

Digital assessment of the pelvic floor muscles: A neglected technique

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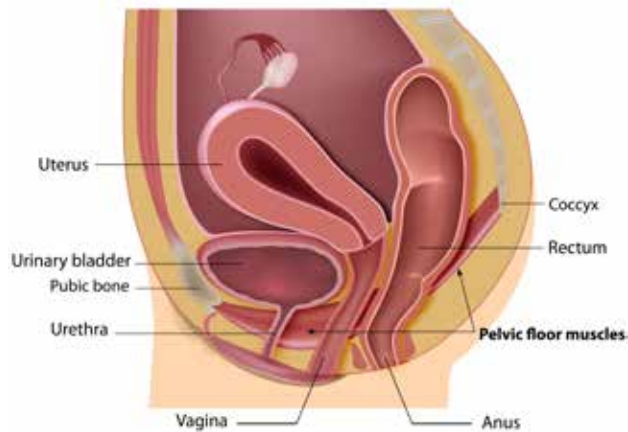
Clinical evaluation of the pelvic floor muscles (PFMs) should be an integral part of a comprehensive well-woman examination because it can aid in identifying bladder dysfunction and pelvic organ prolapse. Digital assessment of the PFMs, a simple but neglected technique that should be part of every clinical evaluation of the pelvic musculature, is described in detail in this article.

As female Baby Boomers age, they are likely to experience pelvic health problems with increasing frequency.¹ Knowledge of the female pelvic musculature is essential to understanding the pathophysiology of conditions such as urinary incontinence (UI) and pelvic organ prolapse (POP). In addition, this knowledge helps examiners more accurately interpret findings from a digital pelvic examination. Conditions such as UI usually occur as result of a dysfunction of the bladder and/or the urethra along with, in most cases, weakness of the pelvic floor muscles (PFMs).²

The pelvic floor explained

The pelvic floor, also called the pelvic diaphragm, is a bowl-shaped muscular sheet whose main functions are to support the abdominal and pelvic organs and to control the opening and closing of the urethral and anal sphincters.³ The pelvic floor rests at the bottom of the pelvis and is formed mainly by the levator ani muscle group. The pubococcygeus muscle forms the anterior portion of the levator ani and is responsible primarily for maintaining continence. The pubococcygeus (PC), as the name implies, stretches like a muscular trampoline from the pubic bone, where it arises, to the coccyx, where it inserts (Figure 1). Three holes (the levator hiatus) open into and through this muscular band. In women, these structures are the urethra, the vagina, and the anal canal, the first of which regulates the flow of liquid waste and the latter-most of which regulates the flow of solid waste as these

Figure 1. Pubococcygeus muscle



The pubococcygeus muscles stretch like a strap from the pubic bone to the tailbone (coccyx).

materials pass out of the body.

When intact, the pelvic floor forms a tight occlusive layer on which the pelvic organs rest, preventing these organs from falling through the opening between the pelvic bones and stabilizing and protecting them during periods of increased intra-abdominal pressure such as that which occurs during childbirth. In addition, the pelvic floor controls and tightens the sphincters around the urethra and the anal canal to maintain continence.

The PFMs work differently from most other muscles in the body, which are usually in a state of relaxation unless performing a task. By contrast, the PFMs continuously maintain a low level of contraction, which allows them to continuously stabilize and support the pelvic organs. When the PFMs are actively contracted, the bladder is elevated further up in the pelvis, the bladder neck is stabilized, and, most important, the angle of the bladder neck remains partially bent, much like a flexible straw, to obstruct the flow of urine from the bladder. If the PFMs weaken (risk factors for PFM weakness are listed in *Table 1*), the bladder drops lower in the pelvis and the bladder neck angle straightens, resulting in a freer flow of urine—and UI.⁴

Urinary continence requires an intact, intrinsic urethral sphincter; a well-supported bladder neck and urethra; and intact PFMs.⁵ When a woman contracts her PFMs, she is actually tightening and lifting the levator ani muscle group, which contracts (pulls) against the PC muscle—the same muscle that is strengthened with Kegel exercises.

Table 1. Risk factors for pelvic floor muscle weakness

- Multiple vaginal deliveries, high infant birth weights: can cause neuromuscular injury and stretching
- Chronic elevations in abdominal pressure related to:
 - Constipation (chronic straining with defecation)
 - Chronic cough (from conditions such as chronic lung disease, long-term smoking)
 - Heavy or improper lifting
- Obesity: places chronic strain on pelvic floor
- Advancing age: results in decreased collagen strength
- Lack of estrogen in pelvic tissue: leads to loss of elasticity in vaginal wall, loss of pelvic muscle tone, thinning of vaginal wall, and devascularization of tissues

Table 2. Minute quiz for urinary incontinence

Please complete this questionnaire and take the first step toward pelvic wellness.

