FLEX CEUs

Pelvic Floor Therapy

Introduction

Between 15 to 25 percent of the United States population will experience a pelvic floor disorder of some sort in their lifetime. These conditions can cause discomfort, pain, poor control of bowel and bladder, and sexual dysfunction. Throughout this course, physical therapists and assistants will gain an understanding of the anatomy of the pelvic region, the incidence of pelvic floor disorders, how back pain is a common co-occurring condition, intervention, and several definitions related to pelvic floor conditions relevant to physical therapy.

Background

Pelvic floor therapy is necessary for millions of people struggling with pelvic floor dysfunction and pain in the United States. This section will explore the incidence and prevalence of pelvic floor dysfunction and the anatomy of the pelvic region. Physical therapists and assistants need to know this foundational information to understand the necessity of pelvic floor therapy on a population level and the structure and function of what they are treating with pelvic floor disorders.

Pelvic Floor Definitions and General Background [1]

It is crucial to have a basic understanding of what is meant by the terms pelvic floor, pelvic floor dysfunction, and pelvic floor disorders as background knowledge for this course.

The **pelvic floor** is a group of muscles that forms a hammock-like structure at the base of the pelvis, supporting the pelvic organs, including the bladder, uterus (in females), and rectum. These muscles play a crucial role in maintaining urinary and bowel continence, as well as sexual function.

Pelvic floor dysfunction refers to a condition in which the muscles, ligaments, and connective tissues of the pelvic floor do not function properly. Symptoms of pelvic floor dysfunction include urinary or fecal incontinence, pelvic organ prolapse, pelvic pain, painful intercourse, urinary urgency and frequency, and difficulty with defecation. Pelvic floor dysfunction can be caused by a variety of factors, including pregnancy and childbirth, chronic constipation, obesity, hormonal changes, nerve damage, and certain medical conditions. Additionally, pelvic floor dysfunction can affect both men and women, but some conditions, like pelvic organ prolapse, are more common in women due to the presence of the uterus and the differences in pelvic anatomy.

Pelvic floor disorder is a term often used to describe a specific diagnosed condition or a more specific issue within the broader category of pelvic floor dysfunction. For example, pelvic organ prolapse and urinary incontinence are considered pelvic floor disorders. A pelvic floor disorder typically refers to a more focused condition that affects the pelvic floor or its associated organs. It is likely that a person who has a pelvic floor disorder will also have pelvic floor dysfunction. The terms are often used interchangeably.

Epidemiology of Pelvic Floor Dysfunction [1–4]

The incidence and prevalence of pelvic floor dysfunction vary based on sex, health history, lifestyle, and many more factors. The most common pelvic floor disorders include urinary incontinence, fecal incontinence, pelvic organ prolapse, and pelvic pain. This section will explore the incidence and prevalence of various populations that experience pelvic floor disorders.

Females

The overall prevalence of having at least one pelvic floor disorder in females of all ages is 24 percent. This jumps to 41 percent for those 40 years or older. Even further, half of females over the age of 80 have at least one pelvic floor disorder. Around one-fifth of females over the age of 80 have surgery to correct pelvic organ prolapse. It is quite typical for females to have more than one pelvic floor disorder at a time. One-third to one-half of females with one pelvic floor disorder actually have two or more.

As for specific pelvic floor disorders, females experience urinary incontinence, fecal incontinence, pelvic organ prolapse, and chronic pelvic pain at certain rates, which generally increase after pregnancy and vaginal childbirth. Urinary incontinence is one of the most prevalent pelvic floor disorders in women, especially as they age. The prevalence rates vary by age and can range from 40 to 60 percent in women aged 60 and older. In younger women (aged 20-39), the prevalence is estimated to be around 25 to 45 percent, which is similar in women after childbirth. The prevalence of fecal incontinence is lower than urinary incontinence but still significant. It is estimated to affect around 2-15 percent of the general population of women. Pelvic organ prolapse is another common pelvic floor disorder in women, and its prevalence increases with age. In women, the prevalence of symptomatic pelvic organ prolapse is estimated to range from 3 percent to 6 percent, while considering all degrees of prolapse, the prevalence can be as high as 50 percent in some age groups. Women post-pregnancy and vaginal childbirth experience pelvic organ prolapse at a rate ranging from 25 to 75 percent. Chronic pelvic pain is a more challenging condition to estimate due to the wide range of underlying causes. The prevalence of chronic pelvic pain in women has been reported to be around 15 percent.

Males

The prevalence of pelvic floor disorders is generally lower in males than in females primarily because the male pelvic floor anatomy is different. However, pelvic floor disorders can still occur in men, and their prevalence can vary depending on the specific disorder and the population being studied. Urinary incontinence can occur in men, particularly as they age. The prevalence of urinary incontinence in men is estimated to be around 5 to 15 percent, with the highest rates observed in older age groups. Fecal incontinence, or the inability to control bowel movements, can also affect men. However, it is less common compared to women, and the prevalence in men is estimated to be lower, around 1 to 5 percent. Chronic pelvic pain is a condition that can affect both men and women. In men, it can be associated with chronic prostatitis or other pelvic floor muscle issues. The prevalence of chronic pelvic pain in men is estimated to be around 2 to 10 percent. Erectile dysfunction is not strictly a pelvic floor disorder, but it can be related to pelvic floor function. It is the inability to achieve or maintain an erection sufficient for sexual intercourse. The prevalence of erectile dysfunction increases with age and is estimated to range from 5 to 15 percent in men aged 40 and older. Men can also experience pelvic floor muscle dysfunction, characterized by pelvic floor muscle tension or weakness. However, specific prevalence rates for this condition are not as well-documented as in women.

Transgender Individuals

People who are transgender, experience pelvic floor disorders at significant rates, although these rates are not well documented. Factors that influence the development of pelvic floor disorders in transgender individuals are hormone therapy, gender-affirming surgeries, genital dysphoria, as welll as simplyaccess to healthcare. Hormone therapy can increase the risk of urinary incontinence and increase pelvic muscle tension. Gender affirming surgeries change the structure of

the pelvic floor, which can alter the function and sensation in the pelvic region. Genital dysphoria may impact pelvic floor dysfunction by altering how transgender individuals perceive their pelvic region. Difficulties in accessing healthcare also increases the severity and prevalence that transgender individuals experience pelvic floor disorders. Many healthcare professionals are not trained in providing gender affirming care to individuals.

