

Preventing and Improving Post-Prostatectomy Incontinence With Pelvic Floor (Kegel) Exercises

SUBJECT BIBLIOGRAPHY

Bales, G. T., G. S. Gerber, et al. (2000). "Effect of preoperative biofeedback/pelvic floor training on continence in men undergoing radical prostatectomy." Urology **56**(4): 627-30.

OBJECTIVES: To determine whether preoperative biofeedback training improves urinary continence overall or the rate of return of continence in men undergoing radical prostatectomy. **METHODS:** One hundred men scheduled to undergo radical prostatectomy were randomized to receive graded pelvic muscle exercise training with biofeedback 2 to 4 weeks before surgery or to a control group performing pelvic muscle exercises without biofeedback. The biofeedback group was instructed to continue exercises four times per day until surgery and to resume exercises when the urethral catheter was removed following surgery. The control group received written and brief verbal instructions in pelvic muscle exercises before surgery and again after catheter removal. Urinary continence was assessed by personal or phone interviews. **RESULTS:** Six months following surgery, the continence rates, as defined by the use of one pad or less per day, were 94% (44 of 47) and 96% (48 of 50) in the biofeedback and control groups, respectively ($P = 0.596$). Also, the rate of return as determined at time points 1, 2, 3, and 4 months after surgery was not significantly different between the two groups. **CONCLUSIONS:** Preoperative biofeedback training did not improve the outcome of pelvic muscle exercises on overall continence or the rate of return of urinary control in men undergoing radical prostatectomy.

Ceresoli, A., G. Zanetti, et al. (1995). "[Stress urinary incontinence after perineal radical prostatectomy]." Arch Ital Urol Androl **67**(3): 207-10.

22 pts treated by radical perineal prostatectomy have been submitted to pelvic floor training soon after catheter removal, in order to assess faster continence reappraisal than that normally described in literature. 18 pts resulted dry within 4 months from surgical care. 2 pts resulted with stabilized mild stress incontinence due to daytime activity within 6 months from prostatectomy. 2 pts complained strong stress urinary incontinence over a period of more 9 months from surgery, but none resulted affected from continuous leakage. In this pts we observed a maximum time of continence reappraisal of 6 months with a minimum of 1 and an average of 4. An high perineal test has been found statistically correlated in the first three months from surgery with nocturnal continence reappraisal and the begging of diurnal micturion events ($p < 0.005$). Pelvic floor exercises has been found useful in the treatment of post radical perineal prostatectomy stress urinary incontinence.

Chang, P. L., L. H. Tsai, et al. (1998). "The early effect of pelvic floor muscle exercise after transurethral prostatectomy." J Urol **160**(2): 402-5.

PURPOSE: We evaluate the early effect of pelvic floor muscle exercise on the frequency of urination, terminal dribbling, urinary incontinence and satisfaction

with life in patients after transurethral prostatectomy. **MATERIALS AND METHODS:** From February to October 1996, 50 patients who had undergone transurethral prostatectomy were selected for study. The first 25 men served as a control group and the next 25 were the experimental group. Pelvic floor muscle exercise was started after removal of the Foley catheter postoperatively in the experimental group. The patients were evaluated before pelvic floor muscle exercise and weekly at our outpatient department after discharge from the hospital. Results for the later 25 patients treated with the pelvic floor muscle exercise program were compared to those of the prior 25 patients. **RESULTS:** There was a statistically significant difference ($p < 0.05$) in the strength of pelvic floor muscle contractions at 4 weeks, length of between void interval ($p < 0.01$), terminal dribbling at week 4 ($p < 0.05$) and urinary incontinence at weeks 3 and 4 between the 2 groups after pelvic floor muscle exercise. During this study no complication or mortality occurred and there were no cases of hospitalization for either group. After pelvic floor muscle exercise patients in the experimental group had better satisfaction with life than the control group ($p < 0.01$). **CONCLUSIONS:** We conclude that pelvic floor muscle exercise seems to help reduce symptoms within the first 4 weeks after transurethral prostatectomy, and provides better psychological and social quality of life.

Cornel, E. B., R. de Wit, et al. (2005). "Evaluation of early pelvic floor physiotherapy on the duration and degree of urinary incontinence after radical retropubic prostatectomy in a non-teaching hospital." World J Urol **23**(5): 353-5.

The objective of this study was to study the effect of early pelvic floor re-education on the degree and duration of incontinence and to evaluate the results of radical retropubic prostatectomy (RRP) performed in a non-teaching hospital. This is a non-randomised study. From March 2000 to November 2003, 57 consecutive men, who underwent RRP for localized prostate cancer, participated in a pelvic floor re-educating program. Continence was defined as a loss of no more than 2-g urine on the 24-h pad test and no use of pads. The 24-h pad test was performed once in every 4 weeks until the patient indicated that he was continent. Diurnal and nocturnal continence was achieved after 1, 2, 3, 6 and 12 months post catheter removal in 40, 49, 70, 86 and 88% of all men, respectively. Comparison of our results with current literature suggest that the time period towards continence after a RRP can be shortened relevantly if pelvic floor re-education is started directly after catheter removal.

Dorey, G. (2000). "Male patients with lower urinary tract symptoms. 2: Treatment." Br J Nurs **9**(9): 553-8.

The first part of this article (Dorey, 2000) described the subjective and objective assessment of men with lower urinary tract symptoms (LUTS). This article will examine treatment protocols for stress incontinence, urge incontinence, post-prostatectomy incontinence, post-micturition dribble, overflow incontinence, reflex incontinence and functional incontinence. Pelvic floor muscle exercises, biofeedback, electrical stimulation, urge suppression techniques, and fluid intake are discussed. It is concluded that men with LUTS can benefit from conservative

treatment.

Dorey, G. (2005). "Restoring pelvic floor function in men: review of RCTs." Br J Nurs **14**(19): 1014-8, 1020-1.

The male pelvic floor muscles support the abdominal contents, are active during breathing, maintain urinary and faecal continence, increase local blood supply and are active during sexual intercourse. It was hypothesized that weak pelvic floor muscles would compromise these functions in men and lead to urinary and faecal incontinence and sexual dysfunction and that pelvic floor muscle strengthening would restore normal function. After a literature search of randomized controlled trials was undertaken, it was found that weak pelvic floor muscles compromised normal pelvic floor function and led to urinary incontinence and erectile dysfunction. Strengthening the pelvic floor muscles was shown to significantly improve post-prostatectomy urinary continence, post-micturition dribble and erectile function. It would be prudent for all men to exercise their pelvic floor muscles to maintain normal pelvic floor function.

Dorey, G. (2007). "Why men need to perform pelvic floor exercises." Nurs Times **103**(26): 40, 43.

Dornan, P. R. (2005). "Incontinence--an aggressive approach to treatment: a case series." J Sci Med Sport **8**(4): 458-62.

