COURAGE KENNY REHABILITATION INSTITUTE

Cancer Rehabilitation Across the Continuum

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Disclosures

1 2021-2023: Clinical Education Presenter/Speaker for Concordia University

2 2022: Clinical Education Presenter/On a Speakers Bureau for Airos Medical

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Objectives

1. Introduce oncology-related functional impairments and side effects
2. Describe some of the short and long-term side effects that can be addressed with cancer rehabilitation
3. Identify functional impairments throughout the cancer continuum
4. Recognize key providers are for identifying impairments and side effects which would benefit from cancer rehabilitation

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Current Cancer Statistics

- In 2023, there will be an estimated **1.9 million new cancer cases** diagnosed in the US (34,000 in MN) (Siegel, 2023)
- 5-year relative survival rate in all cancers is 63-68%, depending upon cancer type, ethnicity etc. (Siegal, 2023)
- More than **18 million** cancer survivors alive in the US today, and that number will grow to more than 20 million by 2026 (Miller, 2022)
  - 22.5 Million by 2032

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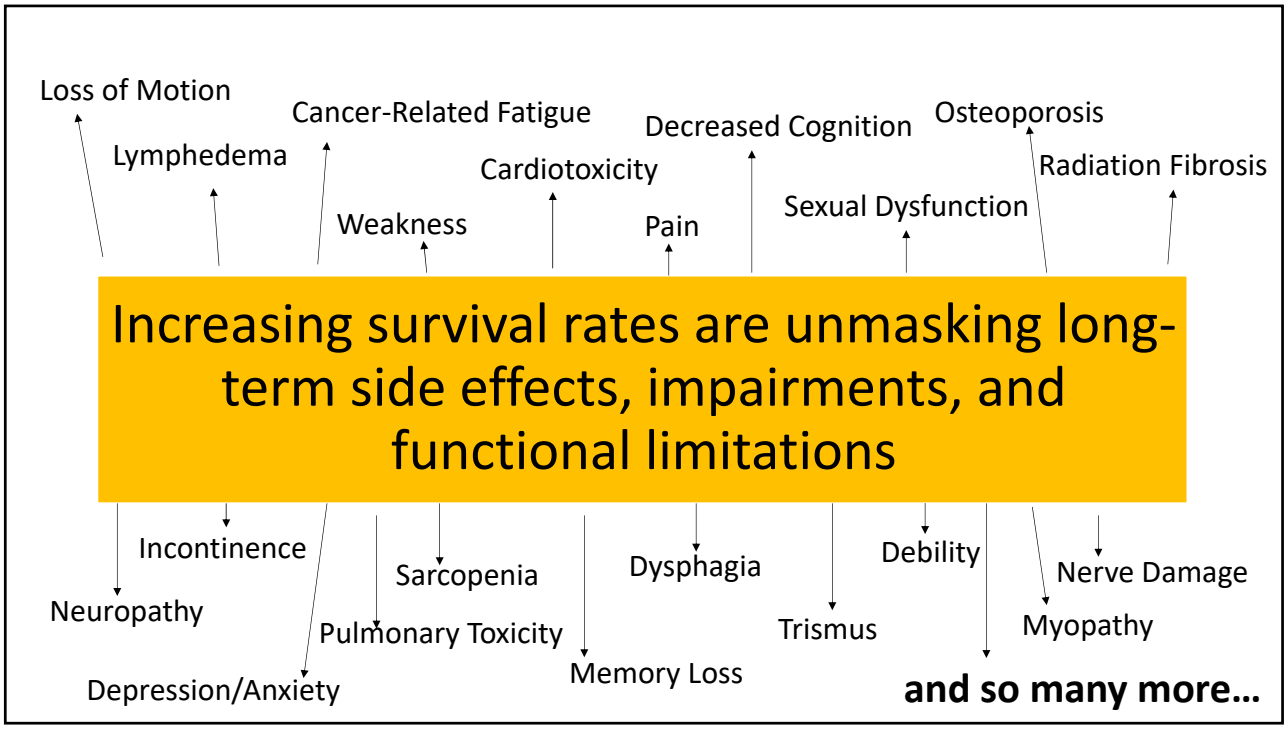

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Current Cancer Statistics

- 1 in 3 cancer survivors has chronic pain (Jiang, 2019)
- The National Cancer Institute estimates that cancer-related **direct** medical costs in the US will increase to **$246 billion** by 2030, a 34% increase from 2015
- Indirect cancer care costs and lost income due to time away from work during treatment and recovery can lead to medical financial hardship for cancer patients and their families

