Is (p)rehabilitation effective for men undergoing prostatectomy?

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Objectives

- Facts & figures
- Surgery overview
- Signs & symptoms
- Prehab, including evidence
- Rehab, including evidence
- Conclusion
- Questions

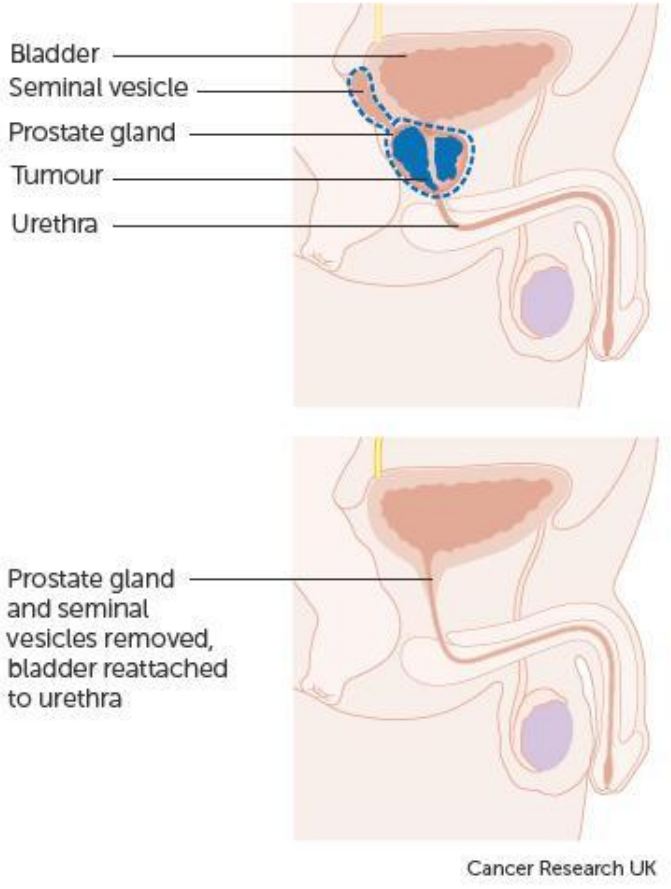
Facts & Figures

- Prostate cancer is the most common cancer in men.
- Over 47,000 men are diagnosed with prostate cancer every year – that's 129 men every day.
- Every 45 minutes one man dies from prostate cancer – that's more than 11,000 men every year.
- 1 in 8 men
- 1 in 4 black men
- Increased risk over age 45
- Over 330,000 men are living with and after prostate cancer
- 4500 RRP carried out annually
- Incidence of SUI following RRP 87%
- Incidence of ED is 100% at 1/12 post-op

(www.prostatecanceruk.org, CRUK, 2014)

Brief surgery overview

- The most common surgery carried out is **radical retropubic prostatectomy (RRP)**
- Some hospitals will use **robotic** assisted surgery (also know as da Vinci surgery)
- Research has shown the following **benefits** to robotic surgery:
  - Less bleeding
  - Less scarring
  - Shorter hospital stay
  - Quicker recovery
- **Surgery involves**: Removal of the prostate and seminal vesicles
- **Nerve sparing** surgery is becoming more common but is only possible if the Ca is confined to the prostate



Signs and symptoms

- Urinary incontinence
  - Internal urethral sphincter deficiency & injury
  - Nerve damage
  - Impaired bladder filling sensation
  - DO
- Urinary retention
- Erectile dysfunction
- Penile shortening
- Dry orgasm

(Stolzenburg et al, 2006)