Recent evidence suggests that, for some, leaking urine may be a barrier to physical activity. Although important from a lifestyle point of view, bladder problems and incontinence also affect both men and women socially, psychologically and economically. For example, it can be particularly distressing when incontinence occurs post-prostate surgery, especially if these patients were continent before surgery. This case series outlines an aggressive, innovative, exercise-based approach to the management of stress incontinence post-prostatectomy. The program attempts to enhance neuromuscular and vascular systems associated with continence, with emphasis placed on the abdominal and pelvic floor muscles. The program was undertaken by 14 incontinent post-prostatectomy patients (mean age 63.5 y, using a mean of 3.5 sanitary pads per day). The program was initiated a mean of two months post-op and had a mean duration of six months. Upon completion of the program, 10 patients were found to be completely dry with three retaining a small leakage (a few drops). The 14th could not comply with the program because of illness. The results of this study appear promising in this patient population. There are indications for further research.

Fanciullacci, F., A. Franzini, et al. (2001). "[Continence problems after radical prostatectomy: role of rehabilitation of the pelvic floor]." Arch Ital Urol Androl **73**(3): 153-6.

Continence mechanisms can be compromised after radical prostatectomy. Relatively low percentages of urinary incontinence are reported (2-15%). Perineal floor physiotherapy is considered an actual method of treatment of

urinary incontinence in females. It is based on pelvic floor muscles exercises, biofeedback and functional electrical stimulation. The aim of physiotherapy is to improve pelvic floor muscles proprioception, to increase tone of levator ani and to favour automatization of these muscles in daily life. The reports in Literature on perineal floor physiotherapy in treating incontinence after radical prostatectomy are scarce. In this paper we present our experience about 9 patients with incontinence post radical prostatectomy (out of 74 patients operated on at our Institution). We obtained an improvement or a complete cure in 78% of the treated patients. We believed that pelvic floor physiotherapy can be considered a good and safe method of treatment of incontinence after radical prostatectomy, at least in less serious cases.

Filocamo, M. T., V. Li Marzi, et al. (2005). "Effectiveness of early pelvic floor rehabilitation treatment for post-prostatectomy incontinence." Eur Urol **48**(5): 734-8.

PURPOSE: Urinary incontinence after radical prostatectomy is a significant clinical problem. In this prospective study we investigate the effectiveness of early pelvic floor muscle training (PFMT) on a large population, that had undergone radical retropubic prostatectomy (RRP) at our department.

METHODS: 300 consecutive patients who had undergone RRP for clinically confined prostate cancer were randomized in two groups after catheter removal. One group of 150 patients took part in a structured PFMT program. This began before discharge and consisted of Kegel exercises. The remaining 150 patients constituted the control group, they were not formally instructed in PFMT.

Incontinence was assessed objectively using the 1 hour and 24 hour pad test, as well as with the ICS-Male questionnaire. All patients who were incontinent after 6 months underwent urodynamic evaluation. **RESULTS:** In the treated group, 19% (29 patients) achieved continence after 1 month, and 94.6% (146 patients) after 6 months. In the control group 8% (12 patients) achieved continence after 1 month, and 65% (97 patients) after 6 months ($p < 0.001$). Patient age did not correlate with continence in the control group ($p > 0.05$), although a significant correlation was revealed within the treated group ($p < 0.01$). Overall, 93.3% of the total population achieved continence after one year. **CONCLUSIONS:** After RRP an early supportive rehabilitation program like PFMT significantly reduces continence recovery time.

Floratos, D. L., G. S. Sonke, et al. (2002). "Biofeedback vs verbal feedback as learning tools for pelvic muscle exercises in the early management of urinary incontinence after radical prostatectomy." BJU Int **89**(7): 714-9.

OBJECTIVE: To evaluate the comparative effectiveness of electromyographic (EMG) biofeedback with verbal instructions as learning tools of pelvic muscle exercises (PMEs) in the early management of urinary incontinence after radical prostatectomy. **PATIENTS AND METHODS:** Forty-two consecutive patients (mean age 64 years, sd 4.2), with urinary incontinence after radical retropubic prostatectomy for localized prostate cancer, were randomized to receive biofeedback (group A, 28 men) or verbal feedback (group B, 14 men) as learning tools for PMEs immediately after catheter removal. Group A received 15

sessions of EMG biofeedback (three times weekly, 30 min each) and group B verbal instructions. Evaluation at baseline and 1, 2, 3 and 6 months included the 1-h pad-test and a questionnaire (number of pads/day and incontinence episodes). RESULTS: By the last follow-up, 27 patients had received biofeedback and 15 verbal instructions. Data were analysed according to the intention-to-treat principle. Urine loss as assessed by the 1-h pad-test at baseline, 1, 2, 3 and 6 months was 39, 18, 7, 4 and 3 g for group A and 31, 11, 3, 1 and 0 g for group B, respectively ($P > 0.05$). The number of pads/day was 3.9, 3.4, 1.2, 0.8 and 0.4 for group A and 3.6, 1.8, 0.9, 0.4 and 0.2 for group B, respectively ($P > 0.05$). The overall continence rate at 6 months was objectively (urine loss > 1 g) 91% and subjectively (0-1 pad/day) 95%. CONCLUSION: Intensive verbal instructions and biofeedback were both very effective behavioural methods and learning tools for PME in the early management of urinary incontinence after radical prostatectomy.

Fontaine, E., V. Izadifar, et al. (2000). "Urinary continence following radical prostatectomy assessed by a self-administered questionnaire." *Eur Urol* **37**(2): 223-7. OBJECTIVES: A total aim of this study was to assess the incidence of urinary incontinence in patients following radical prostatectomy and determine the factors that may influence this incidence. METHODS: A total of 135 men underwent radical retropubic prostatectomy at our center between 1987 and 1997. 120 patients were sent a questionnaire regarding preoperative and postoperative voiding habits. Data collected included preoperative and postoperative continence status, interval to postoperative continence status, associated urinary symptoms, willingness to undergo radical prostatectomy again if need be and additional postoperative procedures. Patient age, date of surgery, number of neurovascular bundles resected at prostatectomy and duration of follow-up were also noted. RESULTS: Of the 120 patients, 116 (96.7%), a mean of 65.2 (range 48-76) years old, responded to the questionnaire. Mean follow-up was 4.3 years (range 1-10.8). Continence was defined as no regular use of pads. Our overall urinary incontinence rate was 14.4%. Of the respondents, 88.8% (103/116) had achieved final continence status by 6 months postoperatively, and 95% (110/116) would undergo surgery again if need be. Of the patients considered incontinent postoperatively, 66.6% had associated urgency. Age, year of surgery, number of neurovascular bundles resected at prostatectomy, preoperative urinary leakage of postvoiding dribbling, postoperative pelvic floor exercises, and anastomotic stricture had no significant impact on postoperative continence status. CONCLUSIONS: Using an anonymous self-administered questionnaire, we found a 14.4% incontinence rate after radical prostatectomy. These results allow patients to have realistic expectations when counseled prior to this operation.

