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The Aging Adult and the Pelvic Floor: Applications for all Providers

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Learning Outcomes

As a result of this course, participants will be able to:

- Least two changes in the pelvic floor muscles that are the result of hormonal shifts with normal aging.
- Discuss at least two techniques to improve utilization of pelvic floor muscles during daily activity and exercise to optimize performance.
- Identify at least two pieces of dietary information that can be beneficial in mitigating symptoms from pelvic floor dysfunction in older adults.
- Discuss at least two pelvic floor disorders that are common in older adults.

What is the Impact?

- Prevalence rates vary depending on the study, but overall prevalence of some type of pelvic floor dysfunction is thought to be 60-80% among women age 55+ and 20-40% in men age 55+
 - Refers to people with what is thought of as a “primary pelvic floor” disorder
- Approximately 60% of institutionalized geriatric individuals have a form of incontinence (fecal or urinary)
- Approximately 40% of institutionalized geriatric individuals have a form of pelvic organ prolapse

What is the Impact?

- In the older adult, PFD has been shown to correlate with higher rates of:
 - Pneumonia
 - Functional disability limiting ability to leave the home
 - Hip and back pain
 - Balance deficit/falls
 - Difficulty with mental orientation
 - Skin breakdown

Aging & the Pelvic Floor

Hormones, skeletal muscle changes, oh my!

Why do Older Adults Have Higher PFD Incidence?

- Hormonal changes (menopause and andropause)
- Increased likelihood of abdominal surgical procedures, including prostatectomies and hysterectomies
- Decreased overall muscle function, strength, and balance
 - Sarcopenia-skeletal muscle mass loss of 0.5-1% per year after age 50 if activity levels don't change with accompanying strength and motor control loss

Why do Older Adults Have Higher PFD Incidence?

- Increased likelihood of health problems leading to treatments that directly cause PFD
 - Cancer, Benign prostatic hypertrophy, higher BMI, diabetes, etc.
- Increased likelihood of health problems leading to treatments that indirectly cause PFD
 - Medications causing side effect of urinary frequency/urgency/leakage or constipation

Menopause

- Ovaries stop producing eggs, menstrual cycle no longer occurs
 - Marks the end of female fertility
- During menopause, women may go through an extremely fertile period and have large hormonal swings (can lead to symptoms such as hot flashes, very irregular periods for a time, headaches, etc.)
- Average age is 51, but may occur as early as 30s or as late as 60s

Menopause

- Medical menopause-inducing menopause by injections (Depo Provera) or hysterectomy (usually due to dysfunctional bleeding or cancer)
- Defined by lack of menstrual periods for 12 months
 - Premenopause-may be very fertile, only diagnosed via ultrasound to see number of “good eggs” left
 - Perimenopause-irregular cycles, hormonal changes leading to hot flashes, headaches, etc.
 - Postmenopause-no longer has periods (for >12 months)

Menopause

- Estrogen levels drop significantly (some people supplement) which can have multiple impacts including:
 - Decrease in natural lubrication produced during sexual intimacy
 - Decreased blood flow to pelvic floor musculature and skin (“vaginal atrophy”)
 - Decrease in urethral stiffness
 - Increased risk for bone density problems
 - Increased risk for heart problems
 - Hair loss
 - Weight gain, especially in the mid section

Hormone Supplementation

- Used to be commonly prescribed to manage all symptoms of menopause, until clinical trials showed risks may outweigh benefits, particularly in older women, but it can still be a beneficial treatment option
 - In women who reach menopause early (age less than 40) benefits seem to outweigh risks
 - NOT recommended for women with a history of cancer, stroke, or DVT
 - Smoking while taking hormone replacement therapy is not recommended

Hormone Supplementation

- Systemic-patches, pills, etc.
 - Most effective for systemic symptom management
 - Usually an estrogen/progesterone combination unless the woman no longer has a uterus (estrogen alone can cause uterine lining to grow out of control)
 - Long term use is not recommended, but some studies suggest use during early menopause can be cardio protective
- Low dose vaginal (topical)-rings, compounds
 - Treats urinary or vaginal symptoms while minimizing systemic impact

Andropause

- Term used medically to describe hormonal changes in men which are related to age
- Steady decline in testosterone levels after age 30 (1% per year)
- Testosterone therapy is controversial and risky but may be used to manage symptoms
 - Can stimulate growth of the prostate or contribute to cardiovascular disease

