

Pelvic Floor Considerations in COVID-19

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ABSTRACT

Background: Much of the research and clinical commentary on COVID-19 have been focused on respiratory function. Pelvic floor therapists understand that both respiratory dysfunction and hospitalization can have an impact on pelvic floor function. This clinical commentary provides context as to how the long-term effects of COVID-19 could affect the pelvic floor as well as some generalized treatment considerations.

Discussion: The respiratory diaphragm has an impact on the ability of the pelvic floor to contract and relax in a manner that will allow for both continence and elimination. COVID-19 survivors often have disability in this muscle of respiration that can lead to implications for both overactive and underactive pelvic floor. Commonly, this population is hospitalized for long periods of time, which can have long-term consequences on both bladder and bowel functioning including, but not limited to, incontinence, urinary retention, and constipation. Pelvic floor therapists must be prepared to adjust both their evaluation and treatment methods in consideration of this novel treatment population.

Conclusions: Because of the pervasive nature of this virus, pelvic floor physical therapists should be a part of the rehabilitation team treating these patients once they have become medically stable.

Video abstract with sound available at <http://links.lww.com/JWHPT/A36>

Key Words: constipation, incontinence, post-intensive care syndrome (PICS), weakness

BACKGROUND

To date, pelvic floor physical therapists have not been widely included in the conversation for treatment of patients surviving coronavirus 2019 (COVID-19). However, as more people are surviving this infection with lingering complications, it is important that

physical therapy become part of larger conversation on rehabilitation of survivors. One of the more complicated aspects of COVID-19 is that it has the potential to affect every system of the body to varying degrees. There has been an abundance of information extolling the lingering issues with the respiratory system after surviving COVID-19, but, to date, the other physiologic complications have not been widely discussed. Because of the COVID-19 virus using the angiotensin-converting enzyme 2 (ACE2) as a host cell receptor, the virus can negatively impact the digestive system and the bladder in addition to the respiratory system.¹ These receptor cells live not only in the nasopharynx and the lungs but also in the small bowel, creating multiple digestive implications for patients long after they have survived the initial infection. The following examples are more conditions that might affect disease severity versus considerations for treatment. For example, patients with Crohn's disease or irritable bowel disease might be at a greater risk for infection if they are taking immunosuppressant therapy; however, the medication may have a protective effect against the unmediated immune response thought to be responsible for severe disease presentation. Research suggests that since estrogen enhances T-cell production at certain points in the hormonal cycle, there may be protective effects for women who are currently menstruating or taking synthetic hormones.² The unpredictable nature and novel side effects of this virus can make it difficult for therapists across the continuum of care to use traditional treatment methods that we have used for similar problems in the past. It is important that we consider using our extensive knowledge of anatomy and physiology as well as illness recovery principles to adapt our typical treatment ideas to this special population. Most physical therapists may not be used to dealing with patients who have had this level of illness, especially if they work in a traditional outpatient setting. However, because of the pervasive nature of this virus, physical therapists should be a part of the rehabilitation team treating these patients once they have become medically stable. In this clinical commentary, we explore both the side effects that respiratory issues can have on pelvic floor functioning

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and the consequences of long-term hospitalization on bowel and bladder functioning.

TYPICAL RESPIRATORY AND PELVIC DIAPHRAGM FUNCTIONS

The effects of COVID-19 on the pelvic floor muscles (levator ani, coccygeus, and obturator internus) are largely unknown, but we can begin to predict potential issues by understanding the relationship between pulmonary and pelvic floor functions. In healthy individuals, respiration is characterized by the exchange of oxygen and carbon dioxide between the air within the lungs and the vascular system. During inspiration, the respiratory diaphragm contracts and flattens and the chest wall expands. This creates negative pressure in the thorax, drawing air deep into the lungs. During typical inhalation, the descent of the diaphragm also causes expansion of the abdominal wall and the pelvic floor, due to an increase in abdominal pressure. During quiet breathing, exhalation consists of a passive expulsion of air from the lungs, as the diaphragm recoils to its resting position. With quiet expiration, the abdominal wall and pelvic floor will gently contract to return to their resting position. With times of increased respiratory demand, active exhalation can increase the efficiency of air expulsion to accelerate gas exchange. During active exhalation, accessory muscles of respiration contract to speed up the elevation of the diaphragm (Figure 1). The pelvic floor and abdominals are included within these accessory

muscles because when they co-contract more forcefully than in quiet breathing, they create a cranially directed increase in intra-abdominal pressure that assists with diaphragm elevation.^{3,4}