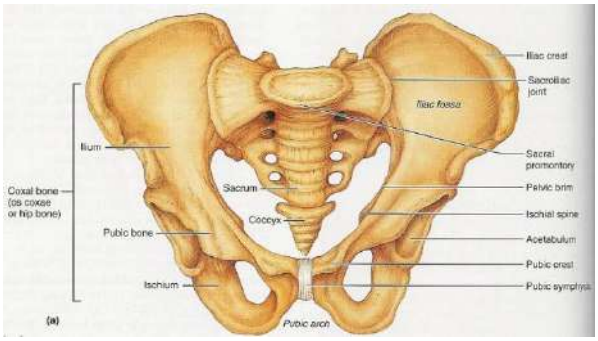
Anatomy of the Pelvic Region [5,6]

Physical therapists and assistants should be familiar with the anatomy and function of the pelvic region in order to best care for patients with pelvic floor dysfunction. This section will detail both the anatomy and how it may relate to urogynecology issues.

Pelvic Bones

The pelvis is formed by a fusion of three bones: the ilium, ischium, and pubis. which when theyarticulate with each other to create the pelvic ring, providing structural support for the abdominal and pelvic organs. The **ilium** is the large, flaring bone on either side of the pelvis. It consists of the body of the ilium, which forms the superior and lateral part of the pelvis, and the iliac crest, a prominent ridge at the top of the ilium. The **ischium** is the posterior, lower part of the pelvis. It includes the ischial body and the ischial tuberosity, commonly known as the "sit bones," which provide support when sitting. The **pubis** is the anterior part of the pelvis. The pubic bones from both sides articulate at the pubic symphysis, a fibrocartilaginous joint in the midline of the body. The sacrum and coccyx make up the terminal aspect of the spine. The **sacrum** is formed by the fusion of five sacral vertebrae, S1 to S5. It provides support for the spine, transferring weight from the spine to the pelvis and lower extremities. It helps to support and protect the

pelvic organs and serves as an attachment site for a multitude of pelvic muscles and ligaments. The **coccyx** is composed of three to five fused vertebrae and serves as an attachment point for muscles and ligaments. It acts as support for the pelvic floor, protection of the lower spinal cord, and weight distribution during sitting.



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Pelvic Ligaments

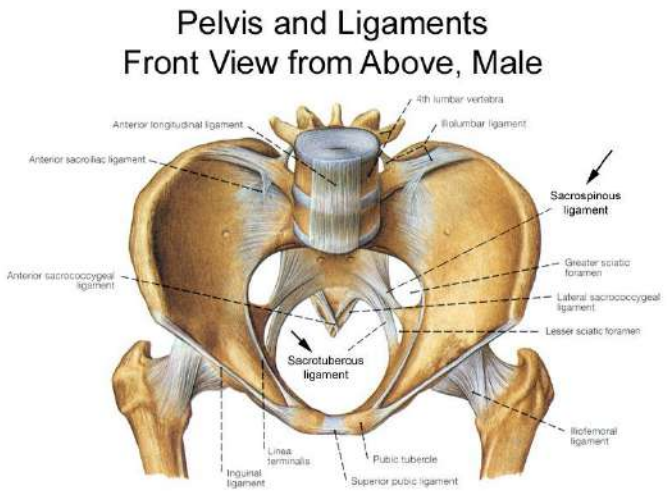
There are a multitude of **sacroiliac ligaments that provide** stability and support from the sacrum to the ilium. They are briefly described her. he **anterior sacroiliac ligament** connects the anterior surface of the sacrum to the adjacent ilium. It is a broad, flat ligament that provides support to the anterior aspect of the sacroiliac joint. The **posterior sacroiliac ligament** connects the posterior surface of the sacrum to the ilium. It is a thick, strong ligament that helps stabilize the posterior aspect of the sacroiliac joint. The **interosseous sacroiliac ligament** is located deep within the joint and connects the roughened surfaces of the sacrum and ilium. It contributes to the overall stability of the sacroiliac joint.

The **superior** and **inferior pubic ligaments** connect the superior and inferior pubic rami, respectively, to add stability. The **sacrotuberous ligament** extends from the lateral sacrum and coccyx to the ischial tuberosity. It forms part of the greater sciatic foramen, through which nerves and vessels pass (sciatic nerve, piriformis muscle, posterior femoral cutaneous nerve, pudendal nerve, and the nerve to

obturator internus). The sacrotuberous ligament contributes to the stability of the sacroiliac joint and supports the pelvic floor.

The **sacrospinous ligament** extends from the lateral sacrum and coccyx to the ischial spine. Like the sacrotuberous ligament, it forms part of the greater sciatic foramen. The sacrospinous ligament provides support to the pelvic organs and is involved in maintaining the integrity of the pelvic floor.

In females, the **uterosacral ligaments** extend from the posterior aspect of the uterus to the sacrum. These ligaments help stabilize the uterus in its position and play a role in supporting the pelvic organs. The **cardinal ligaments**, also known as the transverse cervical ligaments, extend from the cervix and lateral vagina to the lateral pelvic walls. These ligaments provide important support to the uterus and vagina.



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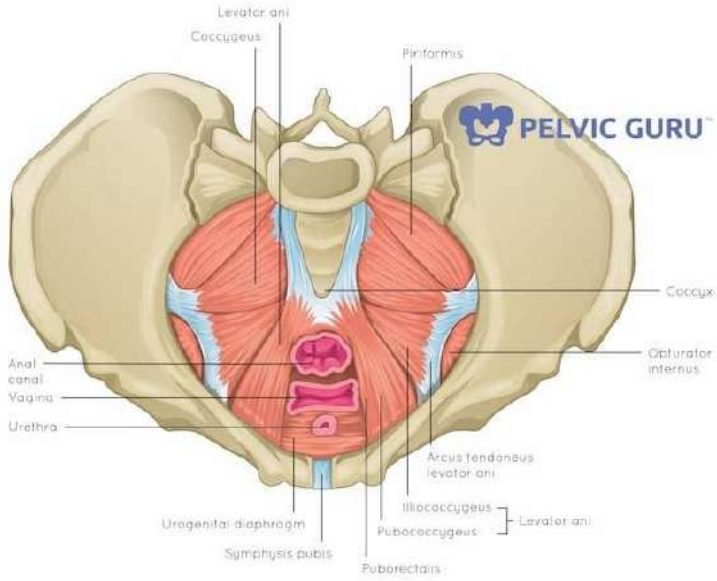
Pelvic Muscles, Nerve, and Blood Supply

The pelvic region contains several muscles that play critical roles in supporting the pelvic organs and controlling bowel and bladder function. The **levator ani** is a broad, flat muscle that forms the pelvic diaphragm, supporting the pelvic organs and contributing to the control of continence. It consists of three main parts, the

puborectalis, the pubococcygeus and the iliococcygeus. The **puborectalis** attaches from the pubis to the anorectal junction (around the rectum). The **pubococcygeus** extends from the pubis to the coccyx and supports the pelvic organs. The **iliococcygeus** stretches from the ischial spine to the coccyx. The levator ani muscle receives innervation from branches of the sacral plexus, particularly the ventral rami of S3 and S4 spinal nerves.