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The Need for Cancer Rehab

- **>50%** of cancer survivors have at least 1 physical impairment **6 years** after finishing cancer treatment (Stubblefield, 2013)
- **63%** of individuals diagnosed with cancer self-report a need for rehabilitation services, but **40% had this need unmet** (Thorsen, 2011)
  Highly correlated with employment status change and receiving chemotherapy
- **93%** of women with metastatic breast cancer have at least 1 physical impairment, but **less than 30% get help** to address it (Cheville, 2009)

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The Need for Cancer Rehab – Breast Cancer

In one study, patients who were diagnosed with nonmetastatic breast cancer within the last year (mean=10.8 months) reported the following:

92% reported **at least 3** long-term side effects (avg of 9.2 side effects)

- Fatigue (90%)
- Pain (66%)
- Numbness and Tingling (54%)
- Swelling in limbs (26%)
- Difficulty Remembering Things (68%)
- Pain with Intercourse (37%)
- Aching Muscles (60%)
- Problems with Urination (36%)

51% reported **at least 1** unmet need, but wanting intervention (avg of 2.6)

- Fatigue (33%)
- Pain (32%)
- Numbness and Tingling (44%)
- Swelling in limbs (39%)
- Difficulty Remembering Things (26%)
- Pain with Intercourse (28%)
- Aching Muscles (41%)
- Problems with Urination (43%)

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(Palmer, 2016)

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The Need for Cancer Rehab – Head and Neck Cancer

Trismus incidence ranges from 38-52%, with severity peaking at 6 months and slightly lower at 12 months

Neck tightness and fibrosis can affect up to 72% after surgery and radiation

(Brook, 2020)

Head and Neck Cancer impairments, 1 year post-radiation:

~50% reported **difficulty with swallowing (dysphagia) and speech (dysarthria)** (Ringash, 2018)

Lymphedema can occur in as many as 90% of Head and Neck Cancer Survivors.

Lymphedema in this population is underrecognized, underdiagnosed, and undertreated. (Stubblefield, 2023)

Long-term :

<5% reported **no problems** while,

- 40% reported difficulty swallowing/eating
- 15% reported difficulty speaking
- 14% reported pain (Taylor, 2023)

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The Need for Cancer Rehab – Gynecological Cancer

Patients who were diagnosed with gynecological cancer within the last 2 years (mean=7.6 months) reported the following:

57% reported **distress**

- Fatigue (58%)
- Numbness and Tingling (54%)
- Decreased Physical Endurance (42%)
- Difficulty with Concentration (50%)
- Changes in Urination (23%)
- Lymphedema (12%)

→ **52% reported unmet needs for rehabilitation services**

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(Seland, 2022)

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The Need for Cancer Rehab – Gastric Cancer

Patients who were diagnosed with gastric cancer:

>1 Year Post-Surgery, 20-30% of patients still complained of:

- Dysphagia
- Pain
- Nausea and Vomiting
- Eating Restrictions
- Weight Loss

5 Years Post-Surgery

~50% reported fatigue

Quality of Life was still reported as low with symptoms of reflux and eating restrictions

(Numico, 2015)

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Cancer Rehabilitation

Who can help address these functional impairments and limitations?

Cancer Rehabilitation!

Cancer rehabilitation helps individuals with cancer obtain optimal physical, social, psychological, and vocational functioning within the limits created by cancer and its treatments (Stubblefield, 2019)

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The Cancer Rehabilitation Team

Currently at Courage Kenny Rehabilitation Institute, part of Allina Health, our Cancer Rehabilitation and Lymphedema Program is made up of:

- 4 MD/NP's at 5 locations across the metro
- 1 Nurse Care Navigator
- 90+ trained therapists (PT/OT/SLP) in 27 locations throughout the metro and regional hospitals
- Dedicated Scheduling team

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Common Impairments Addressed in Cancer Rehab

- Lymphedema
- Deconditioning, Debility, Weakness
- Balance (neuropathy, CNS)
- Eating (swallowing, chewing, oral motor)
- Communication
- Cancer-related fatigue
- Mild Cognitive Impairment (Chemo Brain)
- Musculoskeletal Pain
- Joint Stiffness of Loss of Range of Motion
- Scar Tissue and Radiation Fibrosis Syndrome
- Bowel or Bladder Dysfunction