COVID-19 PATHOPHYSIOLOGY AND EFFECTS ON RESPIRATORY FUNCTION

The SARS-CoV-2 virus, classified as a coronavirus, attacks host cells via binding to ACE2 receptors. These ACE2 receptors are largely present in the lungs, cardiovascular system, ileum, kidney, and bladder. Transmission via aerosolized droplets makes initial infection of pulmonary cells the most common. Once infected, the host's immune system launches an accelerated immune response that causes an inflammatory cascade that has the potential to not just attack the virus but also cause damage to host cells. Within the lungs, this uncontrolled inflammatory cascade is thought to be responsible for the progression of disease from mild-moderate (80% of infections) to severe-critical (20% of infections). Mild to moderate disease presents similarly to an upper respiratory tract infection and can cause mild pneumonia. Most of these patients will fully recover from this infection, though the long-term effects of the virus are yet undetermined.⁵

Patients with severe to critical presentations will begin to show oxygen desaturation due to advanced pneumonia or acute respiratory distress syndrome (ARDS). They might also have multisystem

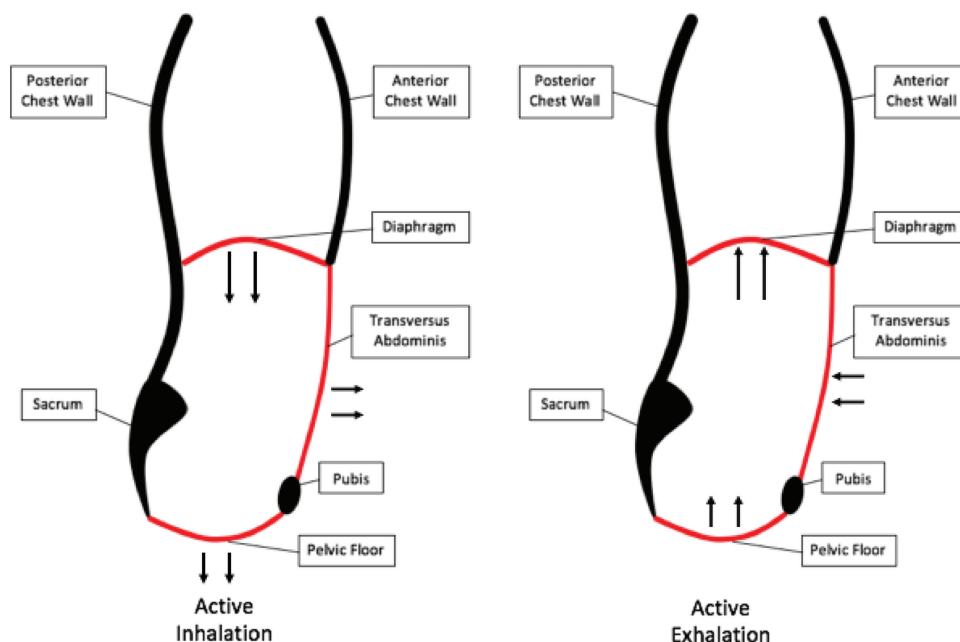


Figure. Diaphragm, transverse abdominis, and pelvic floor activity during respiration. During active inhalation, the diaphragm descends as it contracts and the transversus abdominis and pelvic floor lengthen. During active exhalation, the pelvic floor and transversus abdominis contract, assisting diaphragm elevation. This figure is available in color online (<https://journals.lww.com/jwhpt>).

involvement as the virus and inflammatory cascade begin to spread. ARDS is characterized by significant impairment of gas exchange due to damage to pulmonary cells and capillaries. Patients with ARDS demonstrate worsening oxygen saturation despite the use of supplemental oxygen, frequently requiring the use of a ventilator to maintain adequate oxygenation. While ARDS can be caused by many different infectious processes, COVID-19's uncontrolled inflammatory cascade is responsible for the development of ARDS in such a high proportion of infected patients.⁶ Recovery from ARDS frequently leaves patients with some degree of permanent pulmonary fibrosis due to the extent of lung damage. This fibrosis might cause persistent restrictive lung disease in patients after they recover from COVID-19.⁷ Restrictive lung disease decreases volume of inspiration due to scarring, preventing full expansion of the lungs. Limited diaphragm excursion and shortness of breath with low levels of exertion are common.⁸

