The Ins and Outs of the Pelvic Floor:
Beginning to Address Pelvic Dysfunction in Your Practice

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AAA

CHOO

I think you need to work on your pelvic floor exercises, dear!
Disclosure

- I have no actual or potential conflict of interests in relation to this presentation
Objectives

- Identify the incidence and relevance of pelvic dysfunction statistics
- Identify the anatomy of the pelvic girdle
- Describe the neurophysiology of micturition
- Differentiate between stress, urge, and mixed incontinence
- Explain pelvic prolapse and its relationship to muscle dysfunction
- Explain the relationship between the diaphragm, abdominal muscles, and pelvic floor muscles
- Demonstrate noninvasive evaluation of pelvic floor muscle function
- Describe the correct patient instructions to perform pelvic floor muscle contraction
- Perform various exercises for the pelvic floor and core muscles
- Recognize the role of biofeedback and electrical stimulation in physical therapy management of pelvic dysfunction
- Identify when to refer a patient to pelvic floor dysfunction to another health care provider
Scope of the Problem

- Estimated 40% of women between ages 30 and 65 and 31% of men over 65 have UI
- Functional decline: UI is associated with 30% increase in functional decline
- Significant increased risk of fall during inpatient episode of care (2 to 3.5 times more likely than continent patient)
- Increased depressive symptoms
- 52% of homebound elderly suffer from UI
- Under diagnosed and treated. Only 30-45% of women and 22% of men with incontinence seek care
- Financial burden: over $12 billion spent annually
Scope of the Problem

• Up to 40% suffer from persistent incontinence after prostatectomy
• 50% of all women over the age of 50 complain of symptomatic prolapse
• 600,000 hysterectomies each year, 1/3 of them are performed due to prolapse
• 90,000 radical prostatectomy procedures per year
Low Back Pain: Relationship with PFM dysfunction

- Spasm of abdominal and/or pelvic floor muscles can result in asymmetry of pelvic joint alignment and mobility
- LBP, PGP, postsurgical inhibition of muscles may have pelvic floor dysfunction correlating to higher incidence of UI
- UI associated with LBP in both males and females
- 38% of women with stress incontinence have LBP
- 66% of women with recurrent UI after bladder suspension surgery present with lower back pain
Anatomy of the Pelvic Cavity

- Bony Pelvis/Pelvic Girdle
- Pelvic floor muscles
- Fascia and ligaments
- Viscera
Bony Pelvis/Pelvic Girdle

- Supports the abdomen and organs of the lower pelvis
- Provides dynamic link between the vertebral column and the lower limbs
Pelvic Floor Muscles

• Also referred to as the pelvic diaphragm
• Between pubis anteriorly and coccyx posteriorly and from lateral pelvic wall to lateral pelvic wall
• Supports the pelvic viscera
• Creates closure through compression to aid continence
• Urethra, vagina and rectum transverse the pelvic floor via urogenital hiatus
• Levator Ani: iliococcygeus, pubococcygeus, puborectalis
• Coccygeus
The Pelvic Diaphragm
Associated Muscles

• Piriformis/Obturator Internus- close proximity within the pelvic floor
• Facillatory Muscles: hip adductors, gluts, transversus abdominis
• Synergistic muscles: inner core
  * Transversus abdominis
  *Deep lumbar/sacral multifidus
  *Pelvic floor muscles
  *Respiratory diaphragm
Neuroanatomy

- Hypogastric Plexus: T12 to L2 sympathetic (filling/storage/sphincter contraction)
- Pelvic nerve: S2 to S4 parasympathetic (empty/sphincter relaxation)
- Iliohypogastric (TA)
- Ilioinguinal (TA)
- Genitofemoral
- Lateral femoral cutaneous
- Femoral
- Obturator
- Pudendal
Stress Urinary Incontinence

• **Definition:** involuntary loss of urine on effort or exertion, or on coughing or sneezing.

• **Symptoms:** loss of small amount of urine with exertion (cough, sneeze, lift)

• **Cause:** pelvic floor muscle weakness, supportive and closure dysfunction
Urge Incontinence

• **Definition:** Involuntary loss of urine accompanied by or immediately preceded by urgency.