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	Lung cancer	Breast cancer	Prostate cancer	Colorectal cancer	CNS cancer
General physical impairments	• Balance impairment • Cancer related cognitive impairment • Cancer related fatigue • Chemotherapy-induced peripheral neuropathy • Gait dysfunction • Impairments related to bone metastasis • Pain related to cancer or cancer treatment				
Specific physical impairments	• Chest pain • Increase oxygen dependence • Muscular asymmetry • Scar adhesion	• Lymphedema • Muscular asymmetry • Neck pain • Post-mastectomy pain • Scapular winging • Shoulder pain	• Bowel or urinary dysfunction • Osteopenia/ osteoporosis • Sarcopenia	• Bowel dysfunction • Chemotherapy-induced peripheral • Lymphedema • Sexual dysfunction	• Cognitive impairment • Paralysis • Speech impairment • Swallowing impairment

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	GYN cancer	Head/Neck cancer	Skin cancer (melanoma)	Lymphoma	Osteosarcoma
General physical impairments	• Balance impairment • Cancer related cognitive impairment • Cancer related fatigue • Chemotherapy-induced peripheral neuropathy • Gait dysfunction • Impairments related to bone metastasis • Pain related to cancer or cancer treatment				
Specific physical impairments	• Bowel or urinary dysfunction • Lymphedema • Radiation fibrosis syndrome	• Cervical range of motion limitations • Dystonia • Limited jaw excursion • Lymphedema • Radiation fibrosis syndrome • Speech impairment • Swallowing impairment	• Lymphedema • Muscular asymmetry • Radiation fibrosis syndrome	• Autonomic dysfunction • Balance dysfunction • Graft-versus-host disease	• Balance dysfunction • Limited joint range of motion • Localized joint pain • Radiation fibrosis syndrome • Scar adhesions

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Common Impairments Addressed in Cancer Rehab

Exercise and Physical Activity are supported in literature to have positive effects for individuals living with and beyond cancer on:

- Aerobic capacity (VO2)
- Physical function
- Muscular Strength
- Lymphedema
- Cancer-related fatigue
- Bone health
- Health-related quality of life
- Physical, emotional and functional well-being
- Depression and Anxiety
- Cancer mortality
- Pain
- Return to work and societal costs

(Stout, 2017) (Wallen, 2020) (Padilha, 2017) (McTiernan, 2019) (Campbell, 2019) (Li, 2015) (Mijwel, 2018)

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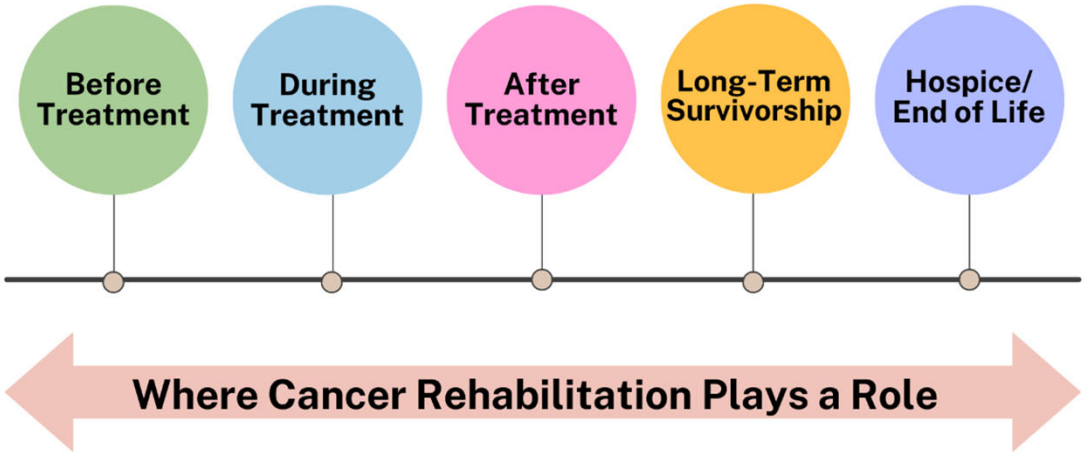
The Cancer Care Continuum



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Cancer Rehab Before Treatment

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Before Treatment (Prehabilitation)

After diagnosis, before treatment(s) begin

Goals of Cancer Rehabilitation:

- Address pre-existing impairments
- Improve physical health in order to safely complete treatment
- To establish a baseline to help prevent or minimize side effects

