

## THE MODIFIED PAPER TOWEL TEST: RELIABILITY OF A TOOL FOR QUANTIFICATION OF URINE LOSS IN STRESS INCONTINENCE.

### Aims of Study

The International Continence Society currently recommends pad-weighing tests to quantify urine loss in studies of the treatment of incontinence (1) but they are time consuming in clinical practice. The Paper Towel Test (3) is a short clinical test which can be used to quantify stress urine loss but it is has only been tested on older stress incontinent women under provocation of coughing and not physical exertion.

### Aims:

to test the absorbent properties of a specific brand of paper hand towel and to investigate the relationship between volumes of fluid and the corresponding wet area

- 1) to investigate the repeatability of a short provocative test of coughing and jumping using the paper hand towel to quantify urine loss in stress incontinent women of any age.
- 2) to investigate the repeatability of a short provocative test of coughing and jumping using the paper hand towel to quantify urine loss in stress incontinent women of any age.

### Methods

Laboratory tests were conducted on the absorbency of a paper hand towel (Kimberly-Clark ®) by titrating known volumes of fluid onto folded paper towels and outlining the wet areas at 15 seconds and again at 60 seconds. The limits of absorbency of the paper and the increase in wet area between 15 and 60 seconds were investigated. The linear association between fluid volumes and wet areas was calculated. In a clinical trial, 31 women with stress urinary incontinence performed a series of three provocative tests (3 coughs, 5 jumps and 5 simultaneous coughs and jumps) on two consecutive days using the paper towel to quantify urine loss.

Between-visit differences were evaluated using a paired two-tailed t-test ( $p < 0.05$ ) and by calculating confidence limits around the mean. A power calculation found that a sample of 10 for each test had 80% power to detect a difference of 1 mL between visits.

### Results

The results of the laboratory tests showed that there was a linear relationship ( $R^2 = 0.926$ ) between volumes of fluid and the corresponding wet area, specific for the brand of paper towel. Fluid volumes from 0.005 mL to 8 mL were reliably measurable at a standard time. One mL of fluid was equivalent to a mean wet area of 23 cm<sup>2</sup>. In the clinical trial, the test was found to be sensitive and repeatable to volumes of within 1 mL for women aged 33-72 years.

### **Between-visit mean differences in wet area (cm<sup>2</sup>)**

	Mean difference (cm <sup>2</sup> )	SEM	CI
Coughs	16.97	5.94	11.64
Jumps	2.79	6.16	12.08
Coughs & Jumps	6.65	6.48	12.71

### Conclusions

The 'modified Paper Towel Test' is suitable as a clinical tool for quick and accurate quantification of urine loss in most women with mild to moderate stress incontinence. The reliability of the test is dependent upon the use of standard protocol.

### References:

1. Lose G, Fantl JA, Arne V, Walter S, Wells TL, Wyman, Mattiasson A. 1998. Outcome measures for research in adult women with symptoms of lower urinary tract dysfunction. *Neurourol Urodynam* 17:255-262.
2. Miller JM, Ashton-Miller JA, DeLancey JOL. 1998. Quantification of cough-related urine loss using the Paper Towel Test. *Obstet Gynecol* 91:705-9.