

UNC Lineberger Cancer Network
ADVANCED PRACTICE PROVIDER
Live Webinar
Sarah Richardson,
PT, DPT, CLT, WCS
Physical Therapy Approaches to Oncology Care: Beyond Lymphedema March 20

Sound Check
03:55

Start Time
04:00

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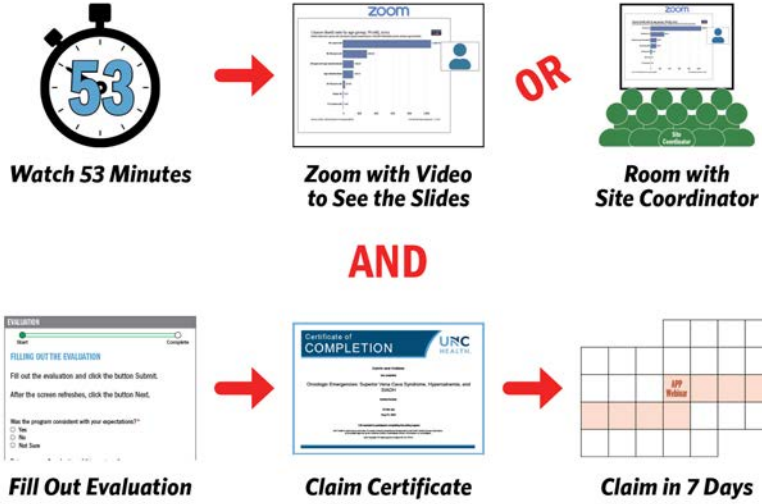
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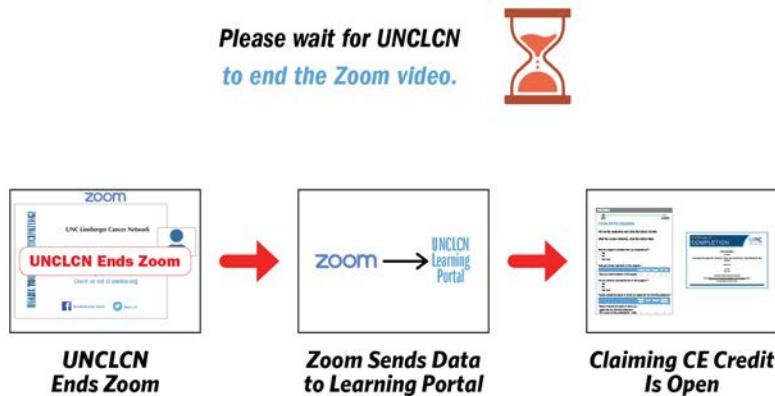
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 March 20

7

Our Presenter

Sarah Richardson,
PT, DPT, CLT, WCS

Sarah is a highly accomplished Physical Therapist with a diverse educational background and extensive clinical experience. Graduating with a dual degree in Psychology and Exercise Sport Science, alongside a minor in Spanish, from UNC Chapel Hill in 2017, she pursued her Doctorate of Physical Therapy at the same institution, culminating in 2021. Building on her commitment to excellence, Sarah completed a Women's Health Residency, specializing in oncology and pelvic health, at UPMC in Pittsburgh, PA.

Currently, Sarah serves as a dedicated Physical Therapist at UNC Health, operating in an outpatient setting where she passionately treats pelvic health conditions and oncology patients. Her expertise extends to the academic realm, as she has shared her knowledge with future physical therapists through teaching roles at both the University of Pittsburgh and UNC Chapel Hill's Doctor of Physical Therapy programs. Sarah is a fervent advocate for interdisciplinary collaboration, recognizing its significance in delivering optimal patient care. Her commitment to mentorship reflects her desire to inspire and guide the next generation of healthcare professionals.

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Our Presenter

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Our Presenter

- 5.** Sarah is a highly accomplished Physical Therapist with a diverse educational background and extensive clinical experience.

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Our Presenter

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- 4.** She earned her Doctorate of Physical Therapy at UNC Chapel Hill in 2021.

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Our Presenter

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Our Presenter

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14

14

Sample Poll Everywhere Question

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Cancer and cancer-related treatments can cause physical impairments.

(A) True 0%

(B) False

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Approved Provider Statement:
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Cancer and cancer-related treatments can cause physical impairments.