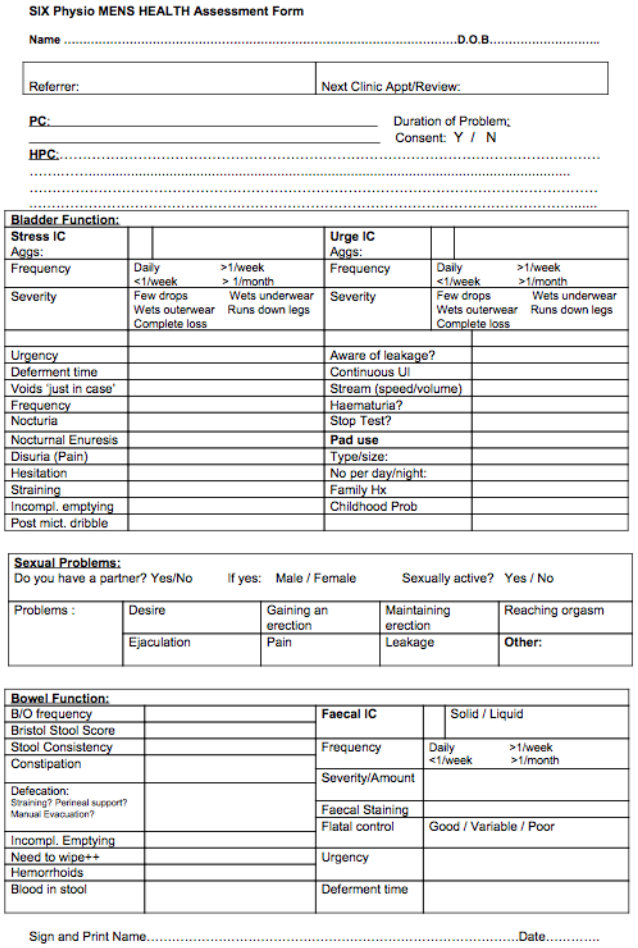
PREHAB

Assessment

Aim of initial assessment is to obtain a clear **baseline of symptoms**.

Baseline symptoms have a clear impact on the prognosis of recovery post surgery.

1) PC & HPC
2) Full Hx of **urinary** symptoms
3) Current **sexual problems**
4) Full Hx of **bowel** symptoms



SIX Physio MENS HEALTH Assessment Form

Name .....D.O.B.....

Referrer:	Next Clinic Appt/Review:

PC: _____ Duration of Problem:
_____ Consent: Y / N

HPC:.....
.....
.....
.....

Bladder Function:

Stress IC Aggs:			**Urge IC** Aggs:		
Frequency	Daily <1/week	>1/week > 1/month	Frequency	Daily <1/week	>1/week >1/month
Severity	Few drops Wets outerwear Complete loss	Wets underwear Runs down legs	Severity	Few drops Wets outerwear Complete loss	Wets underwear Runs down legs

Urgency		Aware of leakage?	
Deferment time		Continuous UI	
Voids 'just in case'		Stream (speed/volume)	
Frequency		Haematuria?	
Nocturia		Stop Test?	
Nocturnal Enuresis		**Pad use**	
Disuria (Pain)		Type/size:	
Hesitation		No per day/night:	
Straining		Family Hx	
Incompl. emptying		Childhood Prob	
Post mict. dribble			

Sexual Problems:
Do you have a partner? Yes/No If yes: Male / Female Sexually active? Yes / No

Problems :	Desire	Gaining an erection	Maintaining erection	Reaching orgasm
	Ejaculation	Pain	Leakage	**Other:**

Bowel Function:

B/O frequency		**Faecal IC**	Solid / Liquid
Bristol Stool Score			
Stool Consistency		Frequency	Daily >1/week <1/week >1/month
Constipation		Severity/Amount	
Defecation: Straining? Perineal support? Manual Evacuation?		Faecal Staining	
		Flatal control	Good / Variable / Poor
Incompl. Emptying			
Need to wipe++		Urgency	
Hemorrhoids			
Blood in stool		Deferment time	

Sign and Print Name.....Date.....