The **coccygeus** (ischiococcygeus) is a muscle located at the posterior aspect of the pelvis, assisting in supporting the pelvic organs. It originates at the ischial spine and attaches to the coccyx. It is innervated by branches of the sacral plexus, the ventral rami of S3 and S4.

The **obturator internus** is a deep muscle that helps rotate and stabilize the hip joint. It runs from the sacrum to the greater trochanter of the femur and is involved in hip rotation. It is innervated by the nerve to the obturator internus (sacral plexus L5-S2).



The **piriformis** originates at the sacrum, courses through the greater sciatic foramen, and attaches to the greater trochanter. It is an external rotator of the hip. It is innervated by the nerve to the piriformis, supplied by S1-S2 of the sacral plexus.

The **urogenital diaphragm** is a muscular and fibrous layer between the pubic bones anteriorly and the coccyx and sacrum posteriorly. It maintains urinary and

fecal continence, supports the pelvic muscles, and spans the width of the pubic arch. It is formed by the external urethral sphincter and deep transverse perineal muscles, which are innervated by S2-S4 spinal nerves of the sacral plexus. **The deep transverse perineal muscle** attaches to the ischial rami and perineal body and is innervated by the pudendal nerve. The **superficial transverse perineal muscle** runs horizontally across the pelvic floor, attaches to the ischial rami, and is innervated by the pudendal nerve.

The gluteals (gluteus maximus, medius, and minimis) support the pelvic region and hips. The **gluteus maximus** attaches from the posterior ilium and sacrum to the femur, extends the hip and assists with external rotation and abduction. The **gluteus medius** attaches from the superior and lateral surface of the ilium to the greater trochanter. It abducts the hip and stabilizes the pelvis while ambulating. The **gluteus minimis** is the deepest of the gluteal muscles. It attaches from the lateral and superior surface of the ilium to the greater trochanter. It helps with hip abduction and internal rotation.

The abdominal muscles are not directly part of the pelvic region anatomically, but they are closely connected and functionally related to the pelvic region and have a large role in low back pain. The abdominal muscles make up the anterior and lateral aspects of the abdomen. These muscles play a crucial role in maintaining abdominal and pelvic stability, protecting internal organs, supporting posture, and assisting in various movements. They are innervated by the thoracoabdominal nerves and the subcostal nerve. Blood supply comes from the superior epigastric artery, inferior epigastric artery, deep circumflex iliac artery, and musculophrenic artery.

The **rectus abdominis** is a paired, long muscle that runs vertically along the front of the abdomen, attaching from the pubic symphysis/pubic crest to the xiphoid

process. The rectus abdominis is involved in flexing the spine, bringing the ribcage closer to the pelvis.

The **external oblique** muscles are the largest and most superficial of the abdominal muscles. They run diagonally from the lower ribs to the pelvis attaching from the lower eight ribs to the linea alba. The external obliques aid in flexing and rotating the trunk.

The **internal oblique** muscles lie beneath the external obliques and run in the opposite direction, from the pelvis to the lower ribs. The internal obliques attach from the thoracolumbar fascia, iliac crest, and the inguinal ligament to the lower ribs, lineal alba, and pubis, and contribute to trunk rotation and lateral flexion.

The **transversus abdominis** is the deepest of the abdominal muscles and attaches from the lower six ribs, thoracolumbar fascia, iliac crest, and inguinal ligament to the linea alba and pubic crest. It runs horizontally across the abdomen, forming a girdle-like structure. The transversus abdominis plays a significant role in core stability and provides support to the abdominal and pelvic organs.

The following vessels comprise most of the vascular supply to the pelvic region.

The internal iliac artery is a major artery that supplies blood to most of the pelvic organs, pelvic walls, and pelvic floor muscles. It divides into several branches, some of which provide blood to specific muscles of the pelvic region. **The superior gluteal artery** arises from the internal iliac artery and supplies blood to the gluteal muscles. The **inferior gluteal artery** also arises from the internal iliac artery and supplies blood to the gluteus maximus muscle, the largest muscle in the buttocks. The **pudendal artery** originates from the internal iliac artery and is responsible for supplying blood to the perineum, including the external genitalia and anal region. It provides blood to muscles like the superficial transverse perineal muscle, ischiocavernosus muscle, and bulbospongiosus muscle. The **obturator artery** is

another branch of the internal iliac artery that supplies blood to the obturator internus muscle, a muscle located in the pelvic floor. The **superior vesical artery** is a branch of the anterior division of the internal iliac artery. It provides blood to the urinary bladder and surrounding structures, including some pelvic floor muscles. The **uterine artery**, also known as the uterine branch of the internal iliac artery, supplies blood to the uterus in females. It also contributes to the blood supply of the pelvic floor muscles. The **middle rectal artery** arises from the anterior division of the internal iliac artery and supplies blood to the rectum and surrounding muscles.

Pelvic Organs

Reproductive organs in females include the **uterus**, fallopian tubes, and ovaries and are located within the pelvic cavity. In males, the **prostate gland** and seminal vesicles are present. The prostate is located just inferior to the urinary bladder and surrounds the urethra. It functions to produce seminal fluid and when enlarged can impede the flow of urine. The urinary organs, the **bladder** and **urethra**, are part of the urinary system, responsible for storing and eliminating urine. The bladder is a hollow organ and is able to eliminate urine by contraction of the detrusor muscle. Urination is a voluntary process due to coordination between the detrusor muscle, the internal and external urethral sphincters, and nerve signaling. The digestive organs, including the lower part of the colon (sigmoid colon) and the rectum are situated in the pelvis, are involved in the storage and elimination of feces. The **rectum** is the terminal part of the large intestine, and its primary function is to store feces before they are eliminated from the body during defecation. It begins at the sigmoid colon, which is the last part of the colon, and ends at the anal canal. The rectum is approximately 5 inches in length. The **anal canal** is the terminal part of the digestive tract, located between the rectum and the anus. It plays a crucial role in controlling the release

of feces from the body through the process of defecation. It consists of the **internal** and **external anal sphincters**, which open and close involuntarily and voluntarily, respectively.

Risk Factors for Developing a Pelvic Floor Disorder [7]

Several risk factors can contribute to the development of pelvic floor disorders. These risk factors can vary based on the specific pelvic floor disorder, but some common factors are included in this section.

Pregnancy and childbirth can put significant strain on the pelvic floor muscles and tissues. Vaginal delivery, in particular, can lead to stretching or tearing of the pelvic floor muscles and may increase the risk of pelvic floor disorders such as pelvic organ prolapse and urinary incontinence.