- Outpatient early rehab (prehab) consults at MD Anderson Cancer Center have increased more than 200% in the last 5 years and currently account for about 50% of new PMR outpatient consults (Stout, 2021)

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Cancer Rehab Before Treatment- What the Literature Supports

Gastrointestinal Cancers

- Improvement in functional outcomes before and after surgery
- Lower hospitalization length and rate of readmission

Lung Cancer

- Improvement in function for those considered high-risk or poor surgical candidates
- Improved pulmonary function and walking tolerance to increase tolerance to surgery and adjuvant therapies

Hematologic Malignancies

- Reduces surgical complications
- Accelerates recovery in order to facilitate the delivery of other necessary cancer treatments

(Stout, 2021)

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Cancer Rehab Before Treatment - What the Literature Supports

Breast Cancer

- Decreases incontinence; Improves cardiorespiratory fitness

Prostate Cancer

- Decreases post-op incontinence
- Reduces post-operative loss of muscle mass

Pancreatic Cancer

- Reduces surgical complications
- Accelerates recovery in order to facilitate the delivery of other necessary cancer treatments

Head and Neck Cancers

- Pre-radiation swallow testing for baseline, along with education supports minimizing effects post

(Stout, 2021)

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Rehab Before Treatment

Strength and Cardiovascular rehab

- Supervised exercise for 2-3 weeks, at a moderate intensity with strength and aerobic interventions has shown positive benefits for all cancers
- Balance training to increase safety and provide recommendations for proper assistive device, as needed
- Transfer training and stair negotiation training, as needed

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Exercise and Cancer Rehab Before Treatment

Exercise can reduce surgical complications, accelerate recovery, and facilitate the delivery of other necessary cancer treatments.

(Parker, 2019)

- Example: is the patient a candidate for surgery based on physical condition?

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Cancer Rehab During and Immediately After Treatment

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During and Immediately After Treatment

In the same timeframe that treatment is ongoing

Goals of Cancer Rehabilitation:

- Address physical and functional impairments
- Minimize and prevent side effects and symptoms related to treatment
- To monitor for developing impairments
- Assist in tolerance of treatment

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Common Impairments Addressed in Cancer Rehab During/After Treatment

Chemotherapy	Radiation	Surgery
• Neuropathy/CIPN • Deconditioning • Debility • Cognitive difficulties • Cancer-Related Fatigue • Weakness/Sarcopenia	• Loss of Range of Motion • Lymphedema • Pain • Weakness • Radiation Fibrosis • Speech/Swallowing	• Lymphedema • Weakness • Pain • Difficulty with walking or mobility • Speech/Swallowing

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Cancer Rehab After Treatment

Breast Cancer

- Lymphedema Risk Reduction Education and Screenings
- Range of Motion and Pain
- Strength and Posture Training
- Radiation Fibrosis and Tightness
- Debility, Deconditioning

Prostate Cancer

- Strength Training for muscle mass loss
- Pelvic Floor Therapy
- Debility and deconditioning
- Fatigue

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Cancer Rehab After Treatment

Pancreatic Cancer

- Fitness, Debility, and Deconditioning
- Balance Training
- Fatigue
- Strength Training

Head and Neck Cancers

- Dysphagia and Trismus
- Lymphedema
- Radiation Fibrosis
- Shoulder and Neck Dysfunction from Spinal Accessary nerve damage
- Fatigue

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Cancer Rehab After Treatment

Brain Tumor

- Strength
- Gait Training
- Debility and deconditioning
- Balance Training
- Cognition

GI Cancers

- Pelvic Floor Therapy
- Deconditioning, weakness, and debility
- Cancer-Related Fatigue

Hematologic Malignancies

- Deconditioning and Debility
- Balance Training
- Cancer-Related Fatigue

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Cancer Rehab During and After Treatment

"Why didn't I know about this sooner?"

