

THE EFFECT OF PREOPERATIVE PELVIC FLOOR MUSCLE **TRAINING ON INCONTINENCE PROBLEMS AFTER RADICAL PROSTATECTOMY: A META-ANALYSIS**

Ervandy Rangganata¹, Harrina Erlianti Rahardjo¹ ¹Department of Urology, Cipto Mangunkusumo Hospital-Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia

#23916

RSC

Abstract

- **Purpose:** To evaluate whether additional pelvic floor muscle training (PFMT), which began before radical prostatectomy and resumes immediately after catheter removal, will significantly improve urinary incontinence after radical prostatectomy (RP).
- Materials and Methods: We reviewed articles obtained from MEDLINE, CENTRAL, EBSCOHost, CINAHL, and Elsevier from July -August 2020, which compared preoperative PFMT with postoperative PMFT or non-PFMT, with continence incidence parameters. There were no restrictions on the definition of incontinence, treatment regimens, and RP surgical approach. The risk of bias was assessed using the Cochrane Risk of Bias Assessment Tool. A meta-analysis was also carried out to pool the effect estimates.
- **Results:** We included 12 eligible studies in this review, 11 of which we included in the meta-analysis. The PFMT initiated preoperatively significantly reduced the incidence of persistent urinary incontinence at 1, 3, and 6 months postoperatively with an OR of 0.58 (95% CI, 0.41–0.81), 0.57 (95% CI, 0.43–0.74), and 0.38 (95% CI, 0.17-0.83). There was no difference in improvement in patients' incontinence at 12 months postoperatively [OR = 1.31 (95% CI, 0.65-2.63)].
- Conclusion: PFMT initiated before radical prostatectomy significantly reduced the incidence of urinary incontinence in the first, third, and sixth months postoperatively. At 12 months postoperatively, additional preoperative PFMT did not cause a significant difference in urinary incontinence incidence.

Introduction

- Persistent and disturbing urinary incontinence after prostatectomy is a commonly reported side effect, with an incidence rate of 1% to 40% postoperatively.
- delaying Several studies recommend invasive urinary ٠ incontinence therapy at least one year postoperatively. Therefore, behavioral therapy was chosen in several cases as an alternative.
- This noninvasive behavioral therapy consists of diet modification, bladder training, PFMT, biofeedback, and functional electrical stimulation.
- Several studies had shown a significant role for PFMT when it is ٠



initiated before surgery and/or early postoperatively (< 6 weeks postoperatively).

Methods and Materials

- We reviewed articles obtained from MEDLINE, CENTRAL, EBSCOHost, CINAHL, and Elsevier from July – August 2020, which compared preoperative PFMT with postoperative PMFT or non-PFMT, with continence incidence parameters.
- The risk of bias was assessed using the Cochrane Risk of Bias Assessment Tool.