Outcome Measures

Main outcome measures to use pre & post-op are:

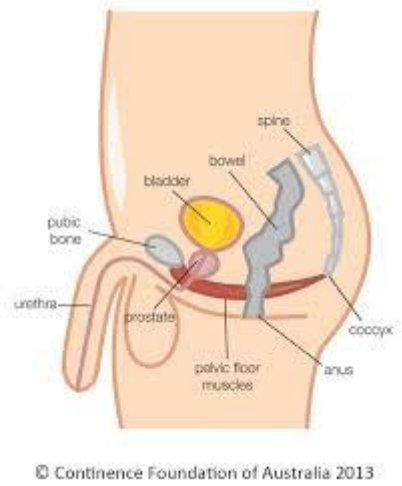
1. **ICIQ-UI SF** (short form)

1. **ICIQ-MLUTS** (male lower urinary tract symptoms)

1. **IIEF-5(15)** (International Index of Erectile Function)

Treatment

1. **Anatomy & Physiology explained**
- Pelvic floor model
- Images



© Continence Foundation of Australia 2013

2. **Pelvic floor exercises**

- Patel et al (2013) highlighted that prehab provides benefit by allowing the ‘understanding of PFM activation in the absence of incontinence & pain.’

3. **Discussion about pads -** have samples in clinic to show and discuss

4. **Erectile dysfunction** discussion

5. **Signposting for support** - Prostate UK

What does the evidence say?

It is mixed...so be prepared!!

Goonewardene et al (2018)

- A **systematic review** looking at the impact of prehab on continence outcomes after prostatectomy
- 9 studies included

CONCLUSION

- Results were **‘overwhelmingly in support’** of prehab
- ‘Strengthening the PFMs significantly improves post prostatectomy urinary incontinence’
- Advisable for all men to undergo pre-op PFMT to maintain normal PF function post-op

Laurienzo et al (2018)

METHOD

- RCT looking at **electrical stimulation** and **PFM training** on muscle strength, urinary incontinence and erectile function
- Follow up pre op, 1,3 and 6 month

RESULTS

- **No significant difference** between all groups
- All worsening PFM strength immediately post op, plus ED and poor QOL, which shows the impact of surgery on PFM
- All groups improved at 3-6 months

Chang et al (2016)

- Meta-analysis of 11 studies

RESULTS

- ‘Significant 36% reduced risk of postop IC at **3/12** after RRP if **preop PFMEs** were completed’.
- NO significant difference at 1/12 or 6/12
- Found conflicting results between existing evidence into prehab:
  - 6 showed benefit
  - 5 failed to show benefit
  - All small sample size

CONCLUSION

- Preop PFME **may aid** early urinary incontinence recovery and increase QoL

Wang et al (2014)

- Meta-analysis

CONCLUSION: ‘additional pre-op PFMT did **NOT** improved the rate of re-establishment of continence after RRP at 1/12, 3/12, 6/12 or 1 year.’

HOWEVER - interpret with caution

- Only 5 studies - not enough to draw a strong conclusion from
- Considerable between study heterogenity
  - different durations of pre-op PFMEs
  - different frequency of exercise

Tienforti et al (2012)

METHOD

- 34 patients who underwent open retropubic RP
- **Pre-op BFB** – one 20 minute session
- Monthly visits post-op for intervention group
- Training diaries

CONCLUSION

- ‘a **single pre-op** supervised training session with **BFB**, with a postop PFME programme, including FUPT on a monthly basis, is **effective** at improving the **recovery of incontinence** after **open** RP’
- QoL not significant between groups

Patel et al (2013) - Retrospective Analysis

TREATMENT:

- Structure & function of bladder, urethra & PFMs with models & diagrams
- Activate PF in different **functional positions**
- **Transabdominal US** for biofeedback

RESULTS:

- Physio guided-PFMT commenced **4 weeks before RRP** significantly reduced severity and duration of incontinence at **6 weeks post surgery**
- Significance of this is **not** shown at **3 months** post surgery

These results support the studies by Centemero et al (2010), Parekh et al (2003), Burgio et al (2006) & Sueppel et al (2001) - all of which had much smaller sample sizes