• **Symptoms:** Loss of a large amount of urine associated with an irritant (running water, walking by the bathroom, putting the key in the door lock, nervousness)

• **Causes:** uninhibited bladder contractions, closure and support deficits

• **Other names:** detrusor instability, overactive bladder, overactive bladder syndrome, urgency-frequency syndrome
https://youtu.be/3NKvN7U5RXQ
American College of Physicians: Clinical Guidelines

• **Recommendation 1:** First-line treatment with pelvic floor muscle training in women with stress UI. (Grade: strong recommendation, high-quality evidence)

• **Recommendation 2:** Bladder training in women with urgency UI. (Grade: weak recommendation, low-quality evidence)

• **Recommendation 3:** Pelvic floor muscle training with bladder training in women with mixed UI. (Grade: strong recommendation, high-quality evidence)
• **Recommendation 4:** Against treatment with systemic pharmacology therapy for stress UI. (Grade: strong recommendation, high quality evidence)

• **Recommendation 5:** Pharmacologic treatment in women with urgency UI if bladder training was unsuccessful. (Grade: strong recommendation, high quality of evidence)

• **Recommendation 6:** Weight loss and exercise for obese women with UI. (Grade: strong recommendation, moderate-quality evidence)
Pelvic Organ Prolapse

• Urogenital prolapse occurs when there is weakness in the supporting structures of the pelvic floor allowing the pelvic viscera to descend and ultimately fall through the anatomical defect.

• Often symptomatic

• Associated with deterioration in quality of life and may cause bowel and bladder dysfunction
Terms for Prolapse

- **Anterior Prolapse** - cystocele, urethrocele, cystourethrocele, uterovaginal
- **Posterior Prolapse** - rectocele
- **Perineal descent syndrome** - perineum “balloons” downward during cough/strain—should not descend beyond the level of the ischial tuberosity
- **Rectal Prolapse** - rectal tissue prolapses through the rectum
Etiology

- Pregnancy and childbirth
- Hormonal Factors
- Constipation
- Smoking (related cough)
- Obesity
- Exercises (heavy lifting, consider cross fit)
- Previous pelvic surgery
POP Grading System

• Grading 1 to 3 (Laycock Scale 2004)
  * Grade 1: not visible at the introitus (mid-vaginal level)
  * Grade 2: Bearing down results in tissue at the introitus
  * Grade 3: Bearing down results in tissue outside the introitus

https://www.google.com/search?q=images+of+grade+2+cystocele&espv=2&biw=1600&bih=794&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjJ8MbjuuHQAhhD8AKHTM7A8UQ_AUIBigB&dpr=1#imgrc=Il3Ljx3C2TEslM%3A

Retrieved 12/06/16
Clinical Presentation

• Complain of feeling of heaviness or dullness in the pelvis
• Sometimes will say they feel a “lump coming down”
• Symptoms tend to become worse with prolonged standing and towards the end of the day
• May also complain of dyspareunia, difficulty with inserting tampons, and chronic lower backache
• Often experience related urinary and bowel symptoms: frequent UTIs, incontinence, difficulty emptying bladder, constipation, fecal incontinence
Pelvic Floor Muscle Dysfunction

Closure Deficit
• Urinary Incontinence
• Fecal Incontinence

Support Deficit
• Pelvic Organ Prolapse (POP)

Pelvic Pain
• Overactive PFM
• Adhesions/scarring

Majority of patients will have a combination of dysfunction
Components of Skeletal Muscle Function

• Flexibility
• Strength
• Coordination
• Endurance

All muscles require the same components regardless of location
Assessing Pelvic Floor Muscle (PFM)

• Preferred Method – internal pelvic palpation
• Strength, Speed (coordination), Endurance
• Strength of associated muscles- MMT of hips, Modified Sahrmann
• External palpation of Levator ani
• External visualization of perineum- visual lift and bulge
External palpation of Levator ani

• Patient is in sidelying. Palpate with “flat hand” or neutral flexion/extension of fingers and wrists just medial to an ischial tuberosity, in the space of ishiorectal fossa, just lateral to the anal sphincter

• Patient is instructed in a pelvic floor contraction: “Lift and squeeze”

• If the patient contracts correctly, therapist will feel the muscle “lift” into fingers

• Can palpate for sustained contraction and repeated quick contractions

• Note for excessive use or substitutions of accessory muscles
Pelvic Floor Contraction “Kegel” Instructions

**Do’s**
- Contract the muscle like you were trying to stop urine or gas
- Lift the muscle while you squeeze.
- Pretend something is falling out of you and you are trying to hold it in.
- Concentrate on the muscle you are contracting

**Don’ts**
- Sit on the toilet and stop the flow of urine
- Squeeze your legs and your butt together
- Push like you are going to the bathroom
- Just do it whenever you remember while you are watching TV
Pelvic Floor Muscle Exercise Progression