Franke, J. J., W. B. Gilbert, et al. (2000). "Early post-prostatectomy pelvic floor biofeedback." *J Urol* **163**(1): 191-3. PURPOSE: We determined whether biofeedback enhanced pelvic floor exercises begun 6 weeks after radical prostatectomy improve the early recovery of

continence. MATERIALS AND METHODS: We randomized 30 patients who underwent radical retropubic prostatectomy into a group that received 5 biofeedback sessions and a control group. RESULTS: Overall 87% of patients were pad-free at 6 months with similar results in the treatment and control groups (86% versus 88%). There was no statistically significant difference in pad test results or voiding diary records in the 2 groups. CONCLUSIONS: A treatment program of biofeedback enhanced pelvic floor exercises begun 6 weeks after radical retropubic prostatectomy did not significantly affect continence in this study.

Gallo, M. L. and P. J. Fallon (1996). "Evaluation of a pelvic floor treatment plan for patients undergoing radical prostatectomy." Urol Nurs **16**(1): 9-13.

Hunter, K. F., C. M. Glazener, et al. (2007). "Conservative management for postprostatectomy urinary incontinence." Cochrane Database Syst Rev(2): CD001843.

BACKGROUND: Urinary incontinence is common after both radical prostatectomy (RP) and transurethral resection of the prostate (TURP). Conservative management includes pelvic floor muscle training (PFMT) with or without biofeedback, electrical stimulation, compression devices (penile clamps), lifestyle changes, extra-corporeal magnetic innervation or a combination of methods. OBJECTIVES: To assess the effects of conservative management for urinary incontinence after prostatectomy. SEARCH STRATEGY: We searched the Cochrane Incontinence Group Specialised Trials Register (searched 23 January 2006), MEDLINE (January 1966 to January 2006), EMBASE (January 1988 to January 2006), CINAHL (January 1982 to January 2006), PsycLIT (January 1984 to January 2006), ERIC (January 1984 to January 2006), the reference lists of relevant articles, handsearched conference proceedings and contacted investigators to locate studies. SELECTION CRITERIA: Randomised or quasi-randomised controlled trials evaluating conservative interventions for urinary continence after prostatectomy. DATA COLLECTION AND ANALYSIS: At least two review authors assessed the methodological quality of trials and abstracted data. MAIN RESULTS: Seventeen trials met the inclusion criteria, fifteen trials amongst men after radical prostatectomy (RP), one trial after transurethral resection of the prostate (TURP) and one trial after either operation. There was considerable variation in the interventions, populations and outcome measures. The majority of trials in this area continue to be of moderate quality, although more recent studies have been of higher quality in terms of both randomization and blinding. Data were not available in all the trials for many of the pre-stated outcomes. Confidence intervals have tended to be wide except for the more recent studies, and it continues to be difficult to reliably identify or rule out a useful effect. There were several important variations in the populations being studied. Therefore the decision was made by the review authors to separate in the analysis the men having the intervention as prevention (whether administered before or after operation, to all men having surgery) or as treatment (postoperatively to those men who did have urinary incontinence), as well as separating those treated with TURP or RP. Amongst seven treatment trials of

postoperative PFMT for urinary incontinence after RP, one trial suggested benefits, whereas the estimates from the others were consistent with no effect. There was clinical and statistical heterogeneity, precluding meta-analysis. There was no clear reason for this heterogeneity. Trials of preventative PFMT started pre or post-operatively also showed heterogeneity: only one large trial favoured PFMT but the data from the others were conflicting. Analysis of other conservative interventions such as transcutaneous electrical nerve stimulation and anal electrical stimulation, or combinations of these interventions were inconclusive. There were too few data to determine treatment effects on incontinence after TURP. The findings should continue to be treated with caution, as most studies were of poor to moderate quality. With respect to other management, men in one trial reported a preference for one type of external compression device compared to two others or no treatment. The effect of other conservative interventions such as lifestyle changes remains undetermined as no trials involving these interventions were identified. Men's symptoms tended to improve over time, irrespective of management. **AUTHORS' CONCLUSIONS:** The value of the various approaches to conservative management of postprostatectomy incontinence remains uncertain. Long-term incontinence may be managed by external penile clamp, but there are safety problems.

Hunter, K. F., K. N. Moore, et al. (2004). "Conservative management for postprostatectomy urinary incontinence." Cochrane Database Syst Rev(2): CD001843. **BACKGROUND:** Urinary incontinence is common after both radical prostatectomy and transurethral resection. Conservative management includes pelvic floor muscle training, biofeedback, electrical stimulation, compression devices (penile clamps), lifestyle changes, extra-corporeal magnetic innervation or a combination of methods. **OBJECTIVES:** To assess the effects of conservative managements for urinary incontinence prostatectomy. **SEARCH STRATEGY:** We searched the Cochrane Incontinence Group trials register (searched 2 July 2003), MEDLINE (January 1966 to January 2004), EMBASE (January 1988 to January 2004), CINAHL (January 1982 to January 2004), PsycLIT (January 1984 to January 2004), ERIC (January 1984 to January 2004), the reference lists of relevant articles, handsearched conference proceedings and contacted investigators to locate studies. **SELECTION CRITERIA:** Randomised controlled trials evaluating conservative interventions for urinary continence after prostatectomy. **DATA COLLECTION AND ANALYSIS:** At least two reviewers assessed the methodological quality of trials and abstracted data. **MAIN RESULTS:** Ten trials met the inclusion criteria, eight trials amongst men after radical prostatectomy, one trial after transurethral resection of prostate and one after either operation. There was considerable variation in the interventions, populations and outcome measures. The trials were of moderate quality and data were not available for many of the pre-stated outcomes. Confidence intervals were wide: it was not possible to reliably identify or rule out a useful effect. There was some support from five trials for pelvic floor muscle training with biofeedback being better than no treatment or sham treatment in the short term for men after radical prostatectomy: relative risk for incontinence with pelvic floor muscle

training and biofeedback versus no treatment: 0.74 (95% confidence interval 0.60 to 0.93). Analysis of other conservative interventions such as pelvic floor muscle training alone, transcutaneous electrical nerve stimulation and rectal electrical stimulation, or combinations of these interventions were inconclusive. There were too few data to determine effects on incontinence after transurethral resection of the prostate. The findings should be treated with caution as there were few studies, all of moderate quality. Men in one trial reported a preference for one type of external compression device compared to two others or no treatment. The effect of other conservative interventions such as lifestyle changes remains undetermined as no trials involving these interventions were identified. Men's symptoms tended to improve over time, irrespective of management. REVIEWERS' CONCLUSIONS: The value of the various approaches to conservative management of postprostatectomy incontinence remains uncertain. There may be some benefit of offering pelvic floor muscle training with biofeedback early in the postoperative period immediately following removal of the catheter as it may promote an earlier return to continence. Long-term incontinence may be managed by external penile clamp, but there are safety problems.

Ip, V. (2004). "Evaluation of a patient education tool to reduce the incidence of incontinence post-prostate surgery." Urol Nurs **24**(5): 401-7.

A pelvic floor muscle exercise program can reduce the incidence of incontinence post-prostate surgery. The purpose of this study was to validate a new education tool, a refrigerator magnet, in comparison to a paper copy with the same information, to determine if patient compliance with the exercises increased.