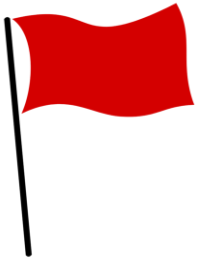
Use of Real Time Ultrasound (RTUS)

- RTUS provides **clear biofeedback** and is of clear benefit to this cohort of patients
- Men often struggle to engage their PF alone, commonly showing co-contraction
- Men often report they cannot ‘feel much’
- **Doorbar-Baptist (2013)** confirmed that RTUS is **reliable** to use for the assessment and ‘attainment of pelvic floor contraction in men with prostate cancer, most effective pre-op’

REHAB

Assessment

- Ideally to be seen **once catheter removed** (at 2 weeks)
- Similar to pre-op if not seen: this is where the **LUTs** will be present and **ED**
- Pick up any **red flags**
  - Bleeding
  - Frank Haematuria
  - Pain
  - Numbness
  - Faecal Incontinence



- Repeat **outcome measures**

Assessment

- Depending on pain and time post surgery complete an **ARE** with consent, otherwise use transabdominal or transperineal **RTUS**

- **RTUS:** look at TVA and ensure not bracing abdominals, especially if still struggling with SUI

- Number and type of **pads**

- **Establish goals:** sports they want to get back to &

  job pressures

Treatments

- Best results come from a **MDT approach** - good to have connections with the CNS.
- **PFMEs** (individual programme) & **education** about relevance to UI and ED
- **Bladder retraining** / fluid intake advice
- **Constipation** avoidance
- **Pad usage** and weaning off protocol - Joanne Milios
- **Pad protocol** : aim dry at night first, once dry 3 nights remove pad
- **Pumps** and **PDE5 i** able to be commenced immediately after catheter removal (Patel et al, ‘13)
- **Pilates** and structured core once not continence reduced

What does the evidence say?

Ribeiro et al 2010

METHOD

- RCT impact of **PFM biofeedback** training on improving continence
- 12 month follow up

RESULTS

- 73% vs 39% at 3 months
- **96% vs 75% continent** at 12 months
- Both groups improved
- Use of **regular biofeedback** hastens the recovery of continence

Overgard et al (2008)

AIM

- To assess the effect **of intensive and frequent** PFMT with and without follow up by a physiotherapist.

RESULTS

- statistical significance in **perceived problems** .
  - 97% mild UI problems in group A vs 78% in group B
- 6 months Group A **79% continent V 58%** group B (clinically relevant)
- 12 months **92% group A vs 72% group B (** statistically and clinically)

CONCLUSION

- Post RP follow up **by a physiotherapist** can increase long term adherence of doing PFMT and therefore improve continence rate

Glazener et al (2011)

METHOD

- 2 RCTS comparing
- **4 sessions** of therapy over 3 months vs standard care and lifestyle advice
- 1 year follow up

RESULTS

- 12 months **76% continent vs 77%**
- 65% vs 62 % in second trial

CONCLUSION

- **No significant difference**
- Only 4 sessions
- No true control

Anderson et al (2015) - Cochrane review

- Reviewed **50 trials** - RCTS or quasi-RCTs
  - Included RRP & TURP
- Considerable **variation** in interventions, populations & outcome measures

