

RELATIONSHIPS BETWEEN SEVERITY OF URINARY INCONTINENCE AND PHYSICAL ACTIVITY LEVELS IN PATIENTS WHO HAVE UNDERGONE A GENERAL EXERCISE PROGRAM FOLLOWING PROSTATECTOMY

Hypothesis / aims of study

Although previous studies have reported significant negative impact of incontinence on physical activity following radical prostatectomy [1, 2], there is limited evidence on the relationships between severity of urinary incontinence (UI) and level of physical activity in patients who have undergone a general exercise program, which is not combined with specific pelvic floor muscle training (PFMT), following prostatectomy. The aims of this study were (1) to explore the relationships between severity of UI and physical activity levels in patients who have undergone an exercise program following prostatectomy and (2) to determine whether pre-exercise program severity of UI is a predictive factor for a change in physical activity levels following an exercise program.

Study design, materials and methods

This was a subgroup analysis of data from patients who participated in a prospective observational study investigating the feasibility of an 8-week, twice weekly exercise program supervised by a physiotherapist and exercise physiologist (the intervention) for patients following surgery for abdomino-pelvic cancer. For this analysis, data from patients who were experiencing post prostatectomy UI, assessed as a score ≥ 1 on the International Consultation on Incontinence Questionnaire - Urinary Incontinence Short Form (ICIQ-UI SF) and consented to participate in the exercise program were analyzed. Physical activity levels were measured using the International Physical Activity Questionnaire short form (IPAQ-SF; higher score=better outcome) and severity of UI was measured using the ICIQ-UI SF (higher score=poorer outcome) at two time-points: pre-intervention/10 weeks post-op and post-intervention/18 weeks post-op. The Spearman correlation coefficient was used to assess the relationships between severity of UI and physical activity levels at both time-points, and between the post-intervention to pre-intervention change scores of IPAQ-SF and ICIQ-UI SF. A multiple linear regression was used to identify whether baseline severity of UI (independent variable) was a predictor of change in physical activity levels (dependent variable) following the exercise program. P values < 0.05 were considered statistically significant.

Results

The study sample consisted of 45 participants. The mean (standard deviation) ICIQ-UI SF total score at pre- and post-intervention was 10.2 (4.5) and 6.0 (4.1), respectively, and the mean IPAQ-SF total physical activity levels were 1988.5 (2347.7) MET-min/week at pre-intervention and 4768.1 (6072.1) MET-min/week at post-intervention. The pre-intervention ICIQ-UI SF total score demonstrated low to moderate positive and significant correlations with the post-intervention IPAQ-SF total physical activity level ($r_s(39) = 0.456$, $p = 0.004$), and the change scores in vigorous ($r_s(38) = 0.344$, $p = 0.035$) and total physical activity levels ($r_s(39) = 0.534$, $p < 0.001$). Moderate positive and significant correlations were also found between post-intervention ICIQ-UI SF total score and post-intervention IPAQ-SF walking ($r_s(36) = 0.330$, $p = 0.05$) and total physical activity levels ($r_s(38) = 0.345$, $p = 0.034$) (Figure 1) and post-intervention ICIQ-UI SF total score and the change score of IPAQ-SF total physical activity level ($r_s(38) = 0.413$, $p = 0.010$).

After adjustment for age, body mass index and employment status, the pre-intervention severity of UI was a significant predictor of change in total physical activity levels ($\beta = 0.403$, $p = 0.020$) following the exercise program (Table 1).

Interpretation of results

This subgroup analysis showed low to moderate correlations between severity of UI and physical activity levels in patients who had undergone an exercise program following prostatectomy. Increases in severity of UI were correlated with increases in physical activity levels, indicating that patients with more severe UI engaged in more physical activity. Our result is in contrast to a study by Mungovan et al. [3], which reported no significant relationships between post-operative physical activity levels and post-prostatectomy UI in patients receiving a peri-operative physiotherapist-guided PFMT and physical activity intervention. However the studies differ regarding the types of intervention provided (i.e. PFMT and physical activity intervention *versus* exercise intervention program without specific PFMT). Regarding prediction, higher severity of UI at pre-intervention (i.e. 10-weeks post-prostatectomy) was a significant predictor of improvement in physical activity levels following the exercise program. A previous study has identified that younger age, being unskilled and being unemployed were predictive factors for decreased physical activity levels at 6 weeks after prostatectomy [1]. Our study suggested that the severity of UI at 10 weeks post-prostatectomy might be a significant predictor of the changes in physical activity levels from 10 weeks to 18 weeks post-prostatectomy. The primary limitation of this study is small sample size. In addition to the lack of data on treatment sought by patients with UI post-prostatectomy (e.g. PFMT), other potential confounders (i.e. cancer stage, preoperative continence status, and comorbidities of patients) were not taken into account due to unavailable data. Therefore, the findings of this study may not be generalizable to all prostate cancer populations.

Concluding message

This is the first study to explore the relationships between severity of UI and physical activity levels in patients who had undergone an exercise program after prostatectomy. Severity of UI was positively correlated with physical activity levels following the exercise

program. The baseline severity of UI was a predictor of change in total physical activity level following the exercise program. Randomized controlled trials are warranted to determine the effects of general exercise alone on UI in this population.