Jackson, J., L. Emerson, et al. (1996). "Biofeedback: a noninvasive treatment for incontinence after radical prostatectomy." Urol Nurs **16**(2): 50-4.

OBJECTIVE: Will a program using biofeedback help patients with post radical prostatectomy incontinence to achieve continence by increasing their ability to contract pelvic floor muscles? STUDY DESIGN: Twenty-seven patients who had undergone incontinent radical prostatectomy were evaluated for urinary incontinence and treated at the Urology Biofeedback Laboratory at our institution. Patients were assessed by urodynamic studies including uroflow, postvoid residual measurement, and cystometrogram before biofeedback was initiated. The protocol provided for 10 weekly sessions of 15 minutes' duration with additional reinforcement sessions at 1, 3, 6, and 12 months. Subjective symptoms related to urgency, frequency, nocturia, and number of pad changes were reported by patients before treatment and at each visit. Digital evaluation of the pelvic floor muscle contraction was objectively graded from 0 to 3 (nil to strong) and was completed before and after treatment. These subjective and objective findings were used to determine success of treatment. RESULTS: Of the 27 patients completing the full treatment course, 13 (48%) had complete success, 7 (26%) had significant improvement but were not completely dry, and 7 (26%) had failure, for a total improvement rate of 74%. CONCLUSIONS: A biofeedback training program is an effective, minimally invasive, and well-

accepted method that can be offered as a first-line option to patients who have undergone radical prostatectomy and want to improve the postsurgical problem of urinary incontinence. Patient motivation is an important factor in success. Nurses have an opportunity to use their expertise in this program to assist these patients to return to continence.

Joseph, A. C. (2006). "Noninvasive therapies for treating post-prostatectomy urinary incontinence." Urol Nurs **26**(4): 271-5, 269; quiz 276.

Incorporation of a noninvasive program for both body and mind can lead to successful outcomes in men suffering from post-prostatectomy urinary incontinence. Key factors in the initial assessment and a detailed description of effective, unique treatment interventions for men with post-prostatectomy urinary incontinence are described.

Joseph, A. C. and M. K. Chang (2000). "Comparison of behavior therapy methods for urinary incontinence following prostate surgery: a pilot study." Urol Nurs **20**(3): 203-4. Americans are living longer. As a result, an increased number of pathologic prostates are being detected and treated. As a consequence of complications from surgical treatment, such as prostatectomy, urinary incontinence may occur. However, it is important to understand urinary continence in the male and the anatomic changes that result with prostatectomy. Having objective measures that are cost-effective and accessible can assist with equaling subjective and objective assessments of continence, as well as determining successful outcomes and the need for more complex behavioral treatments.

Juan Escudero, J. U., M. Ramos de Campos, et al. (2006). "[Radical prostatectomy complications: evolution and conservative management of urinary incontinence]." Actas Urol Esp **30**(10): 991-7.

OBJECTIVES: Radical retropubic prostatectomy is the major procedure for curing early stage prostate cancer. In this retrospective study we valued the complications of this surgery and its evolution in time, as well as the effectiveness of the urinary incontinence preservative treatment in the recovery of urinary continence. **MATERIALS AND METHODS:** During the period between december of 1998 to january of the 2005 we have treated 168 patients suffering prostatic adenocarcinoma clinically confined to the gland by means of retropubic radical prostatectomy. We removed the vesical catheter the fourteenth day of the postoperative and made a clinical monitoring the first, third and sixth month after the surgery, and thereafter every six months. **RESULTS:** Of the 168 patients who underwent clinical surgery, 15% required postoperative blood transfusion in the immediate postoperative. Other complications, with a lower incidence, were the intestinal perforation, surgical wound infection and the haematoma. The most frequent delayed complications we registered were erectile dysfunction, observed in 164 patients (98%), micturition alterations in 32 patients (19%) and intestinal alterations in approximately 11%. Among the micturitional alterations found, the most frequent (64%) was the Urinary Incontinence (UI). However, most of them were of minor importance (34%) and all improved during the first

six months after the surgery. We advised patients with minor and moderate UI to perform pelvic floor muscle training, being very useful since they allowed to anticipate the recovery of continence. **CONCLUSIONS:** Radical prostatectomy continues to be the most effective treatment for the non spared prostate cancer, in spite of the associated morbidity. The IU is the main factor for the high standard of living these patients. Despite the number of patients with UI being so high, most cases are moderate and minor and may improve with pelvic floor muscle training. Hence, this is a significant tool to tackle this illness, whether in connection with the use of absorbent, the pharmacologic therapy or the use of penile collectors.

Lilli, P., M. Mercuriali, et al. (2006). "Impact of preoperative biofeedback on incontinence in cancer patients undergoing radical prostatectomy." Arch Ital Urol Androl **78**(3): 92-6.

OBJECTIVE: Post-radical prostatectomy incontinence is mainly attributable to iatrogenic verify the importance of preoperative biofeedback (BFB) in an attempt to identify a strategy to improve postoperative urinary incontinence. **MATERIALS AND METHODS:** Ninety candidates (median age 68 years: range 49-75) for radical retropubic prostatectomy were evaluated. Forty-five patients underwent preoperative pelvic floor training (PFT) and BFB, whereas the remaining 45 (control group) had preoperative PFT only. Patients started PFT exercises two weeks before surgery and continued during the immediate postoperative period, after catheter removal (6-7 days after surgery), and thereafter at home. No adjuvant therapy was administered and all 90 patients were assessed at follow up visits timed 1, 3 and 6 months post surgery. **RESULTS:** Patients who were completely dry and without use of pads were defined as continent. At the 1-month follow-up, 6.6% (3/45) of both the PFT+BFB group and the PFT only arm were continent. After 3 months, the continence rate had increased to 33.3% (15/45) and 26.6% (12/45), respectively, and at 6-month follow-up, this percentage had further risen to 71.1% (32/45) in the former group and 66.6% (30/45) in the latter group. No significant differences were observed between the two arms during follow-up, but there was a statistically significant correlation between follow-up time and continence improvement in each group.

CONCLUSIONS: Preoperative BFB associated with PFT does not significantly influence urinary continence recovery after radical prostatectomy.

MacDonald, R., H. A. Fink, et al. (2007). "Pelvic floor muscle training to improve urinary incontinence after radical prostatectomy: a systematic review of effectiveness." BJU Int **100**(1): 76-81.