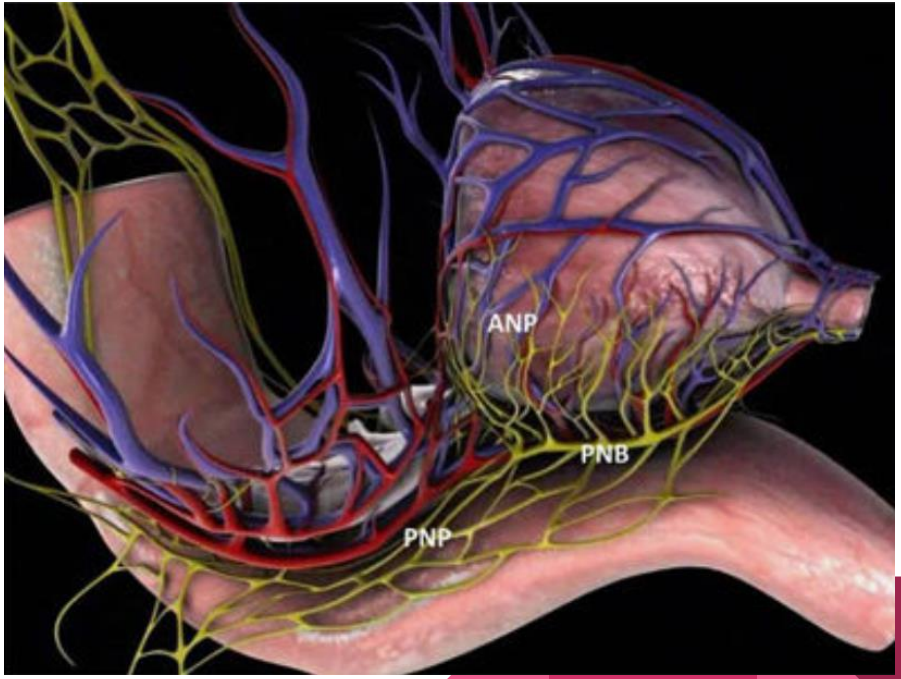
CONCLUSION

- There is **no clear support** that conservative management of **any** type is helpful for postprostatectomy UI, whether delivered as **treatment** to men who are incontinent or as **prevention** to all men undergoing radical prostatectomy
- **Large variation** in interventions and follow up
- **Low** quality studies
- Further **rigorous RCTs** are still required to obtain a definitive answer

Erectile dysfunction

Why is erectile function is impacted?

- Varied post op outcomes 26-100% will have ED (Burnett et al 2007)
- Neurogenic impact on cavernosal nerves
  - Crush
  - Thermal
  - Severed
- Vascular impact

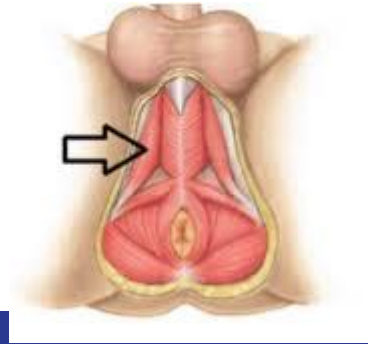


Further impacts of poor erectile function

- **Loss** of daily and nocturnal **erections** (3-6 a night in REM sleep)
- Smooth muscle apoptosis and fibrosis leads to **loss of length** and **circumference**
- Most commonly occurs **4-8 months** post RP
- Longer men go without erections longer recovery due to above
- Aim to **achieve erections early** to help prevent the loss of length and circumference due to tissue death
- There is a link between ED and depression

PFM and return of erectile function

- PFM contraction builds on **bulbospongiosus** and **ischiocavernosus** which help increase intracavernosal pressure
- There is also increase in **neurotrophic factors** that help increase vascular endothelial growth factor which can help with the **nerve regeneration**
- Promotes oxygenation and help reduce tissue death in corpora cavernosa
- Link with continence and return to potency



What does the evidence say?

Lin et al (2012)

METHOD

- Looking at effects of **PFMT** on the **return of sexual function** following RRP
- Taught PFMEs daily from catheter removal vs control group started at 3/12 post op

RESULTS

- **Significant difference** at 6 and 12 months in IIEF scores

Prota et al (2012)

METHOD

- An **RCT** looking at the effects of pure **PFM training** and **return to potency**.
- Treatment group given weekly **biofeedback** for 12/52s
- Control group verbal info on PFM

RESULTS

- At **12 months 47% potent vs 12.5% control**
- Link with continence and ED function
- Neither group given PDEi-5s

