

POGP CONFERENCE 2021

Functional assessment of the female pelvic floor

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Abstract

Functional assessment of the female pelvic floor provides huge benefits for patients suffering from pelvic floor dysfunction during upright postures and/or movements. The physiotherapist is able to complete an upright assessment of the vagina and pelvic floor muscles during the same amount of time and in the same space in which they would complete a traditional crook lying assessment. However, validated measures for upright pelvic floor assessments are yet to be developed. As a starting point, key factors for inclusion within an upright assessment are set out in this paper. The same task performed by different individuals yields varying amounts of intra-abdominal pressure, and therefore, makes assorted demands on the pelvic floor. The results of crook lying assessments are not completely interchangeable with those of standing evaluations. For this reason, there is a need for physiotherapists to increase their skill set so that they can confidently assess the pelvic floor in upright and more-functional positions.

Keywords: functional assessment, functional pelvic floor, pelvic floor muscle assessment, standing assessment.

Introduction

Functional assessment of the female pelvic floor consists of a physical examination that is performed in a position or during a movement that is relevant and specific to a patient's symptoms. It usually mimics activities of daily living (ADLs), exercise and/or habits. Functional assessment can be carried out using a variety of methods: visually (looking at the vulva and pelvic floor with a mirror, or a picture or video that the patient has taken); manually (digital palpation); ultrasound (transvaginal or transabdominal); or a biofeedback probe (note that biofeedback can also be obtained from manual examination and ultrasound scans).

Digital pelvic floor and vaginal examinations are a legitimate and crucial part of physiotherapy practice (CSP 2005a). These are routinely carried out with the patient lying down. This is important for a number of reasons; for example, assessing fascial, soft-tissue and neurological integrity, as well as evaluating pelvic floor muscle (PFM) function. However, most women do not

suffer from pelvic floor dysfunction when they are lying down (Sung *et al.* 2007). Therefore, it is proposed that all healthcare professionals performing vaginal and pelvic floor examinations should be practised and competent in making an assessment in a position that more accurately reflects the patient's symptoms. Upright vaginal examinations are not exclusive to physiotherapy: doctors and nurses are also instructed to assess in this position (Carcio 2018; Yates 2019; Bhadana 2020).

The benefits of choosing to complete vaginal and PFM examinations in standing are that this:

- enhances clinical reasoning;
- more closely replicates the patient's symptoms;
- increases the patient's compliance and confidence in the therapist;
- enhances treatment efficiency;
- is low cost, and quick and easy to perform;
- can confirm the full extent of any pelvic organ prolapse (POP) (Bump *et al.* 1996);
- is in line with the guidelines for medical, health and fitness professionals on the prerequisites for a return to running in the postnatal period (Goom *et al.* 2019); and
- is in line with the National Institute for Health and Care Excellence guideline on the

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management of urinary incontinence and POP in women (NICE 2019).

A wide variety of positions and movements are suitable for functional vaginal and PFM assessment. Those used to date in clinical practice include: abdominal crunch; glute bridge (pelvic lift); squat; deadlift; push press; Russian twist; single-leg stand; sitting; single-leg squat; lunge; standing; split stance; wide stance; reaching; and twisting. Weights can also be added to more accurately replicate the patient's complaint if required.

The pelvic floor muscles and vagina in standing

Standing results in a significant increase in intra-abdominal pressure (IAP), especially in individuals with a high body mass index (Malbrain *et al.* 2003; Cobb *et al.* 2005; Shaw *et al.* 2014). Because the anticipatory function of the PFMs results in greater resistance within the muscles, vaginal resting tone is significantly higher in standing in comparison to lying (Bø & Finckenhagen 2003; Morgan *et al.* 2005). This is clinically relevant since vaginal resting tone has been identified as an indicator of muscular closure of the levator hiatus, and low vaginal resting pressure has been found to produce the highest odds ratio for POP when combined with low PFM strength in women with greater than stage 2 POP (Brækken *et al.* 2009).

Can pelvic floor muscle function in standing be predicted from traditional crook lying findings?

A small study by Bø & Finckenhagen (2003) investigated whether there was a significant and clinical difference between measurements of PFM strength in supine and standing. They concluded that supine assessment seems to reflect that in standing. However, there was no indication of Oxford Grading Scale scores, and drawing in of the abdomen was allowed during PFM contraction. These authors also concluded that assessment is “more time-consuming and difficult to conduct [...] in the standing position” (Bø & Finckenhagen 2003, p.1122), which is questionable once therapists and clinicians are educated and practised in it as part of their clinical practice. It has been shown that the same movement or position creates different IAPs, vaginal pressures and core muscle responses in different people (Cobb *et al.* 2005; O'Dell *et al.* 2007; Shaw

et al. 2014). Because they respond to the same task in a variety of ways, this supports the assessment of patients in their meaningful complaint/position to best replicate what is happening to them at any given moment in time.