- Fast and slow twitch fibers - need to exercise both
- Use accessory/synergistic muscles for overflow as needed: band abduction, pelvic tilt, side lying or quadruped TrAb, etc.
- Monitor for overflow: especially gluts in males
- Count out loud to avoid breath hold
- Bridging with Kegel for prolapse
- Kegel’s with hips elevated on wedge/pillows for prolapse
- Home program target: 30-60 per day with as few as 10
Modified Sahrmann

• Position in hook lying
• Patient to keep back in neutral
• Level 1: Hip flexion and alternate foot lifted
• Level 2: One hip flexed to 90, alternate heel slide on floor
• Level 3: One hip flexed to 90, alternate heel slide off floor
• Level 4: Bilateral heel slide on floor
• Level 5: Double-leg lowering
Guided Assessment/Exercise Lab

- Self assessment of PFM function
- PFM contraction: supine or side lying, progress to sitting, progress to standing. “KNACK”; elevators
- Facillatory exercises: diaphragm and TA (side lying/quadruped)
- Progressive exercises: quadruped, PFM contractions with PPT, coordinated articulating bridge, advanced TA with 90/90
Biofeedback

• Biofeedback is not a treatment rather an adjunct to treatment
• Makes the patient more aware of muscle learning
• Enhances and motivates patients’ effort during training
• Relatively no side effects
• Provides valuable source of diagnostic and therapeutic information for therapist and patient
• Provides meaningful criteria for modification of therapy
• Aids in motor learning
Electrical Stimulation

- Electrical Stimulation (ES) has been used for decades in physical therapy practice for motor stimulation and pain control.
- Use of invasive forms of ES are FDA approved and have well-documented studies of efficacy in treatment of various lower urinary tract dysfunctions.
- Non-invasive ES techniques do not involve introduction of an instrument into the body.
- Invasive: vaginal/rectal probes, surgical placement of Interstim, needle electropuncture at Posterior Tibialis nerve.
NMES for underactive PFM and Overactive Bladder

• Indications:
  - Underactive PFM (weakness)
  - Urinary stress incontinence
  - Urinary urge incontinence
  - Fecal incontinence

• Contraindications
  - On demand pacemaker
  - Pregnancy or suspected pregnancy
  - Impaired cognitive function
  - Vaginal infection, inflammation, or disease
  - Complete denervation of the PFM
Typical protocol for stress urinary incontinence and underactive pelvic floor

- **Electrode placement:** 2 electrodes next to the anal sphincter, perform active PFM contraction with stimulation “on” time
- **Internal vaginal electrode**
- **Frequency:** 35-50 Hz
- **Pulse Duration (width):** 100-350 usec
- **Wave Form:** Asymmetrical biphasic
- **Amplitude:** To patient tolerance or to anal wink
- **Duty Cycle:** Correlate with PFM training program. Start 5 sec on and 10 sec off. Progress to 10 sec on and 5 sec off
- **Duration:** 10-20 minutes
- **Frequency of RX:** 1-2x/week
- **Length of RX:** once to ongoing
Typical protocol for urinary urgency and urge incontinence, overactive bladder and nocturia

- **2 electrodes**: medial ankle over distal tibial nerve, over S2 –S4 nerve roots on sacrum, suprapubic over bladder 2 inches apart
- **Frequency**: 10-30 Hz
- **Pulse Duration(width)**: 100-350 usec
- **Wave Form**: Asymmetrical biphasic
- **Amplitude (intensity)**: To patient tolerance
- **Duration**: 10-20 minutes, every other day to 1-2 times per day
- **Frequency of RX**: 1 to 7x/week up to BID
- **Length of RX**: 8-12 weeks, 1x/week for maintenance
Electrode Placement
Referral to pelvic physical therapist

- Symptoms do not improve with basic Kegel exercises
- Symptoms become worse with Kegel exercises
- Urinary incontinence complicated by fecal incontinence and/or pelvic pain/pelvic muscle spasms
- Inability to contract the pelvic floor muscle or patient’s inability to understand how to contract with basic instructions
- Uncertainty of treating physical therapist
- Patient apprehension
Pelvic Health Physical Therapist

• Continuing Education in pelvic physical therapy
• Certificate of Achievement in Pelvic Physical Therapy, (CAPP) (APTA or equivalent program)
• Certification of Advanced Practitioner, Pelvic Floor (CAPP-PF) (APTA)
• Pelvic Rehabilitation Practitioner Certification (PRPC) (Herman & Wallace)
• Board Certified Clinical Specialist in Women’s Health Physical Therapy (WCS), (ABPTS)
References


Livingston B. Anatomy and Neural Control of the Lower Urinary Tract and Pelvic Floor. Topics in Geriatric Rehabilitation. 2016; 32 (4): 280-294