As individuals age, the pelvic floor muscles and connective tissues may weaken and lose their elasticity, increasing the risk of pelvic floor disorders. Excess body weight from being overweight or obese places increased pressure on the pelvic floor, which can contribute to the development of pelvic floor disorders such as urinary incontinence and pelvic organ prolapse.

Straining during bowel movements, especially if chronic, can weaken the pelvic floor muscles and lead to pelvic floor dysfunction. Conditions such as chronic obstructive pulmonary disease (COPD) or frequent coughing due to smoking or other respiratory issues can also strain the pelvic floor muscles over time, causing pelvic floor disorders such as urinary incontinence.

Repetitive high-impact activities, such as heavy weightlifting or intense aerobic exercises, can place stress on the pelvic floor and increase the risk of pelvic floor disorders if there is an imbalance of muscular function in the area.

There may be a genetic predisposition to pelvic floor disorders, and a family history of pelvic floor disorders may increase an individual's risk of developing one. Changes in hormonal levels, such as during menopause, can lead to alterations in pelvic floor muscle function and contribute to the development of pelvic floor disorders. Previous surgeries in the pelvic region, such as prostate surgery in men or gynecological surgeries in women, can disrupt the pelvic floor and increase the risk of pelvic floor disorders. Neurological conditions that affect the nerves controlling the pelvic floor muscles, such as a spinal cord injury, can lead to pelvic floor dysfunction.

Section 1 Key Words

Pelvic Floor - A group of muscles that forms a hammock-like structure at the base of the pelvis, supporting the pelvic organs

Pelvic Floor Disorder – A term used to describe a more specific problem within the broader category of pelvic floor dysfunction

Section 1 Summary

Pelvic floor disorders impact a significant number of individuals in the United States for a variety of reasons. It is imperative that PTs and PTAs understand the prevalence, the anatomy and function of the pelvis, and background information so they can explain the condition to patients and treat it effectively.

Pelvic Floor Dysfunctions

Several specific pelvic floor disorders and dysfunctions exist that physical therapists and assistants should be knowledgeable about to treat. This section will

define various pelvic floor dysfunctions, common signs and symptoms to monitor for, and therapy needs with each disorder.

Pelvic Floor Dysfunctions – Female [8]

Female pelvic floor dysfunctions range in severity, prevalence, and symptoms. The most common pelvic floor disorders for specifically female patients are in this section.

Prolapse

Pelvic organ prolapse occurs when one or more pelvic organs (bladder, uterus, rectum) descend or bulge into the vaginal canal due to weakened pelvic floor support. Symptoms of pelvic organ prolapse are the sensation of pelvic pressure or heaviness, a bulging sensation in the vagina, difficulty emptying the bladder or bowels, and a visible bulge at the vaginal opening.

Physical therapy needs for prolapse are strengthening the pelvic floor, addressing surrounding musculoskeletal impairments (weak core, gluteals, etc.), retraining the coordination of contraction of the pelvic floor, and addressing body mechanics with lifting.

Rectocele

A rectocele is a type of pelvic organ prolapse where the rectum bulges into the back wall of the vagina due to weakened supportive tissues. Symptoms are difficulty with bowel movements, a feeling of incomplete bowel emptying, and the presence of a bulge or mass in the vaginal canal during straining.

Cystocele

A cystocele is a type of pelvic organ prolapse where the bladder bulges into the front wall of the vagina due to weakened supportive tissues. Symptoms are a sensation of bladder fullness, frequent urination, difficulty emptying the bladder completely, and a bulge or pressure in the vaginal canal during straining or standing.

Vulvar Pain

Vulvar pain refers to chronic pain or discomfort in the external female genital area (vulva). Symptoms are persistent pain, burning, itching, soreness, or tenderness in the vulvar area.

Physical therapy needs in this case should be training pelvic floor muscle relaxation, stress management, trigger point dry needling (if legalized by your practicing state board), manual therapy, and addressing surrounding impairments in the musculoskeletal system. This would include the lower extremity and general core strengthening).

Vestibulitis

Vestibulitis, or vulvar vestibulitis, is a condition characterized by inflammation and pain in the vestibule, the entrance to the vagina. Symptoms are discomfort during sexual intercourse, localized tenderness at the vaginal entrance, and sensitivity to touch in the vestibule area.

Similar to vulvar pain, physical therapy needs for vestibulitis involve training relaxation of the pelvic floor through various techniques and addressing other musculoskeletal impairments.

Interstitial Cystitis

Interstitial cystitis, also known as bladder pain syndrome, is a chronic condition causing bladder pain, urgency, and frequency, not caused by bacterial infection but likely related to the bladder lining. Symptoms are frequent and urgent need to urinate, pelvic pain, pain or discomfort in the bladder area, and pain during or after urination.

Physical therapy needs include addressing muscular flexibility, scar tissue management, and working on pelvic floor muscle coordination and strength.

Episiotomy

Episiotomy is a surgical incision made at the vaginal opening during childbirth to widen the birth canal. Symptoms are pain, discomfort, or tenderness at the site of the episiotomy incision during the healing process.

Physical therapy needs are reduction in scar tissue formation, coordinating strength and relaxation in the pelvic floor, and addressing other impairments in the musculoskeletal system found in the examination.

Dyspareunia

Dyspareunia refers to pain or discomfort during sexual intercourse. Symptoms are pain, burning, or stinging during penetration or intercourse, and ongoing pain after intercourse.

Physical therapy needs are addressing muscle tension and trigger points within the pelvic floor including education on muscular relaxation techniques.

Lichen Sclerosis

Lichen sclerosis is a skin disorder that affects the genital and anal areas, causing white patches, itching, and pain. Symptoms are white, shiny, or smooth patches on the skin of the genital or anal area, itching, discomfort, or pain.

Lichen Simplex

Lichen simplex is a skin condition characterized by thickened, itchy, and irritated skin, often due to scratching or rubbing. Symptoms are thickened, rough, or leathery skin in the genital area, persistent itching or irritation, and redness.

Lichen Planus

Lichen planus is an inflammatory skin condition that can affect the genital area, causing itchy and painful lesions. Symptoms are itchy, purple, flat-topped papules or patches on the genital area, sometimes with painful sores or ulcers.

Physical therapy needs for lichen sclerosis, lichen simplex, and lichen planus are education on proper skin care, gentle stretching, and addressing pelvic floor tension and strength.

Of course, patients may have more than one of these pelvic floor disorders. The intervention section will have more detail on strategies for pelvic floor strengthening, trigger point relief, pelvic floor relaxation techniques, and patient education.

Pelvic Floor Dysfunctions – Male [8]

Male pelvic floor dysfunctions range in severity, prevalence, and symptoms. There are less male pelvic floor dysfunction cases than females. This is due to the more

simple reproductive anatomy in males. The most common pelvic floor disorders for specifically male patients are in this section.