Standing assessment of the female pelvic floor muscles

The documentation of supine assessment is frequently mentioned in the literature on PFM examinations (Frawley *et al.* 2021); however, there is little available information on records of upright assessments. For traditional crook lying assessments, the PERFECT score is a validated measure of PFM function (Laycock & Jerwood 2001), but there is no validated measure for upright positions. The following are the key factors that the present author suggests should be included in the assessment of the female PFMs in standing.

Preparation of the patient for standing assessment

The following steps are necessary before performing an assessment:

- As with all other assessment and treatment techniques, it is crucial as well as a legal requirement to obtain informed consent (CSP 2002, 2005b).
- Offer the patient the opportunity to empty her bladder if necessary. A full bladder may help to replicate the symptoms of incontinence, but it is also associated with the underestimation of the severity of POP (Bhadana 2020). Therefore, an empty bladder will aid a true assessment of this condition.
- Minimal room is required for this assessment in the clinic, which can be completed in the space next to a treatment plinth.
- As with all internal examinations (CSP 2005a), a sterile assessment technique should be employed.
- Consider placing an incontinence pad under the patient's feet to catch any lubrication gel that may fall.
- Consider the patient's dignity at all times, and offer her a towel to hold around her middle.
- Consider your position in relation to the patient: both anterolateral and posterolateral work well.

Body and alignment assessment in standing

The following measures are recommended when performing an assessment:

- Look the patient up and down; for example, check her feet, lumbar and thoracic spine, ribcage, abdomen, and gluteal bulk.
- Identify the bony landmarks of the pelvis:
 - the bilateral anterior and superior iliac spine to determine amount of pelvic tilt;
 - the anterior superior iliac spine and pubic tubercle to aid pelvic tilt assessment;
 - the ischial tuberosities to determine perineal descent (Frawley *et al.* 2021); and
 - the position of the femoral head to begin assessment of any asymmetry of the PFMs (Bendová *et al.* 2007).

Perineal assessment in standing

Using sterile gloves, part the patient's labia with one hand and use a handheld mirror in the other to assess:

- the introital position and angle;
- the presence of introital gaping;
- the visibility of the urethral meatus;
- any asymmetries or shifts (e.g. as a result of scar tissue);
- swellings (e.g. as a result of varicose veins, infections and cysts);
- any reported lumps, bulges or problems;
- skin condition (e.g. scars, lesions, trophic changes, colour, erythema and swelling);
- perineal position (compare to the midline and height relative to ischial tuberosities);
- Valsalva manoeuvre, i.e. a forced exhalation against a closed epiglottis that is different to bearing down (Baessler *et al.* 2017) – at least 5–6 s of sustained maximal Valsalva is necessary to examine POP (Orejuela *et al.* 2012);
- bearing down, i.e. pushing down and consciously relaxing the PFMs, which is different to Valsalva (Baessler *et al.* 2017);
- a standing cough has been shown to produce one of the highest amounts of IAP in comparison to other ADLs and exercise (Cobb *et al.* 2005), and therefore, it is an easy but useful task to include in a functional assessment;
- breathing cycle – reciprocal movement of the pelvic floor has been observed during diaphragmatic breathing (Talaszy *et al.* 2011); and
- maximal voluntary contraction of the PFMs (present, uncertain or absent) – evaluating the amount, direction, quality of lift, full relaxation and whether any other muscles are also working.

Vaginal assessment in standing

A physiotherapist's knowledge of normal anatomical orientation and possible variations in

standing is important. The levator plate has been described as being horizontal when the body is in the standing position (Herschorn 2004). This means that, upon initial penetration of the examining finger(s), a horizontally directed pressure aimed towards the coccyx should be used. The physiotherapist may wish to change examining hands to ensure that both sides of the PFMs can be accurately examined, but this will depend on the clinician's experience and preference. The following should be assessed:

- resting tone on the left and right sides;
- the size of the levator hiatus at rest and on contraction of the PFMs (in both the transverse and sagittal planes) – record in centimetres converted from finger widths (Frawley *et al.* 2021);
- any levator defect or avulsion;
- the presence of any tenderness;
- Valsalva manoeuvre (as above);
- bearing down (as above);
- a standing cough (as above);
- breathing cycle (as above); and
- the PERFECT score (Laycock & Jerwood 2001) may also be used in upright positions until further research indicates otherwise – an important part of sound clinical reasoning depends on the physiotherapist's own experience (Higgs & Jones 2000).

Conclusion

Standing assessment provides a great deal of insight into the functioning of an individual's PFMs. Physiotherapists are well placed to carry out standing assessments of the female PFMs because they have crucial experience and knowledge of this field. Therefore, they should familiarize themselves with the key assessment criteria that apply to standing. The development and validation of a measure for PFM assessment in standing would be an interesting direction for future research.

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