CONSIDERATIONS FOR EXAMINATION

Measures of Respiratory Function

Considering this normal relationship of diaphragm descent and pelvic floor lengthening and diaphragm elevation and pelvic floor contraction, when a disease process affects the respiratory system, we might also expect pelvic floor dysfunction. Coughing and exertional dyspnea commonly persist after recovery from COVID-19, even in mild disease.⁹ Patients recovering from more severe disease might have permanent reduction in lung capacity due to pulmonary fibrosis.⁷ The following objective measures might be included in an evaluation to help contextualize pelvic floor dysfunction in the individual with respiratory dysfunction. The Borg dyspnea score is used to measure dyspnea during various functional activities, as it has been used to dose respiratory rehabilitation in patients recovering from COVID-19.¹⁰ Relevant activities might be related to activities that provoke pelvic floor symptoms, such as walking to the bathroom or lifting something. In addition, a 6-minute walk test can provide a general assessment of pulmonary function and has been shown to correlate with spirometry results in patients with chronic pulmonary disease.¹¹

Observation of diaphragm and chest wall mechanics during respiration might give insight into pelvic floor mechanics. Patients might exhibit tripod breathing or using support of the upper extremities on the knees or other surface to increase the level of assistance provided by accessory respiratory muscles, including the abdominals.¹² Multidirectional, symmetrical chest excursion should be present during inhalation, and observation of a patient's breathing in a variety of positions might reveal any directions of

restriction. Restricted or asymmetrical excursion will have implications for diaphragmatic descent, and as a result pelvic floor lengthening. Palpating substernal rib angle may further characterize a patient's diaphragm use.¹³ A large rib angle is indicative of a low, flattened diaphragm, which might implicate a lengthened resting position of the pelvic floor and weakness, while a small rib angle would indicate the opposite.

Vitals Monitoring

Another area of examination that may not be second nature to the outpatient physical therapist is vitals monitoring. Because of the cardiovascular and pulmonary sequelae of COVID-19, patients might have an exaggerated or abnormal vital response to exertion. It is essential to establish baseline vital sign values of heart rate, blood pressure, respiratory rate, and oxygen saturation with every patient recovering from COVID-19. Vital signs should be reassessed regularly during exertion and afterward to ensure a normal response and allow for scaling of exertion or rest breaks if needed. Physical therapists in an outpatient setting who are not regularly seeing patients with high degrees of cardiovascular and pulmonary dysfunction may need to reframe what activities they consider to be exertion. For a patient who was ventilated, sedated, and immobile in the intensive care unit (ICU) for a period, supine lying might be a position of exertion due to the need to elevate the anterior chest wall against gravity. Or sitting unsupported may not allow a patient with ICU-acquired weakness to simultaneously maintain adequate breath and postural support for an extended time.¹⁴ In addition, patients recovering from COVID-19 can exhibit silent oxygen desaturation, meaning that their oxygen saturation might drop without provoking dyspnea.¹⁵ Best practice would include monitoring vital signs regularly regardless of the level of activity or presence of adverse symptoms (Table).

Table. Summary of Normal and Abnormal Vital Sign Responses to Physical Activity Post-COVID-19

Normal Response to Activity	Abnormal Response to Activity ¹⁶
<ul style="list-style-type: none"> • HR, RR, and systolic BP should rise steadily with exertion • O₂ sat should remain above 90% • Diastolic BP should remain constant with exertion 	<ul style="list-style-type: none"> • HR, RR, and systolic BP increasing rapidly with lower levels of exertion due to severe deconditioning <ul style="list-style-type: none"> ◦ BP should not exceed 180/110 at rest or 210/110 during exercise¹⁷ • O₂ sat below 90% • Orthostatic hypotension—Drop in BP with positional change • Exertional hypotension—Drop in BP during exertion
Abbreviations: BP, blood pressure; HR, heart rate; O ₂ sat, oxygen saturation; RR, respiratory rate.	