(A) True	<input type="text"/>	0%
(B) False	<input type="text"/>	0%

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Physical Therapy Approaches to Oncology Care: Beyond Lymphedema

Presented By: Sarah Richardson, PT, DPT, CLT, WCS
sarah.richardson3@unchealth.unc.edu



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Objectives

- Identify physical challenges of cancer patients beyond lymphedema
- Discuss the role of physical therapy in survivorship care plans for cancer patients
- Explain the relationship of evidence-based physical therapy interventions and improved patient outcomes
- Describe the interdisciplinary collaboration of healthcare workers and physical therapists in delivering optimal cancer care

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Common Side Effects of Cancer Treatment

- Pain
- Numbness, tingling, and/or reduced feeling
- Blockage in the lymphatic system
- Muscle weakness
- Joint stiffness
- Fatigue
- Loss of endurance
- Loss of bone density
- Difficulty moving or walking
- Risk of losing your balance
- Heart Problems
- SOB or breathing difficulties

Brennan L, et al. Phys Ther. 2022;102(3).

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S/E from Radiation Therapy

- Early s/e occur during, immediately after, or soon after radiation treatment (often reversible)
- Late s/e occur several months to years after radiotherapy (chronic and progressive)

Brain	Breast	Chest	Head & Neck	Pelvis	Rectum	Stomach & Abdomen
Fatigue Hair Loss Memory N&V Skin HA Vision	Fatigue Hair Loss Skin Swelling Pain	Fatigue Hair Loss Throat Cough SOB	Fatigue Hair Loss Mouth Skin Taste Throat Thyroid Gland	Diarrhea Fatigue Hair Loss N&V Sexual Fertility Skin Bladder	Diarrhea Fatigue Hair Loss Sexual Fertility Skin Urinary	Diarrhea Fatigue Hair Loss N&V Skin Urinary

Barazzuol L, et al. Mol Oncol. 2020;14(7):1538-1554.
Herrmann J. Nat Rev Cardiol. 2020;17(8):474-502.

Radiation Therapy Side Effects - NCI. Accessed February 24, 2024. <https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy/side-effects>

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Characteristics of Patients with Cancer Referred to Outpatient PT

Cancer Type	Chemotherapy	Hormone Therapy	Radiation Therapy	Surgical Resection
Blood	100.0		8.3	
Bone or joint	18.2		100.0	63.6
Breast	61.1	12.2	93.3	92.2
Central nervous system	60.0		85.0	70.0
Digestive	63.6		72.7	81.8
Head or neck	46.5		100.0	62.8
Genitourinary	10.7	10.7	43.8	82.7
Respiratory	53.8		92.3	84.6
Skin	10.0		80.0	
Soft tissue	10.3		94.9	89.5
All cancers	33.0	6.9	70.6	80.3

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Alappattu MJ, et al. Phys Ther. 2015;95(4):526-538. UNC Health

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Characteristics of Patients with Cancer Referred to Outpatient PT

Measure	Total	Blood	Bone or Joint	Breast	CNS	Digestive	Head or Neck	Genitourinary	Respiratory	Skin	Soft Tissue
Impairment in ^a :											
Gait	14.4	33.3	28.6	10.3	43.8		6.5	4.6	30.0		55.6
Joint mobility	18.5	33.3	71.4	25.0	18.8		48.4	2.6	45.5	37.5	27.8
Posture	40.2	33.3	71.4	79.4	62.5	12.5	90.3	5.2	72.7	62.5	47.2
ROM	51.3	66.7	85.7	85.3	62.5	12.5	100.0	12.4	81.8	87.5	88.9
Skin integrity	14.4		42.9	26.5	12.5		29.0	2.0	27.3	37.5	22.2
Soft tissue	71.3	33.3	85.7	94.1	31.3	37.5	93.5	59.5	63.6	75.0	86.1
Strength	83.6	100.0	85.7	82.4	87.5	87.5	71.0	88.2	63.6	75.0	80.6
Presence of ^b :											
Fatigue	31.1	33.3	57.1	51.5	25.0		61.3	7.2	63.6	50.0	58.3
Fibrosis	21.2		42.9	45.6	6.3		48.4	5.3	18.2	37.5	25.0
Incontinence	38.4					75.0		81.7			
Lymphedema	27.6	33.3	42.9	66.2	25.0	0.0	41.9	4.6	36.4	37.5	38.9
Pain	47.8	33.3	85.7	69.1	37.5	37.5	61.3	25.5	72.7	62.5	80.6
Urgency	36.1					87.5		75.8			
No. of physical therapy sessions	8.5±11.0	13.4±18.2	4.0±1.7	14.1±19.0	11.2±12.5	6.6±4.4	8.7±7.6	5.6±3.8	5.2±2.7	11.5±8.7	6.5±4.0
FCI score	1.4±1.4	0.4±0.8	2.0±2.5	1.6±1.7	1.5±1.6	1.7±1.4	1.3±1.1	1.3±1.2	1.2±1.0	1.5±1.1	1.5±1.1
No. of medications	4.8±4.0	5.2±3.2	7.4±6.8	5.1±4.6	5.6±4.6	6.1±3.8	4.2±3.6	4.5±3.6	5.4±5.0	5.5±4.2	4.4±3.2

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Alappattu MJ, et al. Phys Ther. 2015;95(4):526-538. UNC Health

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Poll: What are common s/e of cancer treatments?