Andropause

- Not all men will be symptomatic (varying levels of normal testosterone to start with)
- Symptoms of testosterone deficiency
 - Decrease in testicular size, decreased libido, fewer night erections, erectile dysfunction, infertility
 - Insomnia or sleepiness
 - Increased body fat, decreased muscle bulk, loss of bone mass
 - Depression

Pelvic Floor Anatomy



PERIAL PICTURES 2

PERIAL PICTURES 3

Pelvic Floor Physiology

- 3 layers of skeletal muscle
 - Layers 1-2: Responsible for the “squeeze” (activation) and opening
 - 70% fast twitch muscle fibers
 - Primary responsibilities in continence, elimination, and sexuality
 - Overactivity can lead to difficulty with elimination and pain with insertion and erection
 - Underactivity/imbalance can lead to leakage of urine or stool and difficulty achieving or maintaining an erection/orgasm

Pelvic Floor Physiology

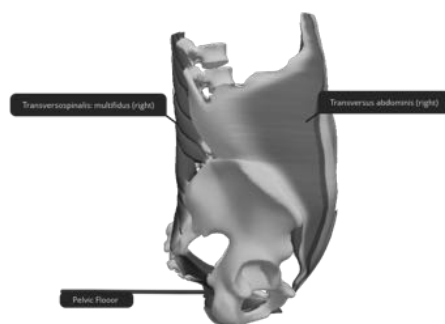
- Layer 3: Responsible for the “lift”
 - 70% slow twitch muscle fibers
 - Part of the core, assists with maintaining organ positioning and appropriate breathing, coughing, and sneezing patterns
 - Inappropriate activity levels can lead to:
 - Musculoskeletal pain (back, hips, pelvic girdle, chronic pelvic pain)
 - Pelvic organ prolapse
 - Difficulty maintaining continence

Ideal Pelvic Floor Function

- Activation
 - As part of the core-helps maintain appropriate and balanced intra-abdominal pressure
 - Helps direct appropriate pressure for coughing, lifting, sneezing
 - Pelvic floor is a respiratory muscle
 - Control of both the concentric and eccentric
- Relaxation
 - “Active relaxation”-dropping the pelvic floor (inhale)
 - Difficult to stretch PF because it's attached to relatively immobile structures

continued™

Ideal Pelvic Floor Function



PRIMAL PICTURES

continued™

Commonly Seen Pelvic Floor Disorders

In the older adult

continued™

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Older Adult Red Flags-Penis Owners

- Cancer red flags
- Urethral discharge of increased quantity, strange color, odor, especially with fever or redness
- Inflammation and acute testicular pain, abrupt onset scrotal pain with swelling or edema and exquisite tenderness, nausea and tachycardia may accompany
- Symptoms of cauda equina syndrome
- Hematuria

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Older Adult Red Flags-Vagina Owners

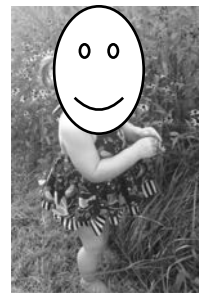
- Cancer red flags
- Discharge that has a foul odor or strange color/appearance
- Bleeding of unexplained origin
- Sharp/acute abdominal pain
- Pelvic or abdominal pain with no apparent musculoskeletal cause
- Hematuria

Aging and Sexual Health

- Decreasing libido is common in older adults due to decreasing levels of testosterone
- May older adults do remain sexually active, but not all-what works for your relationship?
- Common sexual challenges with aging:
 - Dyspareunia
 - Painful ejaculation
 - Premature ejaculation
 - Erectile dysfunction

Dyspareunia

- Lack of prior levels of lubrication
- Tightening/decrease in elasticity of pelvic floor and skin due to estrogen loss
- Blood filling invaginations may take longer/need more stimulus
- Possible development of autoimmune issues such as lichen sclerosis
- If history of cancer, radiation scarring



Dyspareunia-Treatment

- Topical or systemic estrogen if good candidate
- Use of lubricant-water or silicone based
- Adequate foreplay
- Pain education
- Desensitization
- Pelvic floor and abdominal soft tissue mobilization
- Downtraining

Painful Erection or Ejaculation

- Often secondary to soft tissue tightness in pelvic floor, abdomen, inguinal canal, penile suspensory ligaments, etc.
- Erection-corpus cavernosum fills with blood
- Ejaculation-spinal reflex impacts:
 - Deep and superficial pelvic floor muscles
 - These muscles display rhythmic contractions every 0.8 seconds which forces the semen out and through the urethra

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Painful Erection or Ejaculation Treatment