Post Prostatectomy Incontinence

Post-prostatectomy incontinence refers to the loss of bladder control that can occur after prostatectomy surgery, which involves the removal of the prostate gland for the treatment of prostate cancer. Symptoms include urinary leakage or involuntary urine loss, especially during physical activities, coughing, sneezing, or laughing.

Physical therapy needs include regaining bladder control through pelvic floor muscle strengthening exercises, biofeedback, and bladder training techniques. Therapists can also address any pelvic floor muscle weakness or coordination issues that may contribute to incontinence.

Prostatic Hypertrophy

Prostatic hypertrophy, also known as benign prostatic hyperplasia (BPH), is the enlargement of the prostate gland commonly seen in older men, causing urinary symptoms. Symptoms include frequent urination, nocturia (waking up at night to urinate), weak urine stream, difficulty initiating urination, and feeling of incomplete bladder emptying.

Physical therapy may not directly treat prostatic hypertrophy, but therapists can help manage associated symptoms through pelvic floor muscle exercises to relax or strengthen pelvic floor muscular contraction and lifestyle modifications.

Urinary Retention

Urinary retention is the inability to completely empty the bladder, resulting in urine remaining in the bladder after urination. Symptoms include a weak urine stream, straining to urinate, frequent urination in small amounts, or the sensation of incomplete bladder emptying.

Physical therapy needs include strengthening and improving the coordination of the muscles involved in urination and improving bladder emptying. They may also use techniques such as biofeedback to aid in relaxation and coordination of the pelvic floor muscles during voiding.

Post-Micturition Dribble

Post-micturition dribble refers to the leakage of urine that can occur after completing urination, often due to residual urine in the urethra. The main symptom is involuntary dribbling of urine shortly after urination is complete.

Pelvic floor physical therapy can help address pelvic floor muscle weakness or dysfunction that may contribute to post-micturition dribble. Therapy needs are likely strengthening the pelvic floor contraction and improving bladder control.

Prostatitis

Prostatitis is inflammation or infection of the prostate gland, leading to various urinary and pelvic symptoms. Symptoms include frequent and painful urination, pelvic pain, pain or discomfort in the genitals or lower abdomen, and sometimes flu-like symptoms.

Physical therapists can assist in managing pelvic pain and muscle tension associated with prostatitis. Therapy needs may include manual therapy techniques to release trigger points and reduce muscle tension in the pelvic

region. Additionally, therapists can provide guidance on relaxation techniques and exercises to improve pelvic floor muscle function and alleviate pain.

Peyronie's Disease

Peyronie's disease is a condition characterized by the development of fibrous plaques within the penis, leading to penile pain, curvature, and erectile dysfunction. Symptoms include penile pain, curvature of the penis during erection, and difficulty achieving or maintaining an erection.

Physical therapy needs may include a program for strengthening and stretching exercises to reduce penile pain and improve penile function and education on strategies for managing pain during sexual activity.

Testicular and Scrotal Pain, Penile Pain

Testicular and scrotal pain refer to discomfort or pain in the testicles or the scrotal sac that houses them, while penile pain involves pain in the penis. Symptoms include persistent or intermittent pain in the testicular, scrotal, or penile region, which may be sharp, dull, or achy in nature.

Physical therapy needs may include addressing the pelvic floor through manual therapy techniques and relaxation exercises. They may also provide guidance on posture and body mechanics to reduce pelvic floor muscle tension that may contribute to pain.

Pelvic Floor Dysfunctions – Either Sex [9,10]

Pelvic floor dysfunctions of either sex involve the gastrointestinal and urinary systems. Each disorder has specific symptoms, physical therapy approaches, and can occur with other disorders that are specific to males or females.

Urinary Incontinence

Urinary incontinence is the involuntary leakage of urine, leading to an inability to control the bladder. Symptoms include leaking urine during physical activities, coughing, sneezing, or laughing (stress incontinence), sudden and intense urges to urinate followed by involuntary leakage (urge incontinence), or a combination of both (mixed incontinence).

Pelvic floor physical therapy can help improve bladder control and strengthen the pelvic floor muscles to reduce urinary leakage. Therapists may use biofeedback to enhance awareness and coordination of the pelvic floor muscles.

Common Bowel Dysfunctions

Common bowel dysfunctions refer to a variety of conditions affecting bowel movement and function, such as constipation. Symptoms may include changes in bowel habits, such as diarrhea, constipation, bloating, or abdominal pain.

Typically, physical therapy intervention will include guidance on bowel management techniques, lifestyle modifications, and pelvic floor muscle exercises to improve bowel function and reduce symptoms.

Fecal Incontinence

Fecal incontinence is the inability to control bowel movements, leading to involuntary passage of stool. Symptoms include unexpected bowel leakage, the inability to reach the toilet in time, and soiling of undergarments.

Pelvic floor physical therapy can help strengthen the muscles involved in bowel control and provide behavioral strategies for managing fecal incontinence.

Constipation

Constipation is a condition characterized by infrequent and difficult bowel movements. Symptoms include straining during bowel movements, hard stools, and a feeling of incomplete evacuation.

Physical therapy needs are often techniques to improve pelvic floor muscle coordination and relaxation to aid in bowel movement.

Irritable Bowel Syndrome (IBS)

IBS is a functional gastrointestinal disorder causing abdominal pain, bloating, and changes in bowel habits. Symptoms may include abdominal pain, bloating, diarrhea, and constipation, which can vary in intensity.

Physical therapy needs include managing pelvic pain and providing relaxation techniques to help alleviate IBS symptoms.

Paroxysmal Puborectalis

Paroxysmal puborectalis refers to spastic or excessive contraction of the puborectalis muscle, affecting bowel movement. Symptoms may include difficulty passing stool, straining, and feelings of obstruction.

Physical therapy needs are addressing pelvic floor muscle tension and providing techniques to promote relaxation during bowel movements.

Hemorrhoids

Hemorrhoids are swollen and inflamed blood vessels in the rectal area. Symptoms include rectal pain, itching, bleeding during bowel movements, and discomfort.

Physical therapy needs are guidance on strategies to manage hemorrhoids, including pelvic floor muscle relaxation techniques.

Fistulas

Fistulas are abnormal connections between different organs or tissues in the body, such as the rectum and vagina. Symptoms depend on the location and type of fistula but may include rectal discharge, pain, and recurrent infections.

Physical therapy needs are addressing muscular imbalances in the pelvic floor, managing symptoms, and supporting post-surgical recovery.

Fissures

Fissures are small tears or cracks in the skin of the anus, leading to painful bowel movements. Symptoms include rectal pain, bleeding, and discomfort during bowel movements.