What s/e could rehabilitation support with?

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The slide features an abstract background with overlapping light blue and dark blue shapes. The text is positioned on the left side of the slide.

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What are common side effects of cancer treatments? What side effects could rehabilitation support with?

Nobody has responded yet.
Hang tight! Responses are coming in.

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26

Barriers to Care from PT Perspective

CPG recommend multimodal interdisciplinary rehabilitation during and after acute cancer treatment.

Identified Barriers:

- Need for More Services
- Barriers to service development and delivery
- Lack of awareness of the role of PT
- Facilitators to service development
- Priorities of the future of oncology physical therapy
- Training Needs

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Brennan L, et al. Phys Ther. 2022;102(3).
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Barriers to Physical Activity Participation in Cancer Survivors

- 20% of cancer patients who have undergone treatment are not meeting the daily physical activity (PA) guidelines of 30 minutes of moderate physical activity 5x/week
- Physical Activity can alleviate both physical and psychological symptoms associated with cancer treatments (fatigue, QOL, physical function, anxiety, and depressive symptoms)
- Varying levels of awareness of benefit of physical activity for psychological and physical health
- Lack of participation in PA is multifactorial but lack of recommendation from an oncology clinician is a known factor
- Many patients don't engage in PA recommendations due to concern over safety

Assess, Advise, Refer

- o Physical activity as a vital sign
- o If not meeting PA recommendations, educate on benefit of meeting guidelines
- o Refer to appropriate providers

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Roscoe CMP, Pringle A, Chandler C, Faghy MA, Barratt B. 2022; Schmitz KH, Campbell AM, Stuver MM, et al. 2019

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Physical Activity Screening

Schmitz KH, Campbell AM, Stuver MM, et al. 2019

Oncology Clinician's Guide to Referring Patients to Exercise

Step 1: ASSESS

Question #1: How many days during the past week have you performed physical activity where your heart beats faster and your breathing is harder than normal for 30 minutes or more?

Question #2: How many days during the past week have you performed physical activity to increase muscle strength, such as lifting weights?

Question #3: Would this patient be safe exercising without medical supervision (e.g., walking, hiking, cycling, weight lifting)?

Question #3 answer is Yes.

(Patient is ambulatory, ECOG score 0-2)

- **Step 2: ADVISE**
 - EIM ExRx for Oncology, based on current report of activity to increase to:
 - Moderate intensity aerobic exercise (talk but not sing) for up to 30 min, 3 times/wk
 - Resistance exercise 2x weekly 20-30 min
- **Step 3: REFER** to best available community program

Question #3 answer is No Or I'm not sure and I don't have the capacity to evaluate.

(ECOG score 3+ or other complications present)

- **Step 2: ADVISE**
 - Advise patient to follow-up with outpatient rehabilitation healthcare professional for further evaluation
- **Step 3: REFER**
 - Outpatient rehabilitation health care professional will recommend best available program

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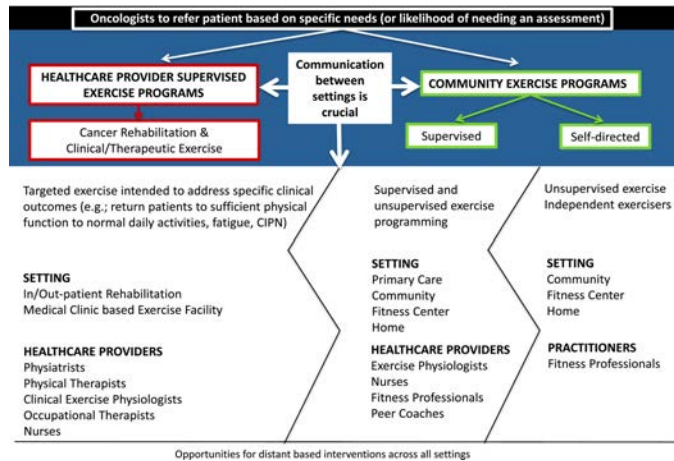
REPEAT AT REGULAR INTERVALS AT CLINICAL ENCOUNTERS DURING AND AFTER ACTIVE TREATMENT

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Physical Activity Screening

Schmitz KH, Campbell AM, Stuver MM, et al. 2019



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What are potential barriers for inclusion of PT within oncology care?