OBJECTIVE: To evaluate the effectiveness of pelvic floor muscle training (PFMT) for treating urinary incontinence (UI) after radical prostatectomy (RP) by reviewing evidence from randomized trials. **METHODS:** Randomized trials published in English were included if they involved men with UI after RP and compared PFMT with a control group. Data were abstracted onto a standardized form using a prospectively developed protocol. **RESULTS:** Eleven trials randomizing 1028 men (mean age 64 years) met the inclusion criteria; the duration of the trials was 3-12 months. One trial of 300 men found that those

assigned to PFMT achieved continence more quickly (after 1, 3 and 6 months) than men not assigned to PFMT. Men receiving biofeedback-enhanced PFMT were more likely to achieve continence or have no continual leakage than those with no training within 1-2 months after RP (relative benefit increase 1.54; 95% confidence interval 1.01-2.34; four trials reporting). The relative benefit increase (1.19, 0.82-1.72; five studies) was no longer significant after 3-4 months. Biofeedback-enhanced PFMT was comparable to written/verbal PFMT instruction. Extracorporeal magnetic innervation (ExMI) and electrical stimulation (ES) were found to be initially (within 1-2 months) more effective than PFMT in one trial, but there were no significant differences between groups at > or = 3 months. CONCLUSION: Based on available evidence, PFMT with or without biofeedback enhancement hastens the return to continence more than no PFMT in men with UI after RP. Additional trials are needed to confirm whether ExMI and ES are effective conservative treatment options.

Manassero, F., C. Traversi, et al. (2007). "Contribution of early intensive prolonged pelvic floor exercises on urinary continence recovery after bladder neck-sparing radical prostatectomy: results of a prospective controlled randomized trial." Neurourol Urodyn.

AIMS: In this prospective controlled randomized trial we assessed the effects of early, intensive, prolonged pelvic floor exercises (PFE) on urinary incontinence following bladder neck (BN) sparing RRP. METHODS: A sample of 152 patients with localized prostate cancer underwent RRP with BN preservation. Out of this group we randomized 107 incontinent patients into 2 groups. We considered incontinent patients with 24 hr Pad test >2 g. The T group received instructions regarding an intensive program of PFE, from 7 days after catheter removal for as long as any degree of incontinence persisted, within a period of 1 year. The control (C) group did not receive instructions. The outcome was assessed using the 24 hr Pad test, a visual analogue scale (VAS) and a single question of QoL. Results at baseline and at 1, 3, 6, and 12 months were available for 54 and 40 patients, respectively. RESULTS: The overall spontaneous continence rate after catheter removal was 23.6%. The proportion of men still incontinent was significantly higher in the C group than treatment (T) group at 1 (97.5% vs. 83.3%; P = 0.04), 3 (77.5% vs. 53.7%; P = 0.03), 6 (60% vs. 33.3%; P = 0.01), and 12 months (52.5% vs. 16.6%; P < 0.01). Similarly, the VAS and the response to the QoL question at 12 months significantly differed between the two groups (P = 0.01 and 0.03, respectively). CONCLUSIONS: Our study suggests that early intensive prolonged PFE can further increase the number of continent patients and this improvement persists in the first 12 months. The second 6 months following surgery are still useful to recovery. *Neurourol. Urodynam.* (c) 2007 Wiley-Liss, Inc.

Mathewson-Chapman, M. (1997). "Pelvic muscle exercise/biofeedback for urinary incontinence after prostatectomy: an education program." J Cancer Educ **12**(4): 218-23. BACKGROUND: This study tested the effectiveness of pelvic muscle exercise (PME) with biofeedback in reducing the length of time urinary incontinence (UI) was experienced following a radical prostatectomy for localized prostate cancer.

METHODS: Fifty-three men were randomly assigned to an education intervention group or a control group. The education group received instruction in PME/biofeedback and were given a PME protocol to perform three times per week for 12 weeks. The control group did not receive instruction in PME technique. Both groups recorded urine losses in three-day bladder diaries, and 24-hour pad tests were done in weeks 2, 5, 9, and 12 after surgery. Study variables included: 1) length of time urine loss was experienced; 2) episodes and frequency of urine loss; and 3) ounces of urine lost and number of pads used. **RESULTS:** The PME/biofeedback group regained continence at a mean of 51 days; the non-PME group at 56 days. Although the PME group demonstrated reductions in episodes, frequency, ounces of urine lost by UI, and pad usage, they were not statistically significant. **CONCLUSIONS:** After prostatectomy, men experience UI for periods of one to 80+ days. The use of biofeedback enhances learning PME and skill performance. Bladder diaries and behavioral management techniques (PME) need to be further studied as appropriate treatment methods to assist men in managing UI after cancer surgery.

Milne, J. L. (2004). "Behavioral therapies at the primary care level: the current state of knowledge." J Wound Ostomy Continence Nurs **31**(6): 367-76; quiz 377-8.

Urinary incontinence, the complaint of any involuntary loss of urine, is a troubling symptom experienced by men and women of all ages. Options for treatment include a range of behavioral, pharmacologic, and surgical therapies. Behavioral therapies, such as dietary modification, pelvic floor muscle training, and bladder training, are noninvasive, with little risk of side effects, and experts agree they should represent the first line of treatment whenever possible. These therapies can be initiated and monitored at the primary care level, thereby enhancing the accessibility of care for those affected. The purpose of this article is to methodically review what is and is not known about behavioral therapies, with attention to research needs. Although there is clear evidence for pelvic floor muscle training in women with urinary incontinence and modest evidence in men for a short time after radical prostatectomy, less is known about bladder training, prompted voiding, habit retraining, and timed voiding. Additional research is required to enhance our understanding of the comparative efficacy of behavioral interventions in specific populations. This research must take an increasingly long-term focus, given the potentially chronic nature of urinary incontinence.

Moore, K. N., D. J. Cody, et al. (2000). "Conservative management of post prostatectomy incontinence." Cochrane Database Syst Rev(2): CD001843.

BACKGROUND: Urinary incontinence after prostatectomy is a common problem. Conservative management of this condition includes pelvic floor muscle training, biofeedback, electrical stimulation using a rectal electrode, transcutaneous electrical nerve stimulation, or a combination of methods. **OBJECTIVES:** To assess the effects of conservative management for urinary incontinence after transurethral, suprapubic, radical retropubic or perineal prostatectomy. **SEARCH STRATEGY:** The Cochrane Incontinence Group's trials register, Medline, Cinahl, Embase, PsycLit and ERIC all up to January 1999, and reference lists of relevant

articles. We contacted investigators to locate studies and we handsearched the following conference proceedings: American Urological Association (1989-1999); Society of Urologic Nurses and Associates (1991-1998); Wound Ostomy and Continence Nurses (1996-1999); and International Continence Society (1980-1998). Date of most recent searches: January 1999. SELECTION CRITERIA: Randomised or quasi-randomised trials which evaluated conservative management aimed at improving urinary continence after prostatectomy. DATA COLLECTION AND ANALYSIS: Two reviewers independently assessed the methodological quality of studies and abstracted data from included trials onto a standard form. MAIN RESULTS: Only five randomised trials were identified which included 365 men, each evaluating different treatments, and all studying men after radical prostatectomy. The trials were of moderate quality and data were not available for many of the pre-stated outcomes. Confidence intervals for both dichotomous and continuous data were wide; it was not possible to reliably identify or rule out a useful effect. Men's symptoms tended to improve over time, irrespective of management. REVIEWER'S CONCLUSIONS: The value of the various approaches to conservative management of post prostatectomy incontinence remains uncertain. Further well designed trials are needed.

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incontinence remains uncertain. Further well designed trials are needed.

Moore, K. N. and M. Gray (2004). "Urinary incontinence in men: current status and future directions." Nurs Res **53**(6 Suppl): S36-41.