Physical therapy needs are promoting relaxation and reducing muscle tension during bowel movements to minimize pain.

Proctalgia Fugax

Proctalgia fugax is a condition characterized by sudden, sharp rectal pain that comes and goes spontaneously. Symptoms include brief episodes of intense rectal pain that may last a few seconds to minutes.

Physical therapy needs include helping to identify and address any pelvic floor muscle tension or trigger points contributing to proctalgia fugax.

Chronic Pelvic Floor Pain

Chronic pelvic floor pain refers to ongoing pain or discomfort in the pelvic region. Symptoms may include pelvic pain, pain during intercourse, and discomfort in the genital area.

Physical therapy needs are to address muscle tension, trigger points, and pelvic floor dysfunction contributing to chronic pelvic pain.

Coccyx Pain

Coccyx pain, also known as coccydynia, refers to pain in the coccyx region. Symptoms include localized pain and discomfort in the tailbone area, which may worsen with sitting or certain movements.

Physical therapy needs include providing manual therapy techniques and exercises to reduce coccyx pain and improve mobility.

Pudendal Neuralgia

Pudendal neuralgia is a condition involving irritation or compression of the pudendal nerve, leading to chronic pelvic pain. Symptoms include burning, shooting, or stabbing pain in the pelvic area, perineum, or genitals.

Physical therapy needs are to muscle tension and dysfunction that may contribute to pudendal neuralgia and provide techniques to alleviate pain.

Tension Myalgia

Tension myalgia refers to muscle pain or discomfort caused by muscle tension or overuse. This is specific to the pelvic region and reported by the patient.

Symptoms may include muscle soreness, stiffness, and discomfort in the affected area.

Physical therapy needs are to provide manual techniques, stretching exercises, and relaxation strategies to address muscle tension and manage tension myalgia.

Section 2 Key Words

Peyronie's Disease - A condition characterized by the development of fibrous plaques within the penis, leading to penile pain and other symptoms

Coccydynia – A condition with localized pain to the coccyx

Tension Myalgia – A condition where muscle tension causes pain in a (typically) overused muscle

Section 2 Summary

As noted in this section, there are several disorders and dysfunctions of the pelvic floor that therapists should be aware of. Therapists should know the basis of what the disorders are, common signs and symptoms, and have ideas of how to intervene from their examination. Patients with one pelvic floor disorder should be screened and treated for others, as it is very common for the disorders to co-occur.

Physical Therapy Basic Evaluation and Intervention

Physical therapists should gain an understanding of their patients with pelvic floor disorders through several examination and evaluation items. This will guide appropriate intervention and best manage care of pelvic floor disorders.

Pelvic floor physical therapy evaluations should include an assessment of the pelvic floor including SEMG biofeedback when available. The pelvic exam, may also include an internal and external examination (beyond the scope of this course), and a lower quarter examination to treat coexisting conditions like low back pain.

SEMG Biofeedback Assessment

A Surface Electromyography (SEMG) biofeedback assessment for the pelvic floor is a specialized evaluation used to assess the function and strength of the pelvic floor muscles. The pelvic floor muscles play a crucial role in supporting the pelvic organs, maintaining continence, and providing stability during movement. Steps of this assessment include gathering patient history, an evaluation, preparation, consent, placing sensors, measuring muscle activity at rest, and assessing muscle activity during specific tasks.

Patient History and Evaluation (SEMG or other Pelvic Floor Assessment)

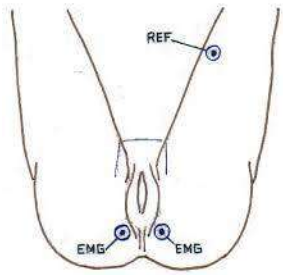
As with any evaluation, the assessment begins with a comprehensive patient hist ory and evaluation, The therapist should discuss the patient's symptoms, chief co mplaint, pelvic health concerns, and any relevant medical history. The duration and onset of their symptoms, a description of qualitative and quantitative pain, urinary and bowel habits, medical history, history of pregnancy, lifestyle, sexual function, and medications are also important.. The therapist should ask more specific questions regarding pelvic floor disorders and symptoms as the evaluation proceeds.

Preparation and Consent

The patient is informed about the assessment procedure and its purpose. Informed consent is obtained from the patient before proceeding. The patient may be asked to change into comfortable clothing or a gown, depending on the clinic's protocols.

Sensor Placement

Small adhesive surface electrodes (SEMG sensors) are strategically placed on the skin around the pelvic floor muscles. The therapist should place the sensors near the perineum and bilaterally, to capture pelvic floor muscle activity.



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Baseline Resting Measurement and Task-Specific Assessment

The initial step involves recording the baseline resting activity of the pelvic floor muscles. The patient is asked to relax completely while the SEMG system records the muscle activity at rest. The patient should be guided through specific pelvic floor exercises and activities to evaluate muscle strength, coordination, and endurance. Common exercises may include Kegels (contraction and relaxation of the pelvic floor muscles), pelvic floor muscle lifts, and functional movements that engage the pelvic floor. The physical therapist may also test for maximum muscle contraction of the pelvic floor and record these values.

Real-Time Biofeedback

The SEMG biofeedback system provides real-time visual or auditory feedback to the patient and therapist, displaying the activity level of the pelvic floor muscles during various exercises. The visual cues help the patient understand how to contract and relax the pelvic floor muscles effectively. The therapist should observe the patient's muscle activation patterns and provide guidance and correction to ensure proper pelvic floor muscle engagement. If the patient is not activating the pelvic floor muscles correctly, the therapist can provide verbal cues or visual feedback to assist them to create a stronger or weaker contraction depending on the muscle activity.

Treatment Planning

Based on the assessment findings, the therapist should develop a personalized treatment plan that may include specific pelvic floor exercises, relaxation techniques, and strategies to address any identified concerns.

Progress Tracking

Subsequent SEMG biofeedback assessments may be conducted to monitor the patient's progress over time. Progress tracking helps to evaluate the effectiveness of the pelvic floor rehabilitation program and adjust the treatment plan as necessary.

Pelvic floor SEMG biofeedback assessments are particularly useful for conditions such as urinary incontinence, pelvic pain, pelvic organ prolapse, and postpartum pelvic floor dysfunction. By providing real-time feedback on the force of muscle contraction and through individualized treatment plans, these assessments can be highly effective in helping patients improve pelvic floor muscle function and overall pelvic health.

Therapeutic Exercise [11]

There are several ways to activate the pelvic floor and is not limited to just Kegel exercises. This section gives some ideas of ways to target coordination, strength, and relaxation of the pelvic floor. It also incorporates ideas for contraction of the deep core and lower extremity muscles to ensure proper functioning of all muscles in the area.