Nobody has responded yet.
Hang tight! Responses are coming in.

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Role of Rehabilitation in Oncology Care

- 32 of 69 guidelines recommended rehabilitation referral, assessment, and interventions for a variety of cancer types as well as symptom/conditions associated with cancer.
- The remaining guidelines endorsed rehabilitation referrals but provided no specific recommendations for assessment/treatment.
- CPG included prominent societies and organizations such as National Comprehensive Cancer Network, National Institute for Health and Care Excellence, the European Society for medical Oncology for example.
- Recommendations for rehabilitation services are relatively prevalent across oncology guidelines
- A high functional morbidity burden associated with cancer treatments impacts >60% of individuals living with or beyond cancer but only 20% of individuals are referred to rehabilitation services for cancer treatment-related impairment and disability.

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Almeida KAM, et al. Phys Ther. 2020;100(11):1997-2008.
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American Cancer Society Head and Neck Cancer Survivorship Care Guideline

Survivorship Care Guideline Recommendations:

- Spinal accessory nerve palsy: PCP should refer HNC survivors with SAN palsy occurring post-radical neck dissection to a rehabilitation specialist to improve ROM and ability to perform daily tasks
- Shoulder Dysfunction: should conduct baseline assessment of shoulder function post treatment and refer HNC survivors to rehabilitation specialist for improvement to pain, disability, and ROM where shoulder morbidity exists
- Trismus: Refer HNC survivors to rehabilitation specialists and dental professionals to prevent trismus and to treat trismus as soon as it is diagnosed
- Lymphedema: assess HNC survivors for lymphedema and refer HNC survivors to a rehabilitation specialist for treatment consisting of MLD and if tolerated, compression bandaging

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Cohen EEW, et al. CA Cancer J Clin. 2016;66(3):203-239.
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PT Benefits for Shoulder Dysfunction

- Progressive resistance training (PRT) is effective for improving shoulder pain and dysfunction in patients with head and neck cancer
- Future studies with longer follow-up times are needed to clarify the effects of early postoperative intervention.
- PRT is more effective than standard physiotherapy treatment for shoulder dysfunction in patients treated for head and neck cancer, improving pain, disability and range of motion of the shoulder joint



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Stout NL, et al. CA Cancer J Clin. 2021;71(2):149-175.
Carvalho APV, et al. Cochrane Database Syst Rev. 2012;(4):CD008693.
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PT Benefits for Shoulder Dysfunction

SI Table: Specific scapular strengthening exercises.

Exercise	Target Muscle	Description
Shoulder drop	Upper trapezius	In sitting or standing. Hang one arm on the side of the trunk with elbow in extension and hold a 1 kg dumbbell. Elevate scapula to the maximal point and maintain the position of glenohumeral joint and elbow extension.
Horizontal adduction and flexion	Middle trapezius	In sitting. Shoulder forward flexion at 90 degrees with elbow flex to 90 degrees. Wrist in neutral with hand fisted. The arm elevates upward and crosses over the body with shoulder adduction and flexion.
Side-lying external rotation	Middle trapezius Lower trapezius	Side-lying with an arm at side with elbow flexion at 90 degrees and perform shoulder external rotation.
Side-lying forward flexion	Middle trapezius Lower trapezius	Side-lying with an arm at side, elbow in extension and shoulder in neutral position. Perform shoulder forward flexion.
Prone extension	Middle trapezius Lower trapezius	Prone with an arm pointing to the floor. Perform shoulder extension.
Prone horizontal abduction with external rotation	Middle trapezius Lower trapezius	Prone with an arm forward flexion at 90 degrees to perform shoulder horizontal abduction in horizontal plane with shoulder external rotation until the thumb points to the ceiling.