Conclusion

Prehab vs Rehab

PRE vs POST rehab for UI and ED

- Research provides a **mixed picture**
- **Best outcomes:**
  - Combination of prehab and rehab
  - Longer period of prehab
- In the majority of cases PFMEs:
  - **Shorten** the length of time to being **continent**
  - **Reduce** number of **pads**
  - **Improve erectile function**
- Ideally patients are taught by **specialist physiotherapis**t & follow up until continent
- Both slow and fast twitch exercises daily

Key points for future service development

Key points for future

- In both NHS and Private settings the **best people** to **contact** are:
  - GPs in area - do they know about ED and UI following RRP and what they can offer
  - CNS in hospitals,
  - Reps for devices (MEDIcare) - they can educate you and do home visits for patients

- **Follow ups** are important to monitor return to sport/ function/ work as many **men are younger** now and needing to get back to higher levels of function

Questions?

References

Anderson, C.A, Omar, M.I., Campbell, S.E., Hunter, K.F., Cody, J.D. & Glazener, C.M.A (2015) *Conservative management for postprostatectomy urinary incontinence.* Cochrane Database of Systematic Reviews, Issue 1.

Burnett AL, Aus G, Canby-Hagino ED, Cookson MS, D'Amico AV, Dmochowski RR (2007) *Erectile Function outcome reporting after clinically localised prostate cancer treatment,* Journal of Urology, 178: 597

Chang, J., Vincent, L. and Patel, M. (2016) *Preoperative Pelvic Floor Muscle Exercise and Postprostatectomy Incontinence: A Systematic Review and Meta-Analysis.* European Association of Urology. 69:460-467

Floratos DL Sonke GS Rapidou CA Alivizatos GJ Constantinides CADelibeliotis C, (2002) *Biofeedback versus verbal feedback as learning tools for pelvic muscle exercises in the early management of urinary incontinence after radical prostatectomy.* BJU Int. 89: 714-719

Glazener C, Boachie C, Buckley B, Cochran C, Dorey G, Grant A, Hagen S, Kilonzo M, Mcdonald A, Mcpherson G, Moore K, Norrie J, Ramsey C, Vale L and N'Dow J (2011) *Urinary incontinence in men after formal one to one pelvic floor muscle training following radical prostatectomy or transurethral resection of the prostate (MAPS): two parallel randomised controlled trials.* The Lancet, 378, 328-337

Goonewardene, S.S., Gillatt, D. & Persad, R. (2018) *A systematic review of PFM pre-prostatectomy.* Journal of Robotic Surgery 12:397-400

References

Goonewardene, S.S., Gillatt, D. & Persad, R. (2018) *A systematic review of PFM pre-prostatectomy.* Journal of Robotic Surgery 12:397-400

Hirschhorn, A, Kolt, G and Brooks, A (2013) *Barriers and enablers to the provision and receipt of preoperative pelvic floor muscle training for men having radical prostatectomy: a qualitative study,* BMC Health Services Research, 13:305

Kirby ,M (2011), *Best practice guidelines on the use of vacuum constriction devices following radical prostatectomy.* British Society for Sexual Medicine.

Laurienzo, C.E., Sacomani, C.A.R, Rodriques, T.R., de Cassio Zequi, S., Guimaraes, G.C. & Lopes, A. (2013) **R***esults of preoperative electrical stimulation of pelvic floor muscles in the continence status following radical retropubic prostatectomy* International Brazilian Journal of Urology Vol. 39 (2): 182-188

Lin, Yu-Hua PhD, RN; Yu, Tsan-Jung MD; Lin, Victor Chia-Hsiang MD; Wang, Hua-Pin MD; Lu, Kevin MD, (2012) *Effects of Early Pelvic-Floor Muscle Exercise for Sexual Dysfunction in Radical Prostatectomy Recipients* Cancer Nursing: Volume 35 - Issue 2 - p 106–114

Manassero F Traversi CAles Vet 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. 26: 985-989

References

Moore KN Valiquette L Chetner MP Byrniak SHerbison GP, (*2008) Return to continence after radical retropubic prostatectomy: a randomized trial of verbal and written instructions versus therapist-directed pelvic floor muscle therapy.* Urology. 72: 1280-1286

Overgard, M, Angelsen, A, Lydersen, S and Morkved, S (2008). *Does physiotherapist guided pelvic floor muscle training reduce urinary incontinence after radical prostatectomy? A randomised control trial.* European Association of Urology, 438-448.