BACKGROUND: Despite similar rates of voiding dysfunction in older men and women, most funded research has focused on women. Strategic treatment plans for managing urinary incontinence and other lower urinary tract symptoms in men are limited by sparse or absent direct clinical evidence with most interventions supported by data extrapolated from studies in women. **OBJECTIVES:** To explore what is known about the epidemiology and etiology of incontinence in men, highlight some of the gaps in the current knowledge, address limitations in existing research, and consider future directions in men's continence care. **METHODS:** Existing literature on urinary incontinence in men was analyzed to generate a plan for future research. **RESULTS:** Gaps in our knowledge of urinary incontinence in men remain in the areas of etiology, psychosocial consequences, and treatment efficacy. **CONCLUSIONS:** Clinical research addressing incontinence in men is critical to explore the barriers or facilitators to seeking care, elucidate the biomechanical aspects of pelvic floor function, provide a clear description of the natural history of bladder dysfunction, and highlight the quality of life impact from incontinence.

Moore, K. N., D. Griffiths, et al. (1999). "Urinary incontinence after radical prostatectomy: a randomized controlled trial comparing pelvic muscle exercises with or without electrical stimulation." BJU Int **83**(1): 57-65.

OBJECTIVES: To assess the effectiveness of intensive conservative treatment on and the impact of urinary incontinence after radical retropubic prostatectomy. **PATIENTS AND METHODS:** Sixty-three men with urinary incontinence \geq 8 weeks after radical prostatectomy were randomized to one of three groups; group 1, standard treatment (control); group 2, intensive pelvic muscle exercises (PME); or group 3, PME plus electrical stimulation (PME+ES). Group 1 received verbal and written instructions about postoperative PME from their urologist and from the nurses at the pre-admission clinic. Groups 2 and 3 were treated by a physiotherapist for 30 min twice a week for 12 weeks and carried out home exercises three times a day on the days when they were not treated. Outcome was assessed using the 24-h pad test, two validated quality-of-life questionnaires and a urine symptom inventory, all obtained at baseline, 12, 16 and 24 weeks after enrolment. The final pad test was carried out approximately 8 months after surgery. **RESULTS:** Fifty-eight patients completed the study, 21 in group 1, 18 in group 2 and 19 in group 3; five discontinued, three with bladder neck contractures requiring dilatation, one with rectal pain when doing the exercises and one unable to complete therapy while on vacation. The mean (median) time elapsed from surgery to entry into the study was 19 (8) weeks. At 12 weeks from baseline, the mean overall urine loss had decreased from 463 g to 115 g but there were no differences among groups, nor were there significant differences in urine loss at 16 and 24 weeks ($F=0.16$, $P=0.69$). There was a significant impact on quality of life during the early recovery. Despite preoperative instructions,

many patients revealed little or no knowledge about catheter care, bladder spasms, rectal pain, incontinence and erectile dysfunction. Little of the preoperative education was retained because of the overwhelming nature of the diagnosis. CONCLUSIONS: From the initial assessment to the final pad-test at approximately 8 months after surgery, incontinence improved greatly in all three groups. This rapid improvement may have masked any treatment benefit. Further research should address incontinence in men whose urine loss has stabilized and who underwent surgery >8 months previously. Moreover, a telephone-based follow-up soon after discharge may alleviate many of the concerns expressed.

Moorhouse, D. L., J. P. Robinson, et al. (2001). "Behavioral treatments for post-prostatectomy incontinence." Ostomy Wound Manage **47**(12): 30-8, 40, 41-2.

Despite improvements in surgical approaches to radical prostatectomy, many patients experience moderate to severe urinary incontinence during the first few postoperative weeks. For some patients, leakage continues for several months or years. Urinary incontinence has a significant impact on quality of life in these typically active patients. Surgical interventions are not recommended until after a 6 to 12 month trial of behavioral interventions. Behavioral interventions include supportive care, diet and medication management, pelvic floor rehabilitation, inhibition techniques, and patient education and support. This integrative review of the literature summarizes current knowledge of behavioral interventions for post-prostatectomy urinary incontinence for the primary care and home care clinician. Aspects of care specific to masculine culture are explored. Recommendations for further research include determination of optimal timing and protocols for pelvic floor rehabilitation, best practices for patient and family education, and development of a standard definition of urinary incontinence so the efficacy of treatments can be compared.

Moul, J. W. (1998). "Pelvic muscle rehabilitation in males following prostatectomy." Urol Nurs **18**(4): 296-301.

Post-prostatectomy incontinence (PPI) is a common problem in the era of increased detection of prostate cancer and use of radical prostatectomy. Whether temporary or permanent, mild or more severe, PPI can be effectively treated and improved by pelvic muscle rehabilitation. It is important for urologic nurses to understand the various pelvic muscle rehabilitation methods--for example, Kegel exercises, biofeedback, and electrical stimulation--to better educate and care for PPI patients and their families.

Nahon, I., G. Dorey, et al. (2006). "Systematic review of the treatment of post-prostatectomy incontinence." Urol Nurs **26**(6): 461-75, 482.

A systematic review was conducted to critically analyze the literature on pelvic floor muscle training, biofeedback, electrical stimulation, and behavioral therapy for managing post-prostatectomy incontinence. Currently, there is a need for further study to better identify the specific components that determine the efficacy of conservative measures in the treatment of male incontinence post surgery.

Pannek, J. and J. E. Konig (2005). "Clinical usefulness of pelvic floor reeducation for men undergoing radical prostatectomy." Urol Int **74**(1): 38-43.

INTRODUCTION: Urinary incontinence after radical prostatectomy is a significant clinical problem. We evaluated the clinical usefulness of early-onset pelvic floor reeducation (EPFR) as compared with later-onset pelvic floor reeducation (LPFR) in patients undergoing radical retropubic prostatectomy. **PATIENTS AND METHODS:** The continence status of 132 consecutive patients who underwent retropubic radical prostatectomy for clinically localized prostate cancer was assessed 1 year later by a standardized questionnaire. Fifty-eight patients started EPFR 7 days after surgery. Fifty-five patients attended LPFR 4 weeks after surgery. Forty-six patients received no pelvic floor retraining, 28 attended LPFR without EPFR, 27 patients received EPFR and LPFR, and 31 patients attended EPFR without LPFR. **RESULTS:** Overall, 87 men were continent, 37 patients felt moderately incontinent, and 8 men suffered from severe incontinence. We could not observe a statistically significant influence of any kind of pelvic floor reeducation on continence status, time to continence, frequency or volume of urine loss, or the use of pads. **CONCLUSION:** A routine prophylactic use of combined EPFR and LPFR in all patients does not seem to be justified.

Parekh, A. R., M. I. Feng, et al. (2003). "The role of pelvic floor exercises on post-prostatectomy incontinence." J Urol **170**(1): 130-3.