Overhead arm raise	Middle trapezius Lower trapezius	Prone with shoulder horizontal abduction at 125 degrees with shoulder external rotation and elbow extension to raise the arm.
One-arm row	Middle trapezius Lower trapezius	In standing. Contralateral hand places on the table with the contralateral leg langes forward. The trunk leans forward to 45 degrees. Ipsilateral hand holds a 1 kg dumbbell with elbow in extension. Pull the dumbbell to the level of the lower rib with shoulder in retraction.
Prone flexion	Lower trapezius	Prone with the arm pointing to the floor to perform shoulder flexion.
Press up	Lower trapezius Serratus anterior	In sitting. Feet on the floor with bilateral arms by the side and palms on the bench with fingers pointing forward. Straighten the arms to lift the body up.
Push-up press	Lower trapezius Serratus anterior	Prone on forearms and knees. Arms are shoulder-width apart, and hips and knees flex to 90 degrees. Push the body into scapular protraction.
Wall slide	Serratus anterior	In standing. Place the ulnar side of hands and forearms on the wall with elbow flexion at 90 degrees and wrist in neutral position. The dominant foot steps forward at the base of the wall. Perform bilateral arms slide up and down.

Anti-scapular winging exercise	Middle trapezius Lower trapezius Serratus anterior	In sitting or standing. Hold both hands together, and elevate arms above the head. Then place both hands behind the head. Pull bilateral scapular closer, elevate both arms above the head. After, put arms back to the front of the trunk.
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Note: Because prone position was not available for participants with tracheostomy during hospitalization, those who had tracheostomy executed all exercises except the 4 exercises under prone conditions (prone extension, prone horizontal abduction with external rotation, overhead arm raise, and prone flexion) during hospitalization. All exercises were performed after discharge from hospital.

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Chen Y-H, et al. PLoS ONE. 2020;15(8):e0237133.

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Manual Therapy Benefit for Trismus

- Manual Therapy can improve radiation-associated trismus in survivors of HNC (largest gains after first treatment but modest gains seen with serial treatment)
- Exercise therapy can enhance mouth opening after the development of cancer treatment-induced trismus but does not prevent trismus
- Not a clear consensus for optimal intervention for trismus in HNC but SR found that a variety of exercise regimens and jaw rehabilitation devices have comparable effectiveness



McMillan H, et al. JAMA Otolaryngol Head Neck Surg. 2022;148(5):418-425.
Chee S, et al. Integr Cancer Ther. 2021;20:15347354211006474.
Shao C-H, et al. Radiother Oncol. 2020;151:249-255.

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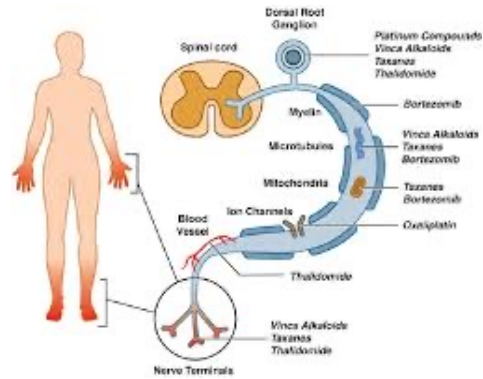
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Treatment Options for Cancer-Related Fatigue & Neuropathy

- Cancer related fatigue (CRF) is the most experienced symptom by patients and survivors
- Almost all patients undergoing treatment for cancer will report CRF and 1/2 will report as severe
- Exercise is effective intervention for improving symptoms of CRF, as well as cognitive impairment, sleep challenges, depression, pain, anxiety, and MSK dysfunction
- Aerobic exercise at moderate intensity, 10-45 min/day, 4-6 days/week for up to 6 months found to reduce the previously listed symptoms and improve cardiopulmonary function



Mustian KM, et al. *Oncol Hematol Rev.* 2012;8(2):81-88. et al
 Brayall P, et al. *Rehabil Oncol.* 2018;36(3):161-166.

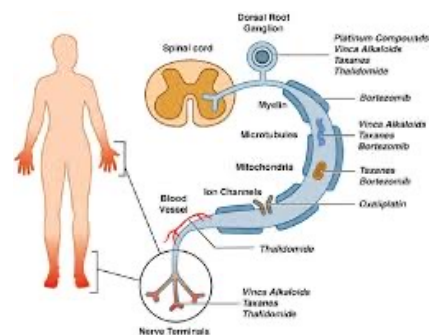
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Treatment Options for Cancer-Related Fatigue & Neuropathy

- Resistance training (2 sets of 8-12 repetitions, 3x/week) led to improvements in UE and LE strength compared to usual care in those receiving chemotherapy--> same group able to tolerate higher relative doses of chemotherapy
- Resistance training following cancer treatments (2x/week for 6-12 months) along with plyometrics enhanced BMD
- Combined aerobic and resistance training with 4-week intervention can improve CRF, QOL, sleep, aerobic capacity, and immune function
- PT interventions in individuals with CIPN can lead to improved static/dynamic balance, strength, and reduction of CIPN symptoms



Mustian KM, et al. *Oncol Hematol Rev.* 2012;8(2):81-88. et al
 Brayall P, et al. *Rehabil Oncol.* 2018;36(3):161-166.