- Soft tissue mobilization of pelvic floor (especially layer 1 and 2), abdomen, inguinal canal
- Pelvic floor downtraining
- Pain education
- If not responding, refer to physician to assess for urethral blockages or strictures

continued™

Premature Ejaculation

- Much shorter than normal latency rate between erection and ejaculation
 - 1.7 minutes vs 7.3 minutes
- Most common in younger men (20-30s) and older men (>70)
- Etiology not perfectly clear, but may be due in part to high sensitivity of nervous system (sensation and/or spinal reflex)

Premature Ejaculation Treatment

- Desensitization/graded exposure
- Soft tissue mobilization if needed
- Overall CNS downregulation if needed

Erectile Dysfunction

- 9-40% prevalence by age 40, increases by 10% every decade thereafter
- Most often the result of a medical problem, not simply aging, but incidence increases with age
 - Anything that decreases blood flow can cause erectile dysfunction (heart disease, atherosclerosis, etc.)
 - Hypertension
 - Diabetes
 - Obesity
 - Neurologic conditions (Parkinson's etc.)
 - Treatments for prostate issues
 - Prescription medications (especially for blood pressure)
 - Tobacco use
 - Alcohol and substance abuse
 - Psychologic dysfunction including stress, depression, etc.

Erectile Dysfunction Treatment

- Bulbospongiosus plays a role in allowing engorgement of the corpus cavernosum
- Ischiocavernosus is also important
 - Exercises targeting the ability to contract and relax can be beneficial
- Abnormally high tone has been suggested as another possible cause of erectile dysfunction
- General aerobic exercise can also be beneficial due to increased blood flow and cardiovascular health

Urinary Health and Aging

- Bladder volume and ability to contract detrusor to empty may both decrease
- Behavioral component
- Common challenges:
 - Stress incontinence
 - Urge incontinence
 - Urinary frequency
 - Overflow incontinence
 - Urinary retention

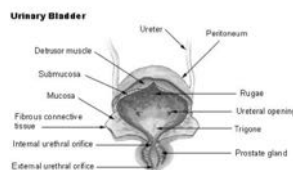


Image: U.S. National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) Program / Public domain

Urinary Incontinence

- Over age 60, residual volume increases from <50mL to 50-100 mL due to loss of strength of detrusor muscle
- Stress-leakage with coughing, sneezing, laughing, jumping/running
- Urge-short interval between getting signal to empty bladder and emptying of bladder
 - May be accompanied by frequency
- Overflow-leakage with no sensation of needing to go
 - Neurologic deficit or post prostatectomy/post longer catheterization

Urinary Incontinence Treatment-Stress

- Improve intra-abdominal pressure regulation
- Teach “knack”
- Ensure voiding at appropriate intervals (2-4 hours)
- Improve overall core and pelvic girdle stabilizer function
- Topical estrogen may help with urethral stiffness
- Appropriate fluid intake

continued™

Urinary Incontinence Treatment- Urge

- Ensure voiding at appropriate intervals
- Timed voiding/bladder retraining
- Eliminate dietary irritants
- Mindfulness
- Appropriate fluid intake

continued™

Urinary Incontinence Treatment- Overflow

- Timed voiding
- Avoid dietary irritants
- Pelvic floor strengthening
- Urethral support if needed
- If due to neurologic deficit, may need to increase catheterization frequency
- Appropriate fluid intake

Urinary Retention

- Inability to void or fully void
- Causes
 - Benign prostatic hyperplasia
 - Prostate cancer
 - Use of in and out catheterization to void for a prolonged period of time
 - Pelvic floor muscle spasm
 - Injury or surgery
 - Neurologic deficit

Urinary Retention Treatment

- Soft tissue mobilization-pelvic floor and abdomen
- Bladder mobilization
- Pelvic floor downtraining
- Timed voiding
- Toileting position (squatting)
- For prostate enlargement, surgery will likely eventually be needed

Bowel Health and Aging

- Dietary changes
- Digestive changes
- Autoimmune disruption
- Activity level changes
- Common challenges
 - Constipation
 - Fecal incontinence

Constipation

- Impact
 - Poor digestion leads to a host of problems
 - Can increase likelihood of urinary incontinence
 - Increases likelihood of pelvic organ prolapse
 - Can lead to discomfort from abdominal bloating
- Common causes
 - Diet
 - Decreased activity level
 - Decreased mobility making toileting difficult
 - Pelvic floor overactivity