Patel, M.I., Yao, J., Hirschhorn, A.D. & Mungovan, S.F. (2013) *Preoperative pelvic floor physiotherapy improves continence after radical retropubic prostatectomy***.** International Journal of Urology 20: 986-992

Prota C,, Gomes CM, Ribeiro LHS, De Bessa J, Nakano E, Dall'Oglio M, Bruschini Hand Srougi m (2012) **E***arly postopertaive pelvic floor biofeedback improves erectile function in men undergoing radical prostatectomy: a prospective, randomised controlled trail***.** International Journal of Impotence Research*,* 24, 174-178

Rahman, S.I. (2016) Management of post-prostatectomy urinary incontinence *Journal of Pelvic, Obstetric and Gynaecological Physiotherapy* 118, 44-48

References

Ribeiro, L.H.S., Prota, C., & Gomes, C.M. (2010) Long-term effect of early postoperative pelvic floor biofeedback on continence in men undergoing radical prostatectomy: a prospective randomized, controlled trial. *The Journal of Urology.* 184 (3), 1034-1039.

Tewari, A.,Srivastav A, Sooriakumaran P, Grover S, Dorsey P and Leung R. (2011). Technique of traction-free nerve-sparing robotic prostatectomy: delicate tissue handling by real-time penile oxygen monitoring. I*nternational Journal of Impotence research* 24.1 (2012): 11.

Van Kampen M De Weerdt W Van Poppel Het al.(1998) Prediction of urinary continence following radical prostatectomy. *Urology International* . 1998; 60: 80-84

Van Kampen M, Deweedt W, Van Poppel H, De RIdder D, Feys H and Baert l, (2000) *Effect of pelvic floor re-education on duration and degree of incontinence after radical prostatectomy: a randomised control trial.* Lancet, *355:98-102.*

Wang, W., Huang, Q.M., Liu, F.P. & Mao, Q.Q. (2014) Effectiveness of preoperative pelvic floor muscle training for urinary incontinence after radical prostatectomy: a meta-analysis *BMC Urology* 14:99

References

CANCER RESEARCH UK *Prostate Cancer* [Online] 27th June 2017. 15th September 2018. https://www.cancerresearchuk.org/about-cancer/prostate-cancer

PROSTATE CANCER UK *About Prostate Cancer.* July 2017. 15th September 2018. https://prostatecanceruk.org/prostate-information/about-prostate-cancer

A little bit extra on pumps…

Pumps

Should be used daily , aim to achieve 20 engorgements a day this can be in 1 10 mins session or 2 5 mins sessions

POSITIVES

- Promotes early function
- Reduced loss of length and circumference
- Can be used once healing occurred (average 3.9weeks post surgery)

NEGATIVES

- Bulky
- Bruising
- Urinary leakage can happen if this has not been regained
- Cold / numb feeling in penis
- Difficult to get seal
- Interrupt mood
- Time consuming

Raina et al (2016)

Investigated the early use of VCDs following RRP. In both NS and NNS

METHOD

- 109 men aged 50-71
- VCD used daily, ring only applied for full penetration

RESULTS AT 9 MONTHS

- 80% patients successfully used VCD with ring for penetration
- 32% report natural erections (52% of these able to achieve vaginal penetration)
- 23% vs 85% loss of length and circumference(VCD vs non VCD)
- IIEF scores raised 4.8 to 16 after VCD