Study or Subgroup	Initiated preope Events	ratively in Total	itiated postoper Events		Weinhr	Odd's Ratio M-H, Fixed, 95% CI	Odds Ratio M-H, Fixed, 95% Cl
ales 2000	1.8	47	38	50	8.05	1.33 [0.50, 3.53]	
urgio 2005	52	57	54	55	5.5%	0.19 [0.02, 1.70]	
entemero 2010	33	59	47	59	43.5%	0.32 [0.14, 0.73]	
Paraerts 2013	41	85	41	85	24.1%	1.00 [0.55, 1.83]	
arekh 2003	12	1.9	15	19	6.3%	0.45 [0.11, 1.94]	
ayılan 2018	24	30	28	10	6.4%	0.29 [0.05, 1.55]	
lentoral 2012	10	1.5	16	16	7.2%	0.05 [0.00, 0.96]	
oshida 2018	17	55	51	79	19.1%	0.49 [0.22, 1.09]	
otal (95% CI)	-	349			100.0%	0.58 (0.41, 0.61)	•
otal events	227		290				
laterogeneity: Chi ^a – fest for overall effect			44%				0.002 0.1 1 10 50 Tayours (Preoperative) Tayours (Postoperative)
B							
auch: or Subarour	Initiated preope Events	Total	itiated postopen Events		Weinhr	Ddd's Ratio M-H, Fixed, 95% Cl	Odds Ratio M-H. Fixed, 95% Cl
tudy or Subgroup							M-H, HXC0, 95% CI
ales 2000	20	47	19	50	7.4%	1.21 [0.54, 2.72]	
urgio 2005	14	22	-4-4	25	12.7%	0.37 [0.16, 0.65]	the second s
entemero 2010	24	59	37	59	15.4%	0.41 [0.19, 0.85]	
eraerts 2013	18	85	14	85	1.7%	1.36 [0.61, 2.95]	
ira 2019 arekh 2003	11	1.5	11	15	2.5%	0.80 [0.17, 3.90]	
arech 2005 arel 2013	41	152	50	132	27,4%	0.27 [0.07, 1.03]	
	23	30	29	10	4.7%	0.61 [0.37, 1.00] 0.11 [0.01, 0.99]	
ayilan 2018 Ianfarti 2012	a	1.5	15	15	5.3%	0.07 [0.01, 0.53]	
oshida 201 K				79	11.1%		
			1 C C C C C C C C C C C C C C C C C C C				
	10	3.6	35	19	11.13	0.48 [0.21, 1.14]	
otal (95% Cl) mailevents elecogeneity: Chr ² —	195 17.17, df = 940 -	517 - 0.05); ř -	266		100.0%	0.57 [0.43, 0.74]	9.01 0.1 1 10 10
'osal (95% Cl) 'osal evens Ielerogeneity: Chr' —	195 17.17, df = 940 -	517 - 0.05); ř -	266				5.01 0.1 1 10 10 Tayours (Preoperative) 1 tayours (Postoperative)
'ocal (95% Cl) 'ocal evens leterogeneity: Chr' —	195 17.17, df = 940 -	517 - 0.05); ř -	266				
'ocal (95% Cl) 'ocal evens leterogeneity: Chr' —	195 17.17, df = 940 -	517 - 0.05); ř - 501)	266	540			
iotal (95% CI) iotal everns leterogeneity: Chri – est for overall effect C	195 17.17, df = 9 (P - Z = 4.12 (P < 0.0	517 - 0.05); ř - 501)	266 4 K%	540 isely	100.0%	0.57 (0.43, 0.74)	Favours [Freoperative] Favours [Postoperative]
iotal (95% CI) iotal events leterogeneity: Chif — est for overall effect C tudy or Subgroup	195 17.17, df = 9.0° - Z = 4.12 (P < 0.0 Initiated preoper	517 - 0.05); ř - 001) atively _ Ini	266 4155 tisted postoperat	540 isely	100.0%	0.57 (0.43, 0.74) Odds Ratio	Didds Ratio M-H, Random, 95% CI
ocal (95% CI) mal evems leterogenetity: Chr = est for overall effect C tudy or Subgroup ales 2000	195 17.17, df = 9.0° - Z = 4.12 (P < 0.0 Initiated preoper Events	517 - 0.05); F - 0001) atively Ini Total	266 4155 tisted postoperat Events	540 isaly Total	100.0% Weight M	0.57 (0.43, 0.74) Odds Ratio M-H, Random, 95% C	Didds Ratio
iotal (95% CI) iotal evems leterogeneity: Chr = lett for overall effect tudy or Subgroup ales 2000 urgio 2006	195 (7, 17, df = 9)P = Z = 4.12 (P < 0.0 Initiated preoper Events 3	517 - 0.05); F - 2001) attively Ini Total 47	266 4K% tisted postoperat Events 2	S4D Ively Total S0	100.0% Weight N 11.0%	0.57 [0.43, 0.74] Odds Ratio M-H, Rasdom, 95% C 1.54 [0.25, 10.26]	Dadas Ratico M-H, Random, 95% Cl