Constipation-Treatment

- Adequate water intake
- Aerobic exercise
- Abdominal soft tissue mobilization
- Bowel massage
- Pelvic floor soft tissue mobilization
- Adequate fiber intake (25-35 g/day)
- Toileting mechanics

Fecal Incontinence

- Can be due to overall digestive health or due to a disease process (Crohn's, inflammatory bowel disease)
- If there is a history of 4th degree perineal tear, that can be a component as well
- Sometimes pelvic floor weakness and sphincter control

Fecal Incontinence Treatment

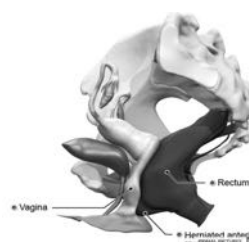
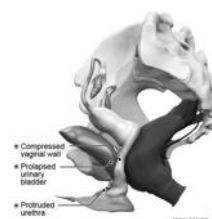
- MUST regulate bowel consistency! None of us can hold in liquid
- Use fiber, control constipation
- Pelvic floor and abdominal mobilization (if scar from perineal tear is causing “gapping”)
- Eliminate bowel irritants (fatty foods, acidic, use bowel diary)



Image: Cabot Health, Bristol Stool Chart / CC BY-SA

Pelvic Organ Prolapse

- Cystocele
- Rectocele
- Uterine
- Enterocoele
- Rectal
- Causes: soft tissue laxity (delivery, genetics, prolonged straining/poor intra-abdominal pressure regulation), poor intra-abdominal pressure regulation, pelvic floor weakness OR overactivity



continued™

Pelvic Organ Prolapse Treatment

- Intra-abdominal Pressure regulation
- Pelvic floor activity level regulation
- Controlling for constipation
- Pessary
- Surgery (worst case)

continued™

Retraining the Pelvic Floor with Exercise

continued™

Overactive or Underactive?

- Assess for tone & function
- Knees supported
- Fingers on ischial tuberosity, “sink in” to palpate
- Bilateral
- Pain, trigger points, resting tone
- Palpate hip adductors also-mirror PF activity
- Can be performed in supine or sidelying
- Assess ability to contract



Overactive or Underactive?

- Internal exam
- Assess for how tight the tissues feel, any tight spots or tender spots you don't expect
- Request activation-can they activate? Does it feel equal/symmetric? Does it return to baseline afterward?
- Are they able to actively elongate?

Coccygeal Movement Test

- Patient in sitting, sidelying, standing
- Place proximal portion of hand on sacrum with 3rd digit on coccyx
- Request a contraction of pelvic floor
- Inward displacement of coccyx=correct contraction
- Outward displacement of coccyx=straining/bulging/ incorrect contraction
- No displacement of coccyx=nothing



For Overactive Pelvic Floors

- Downtrain
- Use breath pistoning to your advantage!
- “Opening” positions for pelvic floor (happy baby, deep squat, butterfly)
- Pelvic floor “drop”



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Breath Work

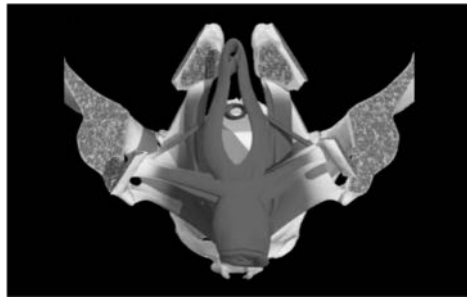
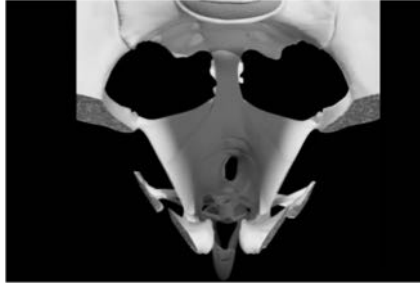


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For Underactive Pelvic Floors

- Teach proprioception first-activate!
- Cues
 - Pull your sit bones together
 - Try to pull your tailbone to your pubic bone
 - Try to lift your rectum into your body
 - Elevate your testicles (or penis)
 - Try to lift the middle of the pelvic floor up away from my hand (if patient sitting on your hand)
 - Try to hold back gas
 - Pretend you are stopping the flow of urine*
 - Elevator cues

continued™



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Underactive Pelvic Floors

- Teach to control the eccentric!
 - Stop the elevator on the way down
 - Try to resist me as I pull my finger out
 - Use the breath cycle and try to lower slowly with the inhale

