



## The Pad Test for urinary incontinence in women

### Summary

**Description:** James et al. first described the Pad Test in 1971.<sup>1</sup> It is a standardised method for quantifying urine loss that can be performed at work or home. There are two versions: the short-term Pad Test and the long-term Pad Test. In the literature, the duration of the test varies widely. The most commonly used short-term Pad Test is performed in the clinic over 1 hour and the long-term Pad Test is usually performed at home over 24 hours.

For the 1-hour Pad Test, women are asked to wear pre-weighed pads and drink 500 ml of sodium-free liquid in < 15 minutes. After rest, they are instructed to exercise for 30 minutes, including: walking, climbing up and down one flight of stairs, standing-up from sitting (10 x), coughing vigorously (10 x), running on the spot for 1 minute, bending to pick up an object from the floor (5 x) and washing hands for 1 minute in running water. Before and after the test, the weight of the pad is measured with a high-precision balance in order to determine the amount of leakage. The short-term Pad Test may be performed with a fixed bladder volume of 150 to 300 ml, or with 50 to 75% of the functional bladder capacity.<sup>1</sup> For the 1-hour Pad Test, an increase of 1 to 10 g represents mild incontinence, 11 to 50 g represents moderate incontinence and > 50 g represents severe incontinence.

The long-term Pad Test does not require women to perform set activities. Women are, however, asked to perform their usual physical activities. They start the test with an empty bladder and wear a pre-weighed pad inside waterproof underwear. They are asked to change the pad every 4 to 6 hours. The test pads need to be weighed immediately, or stored in an airtight bag for weighing in a laboratory. For the 24-hour Pad Test, 4 to 20 g represents mild incontinence, 21 to 74 g represents moderate incontinence and > 75 g represents severe incontinence.

**Reliability and validity:** The short-term Pad Test has low reliability, with a mean difference of 9.7 g (SD 29.7) between 1-week test-retest and wide limits of agreement (46 to 66 g).<sup>2</sup> Low reproducibility has been found in other studies.<sup>1</sup> The use of a standardised bladder volume increases the reliability of the short-term Pad Test, but there is no consensus on ideal volume and the short-term Pad Test may not reflect the problems of urinary incontinence in daily activities.<sup>1,3</sup> A number of studies have concluded that the long-term Pad Test has adequate repeatability.<sup>1,4</sup> Studies comparing the short-term and long-term Pad Tests have shown better reproducibility for the long-term Pad Test than the short-term Pad Test.<sup>5</sup> Groutz et al.<sup>6</sup> reported a satisfactory repeatability for the long-term Pad Test of 0.721 (Lin's concordance correlation coefficient). They found that longer tests (ie, 48 and 72 hours) result in better reproducibility than the standard 24-hour Pad Test, but the adherence is lower. The correlation between Pad Test results and the severity of incontinence is better in long-term Pad Tests.<sup>7</sup> However, a number of variables can affect the validity of the 24-hour Pad Test such as hormonal status, environmental conditions, physical activity level and the type of pads used.<sup>1</sup> The short-term Pad Test has shown a good correlation ( $r = 0.88$ ) with a self-assessment questionnaire.<sup>3</sup> The long-term Pad Test does not differentiate between continent and incontinent women when using a subjective self-assessment.<sup>7</sup> However, a good correlation has been found with the International Consultation on Incontinence Questionnaire-Short Form.<sup>8</sup> The sensitivity of the short-term Pad Test for predicting urinary incontinence varies between 34 and 83%, and the specificity varies between 65 and 89%.<sup>1</sup> There are no equivalent data for the long-term Pad Test.<sup>1</sup>

### Commentary

The fourth International Consultation on Incontinence recommends Pad Tests as an adjunctive measure on outcome measures for urinary incontinence.<sup>9</sup> A recent review, which was prepared by a working group of the International Continence Society Urodynamics Committee, concluded that Pad Tests are underutilised and, although they have some limitations, they provide an easy, inexpensive and objective assessment of urine loss.<sup>1</sup> Pad tests should, however, be supplemented by other assessment tools such as questionnaires. The selection of motivated women and provision of detailed instructions from the physiotherapist are important to improve adherence and reliability of the tests. The level of physical activity should be recorded and a voiding diary should be kept and replicated in reassessments when using the 24-hour Pad Test.

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