The Role of Exercise and Rehabilitation in the Cancer Care Plan
Pretest Question #1

The American College of Sports Medicine (ACSM) and the NCCN have established exercise guidelines for cancer survivors and cancer-related fatigue. Which statement below is FALSE?

A. ACSM cancer survivor exercise guidelines consider resistive training to be an important component of survivors 3x weekly exercise workouts  JL73
B. ACSM cancer survivor exercise guidelines recommend 75 min/wk of moderately intense aerobic exercise during cancer treatment  JL74
C. NCCN Cancer Related Fatigue Guidelines recommend that certain cancer survivor groups (e.g., patients with comorbidities, recent surgery, functional or anatomical deficits or substantial deconditioning) obtain a referral to physical therapy to facilitate exercise during fatigue  JL75
D. NCCN Clinical Practice Guidelines for Breast and Prostate Cancer for whom planned therapy includes medications that lower sex hormones should have a baseline DEXA to evaluate for fracture risk before starting a moderately intensive exercise program  JL76
Your 43-year-old breast cancer patient who is 4 weeks s/p bilateral mastectomy has just developed LUE lymphedema. According to national and international standards of care for treatment of lymphedema, which of the following responses is NOT a component of the initial care in the active phase of treatment?

A. Manual lymphatic drainage massage  JL77
B. Meticulous skin care  JL78
C. Multilayer short-stretch compression arm bandaging  JL79
D. Pneumatic compression pump  JL80
E. Exercise  JL81
F. Patient and caregiver lymphedema education  JL82
The Role of Exercise and Rehabilitation in the Cancer Care Plan

Angelo Rizzo, MS, PT, CLT
Therapeutic Solutions, Inc.
Financial Disclosure

Mr. Rizzo is president and owner of Therapeutic Solutions, Inc., Oncology Rehabilitation and Lymphedema Clinic, Conyers, Georgia. He has no other potential conflicts of interest to disclose.
Learning Objectives

- Discuss how physical impairments of patients with cancer undergoing cancer treatment impact physical functioning and quality of life throughout survivorship.
- Identify the important relationship between exercise-induced cytokines and chronic inflammation, obesity, insulin sensitivity, treatment-related side effects, and comorbidities.
- Identify the role of the oncology physical therapist throughout the cancer survivor trajectory.
- Identify how utilizing physical therapy as an integrated team member benefits the oncology advanced practitioner and survivor.
Personal Journey:
Where Cancer and Career Converge
Cancer Statistics

- 1 in 2 men and 1 in 3 women will be diagnosed with cancer of all sites during their lifetime
- 14.5 million survivors are living in the United States
- Cancer is now a chronic condition
- Goals: Regain quality of life and function
- Great majority of physical impairments never receive rehabilitation

Mission: Seeing the Big Picture

- American Cancer Society 2015
- Healthy People 2020
- LIVESTRONG National Action Plan Cancer Survivorship
- World Cancer Declaration
ASCO: The State of Cancer Care in America 2015

How Oncology Rehabilitation Can Help You

- Shrinking workforce
- Fragmentation of cancer care
- Lack of clarity regarding treatment goals
- Expansion of team-based care
- Shared decision-making
- Escalating costs
- Performance-based payments

The Role of Exercise for the Cancer Survivor

- Ameliorates physical and psychosocial side effects
- Confers health benefits
- Helps restore proinflammatory/anti-inflammatory homeostasis
- Muscle is important in immune function
- Improves quality of life
- Reduces health-care costs

Underutilization of Physical Therapy

- Physical impairments in breast cancer
- No consensus on when to start PT
- Drugs as preferred first-line treatment
- Role of muscle in cancer treatment and survival
- Musculoskeletal knowledge of PTs

Musculoskeletal Knowledge

Figure: Bar chart showing overall scores in various professions. The scores range from 35 to 94. (Childs JD, et al. BMC Musculoskelet Disord. 2005;6:32. Used with permission.)
A Novel Plan Helps Hospital Wean Itself Off Pricy Tests

Paths to Recovery
As Virginia Mason streamlined its approach to back-pain treatment, patients got in faster and employers and insurers saved money.

Old approach
Average cost $2,100-$2,200
The initial meeting might not happen for up to a month, and there is no set procedure for treatment.

New approach
Average cost $900-$1,000
Immediately meets with doctor and therapist. Simple cases usually begin physical therapy.

Muscle: The Largest Endocrine Organ

Myokines
Biologic Role of Contraction-Induced IL-6
Image used with permission from the American Physiological Society.
Proinflammatory Cytokines

- Fatigue
- Depression
- Cognitive impairments
- Sleep dysfunction
- Stress/distress
- Pain
- Obesity
- Muscle weakness

Inactivity Leads to Chronic Inflammatory Disease

- Physical inactivity
- Abdominal adiposity
- Macrophage infiltration of visceral fat
- Chronic systemic inflammation
- Insulin resistance, atherosclerosis, neurodegeneration, tumour growth

- Cardiovascular diseases
- Breast cancer
- Colon cancer
- Type 2 diabetes
- Depression
- Dementia

Myokines and Myogenesis

- Sarcopenia
- Dynapenia

Strengthening the Elderly

Photo source: Thinkstock
Myokines, Muscle, and Osteogenesis

- Aromatase inhibitors
- Osteoporosis and osteopenia
- Falls and fractures

Osteoporosis/Osteopenia Rehabilitation

- High fall risk
- High fracture risk
- Assistive devices
- Postural training
- Strength training
- Sarcopenia and slow-twitch fibers
- Balance training
- Endurance training
- Pulmonary rehabilitation
Audience Response Question

Which of the following statements is false?