Kegel Exercises (Pelvic Floor Contractions)

Kegel exercises should be prescribed for those who have poor timing and weakness in pelvic floor contraction. An example is urinary or fecal incontinence. Kegels involve contracting and relaxing the pelvic floor muscles. PTs and PTAs should guide patients to perform a Kegel by imagining stopping the flow of urine or tightening the muscles used to prevent passing gas. They should hold the contraction for a few seconds, then release and relax. This can be progressed to longer holds and can be done in different positions (sitting, standing, lying down).

Reverse Kegel Exercises (Pelvic Floor Relaxations)

Reverse Kegel exercises focus on consciously relaxing and lengthening the pelvic floor muscles. These exercises are particularly helpful for individuals with pelvic floor muscle tension or overactivity. To do a reverse Kegel patients should be instructed to breathe deeply and consciously relax the pelvic floor muscles as you exhale. It may be helpful to visualize the pelvic floor opening and widening.

Pelvic Floor Muscle Lifts

Pelvic floor muscle lifts involve a gentle lifting of the pelvic floor muscles without squeezing or bearing down. This exercise helps improve pelvic floor muscle

control and coordination. Therapists should cue patients to perform a pelvic floor lift by imaging gently drawing the pelvic floor muscles upward, lifting and supporting the pelvic organs.

Pelvic Floor Bracing

Pelvic floor bracing involves contracting the pelvic floor muscles before and during activities that increase intra-abdominal pressure, such as lifting, sneezing, or coughing. Bracing helps support the pelvic organs and prevents stress on the pelvic floor during exertion. Patients should be instructed to brace prior to any activity that stresses the pelvic floor. This will train the pelvic floor to contract automatically over time.

Bridge Exercise

The bridge exercise strengthens the gluteal and core muscles while also engaging the pelvic floor. Patients should lie hooklying and engage the transverse abdominis, glutes, and pelvic floor with cues. The bridge is a good exercise to prescribe with coexisting low back pain and pelvic floor disorders because strengthening the transversus abdominis specifically has been proven to help manage low back pain.

Squats

Squats strengthen the core, glutes, quadriceps, and other lower extremity muscles. During their squats, patients should be instructed to also engage the pelvic floor. Addressing pelvic floor contraction during functional activities like squats will help address symptoms of pelvic floor dysfunction, particularly incontinence.

Heel Slides

Heel slides are not only helpful for lower extremity problems, they also help improve hip mobility and activate the pelvic floor muscles. The patient should lie supine and slide one foot away from the body, straightening the leg, and then slide it back in. They should be instructed to engage the pelvic floor to facilitate functional co-contraction of the quadriceps, hamstrings, and pelvic floor.

Pelvic Clocks and Transversus Abdominis Progression

Pelvic clocks help improve awareness and control of pelvic movements. Patients should be instructed to imagine the pelvis as the center of a clock, and slowly tilt it in different directions, such as 12 o'clock (anterior tilt), 6 o'clock (posterior tilt), 3 o'clock (lateral tilt), and 9 o'clock (lateral tilt). Posterior pelvic tilts and transversus abdominis bracing in supine are a good place to start to gain control of the deep core and pelvic floor. Progression exercises may include planks, abdominal bracing with leg lifts and others. Therapists should educate pelvic floor contraction with deep core bracing in functional activities like squatting and lifting as well.

Manual Therapy [12,13]

Manual therapy for the pelvic floor involves hands-on techniques performed by a trained pelvic floor physical therapist to assess and treat various pelvic floor dysfunctions. These techniques aim to address muscle tension, flexibility, and function of the pelvic floor muscles and surrounding structures. Manual therapy can be a valuable component of pelvic floor physical therapy and may be used in conjunction with other therapeutic approaches.

Internal and External Palpation

Internal palpation involves the physical therapist using a gloved and lubricated finger to assess the muscles and tissues within the vaginal or rectal canal. This allows the therapist to evaluate muscle tone, tenderness, and any trigger points. External palpation involves gentle pressure and assessment of the muscles and structures on the outside of the pelvis to identify areas of tenderness or tightness. Therapists should have a protocol for asking for informed consent and explain the process during the examination to put patients at ease.

Myofascial Release

Myofascial release is a manual therapy technique that targets the fascial tissues surrounding the muscles. The therapist uses gentle pressure and stretching to release tension and restrictions in the fascia, which can help improve pelvic floor muscle function and reduce pain.

Trigger Point Release

Trigger points are hyperirritable knots in the muscles that can cause pain and referred sensations. The therapist uses targeted pressure to release these trigger points and promote muscle relaxation, either with dry needling if allowed by your state board, manual massage, or other techniques at and near the pelvic floor.

Soft Tissue Mobilization

Soft tissue mobilization involves various manual techniques, such as kneading, compressions, and gliding strokes, to manipulate the soft tissues of the pelvic floor. This can help improve blood flow, reduce muscle tension, and promote healing.

Joint Mobilization

Joint mobilization is a technique used to improve joint mobility and reduce joint stiffness in the pelvis and lower back. The therapist applies controlled movements to specific joints to restore their proper range of motion. Mobilization or manipulation of the lower back and hips may be needed if the examination reveals hypomobility and pain generators in these areas.

Neuromuscular Techniques

Neuromuscular techniques involve manual pressure and stretching to stimulate the nervous system and enhance muscle activation and coordination in the pelvic floor.

Breathwork and Relaxation Techniques

Manual therapy for the pelvic floor often includes teaching patients breathwork and relaxation techniques. These techniques can help release tension in the pelvic floor muscles and promote overall relaxation.

Pelvic Floor Therapy for Gender-Affirming Surgeries [4]

Pelvic floor therapy for gender affirming surgeries, also known as gender-affirming pelvic floor therapy or gender-affirming physical therapy, is a specialized area of physical therapy that focuses on providing pre-operative and post-operative care for individuals undergoing gender-affirming procedures. These surgeries aim to align an individual's physical characteristics with their gender identity. Pelvic floor therapy can play a crucial role in optimizing surgical outcomes, promoting recovery, and addressing specific pelvic health concerns related to gender-affirming surgeries.

Pre-Operative Physical Therapy

Before gender-affirming surgeries, pelvic floor therapists provide education and support to patients. This may include discussions about surgical procedures, potential changes to pelvic floor anatomy, and expectations for post-operative recovery. Pre-operative pelvic floor exercises should be prescribed to strengthen the pelvic floor muscles, which can help prepare the muscles for surgery and potentially aid in post-operative recovery.

Post-Operative Physical Therapy

After gender-affirming surgeries, pelvic floor therapy focuses on post-operative rehabilitation and recovery. The therapist should assess the patient's pelvic floor function and tailor a treatment plan based on their specific surgical procedure and individual needs. The treatment plan may include gentle pelvic floor exercises, breathing techniques, and positioning to promote blood circulation, reduce swelling, and maintain pelvic floor muscle flexibility. Therapists also provide guidance on wound care, scar management, and pain management techniques to support the healing process.