CLINICAL CONSIDERATIONS

When considering the pulmonary and pelvic floor examination findings within the context of a patient recovering from COVID-19, there is no currently available evidence to guide the formation of a clinical hypothesis and treatment. However, we can begin to theorize what might be expected on the basis of existing evidence on related lung pathologies and the relationship of pelvic floor and diaphragm. The following ideas explore the contribution of respiratory dysfunction to the underactive pelvic floor, the overactive pelvic floor, and their associated symptoms.

An underactive pelvic floor is characterized by an inability to meet the demands of maintaining continence or pelvic organ support due to deficits in power, endurance, or correctly timed coordination of contraction. The residual respiratory symptoms of COVID-19, including coughing and shortness of breath, might contribute to pelvic floor underactivity and cause new or worsening urinary or fecal incontinence and/or pelvic organ prolapse.

Populations that have increased incidence of chronic coughing have a higher incidence of urinary incontinence, fecal incontinence, and pelvic organ prolapse. The theorized mechanism is repetitive microtrauma to the pelvic floor from frequent, high levels of intra-abdominal pressure associated with coughing.^{18–21} We might also expect the repetitive coughing associated with COVID-19 might cause the same dysfunction.

Shortness of breath might increase the incidence of urinary incontinence by 2 proposed mechanisms. First, dyspnea is related to the overuse of the pelvic floor as a muscle of expiration. When an individual is short of breath, he or she uses active expiration to improve the rate of gas exchange. When pelvic floor contraction is timed with respiratory rate to assist with breathing, it is unable to respond to increases in intra-abdominal pressure with the appropriate timing to prevent stress incontinence. Second, and less related to pelvic floor dysfunction, is that shortness of breath upregulates the autonomic nervous system in a similar way to panic or anxiety, increasing urgency of urination. This effect might be multiplied by the exertion of ambulation to the bathroom in patients with exertional dyspnea, post-COVID-19.²² In considering the combination of diaphragmatic dysfunction and pelvic floor muscle weakness, therapists should combine pelvic floor muscle strengthening with breathing exercises in order to strengthen the entire system. These ideas may be a departure from typical treatment programs where we are focusing on isolation of these muscles or improving endurance of the levator ani.

An overactive pelvic floor is characterized by an inability to fully relax and lengthen. Most frequently,

the overactive pelvic floor is associated with symptoms of pelvic pain, urinary frequency/urgency, and defecatory dysfunction.²³ The residual effects of COVID-19 that might contribute to an overactive pelvic floor are restricted diaphragm excursion or due to development of pulmonary fibrosis or possible restrictions in chest wall mobility from prolonged positioning. Also, worth briefly mentioning, anxiety is common in people with shortness of breath and has been associated with pelvic pain.^{24,25} When treating the COVID-19 survivor with an overactive pelvic floor, therapists should incorporate sympathetic down training techniques along with traditional manual therapy and exercise to allow for further eccentric control of the muscle and proprioceptive awareness.

Patients with more severe disease are more likely to develop pulmonary fibrosis due to extensive lung damage, especially in those patients with ARDS. There may also be temporary damage to the lungs in patients with any degree of disease severity.²⁶ This damage to the lungs along with diaphragmatic weakness related to ventilator use may have negative implications for lung volume and diaphragm excursion.^{8,27} It is possible that patients with impaired diaphragmatic excursion might have difficulties lengthening their pelvic floor. Again, proprioceptive awareness will be key with this patient population, so using techniques such as eccentric lengthening of the muscle with a finger on the perineum to increase tactile sensitivity will improve their ability to control levator ani contraction and relaxation.

Patients with critical presentations of COVID-19 are spending unprecedented amounts of time in the prone position, with a median ICU stay of 8 days, and many cases far exceeding this time frame.²⁸ There is a possibility for decreased anterior chest wall mobility with prone positioning.^{29–31} Anterior chest wall restrictions might have long-term effects on diaphragmatic excursion, also contributing to pelvic floor overactivity.

