

## THE EFFECT OF PHYSICAL ACTIVITY ON PELVIC ORGAN PROLAPSE

### Hypothesis / aims of study

Does physical activity cause an increase in pelvic organ prolapse measured with the POPQ system?

### Study design, materials and methods

This prospective observational study of consecutive women admitted to hospital for pelvic reconstructive surgery was performed with approval from the Local Research and Ethics Committee. Fifty women were required to detect a difference of one POPQ stage with 90% power and a significance level of 5%. All women were admitted to hospital routinely the day before planned surgery. Women who were willing and able to give informed consent, and able to perform the proscribed physical activities were eligible. Demographic data, medical history, surgical history and BMI were recorded for inclusions and exclusions to the study. All recruited women were asked to remain mostly mobile for between 4-6 hours, followed by one hour of proscribed activity similar to the ICS one hour pad test. Immediately following this the women were asked to empty their bladders and were then examined by a single examiner using the POPQ system in the semi-recumbent dorsal lithotomy position. The presence of vaginal lump and pelvic heaviness were documented at the time of this examination. These women were asked to remain in bed overnight except for toilet breaks until the second examination the next morning. The POPQ examination was repeated in the same manner by the same examiner and were all performed between 07.30 and 10.00am. Change in symptoms of lump and heaviness compared to following activity were documented.

Nonparametric statistical analyses were performed to avoid the assumption of normal distribution of data. Continuous variables with long ranges, such as age and BMI, were rounded up or down to aid clinical interpretation, whereas decimal points were used in those over shorter ranges such as parity and POPQ.

### Results

54 women were recruited to this study between April 2003 and December 2003. The demographics and characteristics of the recruits are shown below. 46/54 women (85%) were postmenopausal and 16/54 (30%) were taking HRT.

	Age (yrs)	Parity	BMI (kg/m <sup>2</sup> )	Prolapse operations	Continence operations
Mean	59	3.0	28	1.0	0.3
Standard deviation	14.76	1.40	4.36	1.33	0.70

The mean POPQ stage following activity was 2.8 (SD 0.8) and following rest was 2.6 (SD 0.9). Overall there was a significant increase in POPQ stage with activity ( $p < 0.01$ , Wilcoxon signed ranks test). 14/54 women increased in stage and in all cases by one stage only. Three women went from stage 1 to 2, eight went from 2 to 3 and three went from 3 to 4. Two women reduced from stage 3 to 2. Significant increases in all vaginal POPQ measurements (Aa, Ba, C, D, Ap and Bp) were also found ( $p \leq 0.03$ , Wilcoxon signed ranks test). Although, 41 women reported worse vaginal lump and 33 reported worse pelvic heaviness with activity, neither correlated with greater change in the POPQ stage or parameters. The demographics and characteristics were examined as possible predictors of increases in POPQ. None of these predicted women who increased in stage. Those with higher BMI tended to have greater change in the apical point D (equivalent to the Pouch of Douglas) after activity (Spearman  $\rho$  correlation coefficient = .450,  $p = 0.02$ ) and postmenopausal women had greater change in the anterior point Aa following activity ( $p = 0.05$ , Mann Whitney test). Aa increased by a mean of 0.6cm (SD 1.07) in postmenopausal women compared to 0.0cm (SD 0.53) in the premenopausal counterparts.

**HUMAN SUBJECTS:** This study was approved by the North Manchester Local Ethics & Research Committee and followed the Declaration of Helsinki. Informed consent was obtained from the patients.