All Pelvic Floors

- The amount of activation should match the amount of effort!
- Pelvic floor activation should coordinate with and be in approximately equal amounts with other core muscles (neuromotor control)
- You can always go back to the breath cycle
- As you move into functional training, watch for substitution patterns!
 - Glute squeezing, breath holding, aberrant movement patterns

Neuromotor Control

- “Blow before you go”
- Talk or sing as you move
- Choose the functional movement that causes the problem (if you know it!) and work on that
- Can use body positioning (forward/backward weight shifts) to bias toward anterior or posterior pelvic floor if applicable

continued™

Cough Training

- Shown to help decrease incidence of pneumonia
- Teach to cough from the bottom up

continued™

Older Athletes

- Train to their sport!
- Critical to ensure appropriate baseline muscle activity
- Ensure balanced muscle activation so nothing is over or under loaded

Lifestyle Adaptations

That can be helpful in the older adult population

Coughing/Sneezing

- Don't suppress the sneeze!
- Knack beforehand if possible

Intake/Output Diaries

Date	Drink		Urine		Leakage		
	Type	How much (mls)	Volume of Urine (mls)	How Urgent 0-3 3= most urgent	Leakage with Urgency	Leakage with activities	Pad change
0200			150mls		Y		
0700	Mug coffee	250mls	250mls				
0800			60mls			cough	P
0900	Cup orange juice	200mls				stretch	
1000			100mls				
1200	2 mugs coffee	500mls					
1400			300mls		Y		
1530	Cup of tea	200mls				jogging	P
1600			100mls				
1800	Cup of tea	200mls					
1900			100mls		Y		
2000	Glass of beer	200mls	20mls				
2030	Glass of wine	50mls				cough	
2200							P
2300			150mls				

Intake/Output Diaries

- Identify bowel or bladder irritants
- Ensure appropriate intake of water and/or fiber
- May assist in making personalized recommendations

Timed Voiding

- Purpose: Either stretch a contracted detrusor or prevent overflow leakage
- Determine amount of time they can easily go with minimal or no leaking
- Set a timer and go when it goes off!
- If urge before it goes off, attempt distraction techniques, if still urge, go ahead and go, start the timer over
- Slowly increase by 15-30 min increments every 3-4 days

Toileting Mechanics

- Knees higher than hips is ideal
- If not possible, having them the same height is good
- Diaphragmatic breathing
- Open glottis exhale



continued™

Sleep

- Critical for ideal musculoskeletal and organ health/functioning
- 7 to 8 hours recommended for >65 year olds
- Improving sleep recommendations:
 - Same wake up time daily to allow good circadian rhythm
 - Go to bed alarm if needed
 - Limit extreme light exposure/brain excitement for an hour before bedtime
 - Get at least 1 hour of direct sunlight during the day if possible
 - Avoid or limit length of naps
 - Relaxing bedtime routine
 - Get out of bed if lying awake
 - Screen for possible sleep disorders (insomnia, apnea)

continued™

Exercise!

- Aerobic activity-walking program, biking, swimming, running
- Resistance training (can be body weight, bands, light weight)
- Gentle, purposeful movement that incorporates balance (Tai Chi, yoga, Qi Gong)

Case Study

Case 1

- 72 year old male presents with a complaint of urinary leakage. He had a radical prostatectomy approximately 1 year ago and is having incontinent episodes with sneezing and when moving from seated to standing or the reverse. He also has a history of a total hip replacement 5 years ago. His goal is to be able to decrease the number of Depends he uses per day (currently 4).

continued™

Case 1

- What other information do you want to know?
- What are some elements of treatment that you might include?
- What are some lifestyle adaptations that might be beneficial for this patient?

continued™

Case 2

- 65 year old female with complaints of dyspareunia for approximately 10 years. She finished menopause at age 54. She does not have a past history of dyspareunia. She is in a committed relationship and desires to be able to have pain free intercourse.

continued™

Case 2

- What else do you want to know?
- What are some elements of treatment that may be beneficial for this patient?
- What are some lifestyle changes you might suggest?

continued™

Case 3

- 68 year old female Crossfit athlete with complaints of urinary leakage during exercise. It is especially noticeable with double unders, weighted squats, and burpees. This started approximately 15 years ago, and she has been wearing pads to exercise, but a friend told her that having therapy might help. Her goal is to be able to exercise without leaking. She states she is frustrated because even if she goes to the bathroom right before she does double unders, she still leaks.

continued™

Case 3

- What else do you want to know?
- What are some elements of treatment that may be beneficial for this patient?
- What are some lifestyle adaptations that may be helpful to include?

continued™

Questions?



continued™

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