POST-INTENSIVE CARE SYNDROME AND PELVIC FLOOR

People who develop severe complications of COVID-19 may be hospitalized for long periods of time, some of that time spent in the ICU. PICS has been identified as a sequela of longer durations in the ICU and carries with it a variety of issues that persist after the patient returns home. PICS is a relatively newly recognized phenomenon and therefore guidelines for treatment are still being developed for rehabilitation, complicating the ability to assimilate research and translate it into prospective outcomes for the pelvic floor. Some of the more common issues include a decline in cognitive function, an increase in psychiatric disorders, and pervasive

weakness and deconditioning.³² Possible neuromuscular symptoms that these patients suffer from include poor mobility, frequent falls, and even quadriparesis.³³ Calls to action for PICS have been widespread for rehabilitation professionals to make sure that we are screening for neuromuscular symptoms in post-COVID-19 patients. Widespread and pervasive weakness may persist for up to 12 months after they are discharged from the hospital and present widely in severity. In addition to traditional neuromuscular sequelae, PICS can cause a variety of complications within bowel and bladder functioning that the physical therapist must consider. Techniques that we often use for patients with these overarching bowel and bladder problems will not always work with this population due to the severity of these neuromuscular symptoms and unknown sequelae of this disease.

CONSIDERATIONS FOR EXAMINATION

While there is no specific screening or outcome tool for patients who may have PICS, physical therapists should consider screening COVID-19 survivors with the following questions: How long were you hospitalized? How long were you in the ICU? and How long were you on a ventilator? Asking these questions will start to give us an idea of the severity of the neuromuscular and bowel and bladder issues that the patient is likely to experience. The widespread nature of PICS-related weakness necessitates a broader focus of examination than just the pelvic floor. If we are unable to perform a pelvic examination on these patients, we may be able to work on manual muscle testing other pelvic girdle muscles to give us an idea of the functioning of the pelvic floor.

Patients who are in the ICU are often catheterized for longer periods of time. Length of catheterization is the biggest risk factor for urinary retention, and risk of urinary tract infection (UTI) increases by 3% to 7% each day that the catheter is left inserted.³⁴ Frequent UTIs can have implications after discharge for increased risk of UTI as well as urgency/frequency symptoms. Patients who spend extended time in the ICU are at risk for urinary retention at discharge with the increased risk from use of hypnotics, indwelling catheter for more than 7 days, and use of bed restraints, all common practices when patients are in the ICU being treated for COVID-19. Urinary retention can persist after discharge, which makes it imperative for therapists to screen for this when they are working in the outpatient setting. Recovery from urinary retention directly correlates with the recovery of lower-limb function after PICS, so this concept could be an important measurement for physical therapists to keep in mind when treating this patient population.³⁵

Bowel complications from long-term ICU stays include, but are not limited to, constipation, ileus, feeding intolerance, abdominal distension, and gastric decompression. Patients who are ventilated for 6 days or longer are at a 2-fold increased risk for constipation that can persist even after the ventilator is removed.³⁶ The prevalence of patients who develop constipation in the ICU is between 20% and 83%. Constipation has not been associated with length of hospital stay, suspension of nutritional support, or outcome of hospitalization. Interestingly enough, there was a study that showed that abdominal massage while ventilated in the ICU did seem to be an effective treatment of patients with constipation and levels of constipation can be a predictor for length of time that the patient must stay ventilated.³⁷

The prevalence of the diarrhea in the ICU is between 3.3% and 78%.³⁸ Enteral nutrition is the most common reason for diarrhea in this population. The median time for onset of diarrhea in enterally fed patients is 6 days.³⁹ One of the more common treatments of this is to add either probiotics or fiber to their enteral nutrition.⁴⁰ Addition of probiotics may be discontinued once they are removed from enteral nutrition, so it may be important to educate the patient on continuing these interventions once we are able to see them in the outpatient setting.

Patients who have long ICU stays may also be at a higher risk for sexual dysfunction after they are discharged. Up to 52% of patients report lingering sexual dysfunction after discharge that can affect their quality of life.⁴¹ Decreased quality of life can be due to a variety of factors including posttraumatic stress disorder (PTSD) symptoms, cognitive decline, and proximal neuromuscular weakness. There has been some interesting research on erectile dysfunction after COVID-19 that shows that the virus invades the Leydig cells of the testicle, causing widespread inflammation leading to erectile dysfunction.⁴² Sexual dysfunction in post-critical illness does seem to impact men more than women but should be screened in all patients to help with quality-of-life measures.⁴³