1. Have you leaked urine in the past 3 months?
 Yes No If yes, how much and how often? _____
2. Which of the following caused you to leak? Check all that apply.
 Performing strenuous activity such as running or jumping (SUI)
 Performing simple activities such as laughing, coughing, and sneezing (SUI)
 Hearing the sound of running water (e.g., washing dishes) (UUI)
 Running to the toilet with a strong urge to urinate (UUI)
3. How often do you get up at night to urinate? _____ times
4. Do you feel you go to the bathroom frequently?
 Yes No
5. How much do any of the problems listed above bother you?
 Not at all A little A lot

SUI, stress urinary incontinence; UUI, urge urinary incontinence.

bladder). The Minute Quiz for Urinary Incontinence, a short questionnaire created by the author, may also be used (Table 2).

Inspection

The patient assumes a comfortable semi-Fowler's position for this examination. The NP spreads the patient's labia and observes for any gaping of the introitus or visible descent of pelvic structures as the patient bears down or coughs. In addition, the NP looks for any concomitant bulging of the bladder or rectum or leaking of urine. Next, the NP records the stage of descent of any POP (Table 3). If a prolapse is suspected, the patient is asked to stand, which allows visualization of the full extent of it.⁶ She may place her hands on the NP's shoulders for stability or elevate one leg on a stool to provide better visualization of the vulva. The NP palpates the vaginal opening for any bulges as the patient bears down again.

Digital assessment of the pelvic floor muscles

Evaluation of PFM strength provides a quantitative assessment of the voluntary contraction of these muscles. Digital assessment

Clinical evaluation

A short series of questions and a digital pelvic examination are all that are needed to diagnose most pelvic health problems and initiate a well-structured, conservative treatment plan.

Health history

The health history begins by asking the patient a simple question: *Have you leaked urine in the past 3 months?* If she responds *yes*, then the nurse practitioner (NP) asks whether the leakage is associated with impact such as jogging or coughing (stress UI) or whether it is accompanied by a strong feeling of urgency, even leaking, when the patient approaches the bathroom (urge UI/overactive

is essential to evaluating PFM strength and also enables the NP to detect the presence of a prolapse, a mass, or weakened PFMs or the presence of any conditions related to the aforementioned risk factors that could progress to PFM dysfunction.

Teaching the rectal squeeze

The patient resumes her position on the exam table. The NP asks her to relax her abdominal muscles and then tighten her rectal muscles when directed to do so. The NP explains that PFM tightening—the Kegel exercise—actually entails performing a rectal muscle squeeze. This exercise can be accomplished by pretending to prevent oneself from passing gas.⁷ As the PFMs are tightened rec-

Table 3. Pelvic organ prolapse staging

Stage 0 (not often used)	No prolapse
Stage 1	Descent to any point 1 cm above the hymen
Stage 2	Descent to the hymen
Stage 3	Descent 1 cm or more distal to the hymen

tally, they pull against the pubic bone anteriorly and lift and tighten the PC muscle. Of note, many women think, or they are taught—erroneously so—that the Kegel exercise involves performing a vaginal squeeze or pretending to stop the flow of urine. These latter practices are counterproductive to PFM strengthening.

The NP should observe the anus as the patient squeezes her rectal sphincter. The introitus and anal sphincter should pucker and draw in. Again, the NP should reinforce that the Kegel exercise, or PFM strengthening, is always a rectal squeeze. Of note, many women will have difficulty switching from a vaginal squeeze to a rectal squeeze if the former is already a regular practice.

Assessment of pelvic tightening

Assessment of the patient's ability to tighten the PFMs and relax the abdomen is vital to the correct diagnosis of bladder dysfunction or POP. The NP begins this part of the exam by inserting one or two fingers about 3-6 cm (first knuckle) inside the vagina, at the 5 and 7 o'clock positions around the external vaginal opening. While the patient squeezes the PC muscle, the NP palpates both of its branches and notes her ability to sustain the squeeze. During the squeeze, the muscle should feel like a tight band. The contraction draws the rectum and vagina upward and forward, toward the symphysis pubis, in an attempt to tighten and close the vagina. If the patient is asked to perform multiple squeezes, she should relax the muscle completely between squeezes.