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Cancer Rehab During Treatment

- **Exercise during treatment** positively impacts cancer-related fatigue, depression, anxiety, sleep, physical function, quality of life, immune function, and tolerance to chemotherapy (Stout, 2017)
- **Exercise during chemotherapy** has not only shown the benefits of reduced fatigue, improved strength, and less physical side effects, it has also shown to reduce societal costs associated with prolonged sick leave for patients, with a larger proportion returning to work (Mijwel, 2018)

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Exercise During Treatment

- Supervised exercise is safe for this population with systematic reviews noting no adverse effects associated with blood counts or lymphedema (Stout, 2017)

- Current Exercise Recommendations:
  - Moderate-to-vigorous aerobic 3-5x/week (150 minutes/wk), with resistance exercise 2x/week (Stout et al, 2017)

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Cancer Rehab During Long-Term Survivorship and Beyond

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Long-Term Survivorship

2+ years after treatment is completed
May be even decades later

Goals of Cancer Rehabilitation:
- Restore function
- Reduce chronic side effects and symptoms related to treatment
- Minimize the progression of long-term side effects

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Long-Term Survivorship

What is common, doesn't need to be normal

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Cancer Rehab Long-Term

- Breast Cancer
  - Lymphedema Management
    - Lifelong Risk
  - Radiation Fibrosis
    - Range of Motion, Tightness, and Pain
  - Cancer-Related Fatigue
  - Cognition
  - Bone Health
- Prostate Cancer
  - Strength Training for muscle mass loss on ADT
  - Pelvic Floor Therapy
  - Debility and deconditioning
  - Bone Health

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Cancer Rehab After Treatment

- Pancreatic Cancer
  - Fitness, Debility, and Deconditioning
  - Balance Training
  - Fatigue
  - Strength Training
- Head and Neck Cancers
  - Dysphagia and Trismus
    - Due to surgery and/or radiation
  - Lymphedema
    - Lifelong risk
  - Radiation Fibrosis
    - Decreased TMJ, neck, and shoulder mobility
  - Shoulder and Neck Dysfunction from Spinal Accessary nerve damage

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Cancer Rehab After Treatment

Brain Tumor

Strength
Gait Training
Debility and deconditioning
Balance Training
Cognition

Hematologic Malignancies

Deconditioning and Debility
Balance Training
Cancer-Related Fatigue
GVHD

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Cancer Rehabilitation and Exercise Outcomes

Exercise-based rehabilitation has shown significant improvement of impairments, including:

- Quality of Life
- Activities of Daily Living
- Fatigue
- Functional Mobility and Capacity
- Cognition
- Communication
- Sexual Function
- Return to Work
- Body Composition

(Sleight, 2022)

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Cancer and Aging

With nearly half of new cancer cases worldwide being diagnosed in individuals aged 65 years and older, associated comorbidities and declining functional status may place one at a higher risk for developing side effects from cancer-related therapies (Fournier, 2021)

Older cancer survivor groups were:
- Less interested in physical activity overall
- Less likely to engage in moderate-to-vigorous activity
- More interested in home-based activity programs (Delrieu, 2020)

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Cancer and Aging

However,
- After participating in a physical activity program, interest shifted to being more interested in a community-based fitness program (Delrieu, 2020)

Local Community Fitness, specific for cancer survivors:
- YMCA – Live Strong
- The Art of Well (theartofwell.com)
- TREC – Eden Prairie Community Center

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Cancer and Cardiotoxicity

- VO2peak has been shown to decline between 5 and 26% during exposure to anthracycline regimens, and **many individuals do not fully recover to baseline after treatment** (Beaudry, 2019)
- Many survivors are not at higher risk of death from cardiovascular disease than from recurrent cancer (Pituskin, 2020)

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Cancer and Cardiotoxicity

- The rates for cardiovascular disease exceeds breast cancer as the leading cause of death, 7 years after breast cancer diagnosis (Patnaik, 2011)
  - it's essential to have strategies to maintain cardiorespiratory fitness and function as early as possible to minimize myocardial damage long-term.

*Due to safety, this is best done with professional support for vitals, exercise prescription, and symptom monitoring

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Exercise in Long-Term Survivorship

- The 2018 roundtable, published in 2019 (Campbell, 2019) recommends exercise for overall health in cancer survivors as:

Moderate intensity aerobic training at least 3 times per week, for at least 30 minutes

+

Resistance training at least 2 times per week, using at least 2 sets of 8–15 repetitions

- Cancer Rehabilitation, done in a supervised setting can help create and build an individualized program, which can then be done independently, with medical clearance

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Identifying the Need for Cancer Rehabilitation

With improvements in cancer detection and anticancer therapies – there are an increasing number of cancer survivors

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Identifying the Need for Cancer Rehabilitation

Oncology nurses, primary care providers, and other key providers are needed to:

- Identify baseline risks for side effects
- Provide individualized teaching
- Perform necessary referrals

With the goal to:

- reduce long-term cancer costs
- support the patients return to baseline physical status
- return to work
- improve overall quality of life and function

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