est (95% CI) mail events elerogeneity: Chf = est for overall effect Cody or Subgroup ales 2000 urgio 2006 esserts 2013	195 17.17, df = 9 (P - Z = 4.12 (P < 0.0 Initiated preoper Events 3 24	517 - 0.05); F = 0001) atively Ini Total 47 57	266 4 KS tialed postoperal Events 2 33	S4D Total 50 55	100.0% Weight M 11.0% 22.0%	Odds Ratio M-H, Random, 95% Cl 1.54 [0.25, 10.26] 0.48 [0.23, 1.03]	Didds Ratio
iotal (95% CI) ional events leterogenetity: Chr? = lest for overall effect Cudy or Subgroup ales 2000 urgio 2006 eraeris 261 a arekh 2003	195 17.17, df = 9 (P < Z = 4.12 (P < 0.0 Initiated preoper Events 3 24 5	517 - 0.05); F = 00015 Total 47 57 85	266 4 K% tisted postoperat Events 2 33 3 3	S40 Total S0 S5 K5	100.0% Weight N 11.0% 22.0% 15.9%	Odds Ratio H. Random, 95% Cl 1.64 [0.26, 10.26] 0.48 [0.23, 1.03] 1.00 [0.28, 3.59]	Didds Ratio
Total (95% CI) Total evems leterogenetity: Chr ² = test for overall effect tudy or Subgroup ales 2000 urgio 2006 eraeris 2013 arckh 2003 system 2018	195 17.17, df = 9.02 Z = 4.12 (P < 0.02) Initiated preoper Events 3 24 5 4 15 6	517 = 0.05); F = 0001) Total 47 57 85 19 30 16	266 4 KS tisted postoperat Events 2 33 3 7 7 29 15	S40 Total S0 S5 K5 19	100.0% Weight M 11.0% 22.0% 15.9% 14.3%	Odds Ratio M-H, Random, 95% Cl 1.64 [0.26, 10.26] 0.48 [0.23, 1.03] 1.00 [0.28, 3.59] 0.45 [0.11, 1.94]	Didds Ratio
Total (95% CI) Total evems Recognitive Chr = Test for overall effect tudy or Subgroup ales 2000 urgio 2006 eraerts 2013 arekh 2003 sylan 2018 temfort 2012	195 $(7.17, df = 9.0^{\circ} - Z = 4.12 (P < 0.0)$ Initiated preoper Events 3 24 5 4 15	517 - 0.05); F = 2001) atively Ini Total 47 57 85 19 30	266 48% tisted postoperat Events 2 33 5 7 29	540 Total 50 55 85 19 10	100.0% Weight M 11.0% 22.0% 15.9% 14.3% 9.2%	Odds Ratio A-H, Random, 95% Cl 1.54 [0.25, 10.26] 0.48 [0.23, 1.03] 1.00 [0.48, 3.59] 0.45 [0.11, 1.94] 0.05 [0.00, 0.29]	Didds Ratio
Total (95% CI) Total evems Total evems Test for overall effect tudy or Subgroup ales 2000 urgio 2006 eraeris 2013 arckh 2003 sylari 2018 tenforti 2012 oshida 2018	195 17.17, df = 9.02 Z = 4.12 (P < 0.02) Initiated preoper Events 3 24 5 4 15 6	517 - 0.05); F = 2001) attively Ini Total 47 57 85 19 30 16 36	266 4 KS tisted postoperat Events 2 33 3 7 7 29 15	540 Total 50 55 85 19 10 16 90	100.0% Weight N 11.0% 22.0% 14.3% 9.7% 8.4% 19.3%	Odds Ratio Odds Ratio M-H, Rasdom, 95% Cl 1.54 [0.25, 10.26] 0.48 [0.23, 1.03] 1.00 [0.28, 3.59] 0.46 [0.11, 1.94] 0.05 [0.00, 0.29] 0.04 [0.00, 0.38] 0.40 [0.15, 1.07]	Didds Ratio
Total (95% CI) Total evems Total evems Total evems Test for overall effect Total effect Total effect tudy or Subgroup ales 2000 urgio 2006 eraeris 2013 arckh 2003 sylar 2018 tenforb 2012 oshida 2015 total (95% CI)	195 (7, 17, df = 9)(P < Z = 4.12)(P < 0.0) Initiated preoper Events 3 24 5 4 15 6	517 = 0.05); F = 0001) Total 47 57 85 19 30 16	266 4 KS tisted postoperat Events 2 33 5 7 29 15 30	540 Total 50 55 85 19 10 16 90	Weight N 11.056 22.056 15.995 14.356 9.795 8.456	Odds Ratio M-H, Random, 95% Cl 1.54 [0.25, 10.26] 0.48 [0.23, 1.03] 1.00 [0.28, 3.59] 0.45 [0.11, 1.94] 0.05 [0.00, 0.29] 0.04 [0.00, 0.38]	Didds Ratio