CLINICAL CONSIDERATIONS

Patients who are experiencing proximal muscle weakness due to PICS will be at a higher risk for urinary and fecal incontinence. They also may run a higher risk of worsening preexisting pelvic organ prolapse, which has implications not just for treatment of patients who are experiencing this post-COVID-19 infection but also for prevention education in those who have recovered from this infection. Generalized muscle weakness can lead to mobility issues, which could have implications for toileting. Those who are experiencing balance deficits will have difficulty

making it to the bathroom when they have increased urgency, which may lead to higher rates of urinary incontinence. Because of the pervasive nature of this weakness, we may have to reframe traditional strengthening parameters for these patient, which can be accomplished by adapting traditional pelvic floor muscle strengthening to consider the increased fatigue factor inherent in this syndrome by decreasing repetitions, increasing rest breaks, and avoiding overfatiguing these muscles to enhance function.

Cognitive decline in people who are experiencing PICS has implications for bowel and bladder functioning on a variety of levels. Those who experience cognitive decline tend to have poor nutritional habits, which could lead to constipation or diarrhea.⁴⁴ Poor hydration and/or forgetting to drink may lead to bladder irritation and urinary urgency. Coupled with mobility issues, urinary urgency could be a dangerous combination and increase fall risk. Cognitive decline in this population also has a higher risk for depression and PTSD-like symptoms that could lead to distressing urinary urgency as well as sexual dysfunction. Patients who are experiencing “brain fog” type symptoms may have difficulty with sequencing, which is an essential component of toileting, and could lead to increased rates of urinary incontinence. Also, if they are having communication deficits, this may delay their ability to express the need to go to the bathroom, which could cause a rise in incontinence, both fecal and urinary. Typical urge suppression techniques may be difficult in patients with both proximal muscle weakness and cognitive functioning due to issues with understanding sequencing and an inability to use both accessory and isolated pelvic floor musculature to activate the ascending neural inhibition of urge. Speech therapists have an abundance of knowledge in helping with strategies with this, so physical therapists may want to involve this specialty in their long-term programming with this population.

As patients in the post-COVID-19 infectious period may be more prone to anxiety and PTSD-type symptoms, it is important for physical therapists to screen for these mental health concerns. Anxiety can increase the risk of urinary urgency and frequency as well as put the patient at a high risk for constipation due to sympathetic overdrive. Anxiety can also cause a chronic holding pattern in the pelvic floor muscles, which can lead to overactivity and pain in the pelvic floor. Anxiety has been shown to decrease anal sphincter closure pressure, which could have implications for both fecal incontinence and finishing bowel movements. Sympathetic down training will be an imperative part of treating this population to help with reduction in anxiety and awareness of pelvic floor overactivity.

INTERVENTIONS

Once physical therapists can take into consideration the respiratory implications of this virus and the “long haul” side effects in patients who may or may not have been hospitalized, they can create an exercise program to help alleviate these bowel and bladder complications based on general neurologic and neuromuscular treatment principles. Traditional pelvic floor strengthening programs can be easily individualized for the COVID-19 population. For patients with proximal muscle fatigue, pelvic floor contraction sets can be prescribed with longer rest breaks in between repetitions and performed in a semireclined position to consider the demand on both the diaphragm and the pelvic floor. Instead of focusing on active inhalation and exhalation with pelvic floor work, therapists can emphasize passive recoil to improve control of the pelvic floor. Manual release of the diaphragm, rib mobility exercises and stretches, and manual cueing of the diaphragm can be coordinated with pelvic floor muscle actions to improve the coordination of these 2 muscles. Therapists should be mindful that if the patient was in the ICU, they may have increased anxiety with sound and light due to the constant stimulation of the ICU. Sympathetic down training should take place in a darkened room with minimal outside noise to allow patients to focus on their breathing and reduction in activity of the muscle. Visualization of a calming environment for the patients and asking them to describe the sights, sounds, smells, and feelings they have in their most relaxed memory may help them take the focus off the exercises that they are struggling with.

In considering the proximal muscle weakness, therapists must focus strengthening practices on the accessory muscles that assist the pelvic floor in its function. Exercise programs can focus on hip and abdominal strengthening, which will translate into improvement in bowel and bladder functioning. General fitness and exercise must be emphasized in any treatment program for bowel and bladder dysfunction in this population. Physical therapists may also want to consider the short-term use of an assistive device to take some of the physiologic burden off the pelvic floor and the diaphragm. Energy conservation will be an important discussion to optimize bowel and bladder functioning.