The NP grades the strength of the squeeze, its duration, and whether any deflection of the fingers is felt (Table 4). A low score indicates a lack of PFM strength. The higher the score, the more effectively the patient is performing the Kegel exercise; she should strive for a

level 3 in all parameters. The NP can also use this scale as a means of positive reinforcement; the patient can track her increasing PFM strength at each subsequent visit.

Promotion of abdominal relaxation

As the woman tightens her PC muscle, she must concomitantly relax her abdominal muscles. (Simultaneous contraction of the abdominal muscles reduces the strength of the rectal tightening she can perform.) The NP places the opposite hand lightly on the patient's abdominal muscles to monitor for any incorrect straining. The abdomen should remain soft. This type of biofeedback gives welcome reassurance to the patient that she is performing the exercises correctly.

In addition to relaxing her abdominal muscles and isolating/contracting the PFMs, the patient must relax her accessory muscles, which she may unknowingly be squeezing in an attempt to recruit other muscles to help her tighten her vagina. Tightening would almost entirely negate the usefulness of performing the Kegel exercise. To promote relaxation of the accessory muscles, which include those of the abdomen, thighs, and buttocks, the NP can tell her: *No abs, hips, or butts!* NPs may also need to remind the patient to avoid pushing against the stirrups to enhance her vaginal squeezing ability. This effort is also counterproductive.

Teaching correct performance of PFM exercises

Once the digital assessment of the PFMs is complete, the NP can teach the patient how to perform PFM strengthening exercises. Figure 2 provides full instructions. The patient should tighten and relax her PFMs 10 times in a row at least 3 times a day. Performing PFM exercises can significantly reduce the incidence of conditions associated with PFM weakness.⁸

A reimbursable event

If PFM weakness is present, the NP can attach the billable ICD-10 procedural codes N81.84 (disuse atrophy of pelvic muscle and anal sphincter) and N81.9 (female genital prolapse).

Table 4. Grading the pelvic squeeze

	0	1	2	3
Pressure	None	Slight	Firm	Strong (fingers compressed)
Duration	None	<1 second	1-3 seconds	≥4 seconds
Displacement	No change	Slight incline	Noticeable, pulled inward	Finger drawn inward

Figure 2. How to achieve pelvic fitness in just minutes a day

Kegel exercises involve controlled tightening and relaxing of the pelvic floor muscles (PFMs). When performed correctly, these exercises help strengthen the muscles that support your bladder and urethra and hold your pelvic organs in place. Repeated contraction of the PFMs (isometric contractions) enables them to strengthen, press firmly against the bladder neck, and put pressure against the urethra to slow the unwanted escape of urine. These exercises contract the strap of a muscle that stretches from your pubic bone to your coccyx. And they will enable you to totally relax from head to toe!

1. Breathe slowly and deeply, relaxing the abdominal muscles. You may place your hands on your abdomen to monitor relaxation.
2. Do not contract your abdomen, thighs, legs, or diaphragm.
3. Concentrate on and visualize the PFMs.
4. Slowly contract these muscles. Squeeze and pull your rectal muscles in, as though you were in a crowded elevator standing next to your best friend and you had to pass gas. Your vagina will lift and tighten along with these contractions.
5. Squeeze the muscles and hold the squeeze for 5–10 seconds. Then relax the muscles completely for 5–10 seconds.
6. Repeat this sequence 10 times in a row, 3 times a day.
7. Tie these exercises to a specific activity that you do every day—do not rely on memory—you have enough on your mind already.

Identify 2–3 different times in your day that would allow you a few minutes to practice. For example, practice while you're waiting for your computer to restart or download a file. Write down triggers in your daily routine that will remind you to do these exercises. When performing the exercises, alternate among lying, sitting, and standing. No special equipment is needed. You can practice these exercises discreetly anytime, anyplace. Expect to feel some improvement in 2 weeks and noticeable improvement in 4–6 weeks.

Conclusion

Once the NP becomes comfortable with them, these questions and maneuvers should take only a few extra minutes in the exam room. Digital assessment, a simple but sometimes neglected technique, should be added to every pelvic examination, even if a patient does not have any UI or POP concerns. This simple assessment could change the face of continence care for generations to come as women, particularly younger women, are taught how to increase PFM awareness and maintain and tone their PFMs via Kegel exercises, which can prevent pelvic health problems in the future. ●

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