Total (95% CI) Total everns leterogeneity: Chr ² = Test for overall effect C tudy or Subgroup ales 2000 urgio 2006 erserts 2013 arach 2003 sylan 2018 lenforb 2012 oshida 2018 total (95% CI) otal events leterogeneity: Ta1 ² =	195 17.17, df = 9 (P - Z = 4.12) (P < 0.0) Initiated preoper Events 3 24 5 4 15 6 6 0.58; Chf = 13.8	517 - 0.05; F = - 001) atively Ini Total 47 57 85 19 30 16 36 290 9, df = 5 (P -	266 4 KS tisted postoperat Events 2 33 5 7 79 15 30	540 Total 50 55 85 19 10 16 90	100.0% Weight N 11.0% 22.0% 14.3% 9.7% 8.4% 19.3%	Odds Ratio Odds Ratio M-H, Rasdom, 95% Cl 1.54 [0.25, 10.26] 0.48 [0.23, 1.03] 1.00 [0.28, 3.59] 0.46 [0.11, 1.94] 0.05 [0.00, 0.29] 0.04 [0.00, 0.38] 0.40 [0.15, 1.07]	Didds Ratio
Total (95% CI) Total evems Total evems Test for overall effect Test for overall effect Test for overall effect Test for overall effect tudy or Subgroup ales 2000 urgio 2006 eraerts 2013 arekh 2003 sylen 2018 tenforb 2012 oshida 2015 Test (95% CI) otal events teterogeneity: Tau ² =	195 17.17, df = 9 (P - Z = 4.12) (P < 0.0) Initiated preoper Events 3 24 4 15 6 6 0.58; Chf = 13.8 Z = 2.43 (P = 0.0)	517 - 0.05; F = 2001) atively ini Total 47 57 85 19 30 16 36 290 9, df = 6 (P - 2)	266 46% tiated postoperat Events 2 33 5 7 29 15 30 121 = 0.03); 1' = 57%	540 Total 50 55 65 19 10 16 90 345	100.0% Weight N 11.0% 22.0% 15.9% 14.3% 9.7% 8.4% 19.3%	Odds Ratio Odds Ratio A-H, Random, 95% Cl 1.64 [0.26, 10.26] 0.48 [0.23, 1.03] 1.00 [0.28, 3.59] 0.45 [0.11, 1.94] 0.05 [0.00, 0.29] 0.46 [0.15, 1.07] 0.38 [0.17, 0.83]	Didds Ratio M-H, Random, 95% CI 0.01 0.1 Havours [Preoperative] Havours [Postoperative] 10 Havours [Preoperative] Havours [Postoperative]
Total (95% CI) Total evems Total evems Total evems Test for overall effect Total overall effect Total overall effect arekh 2003 arekh 2005 arekh 2003 arekh 2005 arekh 2005 ar	195 17.17, df = 9 (P - Z = 4.12 (P < 0.0) Initiated preoper Events 3 24 5 4 15 6 6 53 0.58; Chf = 13.8 Z = 2.43 (P = 0.0) Initiated preo	517 = 0.053; F = >001) atticely Ini Total 47 57 85 19 30 15 36 290 9, df = 5 (P - 2) peratively	266 46% tiated postoperat Events 2 33 3 7 7 9 15 30 121 = 0.05); I' = 57%	540 Total 50 55 85 19 10 16 90 345	100.0% Weight N 11.0% 22.0% 14.3% 0.7% 8.4% 19.3% 10.0%	Odds Ratio M-H, Random, 95% Cl 1.64 [0.26, 10.26] 0.48 [0.26, 10.26] 0.48 [0.23, 1.03] 1.00 [0.28, 3.59] 0.46 [0.11, 1.94] 0.03 [0.00, 0.29] 0.04 [0.00, 0.38] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83]	Didds Ratio M-H, Random, 95% Cl
Total (95% CI) Total evems Total evems Total evems Test for overall effect Total overall effect Total overall effect tudy or Subgroup ales 2000 urglo 2006 teraeris 2013 archt 2003 sylari 2018 terfort 2012 oshida 2018 total (95% CI) atal events teterogeneity: Tauf = est for overall effect: 3 D atudy or Subgroup	195 17.17, df = 9 (P < Z = 4.12 (P < 0.0) Initiated preoper Events 3 24 5 4 15 6 6 0.58: Chf = 13.8 Z = 2.43 (P = 0.0) Initiated preo Events	517 - 0.053; F = 2001) attively Ini Total 47 57 85 19 30 15 36 290 9, df = 5 (P - 2) peratively Total	266 4 K% tiated postoperat Events 2 33 3 7 29 15 30 121 = 0.05); I' = 57% Initiated postop Events	S40 Total 50 55 85 19 10 16 90 345	100.0% Weight N 11.0% 22.0% 14.3% 9.7% 8.4% 19.3% 101.0%	Odds Ratio M-H, Random, 95% Cl 1.54 [0.25, 10.26] 0.48 [0.25, 10.35] 0.48 [0.23, 1.03] 1.00 [0.28, 3.59] 0.46 [0.11, 1.94] 0.05 [0.00, 0.29] 0.04 [0.00, 0.38] 0.40 [0.15, 1.07] 0.38 [0.17, 0.33] Odds Ratio Odds Ratio	Didds Ratio M-H, Random, 95% CI 0.01 0.1 Havours [Preoperative] Havours [Postoperative] 0.01 (Preoperative] Havours [Postoperative] 0.01 (Preoperative] Havours [Postoperative]