PURPOSE: Post-radical prostatectomy incontinence occurs in 0.5% to 87% of patients. This condition may be attributable to intrinsic sphincteric deficiency, and/or detrusor abnormalities. Previous studies of pelvic floor exercise (PFE) for improving post-prostatectomy incontinence have shown mixed results. We determined whether preoperative and early postoperative biofeedback enhanced PFE with a dedicated physical therapist would improve the early return of urinary incontinence. **MATERIALS AND METHODS:** A total of 38 consecutive patients undergoing radical prostatectomy from November 1998 to June 1999 were randomly assigned to a control or a treatment group. The treatment group of 19 patients was referred to physical therapy and underwent PFE sessions before and after surgery. Patients were also given instructions to continue PFE at home twice daily after surgery. The control group of 19 men underwent surgery without formal PFE instructions. All patients completed postoperative urinary incontinence questionnaires at 6, 12, 16, 20, 28 and 52 weeks. Incontinence was measured by the number of pads used with 0 or 1 daily defined as continence. **RESULTS:** Overall 66% of the patients were continent at 16 weeks. A greater fraction of the treatment group regained urinary continence earlier compared with the control group at 12 weeks ($p < 0.05$). Three control and 2 treatment group patients had severe incontinence (greater than 3 pads daily) at 16 and 52 weeks. Of all patients 82% regained continence by 52 weeks. **CONCLUSIONS:** PFE therapy instituted prior to radical prostatectomy aids in the earlier achievement of urinary incontinence. However, PFE has limited benefit in patients with severe urinary incontinence 16 weeks after surgery. There is a minimal long-term benefit of PFE training since continence rates at 1 year were similar in the 2 groups.

Porru, D., G. Campus, et al. (2001). "Impact of early pelvic floor rehabilitation after transurethral resection of the prostate." Neurourol Urodyn **20**(1): 53-9.

We examined the results of teaching pelvic floor muscle exercises (PME) on micturition parameters, urinary incontinence, post-micturition dribbling, and quality of life in patients after transurethral prostatectomy (TURP). Fifty-eight consecutive patients who were selected to undergo TURP for benign prostatic hyperplasia (BPH) were admitted into the study: 28 were randomly assigned to a control group (A), 30 formed the investigational group (B) during an initial visit conducted before surgery. In group B patients, perineal exercises were demonstrated in detail, and tested for their correct use via simultaneous rectal and abdominal examination. After the removal of the urethral catheter, these patients were instructed to perform pelvic floor muscle exercises at home and were evaluated before the exercises and at weekly intervals postoperatively. The American Urological Association Symptom Score improved significantly after TURP in both groups. The average quality of life score improved more significantly in group B after TURP, from 5.5 to 1.5 ($P < 0.001$). The grade of muscle contraction strength after 4 weeks of PME increased from 2.8 to 3.8 in group B ($P < 0.01$); it was unchanged in the group A. The number of patients with incontinence episodes and post-micturition dribbling was significantly lower in the group B at weeks 1, 2, and 3 ($P < 0.01$). Our results show that pelvic floor muscle re-education produces a quicker improvement of urinary symptoms and of quality of life in patients after TURP. Its early practice reduces urinary incontinence and post-micturition dribbling in the first postoperative weeks. The exercises are simple and easy to perform in the clinical setting and at home, and therefore should be recommended to all cooperative patients after TURP.

Rigby, D. (2003). "Regaining continence after radical prostatectomy." Nurs Stand **18**(8): 39-43.

In this article, the author examines incontinence following radical prostatectomy and describes how nurses can provide advice, support and care for these patients.

Sampsel, C. M., M. H. Palmer, et al. (2004). "Prevention of urinary incontinence in adults: population-based strategies." Nurs Res **53**(6 Suppl): S61-7.

BACKGROUND: Urinary incontinence (UI) affects large numbers of adults, especially older adults, with an estimated 200 million adults worldwide having this life-altering condition. **OBJECTIVES:** To identify key populations at risk for urinary incontinence and propose population-based strategies to promote continence with a substantive focus on UI prevention. **METHODS:** Critical review of extant literature and iterative synthesis were undertaken to generate an action plan to guide future UI prevention research. **RESULTS:** Key populations identified to be at risk for UI are women in selected occupations, childbearing women, older adults with lifestyle risk factors, older adults with comorbid conditions, and nursing home residents. Population-based research activities are proposed. Growing evidence supports the benefit of pelvic floor muscle training to prevent childbirth and prostatectomy-related UI. Bladder training has

demonstrated preventive capacity. CONCLUSIONS: Because of its high prevalence and chronic but preventable nature, UI is most appropriately considered a public health problem. Nursing research is needed to test prevention programs for UI using a population-based public health focus.

Schlenker, B., C. Gratzke, et al. (2006). "Preliminary results on the off-label use of duloxetine for the treatment of stress incontinence after radical prostatectomy or cystectomy." Eur Urol **49**(6): 1075-8.

OBJECTIVES: Stress urinary incontinence (SUI) is a common complaint of patients after pelvic surgery. To date, no pharmacotherapy for men is available, but duloxetine, a combined serotonin and norepinephrine reuptake inhibitor, has been successfully introduced and tested for SUI in women. The aim of our study was to evaluate if duloxetine is safe and effective for men with stress incontinence after radical prostatectomy or cystectomy. METHODS: Twenty patients were included in our study, 15 after radical prostatectomy and 5 after radical cystectomy and orthotopic ileal neobladder reconstruction. Each patient reported at least 3 wk of SUI despite doing consequent pelvic floor exercises. After exclusion of a urinary tract infection, we administered 40 mg duloxetine twice daily for a mean of 9.4 wk (range: 1-35 wk). RESULTS: After duloxetine, the average daily use of incontinence pads was lowered significantly ($p < 0.001$) from 8.0 (+/-6.5) to 4.2 (+/-5.9). Seven patients were completely dry or used one pad daily at most. Most patients reported mild side effects such as fatigue or a dry mouth, but these symptoms vanished after a short time. Six patients, however, had severe side effects, mainly massive fatigue or insomnia, and discontinued using duloxetine. CONCLUSIONS: Our preliminary results suggest that duloxetine is effective in men with SUI after prostatectomy or cystectomy. Further prospective studies with more patients included and a longer follow-up are recommended.

Sueppel, C., K. Kreder, et al. (2001). "Improved continence outcomes with preoperative pelvic floor muscle strengthening exercises." Urol Nurs **21**(3): 201-10.

The results of this study involving the timing of pelvic floor muscle strengthening exercises and the return of continence showed that starting biofeedback sessions with pelvic floor muscle exercises prior to radical prostatectomy surgery improved patient outcomes. A brief overview of male incontinence in the general population, risk factors associated with post-prostatectomy urinary incontinence, the incidence and pathophysiology of post-prostatectomy incontinence, and the use of biofeedback for treating post-prostatectomy urinary incontinence are presented to provide the foundation for this study.

Van Kampen, M. (2006). "In addition to usual care, pelvic floor exercises commenced preoperatively reduce incontinence after prostatectomy." Aust J Physiother **52**(4): 305.

Van Kampen, M., W. De Weerd, et al. (2000). "Effect of pelvic-floor re-education on duration and degree of incontinence after radical prostatectomy: a randomised controlled trial." Lancet **355**(9198): 98-102.