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ACSM Exercise Guideline for Cancer Patients & Survivors

Mode of Exercise	Recommendation
Aerobic	Achieve a weekly volume of 150 minutes of moderate intensity exercise or 75 minutes of vigorous intensity (or combination of the two)
Resistance	2-3x/week (target all major muscle groups)
Flexibility	All major muscle groups on all the days that other exercises are performed
Additional Info.	Return to normal activity ASAP during/following treatment. Some exercise is better than none. Start slowly and progressively increase.

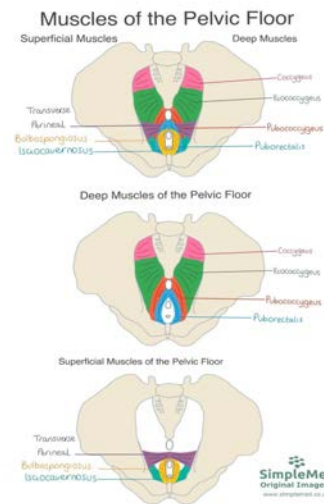
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PT Benefits for Gynecological and Prostate Cancer

- Physical therapists can support symptoms related to pelvic pain, UI, constipation, FI through exercise prescription, manual therapy techniques, behavior modification, and patient education.
- PT with gynecological cancer survivors can enhance symptoms of dyspareunia and leads to significant improvements in pain, sexual function, pelvic floor dysfunction symptoms and quality of life.
- Physical therapy can help reduce incidence of UI and ED following prostatectomy and is preferred approach due to simplicity, safety, and non-invasiveness
- Supervised PFME can lead to a decrease in UI rates, particularly when implemented pre-operatively in those with prostate cancer



Cyr M-P, et al. Gynecol Oncol. 2020;159(3):778-784.
Yaacov D, et al. Sex Med Rev. 2022;10(1):162-167.
Soto González M, et al. NeuroUrol Urodyn. 2020;39(5):1529-1537.

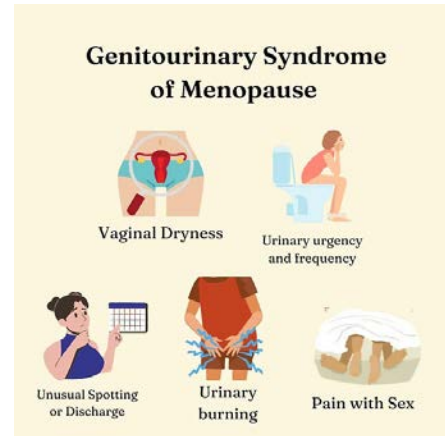
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PT Benefits for Pelvic Floor Symptoms in Breast Cancer Patients

- Genitourinary syndrome of menopause (GSM) is a collection of s/s associated with a decrease in sex steroids involving changes to the labia majora/minora, clitoris, vestibule, vagina, urethra, and bladder
- GSM is commonly experienced by breast cancer survivors receiving antiestrogen therapy (aromatase inhibitors)
- >60% of postmenopausal patients with breast cancer report vaginal dryness and dyspareunia
- International Society for the Study of Women's Sexual Health recommend moisturizers, lubricants, pelvic floor physical therapy, and dilator therapy as first line treatment
- PT is also effective in treating urinary incontinence, genital prolapse, and relief of GSM symptoms



Kagan R, Spadt SK, Parish SJ. 2019;36(10):897-908.

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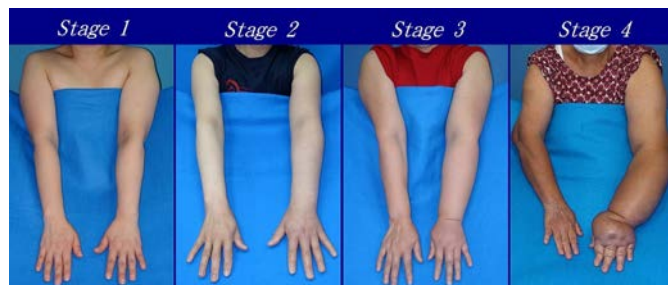
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PT Benefits for Breast Cancer