Total (95% CI) Total evems Total evems Test for overall effect Test for overall effect tudy or Subgroup ales 2000 urglo 2006 erserts 2013 arckh 2003 aylar 2018 tenforb 2012 total events Test for overall effect: 1 D Rody or Subgroup ()(kstra-Eshus 2015	195 17.17, df = 9 (P < Z = 4.12 (P < 0.0) Initiated preoper Events 3 24 5 4 15 6 6 0.58: Chf = 13.8 Z = 2.43 (P = 0.0) Initiated preo Events 20	517 - 0.05; F = 2001) attively Ini Total 47 57 85 19 30 16 36 290 9, df = 5 (P - 2) peratively Total 58	266 4 K% tiated postoperat Events 2 33 5 7 29 15 30 121 = 0.05); f' = 57% Initiated postor Events 9	540 Total 50 55 65 19 10 16 90 345	100.0% Weight N 11.0% 22.0% 14.3% 9.7% 8.4% 19.3% 100.0%	Odds Ratio A-H, Random, 95% Cl 1.54 [0.25, 10.26] 0.48 [0.23, 1.03] 1.00 [0.26, 3.59] 0.46 [0.11, 1.94] 0.05 [0.10, 0.28] 0.04 [0.00, 0.28] 0.04 [0.00, 0.38] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] Odds Ratio ght M-H, Fissel, 959 7% 2.11 [0.95, 5.	Didds Ratio M-H, Random, 95% Cl M-H, Random, 95% Cl Didds Ratio 0.01 0.1 Havours [Preoperative] Havours [Postoperative] Odds Ratio M-H, Fixed, 95% Cl Didds Ratio M-H, Fixed, 95% Cl
Total (95% CI) Total events Referegeneity: Chr ² = Test for overall effect Rudy or Subgroup ales 2000 argio 2006 argents 2013 tarekh 2003 aylan 2018 tenforts 2012 Toshida 2018 tetal (95% CI) total events teterogeneity: Tau ² = Test for overall effect: 2 D Rudy or Subgroup Julistra-Eshus 2015 Seraerts 2013	195 17.17, df = 9 (P - Z = 4.12) (P < 0.0) Initiated preoper Events 3 24 5 4 15 6 6 0.58; Chf = 13.8 Z = 2.43 (P = 0.0) Initiated preo Events 20 2 2	517 = 0.05; F = >001) atively Ini Total 47 57 85 19 36 290 9, df = 5 (P - 2) peratively Total 58 53	266 4 8% tiated postoperat Events 2 33 5 7 29 15 30 121 = 0.03); 1' = 57% Initiated postop Events 9 4	540 Total 50 55 85 19 16 90 345 245	100.0% Weight R 11.05 22.05 15.95 14.35 0.75 8.435 19.335 100.0% Y dal Weig 45 42, 85 28.	Odds Ratio A-H, Rasdom, 95% C 1.54 [0.25, 10.26] 0.48 [0.23, 1.03] 1.00 [0.78, 3.59] 0.48 [0.11, 1.94] 0.05 [0.00, 0.29] 0.04 [0.00, 0.38] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83]	Didds Ratio M-H, Random, 95% Cl Didds Ratio 0.01 0.1 Havours [Preoperative] Favours [Postoperative] 0.01 0.1 Havours [Preoperative] Favours [Postoperative] 0.01 0.1 Havours [Preoperative] Favours [Postoperative]
