

Relationships between perioperative physical activity and urinary incontinence after radical prostatectomy: an observational study

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Introduction

- Men having radical prostatectomy in our clinical setting routinely receive physiotherapy treatment, including pelvic floor muscle training (PFMT), to reduce the severity and duration of post-prostatectomy urinary incontinence (PPUI).
- Because many men having radical prostatectomy have, or are at risk of, lifestyle-related diseases, e.g. diabetes mellitus, heart

disease, our physiotherapy treatment also includes prescription of general physical activity/exercise.

- Previous studies have shown that general physical activity is continence-protective in other, non-prostate cancer populations,^{1,2} and have linked obesity/inactivity to an increased risk of PPUI.³

In this prospective observational study, we sought to answer the following questions:

In a cohort of men receiving perioperative physiotherapy treatment:

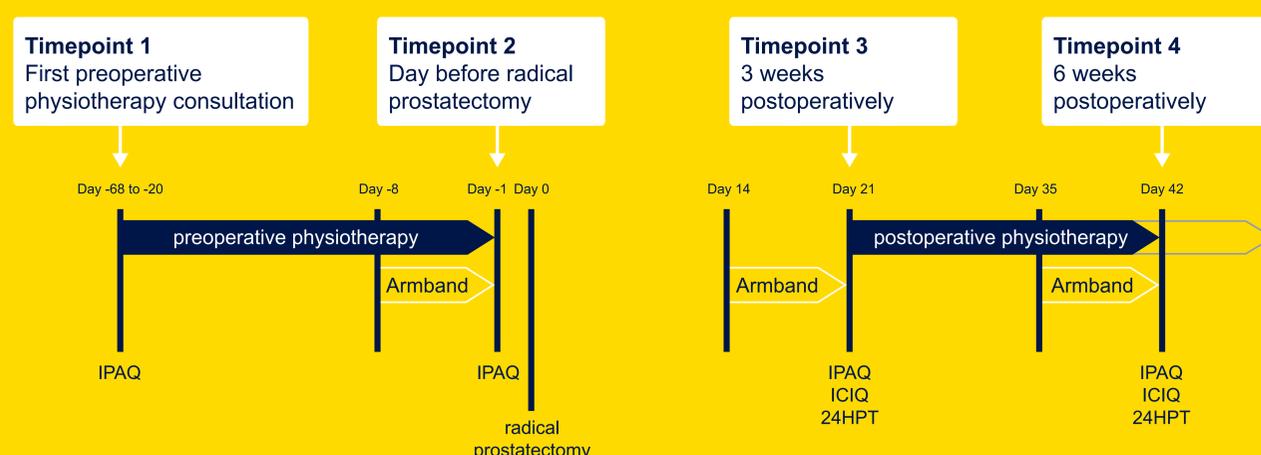
- How do physical activity levels change over the perioperative period?
- What is the relationship between preoperative physical activity levels and early PPUI?
- What is the effect of surgical approach (open retropubic (ORP) vs robotic-assisted laparoscopic (RALP)) on postoperative physical activity levels and PPUI?

Methods

Participants

Men having radical prostatectomy (ORP: n=9; RALP: n=24; age 62±6 years) by one urological cancer surgeon (MP) in Western Sydney, Australia.

Assessment Timeline (Figure 1)



Physiotherapy Treatment

All participants received a standard program of perioperative physiotherapy, consisting of weekly preoperative appointments and 3 and 6-week postoperative appointments. Physiotherapy included both PFMT and general physical activity/exercise, e.g. stationary cycling and/or treadmill walking of between 15 to 30 min duration.

Assessments of Physical Activity

- The International Physical Activity Questionnaire (IPAQ): A self-report questionnaire used to estimate physical activity levels over a 7-day period.
 - The SenseWear Pro3 Armband (Armband): An accelerometer-based physical activity monitor, worn on the upper arm for a 7-day period.
- Physical activity was measured as metabolic equivalent of task (MET) minutes (MET.min/week). Participants were categorised as having 'high' (> 3000 MET.min/week) or 'moderate' (601 to 2999 MET.min/week) preoperative physical activity levels.