- Breast Cancer related lymphedema (BCRL) occurs around 16.6% in individuals 3 months to 20 years after diagnosis (increased with axillary lymph node dissection to 19.9%)
- Resistance exercise can decrease breast cancer related lymphedema and improve muscular strength
- CPG recommend early postoperative exercise: UE exercise paired with compression garment in patients at risk of BCRL can reduce the risk of development
- Also recommend PRT at least 1 month post-surgery



Baumann FT, et al. Disabil Rehabil. 2022;44(19):5374-5385; Claire Davies, Kimberly Levenhagen, Kathryn Ryans, Marisa Perdomo, Laura Gilchrist, Volume 100, Issue 7, July 2020, Pages 1163-1179

42

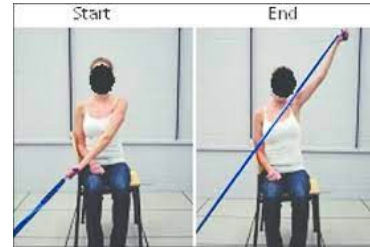
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PT Benefits for Breast Cancer

- PT in the post-operative period of mastectomy allows for improvement in shoulder ROM, decrease in pain and improve functional disability and also plays a role in prevention, early detection, and treatment of complications in post-operative period of breast cancer
- Scapular strengthening along with conventional PT treatment can be beneficial for shoulder dysfunction, pain, and functional disability after modified radical mastectomy (Ex: D2 flexion pattern, shoulder shrugs, wall slide, scapular retraction)



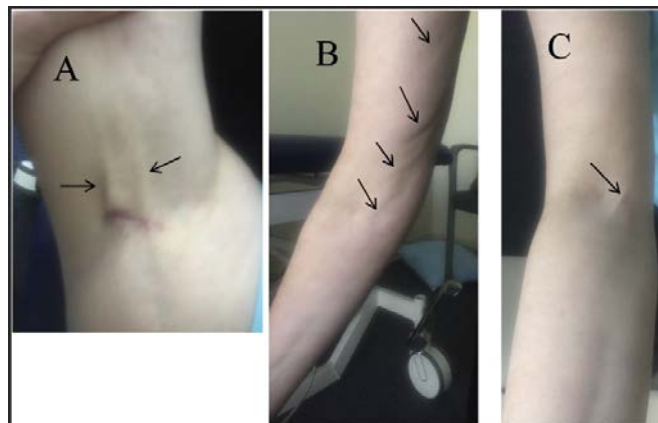
Hasenoehrl T, et al. Support Care Cancer. 2020;28(8):3593-3603. **UNC Health**

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PT Benefits for Breast Cancer and Axillary Web Syndrome (AWS)

- Lymphatic cording or axillary web syndrome (AWS) refers to a ropelike structure that develops mainly under the axilla but can extend to involve the medial aspect of the ipsilateral arm down to the antecubital fossa
- PT improves shoulder function, pain, and QOL in breast cancer patients with AWS and combined with MLD decreases arm lymphedema after as short as 4-week intervention
- Treatment involved UE stretching (focusing on abduction, flexion, elbow extension) and strengthening (3 sets of 10) & manual therapy (release techniques to the cords; scapular mobilization; passive ROM)
- A SR found that exercise and stretching are most effective therapies within field of PT for AWS



Mohite PP, et al. Asian Pac J Cancer Prev. 2023;24(6):2099-2104.; Cho Y, et al. Support Care Cancer. 2016;24(5):2047-2057.; González-Rubino JB, Vinolo-Gil MJ, Martín-Valero R. 2023;31(5):257.

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What side effects of cancer treatment can be enhanced by the inclusion of physical therapy within their care, beyond lymphedema?

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45

Role of a Physical Therapist in Oncology

- Cancer survivors are almost **three times** more likely to report fair or poor health after treatment and twice as likely to have psychosocial disabilities and physical and functional limitations as persons without cancer or chronic illness
- Rehabilitation services have historically been **reactive** in nature
- The point of cancer diagnosis offers an opportunity to identify the individual's baseline functional performance and initiate a plan of care to prospectively monitor function throughout treatment
- **High functional morbidity burden impacts >60% of individuals living with or beyond cancer with only 20% of individuals being referred to rehabilitation services for cancer treatment-related impairment and disability.**

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Tilley A, et al. Can J Surg. 2009;52(4):E105-E106.
Rizzo A. J Adv Pract Oncol. 2016;7(3):339-342.

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Communication with Patients

- Chronic disease management and health behavior change both must be done by the patient.
- Patients who participate in their decisions have enhanced outcomes
- If patients are not aware of services or the benefits of the services are not outlined, then they will likely not pursue care

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Krist AH, et al. Stud Health Technol Inform. 2017;240:284-302.