Total (95% CI) Total events Referencemently: Chr ² = Test for overall effect Referencements: 2013 Parekh 2006 Parekh 2008 Parekh 2003 Parekh 2004 Parekh 2005 Parekh 2005 Parek	195 17.17, df = 9 (P < Z = 4.12 (P < 0.0) Initiated preoper Events 3 24 5 4 15 6 6 0.58: Chf = 13.8 Z = 2.43 (P = 0.0) Initiated preo Events 20	517 - 0.05; F = 2001) attively Ini Total 47 57 85 19 30 16 36 290 9, df = 5 (P - 2) peratively Total 58	266 4 K% tiated postoperat Events 2 33 5 7 29 15 30 121 = 0.05); f' = 57% Initiated postor Events 9	540 Total 50 55 85 19 16 90 345 245	100.0% Weight N 11.0% 22.0% 14.3% 9.7% 8.4% 19.3% 100.0%	Odds Ratio A-H, Rasdom, 95% C 1.54 [0.25, 10.26] 0.48 [0.23, 1.03] 1.00 [0.78, 3.59] 0.48 [0.11, 1.94] 0.05 [0.00, 0.29] 0.04 [0.00, 0.38] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83]	Didds Ratio M-H, Random, 95% Cl Didds Ratio 0.01 0.1 Havours [Preoperative] Favours [Postoperative] 0.01 0.1 Havours [Preoperative] Favours [Postoperative] 0.01 0.1 Havours [Preoperative] Favours [Postoperative]
Focal (95% CI) Fosal everns Reterogeneity: Chf = Fest for overall effect Fest for overall effect Return overall effect argio 2006 argio 2006 argio 2006 argio 2008 argio 2018 tenforb 2012 foshida 2018 retal (95% CI) otal events feterogeneity: Tauf = less for overall effect: 3 D Rudy or Subgroup Jukstra - Eshuis 2015 Seraeris 2013 Varekh 2003	195 17.17, df = 9 (P - Z = 4.12) (P < 0.0) Initiated preoper Events 3 24 5 4 15 6 6 0.58; Chf = 13.8 Z = 2.43 (P = 0.0) Initiated preo Events 20 2 2	517 - 0.053; F = 2001) attively Ini Total 47 57 85 19 30 16 36 290 9, df = 5 (P - 2) peratively Total 58 83 19	266 4175 tiated postoperat Events 2 33 3 7 29 15 30 121 = 0.05); I' = 575 Initiated postop Events 9 4 4	540 Total 50 55 83 19 10 16 90 345	100.0% Weight N 11.0% 22.0% 14.3% 9.7% 8.4% 19.3% 101.0% 101.0% Y tal Weig 45 42. 85 28. 19 24.	Odds Ratio 0.57 [0.43, 0.74] Odds Ratio 0.48 [0.25, 10.26] 0.48 [0.25, 10.35] 0.48 [0.23, 1.03] 0.46 [0.11, 1.94] 0.05 [0.00, 0.29] 0.04 [0.00, 0.38] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.95, 0.29] 0.40 [0.09, 2.2] 0.49 [0.09, 2] 0.49 [0.09, 2] 0.49 [0.13, 3]	Didds Ratio M-H, Random, 95% Cl 0.01 0.1 Havours (Preoperative) Havours (Postoperative) 0.01 0.1 Havours (Preoperative) Havours (Postoperative) 0 dds Ratio 0 dds Ratio 0 dds Ratio
Total (95% CI) Total events Interrogeneity: Chf = Test for overall effect Test for overall effect Test for overall effect Test for overall effect area 2000 urgio 2006 eraerts 2013 area 2008 eraerts 2013 tatel 2015 total (95% CI) cital events teterogeneity: Tauf = Test for overall effect: 2 D Rody or Subgroup Jukstra-Eshus 2015 Seraerts 2013	195 17.17, df = 9 (P - Z = 4.12) (P < 0.0) Initiated preoper Events 3 24 5 4 15 6 6 0.58; Chf = 13.8 Z = 2.43 (P = 0.0) Initiated preo Events 20 2 2	517 = 0.05; F = >001) atively Ini Total 47 57 85 19 36 290 9, df = 5 (P - 2) peratively Total 58 53	266 4175 tiated postoperat Events 2 33 3 7 29 15 30 121 = 0.05); I' = 575 Initiated postop Events 9 4 4	540 Total 50 55 83 19 10 16 90 345	100.0% Weight R 11.05 22.05 15.95 14.35 0.75 8.435 19.335 100.0% Y dal Weig 45 42, 85 28.	Odds Ratio 0.57 [0.43, 0.74] Odds Ratio 0.48 [0.25, 10.26] 0.48 [0.25, 10.35] 0.48 [0.23, 1.03] 0.46 [0.11, 1.94] 0.05 [0.00, 0.29] 0.04 [0.00, 0.38] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.15, 1.07] 0.38 [0.17, 0.83] 0.40 [0.95, 0.29] 0.40 [0.09, 2.2] 0.49 [0.09, 2] 0.49 [0.09, 2] 0.49 [0.13, 3]	Didds Ratio M-H, Random, 95% Cl 0.01 0.1 Havours (Preoperative) Havours (Postoperative) 0.01 0.1 Havours (Preoperative) Havours (Postoperative) 0 dds Ratio 0 dds Ratio 0 dds Ratio