BACKGROUND: Urinary incontinence is a common long-term complication after radical prostatectomy. Spontaneous recovery of normal urinary control after surgery can take 1-2 years. We aimed to investigate whether there was any beneficial effect of pelvic-floor re-education for patients with urinary incontinence as a result of radical prostatectomy. **METHODS:** 102 consecutive incontinent patients who had had radical retropubic prostatectomy for clinically localised prostate cancer and who could comply with the ambulatory treatment schedule in our hospital were randomised, after catheter removal, into a treatment group (n=50) and a control group (n=52). Patients in the treatment group took part in a pelvic-floor re-education programme for as long as they were incontinent, and for a maximum of 1 year. The control group received placebo therapy. The primary endpoint was continence rate at 3 months. Incontinence was assessed objectively with the 1 h and 24 h pad tests and subjectively by the visual analogue scale. The groups were analysed on an intention-to-treat basis by ANOVA and chi²-test. **FINDINGS:** In the treatment group continence was achieved after 3 months in 43 (88%) of 48 patients. In the control group, continence returned after 3 months in 29 (56%) of 52 patients. At 1 year, the difference in proportion between treatment and control group was 14% (95% CI 2-27). In the treatment group improvement in both duration (log-rank test, p=0.0001) and degree of incontinence (Wald test, p=0.0010) was significantly better than in the control group. **INTERPRETATION:** Pelvic-floor re-education should be considered as a first-line option in curing incontinence after radical prostatectomy.

Wille, S., A. Sobottka, et al. (2003). "Pelvic floor exercises, electrical stimulation and biofeedback after radical prostatectomy: results of a prospective randomized trial." J Urol **170**(2 Pt 1): 490-3.

PURPOSE: We assessed the effect of pelvic muscle exercises (PMEs), electrical stimulation (ES) and biofeedback (BFB) on urinary incontinence after radical retropubic prostatectomy. **MATERIALS AND METHODS:** We randomized 139 patients who underwent radical retropubic prostatectomy into 3 groups. Group 1 received instructions about postoperative PMEs. Group 2 received the same instructions and ES for 15 minutes twice daily. Patients in group 3 were also treated with BFB for 15 minutes twice daily. Treatment was started immediately after catheter removal and performed for 3 months. The outcome was assessed using the 20-minute pad test and a urine symptom inventory. Results at baseline, and 3 and 12 months postoperatively were available for 139, 120 and 128 (questionnaire), and 116, 79 and 124 (pad test) patients, respectively. **RESULTS:** An overall subjective spontaneous continence rate (questionnaire) 1 day after catheter removal of 21.4% increased within the first 3 months up to 59.2%. There was no significant difference among the 3 groups. The continence rate increased from 3 to 12 months postoperatively from 59.2% to 85.9%. An overall objective spontaneous continence rate (pad test) 1 day after catheter removal of 32.9% increased within the first 3 months up to 65% and up to 83% after 12 months without any significant difference in all 3 groups. **CONCLUSIONS:** A treatment program of ES and BFB enhanced PMEs did not affect continence after radical

prostatectomy after 3 or 12 months. Up to 711 euro can be saved per patient.

Yokoyama, T., J. Nishiguchi, et al. (2004). "Comparative study of effects of extracorporeal magnetic innervation versus electrical stimulation for urinary incontinence after radical prostatectomy." Urology **63**(2): 264-7.

OBJECTIVES: To perform a randomized comparative study to investigate the clinical effects of extracorporeal magnetic innervation (ExMI) and functional electrical stimulation (FES) on urinary incontinence after retropubic radical prostatectomy. **METHODS:** Thirty-six patients with urinary incontinence after radical prostatectomy were randomly assigned to three groups (12 patients each in the FES, ExMI, and control groups). For FES, an anal electrode was used. Pulses of 20-Hz square waves at a 300-micros pulse duration were used for 15 minutes twice daily for 1 month. For ExMI, the Neocontrol system was used. The treatment sessions were for 20 minutes, twice a week for 2 months. The frequency of the pulse field was 10 Hz for 10 minutes, followed by a second treatment at 50 Hz for 10 minutes. For the control group, only pelvic floor muscle exercises were performed. Objective measures included bladder diaries, 24-hour pad weight testing, and a quality-of-life survey, at 1, 2, and 4 weeks and 2, 3, 4, 5, and 6 months after removing the catheter. **RESULTS:** The leakage weight during the 24 hours after removing the catheter was 684, 698, and 664 g for the FES, ExMI, and control groups, respectively. At 1 month, it was 72, 83, and 175 g (FES versus control, $P < 0.05$) and at 2 months was 54, 18, and 92 g (ExMI versus control, $P < 0.05$) in the FES, ExMI, and control groups, respectively. Finally, 6 months later, the average 24-hour leakage weight was less than 10 g in all groups. Quality-of-life measures decreased after surgery, but gradually improved over time in all groups. No complications were noted in any of the groups. **CONCLUSIONS:** ExMI and FES therapies offered earlier continence compared with the control group after radical prostatectomy. We consider ExMI and FES to be recommendable options for patients who want quick improvement of postoperative urinary incontinence.

Zhang, A. Y., G. J. Strauss, et al. (2007). "Effects of combined pelvic floor muscle exercise and a support group on urinary incontinence and quality of life of postprostatectomy patients." Oncol Nurs Forum **34**(1): 47-53.

PURPOSE/OBJECTIVES: To examine the effect of combined pelvic floor muscle exercise (PFME) and a support group on postprostatectomy urinary incontinence and quality of life. **DESIGN:** Pilot study of a randomized, controlled clinical trial. **SETTING:** Two metropolitan hospitals in northeastern Ohio. **SAMPLE:** 29 men with postprostatectomy urinary incontinence. **METHODS:** The participants learned PFME through biofeedback and were randomized to the control group ($n = 15$) or the support group ($n = 14$). The control group practiced PFME at home, whereas the support group attended six biweekly group meetings facilitated by a health psychologist. Assessment of urinary incontinence and quality of life was conducted at baseline and three months. **MAIN RESEARCH VARIABLES:** Urinary incontinence and disease-specific quality of life. **FINDINGS:** Eighty-six percent of the support group participants versus 46% of the control group

participants practiced PFME four to seven days per week. The support group had a lower rating of urinary incontinence based on a 0- to 10-point visual analog rating scale than the control group ($X = 3.2$ versus 4.7), and fewer support group participants used pads (50%) than control group participants (85%) at three months. The support group also scored significantly lower on the severity of incontinence problems than the control group at three months, especially in relationship with spouse and social outing, despite no group difference in these areas at baseline. **CONCLUSIONS:** The study provided promising evidence regarding the effect of the proposed intervention on adherence to PFME, urinary incontinence, and quality of life. **IMPLICATIONS FOR NURSING:** Reports regarding nursing practice are lacking with respect to PFME. This study suggests that practicing PFME in a group with patients with incontinence who have undergone prostatectomy can be a useful nursing intervention.