A. A benefit of myokines is that they can reduce chronic inflammation  **JL83**
B. Muscle activity, partially through myokine signaling, increases insulin sensitivity  **JL84**
C. The cytokine myostatin increases muscle hypertrophy and muscle mass  **JL85**
D. Increased muscle mass increases bone mass  **JL86**
Muscle: Nature’s Polypill

- Alternatives to drugs and its side effects
- United States: 4.4% of world’s population\(^1\)
- United States: Consumer of more than 50% of world’s prescription medications\(^2\)
- Conservative prescribing\(^3\)

Physical Activity and Cancer Survival

Physical activity and breast cancer
- 9+ MET-hr/wk → 50%–60% increase in survival rate for cancer and other causes of death

Physical activity and colorectal cancer
- 18+ MET-hr/wk → 50%–60% increase in survival rate for cancer and other causes of death

American College of Sports Medicine (ACSM) Survivor Exercise Guidelines

- Never too early, never too late
- 150 minutes/wk of moderate-intensity aerobic exercise
- 75 minutes/wk of high-intensity aerobic exercise
- Resistance training 3 days/wk at 60%–80% 1 repetition maximum
- Balance activities 2–3 days/wk

ACSM Exercise Guidelines

- Programs should be tailored to the individual
- Patients with an inability to fight infection are discouraged from exercising at a gym facility
- Risks associated with specific cancers need to be assessed
- NCCN Cancer-Related Fatigue Guidelines recommend physical therapy for fatigue
- Add physical activity into daily routine

Improving Exercise Adherence

- Provide information as to how exercise will benefit well-being and recovery
- Identify patient’s perceived barriers to exercise
- Establish patient-generated goals and expectations
Oncology Rehabilitation

Physical Therapy
Role of Physical Therapy Throughout the Cancer Care Continuum

- Diagnosis
  - Prevention
  - Detection
  - Pretreatment
  - Treatment
  - Recovery
  - Secondary Prevention
  - End of Life
  - Support
  - Rehabilitation?
- Prediagnosis
- Survivorship

Oncology Rehabilitation

Cancer-Related Fatigue

Photos courtesy of www.clevelandseniors.com (Polar Blessings)
Impact of Cancer-Related Fatigue

- Most common and most debilitating symptom
- Present in 40% of patients at diagnosis
- Experienced by up to 90% of patients treated with radiation and up to 80% of those treated with chemotherapy
- Impact on a patient’s quality of life, physical functioning, and the ability to perform is both profound and pervasive
- Psychological distress
- Financial and economic burden

Exercise and Circadian Rhythm

- Proinflammatory cytokine dysregulation of cortisol
- Cancer-related fatigue blunts responses to stress
- Cancer-related fatigue flattens cortisol slopes
- Higher cortisol at the end of the day
- Prolonged sleep latency
- Reduced sleep duration
- Reduced REM and pre-REM sleep
- Changes in the sleep-wake pattern
- Impaired feedback loop prolongs cytokines
- Chemotherapy and radiation alter circadian rhythm

Patient Barriers to Implementation of NCCN’s Cancer-Related Fatigue Guidelines

- The patient’s belief that the health-care practitioner would ask about fatigue if it were important
- Patients want their oncologist to be the one to advise them about exercise
- The patient’s desire to play the “good patient” role

Which of the following is a goal of the prospective surveillance model for breast cancer?

A. Educate to reduce risk or prevent adverse treatment side effects  JL87
B. Provide opportunity for early impairment intervention  JL88
C. Promote and support physical activity, exercise, and weight management  JL89
D. Soon after diagnosis, a physical therapist will perform a preoperative exam to establish a baseline level of function  JL90
E. All of the above  JL91
Before and After Lymphedema Treatment

Photos courtesy of Dr. Andrea Cheville
**Lymphedema**

- Early assessment is key
- Often misdiagnosed
- Complex decongestive therapy
- Pneumatic compression pumps
What Actions Can Oncology Advanced Practitioners Take?

- Identify and refer physical impairments early to physical therapy
- Incorporate physical therapists into the treatment and decision-making team
- Think more conservatively before adding another drug; ask how can we use the power of the muscular system for cell repair, defense, and healing
- Include your patient as a co-key decision maker
Thank You for Your Attention!
Angelo Rizzo, MMS, PT, CLT  770-922-2420
Therapeutic Solutions
www.therapeuticsolutions.com

Image courtesy of nickpresley.tumblr.com/.
Posttest Question #1

The American College of Sports Medicine (ACSM) and the NCCN have established exercise guidelines for cancer survivors and cancer-related fatigue. Which statement below is FALSE?

A. ACSM cancer survivor exercise guidelines consider resistive training to be an important component of survivors 3x weekly exercise workouts  

B. ACSM cancer survivor exercise guidelines recommend 75 min/wk of moderately intense aerobic exercise during cancer treatment  

C. NCCN Cancer Related Fatigue Guidelines recommend that certain cancer survivor groups (e.g., patients with comorbidities, recent surgery, functional or anatomical deficits or substantial deconditioning) obtain a referral to physical therapy to facilitate exercise during fatigue  

D. NCCN Clinical Practice Guidelines for Breast and Prostate Cancer for whom planned therapy includes medications that lower sex hormones should have a baseline DEXA to evaluate for fracture risk before starting a moderately intensive exercise program
Your 43-year-old breast cancer patient who is 4 weeks s/p bilateral mastectomy has just developed LUE lymphedema. According to national and international standards of care for treatment of lymphedema, which of the following responses is NOT a component of the initial care in the active phase of treatment?

A. Manual lymphatic drainage massage JL96
B. Meticulous skin care JL97
C. Multilayer short-stretch compression arm bandaging JL98
D. Pneumatic compression pump JL99
E. Exercise JL100
F. Patient and caregiver lymphedema education JL101