Figure 3. Forest plot shows odds ratio of getting incontinence after radical prostatectomy at several time points: (A) 1 month; (B) 3 months; (C) 6 months; and (D) 12 months.



- Overall, studies had a high risk of performance bias caused by the impossibility of participants and personnel blinding.
- A large variety of interventions given to patients in each study was generally based on each health center's protocol.
- The PFMT initiated preoperatively significantly reduced the incidence of persistent urinary incontinence at 1, 3, and 6 months postoperatively with an OR of 0.58 (95% Cl, 0.41-0.81), 0.57 (95% CI, 0.43-0.74), and 0.38 (95% Cl, 0.17-0.83).
- There was no difference in improvement in patients' incontinence at 12 months postoperatively [OR = 1.31 (95% Cl, 0.65-2.63).

Discussion

Detrussor overactivity is an incontinence pathophysiology that is corrected by PFMT.

- Several clinical studies have proven that the strength of PFM correlates with incontinence and that PFMT increases the strength of PFM can effectively speed up the recovery of incontinence in patients post radical prostatectomy.
- In this study, we found that PFMT carried out before radical prostatectomy significantly reduced the risk of persistent urinary incontinence • at 1, 3, and 6 months after radical prostatectomy, compared to patients who underwent PFMT only after surgery or did not undergo PFMT at all.
- At 12 months postoperatively, the control group could achieve the same continence rate as the experimental group, indicating that almost all patients in both groups had regained continence.
- Some limitations of the study were the heterogeneity due to the large variety of PFMT regimens in each study, the diversity of definitions of the "intervention group", "incontinence", and "continence" in each study, the variation of surgery techniques, frequency of PFMT intervention, time of initiation of preoperative and postoperative PFMT, and participant blinding was not possible.

Conclusions

- PFMT initiated before radical prostatectomy significantly reduced the incidence of urinary incontinence in the first, third, and sixth months postoperatively.
- At 12 months postoperatively, additional preoperative PFMT did not cause a significant difference in the incidence of urinary incontinence.

References

- Anderson CA, Omar MI, Campbell SE, Hunter KF, Cody JD, Glazener CMA. Conservative management for postprostatectomy urinary
- Centemero A, Rigatti L, Giraudo D, Lazzeri M, Lughezzani G, Zugna D, et al. Preoperative Pelvic Floor Muscle Exercise for Early Continence After Radical Prostatectomy: A Randomised Controlled Study. European urology. 2010;57:1039–43.
- Burgio KL, Goode PS, Urban DA, Umlauf MG, Locher JL, Bueschen A, et al. Preoperative biofeedback assisted behavioral training to decrease post-prostatectomy incontinence: a randomized, controlled trial. J Urol. 2006;175:196–201; discussion 201. 3.
- Manley L, Gibson L, Papa N, Beharry BK, Johnson L, Lawrentschuk N, et al. Evaluation of pelvic floor muscle strength before and after robotic-assisted radical prostatectomy and early outcomes on urinary continence. J Robot Surg. 2016;10:331–5.