Assessments of Post-Prostatectomy Urinary Incontinence

- The International Consultation on Incontinence Questionnaire – Urinary Incontinence Short Form (ICIQ)
- The 24-Hour Pad Test (24HPT)

Results

- Physical activity levels changed significantly over the perioperative period (IPAQ: $p < 0.001$; Armband: $p = 0.028$) (see Figure 2). At 6 weeks postoperatively, physical activity levels were not significantly different from baseline ($p = 0.181$), but remained significantly lower than the week before surgery ($p = 0.002$).
- There was no significant interaction effect between preoperative physical activity level (high vs moderate) and time on 24HPT ($p = 0.241$) or ICIQ ($p = 0.608$). Nor were there significant correlations between absolute preoperative physical activity level (MET.min/week) and 24HPT or ICIQ at 3 or 6 weeks postoperatively.
- There were no significant interaction effects between surgical approach and time on physical activity levels (IPAQ: $p = 0.832$; Armband: $p = 0.466$). 24HPT reduced more steeply from 3 to 6 weeks postoperatively for participants having ORP ($p = 0.044$) (see Figure 3).

Figure 2: Physical activity levels over the perioperative period

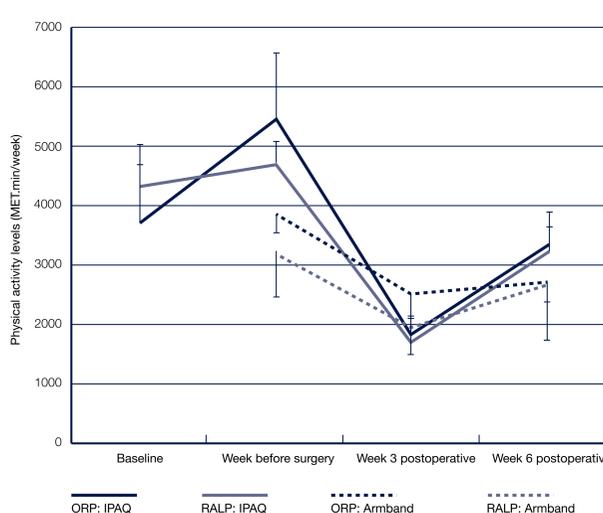
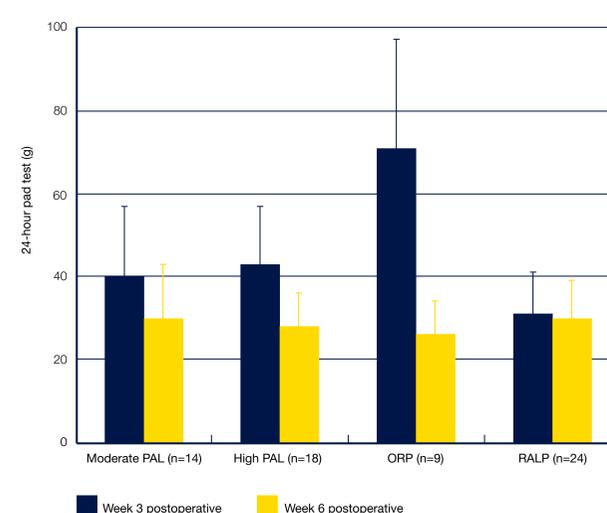


Figure 3: 24HPT by preoperative physical activity level and surgical approach



Conclusions

- This study provides novel data on perioperative changes in physical activity levels for men having radical prostatectomy.
- We found no relationships between preoperative physical activity levels and PPUI, although participants had high overall preoperative physical

- activity levels and low overall PPUI/burden.
- Surgical approach (ORP vs RALP) did not affect the course of perioperative physical activity.
- Randomised trials of physical activity/exercise in exercise-naïve clinical settings would be of benefit.