

Captions: Y = Yes; and N = No.

Table 4. Description of the methodological quality of the studies according to the JBI critical assessment verification scale score for case series

Studies / Item JBI Scale	Sacomori et al., 2020	Bernard et al., 2021
1. Are there clear criteria for inclusion in the case series?	S	S
2. Was the condition measured in a standard and reliable manner for all participants included in the case series?	S	S
3. Were valid methods of condition identification used for all participants included in the case series?	S	S
4. Did the case series have consecutive inclusion of participants?	N	N
5. Did the case series have the complete inclusion of the participants?	N	N
6. Was there a clear report of the demographics of the study participants?	N	N
7. Was there a clear report of the participants' clinical information?	S	S
8. Have the results or follow-up results of the cases been clearly reported?	S	N
9. Was there a clear report of the demographic information of the site(s)/clinic(s) presented?	N	N
10. Was the statistical analysis adequate?	S	S
Total score	**6/10**	**5/10**

Captions: JBI = *Joanna Briggs Institute*; Y = Yes; and N = No.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interest to declare.

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REFERENCES

1. Instituto Nacional de Câncer. Estimativa 2023: incidência de câncer no Brasil [Internet]. Rio de Janeiro: INCA; 2022 [acesso 2022 dez 11]. Disponível em: https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//estimativa-2023.pdf

2. Bhatla N, Aoki D, Sharma DN, et al. Cancer of the cervix uteri. Int J Gynecol Obstet. 2018;143(Suppl 2):22-36. doi: https://doi.org/10.1002/ijgo.12611
3. Berek JS, Kehoe ST, Kumar L, et al. Cancer of the ovary, fallopian tube, and peritoneum. Int J Gynecol Obstet. 2018;143(Suppl 2):59-78. doi: https://doi.org/10.1002/ijgo.12614
4. Koskas M, Amant F, Mirza MR, et al. Cancer of the corpus uteri: 2021 update. Int J Gynecol Obstet. 2021;155(Suppl 1):45-60. doi: https://doi.org/10.1002/ijgo.13866
5. Haraldsdóttir S, Einarsdóttir HM, Smáradóttir A, et al. Krabbamein í ristli og endaþarmi - yfirlitsgrein [Colorectal cancer - Review]. Læknablaðið 2014;100(2):75-82. Islândia. doi: https://doi.org/10.17992/lbl.2014.02.531
6. Goforth J, Langaker M. Urinary incontinence in women. N C Med J. 2016;77(6):423-5. doi: https://doi.org/10.18043/ncm.77.6.423
7. Wallace KM, Drake MJ. Overactive bladder. F1000Res. 2015;4(F1000 Faculty Rev):1406. doi: https://doi.org/10.12688/f1000research.7131.1
8. Selius BA, Subedi R. Urinary retention in adults: diagnosis and initial management. Am Fam Physician [Internet]. 2008 [cited 2022 May 22];77(5):643-50. Available from: https://www.aafp.org/pubs/afp/issues/2008/0301/p643.html
9. Baldini G, Bagry H, Aprikian A, et al. Postoperative urinary retention: anesthetic and perioperative considerations. Anesthesiology. 2009;110(5):1139-57. doi: https://doi.org/10.1097/ALN.0b013e31819f7aea
10. Shiwa SR, Costa LOP, Moser ADL, et al. PEDro: a base de dados de evidências em fisioterapia. Fisioter Mov. 2011;24(3):523-33. doi: https://doi.org/10.1590/S0103-51502011000300017
11. Munn Z, Barker T, Moola S, et al. Methodological quality of case series studies: an introduction to the JBI critical appraisal tool. JBI Evid Synth. 2020;18(10):2127-2133. doi: https://doi.org/10.11124/JBISRIR-D-19-00099
12. Rutledge TL, Rogers R, Lee SJ, et al. A pilot randomized control trial to evaluate pelvic floor muscle training for urinary incontinence among gynecologic cancer survivors. Gynecol Oncol. 2014;132(1):154-8. doi: https://doi.org/10.1016/j.ygyno.2013.10.024
13. Sacomori C, Araya-Castro P, Diaz-Guerrero P, et al. Pre-rehabilitation of the pelvic floor before radiation therapy for cervical cancer: a pilot study. Int Urogynecol J. 2020;31(11):2411-8. doi: https://doi.org/10.1007/s00192-020-04391-5
14. Bernard S, McLean L, Boucher S, et al. An in-home rehabilitation program for the treatment of urinary incontinence symptoms in endometrial cancer survivors: a single-case experimental design study. Int Urogynecol J. 2021;32(11):2947-57. doi: https://doi.org/10.1007/s00192-021-04981-x
15. Li H, Zhou CK, Song J, et al. Curative efficacy of low frequency electrical stimulation in preventing urinary retention after cervical cancer operation. World J Surg Oncol. 2019;17:141. doi: https://doi.org/10.1186/s12957-019-1689-2
16. Li XW, Gao L, Wang Q, et al. Long-term effect of early post-operative transcutaneous electrical stimulation on voiding function after radical hysterectomy: a multicenter, randomized, controlled trial. Front Med (Lausanne). 2021;8:677029. doi: https://doi.org/10.3389/fmed.2021.677029
17. Zong J, You M, Li C. Effect of Kegel pelvic floor muscle exercise combined with clean intermittent self-catheterization on urinary retention after radical hysterectomy for cervical cancer. Pak J Med Sci. 2022;38(3 Part-I):462-8. doi: https://doi.org/10.12669/pjms.38.3.4495
18. Yu L, Guo Y, Che T. The effect of pilates exercise nursing combined with communication standard-reaching theory nursing and pelvic floor muscle training on bladder function and family function of patients after cervical cancer surgery. Comput Math Methods Med. 2022;2022:6444462. doi: https://doi.org/10.1155/2022/6444462
19. Bø K. Physiotherapy management of urinary incontinence in females. J Physiother. 2020;66(3):147-54. doi: https://doi.org/10.1016/j.jphys.2020.06.011
20. Cacciari LP, Dumoulin C, Hay-Smith EJ. Pelvic floor muscle training versus no treatment, or inactive control treatments, for urinary incontinence in women: a Cochrane systematic review abridged republication. Braz J Phys Ther. 2019;23(2):93-107. doi: https://doi.org/10.1016/j.bjpt.2019.01.002
21. Coolen RL, Groen J, Scheepe JR, et al. Transcutaneous electrical nerve stimulation and percutaneous tibial nerve stimulation to treat idiopathic nonobstructive urinary retention: a systematic review. Eur Urol Focus. 2021;7(5):1184-94. doi: https://doi.org/10.1016/j.euf.2020.09.019

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