Figure 1 A scatter plot displaying the relationship between the post-intervention ICIQ-UI SF total score (x-axis) and post-intervention IPAQ-SF total physical activity levels (y-axis).

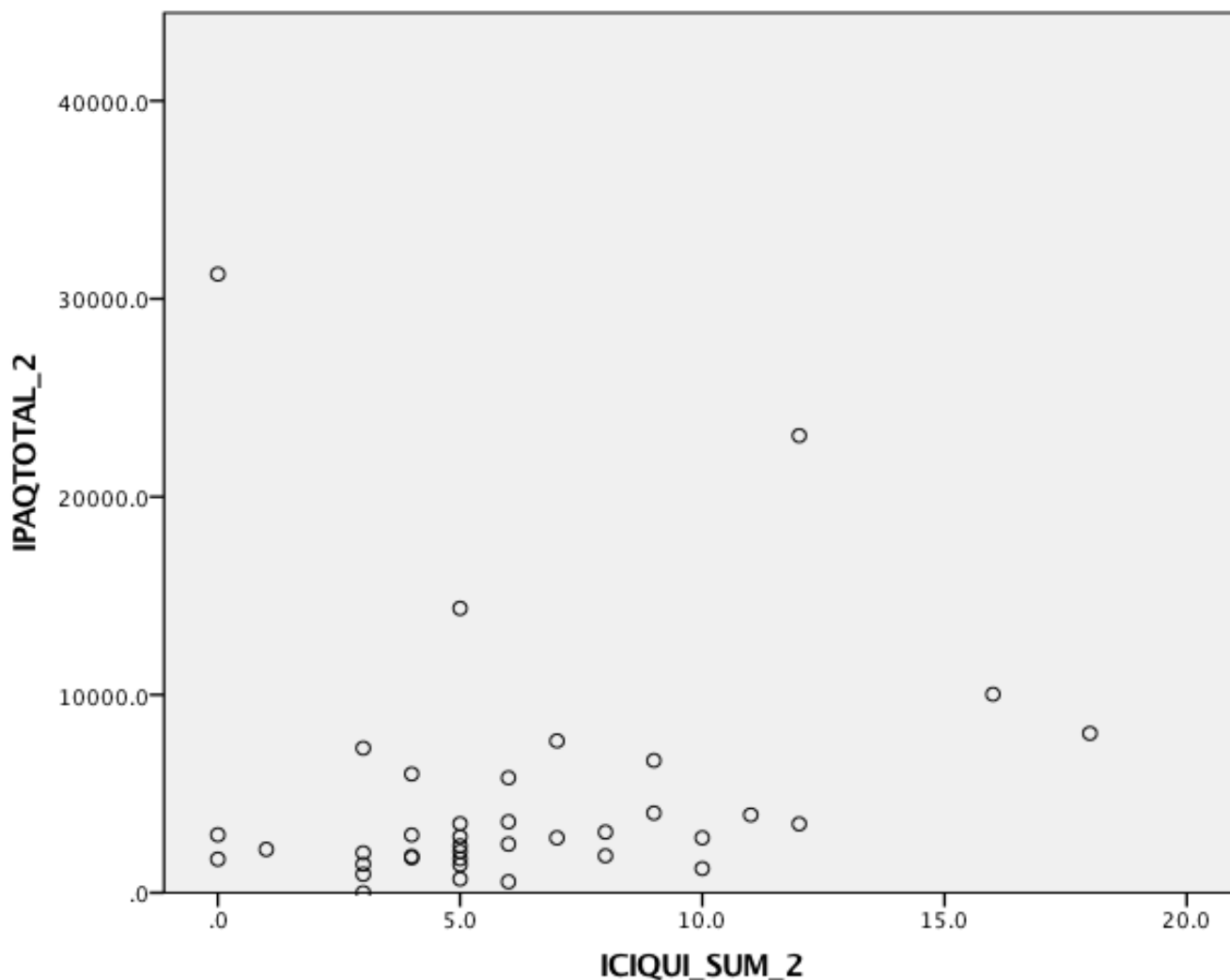


Table 1 Associations between pre-intervention severity of urinary incontinence and change scores in physical activity levels

	ICIQ-UI SF total score (T1)		
	β coefficient	95% Confidence Interval	p-value
IPAQ-SF Vigorous (T2-T1 difference)	0.336	-15.0 to 529.2	0.063
IPAQ-SF Moderate (T2-T1 difference)	0.275	-34.3 to 228.0	0.142
IPAQ-SF Walking (T2-T1 difference)	0.217	-53.9 to 213.8	0.232
IPAQ-SF Total (T2-T1 difference)	0.403	74.1 to 823.3	0.020

Abbreviations: T1, time-point 1 (pre-intervention/10 weeks post-op); T2, time-point 2 (post-intervention/18 weeks post-op); IPAQ-SF, International Physical Activity Questionnaire short form; ICIQ-UI SF, International Consultation on Incontinence Questionnaire - Urinary Incontinence Short Form.

References

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Disclosures

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Clinical Trial: Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** Cabrini Hospital Human Research Ethics Committee **Helsinki:** Yes **Informed Consent:** Yes