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How to Refer to Physical Therapy

1. Search for physical therapy in orders:



2. Double-click Physical Therapy in the Order search



3. Select the magnifying glass to search the clinic.



4. Type "therapy pelvic" to choose the Pelvic Health Clinic



5. You may specify services requested



6. If you have a preferred provider please list in the comments*

*You do not need to enter a provider (this will allow for scheduling with first available provider vs having to wait for a specific provider)

7. Enter the pt's dx along with any special instructions/requests in the "Comments" section (ie: pt may need dry needling, etc)

Please call **UNC Therapy Services 984-215-4970** or **UNC Hospitals Rehabilitation Therapies 984-974-9700** for assistance in referring patients to our clinics. Thank you!

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Resources

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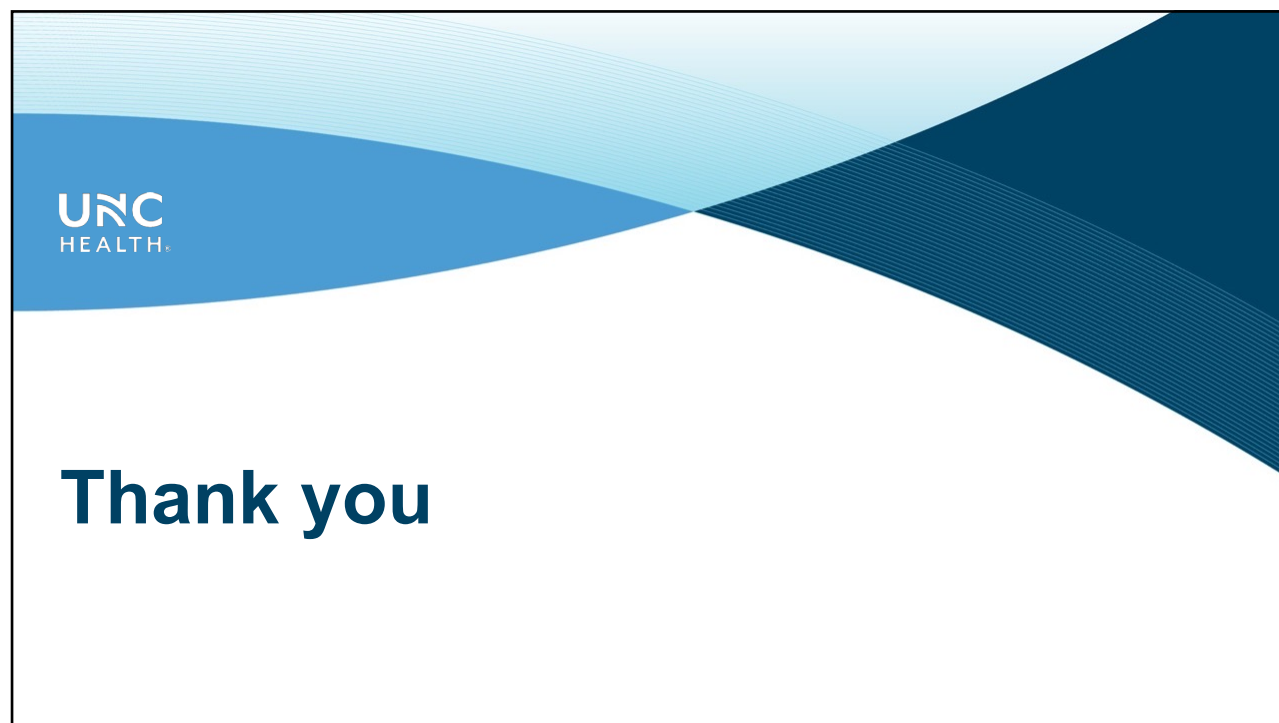
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51



52

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The song *Back Rhodes* written and performed by **Don Poe**



54

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	<p>PATIENT-CENTERED CARE </p>	<p style="text-align: right;">April 10 12:00 PM</p> <p>Breast Cancer Management in North Carolina Yara Abdou, MD</p>
	<p>RESEARCH TO PRACTICE </p>	<p style="text-align: right;">April 24 12:00 PM</p> <p>Current Concepts in Spinal Oncology Michael Galgano, MD, FAANS</p>

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	<p>RESEARCH TO PRACTICE </p>	<p>H. Pylori Testing and Treatment for Gastric Cancer Prevention Meira Epplein, PhD Katherine Garman, MD</p>
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56

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