After the tissues are healed and pain is under control, physical therapy should focus on addressing the strength and coordination of pelvic floor muscle contractions and address any symptoms such as incontinence. Physical therapists should refer patients to primary care or post-surgical care teams if there are issues with prolonged healing. They should also consider referrals to mental healthcare professionals for patients who screen for mental health disorders such as anxiety or depression, or for those who are struggling to cope with their new anatomy after surgery.

Programs and Certifications [14]

Several paths exist to become an expert in pelvic health physical therapy. Programs and certifications offer a path for physical therapists to completely specialize their practice to women's health or to be among the best qualified therapists to manage the care of those with pelvic floor dysfunction.

Pelvic Health Physical Therapy Residency and Fellowship

Some institutions offer post-professional residency programs that focus on pelvic health physical therapy. These programs are designed for licensed physical therapists who want to advance their knowledge and skills in this specialized area. Residency programs typically include mentored clinical experiences, didactic coursework, and research components. Graduates of these programs are better equipped to provide advanced pelvic floor therapy services. Fellowships in pelvic floor physical therapy are advanced post-residency training programs that provide physical therapists with specialized education and hands-on experience in the field. Fellowships aim to develop clinical and research expertise in pelvic health, preparing therapists for leadership roles and specialization in this area.

Women's Health Clinical Specialist Board Certification

The American Board of Physical Therapy Specialties (ABPTS) recognizes and manages the Women's Health Clinical Specialist (WCS) certification for pelvic floor rehabilitation. This certification requires a combination of clinical experience, coursework, and successful completion of an examination. Oftentimes physical therapists will complete a residency and/or a fellowship prior to taking the board examination.

Continuing Education Courses

Many organizations and institutions offer extensive continuing education on pelvic floor therapy. These courses, including this one, cover a wide range of topics, from basic concepts to advanced techniques and evidence-based practices. Physical therapists can attend workshops, seminars, and online courses to enhance their knowledge and skills in pelvic floor rehabilitation. They will not substitute for a residency, fellowship, or certification, but are a great way for an outpatient physical therapist to be better prepared to treat patients with basic pelvic floor disorders.

Pelvic Health Conferences and Associations

Attending pelvic health conferences especially through the APTA Pelvic Health organization and becoming involved in pelvic health associations can be valuable for networking, staying up to date on the latest research and trends, and accessing resources in the field.

Section 3 Key Words

Surface Electromyography (SEMG) Biofeedback Assessment - A specialized evaluation used to assess the function and strength of the pelvic floor muscles with real-time feedback of muscle activity

Gender-Affirming Pelvic Floor Therapy – A specific physical therapy approach that focuses on providing pre-operative and post-operative care for individuals undergoing gender-affirming procedure

Section 3 Summary

Physical therapists and physical therapist assistants should be knowledgeable of evaluation and intervention options supported by literature to best manage care of those with pelvic floor disorders. Therapists should be mindful of ways to further their education and become specialists in the pelvic floor if interested. It is important for therapists to refer to other clinicians if their patients either are not improving, or they have a complicated pelvic floor disorder requiring a certified pelvic floor therapist.

Case Study

Sarah is a 30-year-old female who reports a history of chronic pelvic pain and urinary urgency, which has been gradually worsening over the past two years. She has no history of major medical conditions, surgeries, or significant injuries related to the pelvic region. She has one child, delivered via cesarean section five years ago. Sarah is otherwise healthy and has an active lifestyle. Sarah describes a constant dull ache in her pelvic area, with occasional sharp stabbing pain. The pain worsens during prolonged sitting and after physical activities. Sarah experiences a frequent and urgent need to urinate throughout the day, sometimes accompanied by mild leakage (urge incontinence). Sarah reports pain during sexual intercourse, making intimacy challenging and uncomfortable. Sarah mentions that her symptoms are causing increased stress and anxiety, impacting her overall well-being and work performance.

Reflection Questions

1. How did the patient's symptoms and medical history guide the assessment and treatment planning for pelvic floor dysfunction?
2. What should the assessment for a pelvic floor physical therapist include?
3. How should the therapist establish a supportive and respectful environment during the internal pelvic floor examination?
4. Which treatment interventions would likely be effective in addressing the patient's symptoms and promoting progress?
5. What components of this case could be managed by a physical therapist who does not specialize in pelvic health?

Responses

1. The patient's symptoms of chronic pelvic pain, urinary urgency, and dyspareunia, along with her medical history of one cesarean section and an active lifestyle, were essential in guiding the assessment. They provided valuable clues to potential pelvic floor dysfunction related to muscle tension and weakness. This information helped tailor the treatment plan to address her specific concerns effectively.
2. The pelvic floor physical therapist should take a patient history, complete a pelvic floor examination to assess muscle tone, tenderness, strength, and coordination of the pelvic floor, and a lower quarter examination to determine involvement of the low back or lower extremities.
3. To establish a supportive and respectful environment during the internal pelvic floor examination, the therapist should ensure clear communication with the patient about the procedure, its purpose, and obtain informed

consent. The therapist should maintain professionalism, sensitivity, and empathy throughout the examination, acknowledging the potential discomfort or anxiety that the patient might experience. The therapist should offer to stop the examination if she felt uncomfortable at any point.

4. Pelvic floor muscle training, including both Kegel exercises and relaxation techniques, would be particularly effective in addressing the patient's symptoms of pelvic pain and urinary urgency. Learning to relax the pelvic floor muscles and improve their coordination should help to reduce muscle tension and pain while enhancing bladder control. Additionally, myofascial release and trigger point release techniques would likely be successful in alleviating muscle tension and improving the patient's overall pelvic floor muscle function.

5. It depends on a PT's experience and comfortability treating the pelvic floor. Physical therapists should always refer patients to the highest qualified provider for the best outcomes. However, in this case a generalist physical therapist could begin a pelvic floor strengthening and coordination program, deep core strengthening, and address other musculoskeletal issues through the plan of care. Physical therapists should only do internal examinations if they are trained to perform them.

Conclusion

Up to one quarter of the United States population as a whole will experience a pelvic floor disorder or pelvic floor dysfunction in their lifetime. Knowing the incidence of pelvic floor disorders and the symptoms of discomfort, pain, poor control of bowel and bladder, and sexual dysfunction, healthcare providers should be prepared to manage these conditions. From this course, physical therapists and assistants should have an in-depth understanding of the anatomy of the pelvic

region, the incidence of pelvic floor disorders, evidence-based intervention ideas, and referral necessity to best manage the care of patients with pelvic floor dysfunction.

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