The post-COVID-19 patient population requires a team approach for treatment to optimize digestive and urinary tract recovery. Speech therapists can help design timed voiding programs. Registered dietitians can assist with the design of a diet that will improve constipation and decrease the risk of diarrhea. Occupational therapists may be consulted to improve fine motor function for patients to be able to don and

doff clothing for toileting, thereby reducing the risk of anxiety that accompanies urge. By consulting with a larger team, the physical therapist can create an environment for progressive recovery and a reduction in anxiety about progress with this patient population.

Education is a key component of treatment. Explanation of the pathophysiology of this disease and why some of these bowel and bladder considerations may be happening can help alleviate fear and contribute to therapeutic alliance with the patient. By understanding the physiologic consequences of this infection, many of which we are still learning ourselves, and applying research of previous diseases with similar physiologic profiles, we can communicate why these side effects are occurring with the patient. A collaborative plan can be designed around patients' specific deficits and recovery timeline to return them to their pre-COVID-19 functioning.

DISCUSSION

Physical therapists have a long history of responding to pandemics and epidemics to help mitigate the long-term consequences of illnesses.⁴⁵ About 85% of COVID-19 cases will have mild symptoms and not require hospitalization, 10% will require hospitalization, and 5% of those will require long ICU stays.⁹ One of the primary things that we must consider as physical therapists is that the effects of this infection will be far-reaching and pervasive in the short term. However, we also must keep in mind that many of the long-term effects on those who suffer only mildly from this infection may not reveal themselves for many months after the initial first wave has come and gone. As Brown et al⁴⁶ discuss in their article on COVID-19 and HIV infection, we as physical therapists must be ready for the unpredictable, episodic, and unpredictable nature of symptoms that may accompany the recovery from this infection. Patients who have poor diaphragmatic movement will likely have difficulty relaxing and eccentrically lengthening their pelvic floors, which could lead to long-term implications for dyssynergic defecation. Constipated patients often do not seek treatment for many months after developing this muscle coordination issue, so we should be cognizant of these implications to ask questions about COVID-19 in our subjective examination for many years to come.

Even if physical therapists are not getting these patients referred directly to them, it is important for them to be aware of these bowel and bladder side effects and to work with our colleagues across the continuum of care to screen for deficits in these systems. We are aware of the impact that bowel, bladder, and sexual dysfunction has on the quality of life at any point along the disease process. But in the

attempt to rehabilitate these neuromuscular deficits, the focus on overall physical recovery may cause us to neglect to ask questions about systems other than the musculoskeletal system and therefore miss the opportunity to identify life-altering problems in COVID-19 patients. By collaborating with our colleagues in the neurologic, orthopedic, and home health settings about screening questions of bowel and bladder function for these patients, pelvic floor physical therapy may be able to provide an improvement of functioning in a variety of quality-of-life domains and metrics. A simple 5-question screening tool may help pick up on bowel and bladder concerns in the general rehabilitation population:

- Are you experiencing any urinary incontinence?
- Are you able to delay urination if you have the urge? If so, for how long?
- Are you experiencing any constipation?
- Are you experiencing any fecal incontinence?
- Are you experiencing any pain in the pelvic or abdominal region?

If the patient answers yes to any of these questions, it may be appropriate to at least refer to a pelvic floor physical therapist for an educational consult. These questions could be asked in person or via telehealth to help determine whether a more robust evaluation and a plan of care are required.

Pelvic floor physical therapists should be a part of the comprehensive therapy team treating this patient population due to the multilayered effects that it seems to have on all body systems. While we do not have specific research yet on the effects of COVID-19 on the bowel and bladder, by assimilating what we do know about the effects that PICS, neurologic insults, and respiratory diseases have on the pelvic floor and visceral symptoms, we can help screen and treat patients for the distressing bowel and bladder symptoms. Likewise, treatment methodology will have to consider neuromuscular recovery principles to effectively tailor our treatments to the unique deficits suffered by post-COVID-19. More research will be needed to see the exact effects of the virus, but in the meantime, we can still be an asset in their rehabilitation.

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