JADPRO LIVE at APSHO

November 5-8, 2015
JW Marriott Desert Ridge
Phoenix, Arizona

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**

JADPRO LIVE at APSHO

Pretest Question #2

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**

JADPRO LIVE at APSHO

JADPRO LIVE at APSHO

November 5-8, 2015
JW Marriott Desert Ridge
Phoenix, Arizona

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

JADPRO LIVE at APSHO

Personal Journey:
Where Cancer and Career Converge

JADPRO LIVE at APSHO

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

American Cancer Society. Cancer Facts & Figures 2014. http://www.cancer.org/research/cancerfactsstatistics/cancerfactsfigures2014/; Hewitt M. *J Gerontol Biol Sci Med Sci*. 2003;58:82-91.

Mission: Seeing the Big Picture

- American Cancer Society 2015
- Healthy People 2020
- LIVE**STRONG** National Action Plan Cancer Survivorship
- World Cancer Declaration

JADPRO LIVE at APSHO

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

American Society of Clinical Oncology (2015). The State of Cancer Care in America 2015. http://www.asco.org/sites/www.asco.org/files/2015ascostateofcancercare.pdf

JADPRO LIVE at APSHO

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

Hewitt M, et al. *J Gerontol A Biol Sci Med Sci.* 2003;58:82-91.

JADPRO LIVE at APSHO

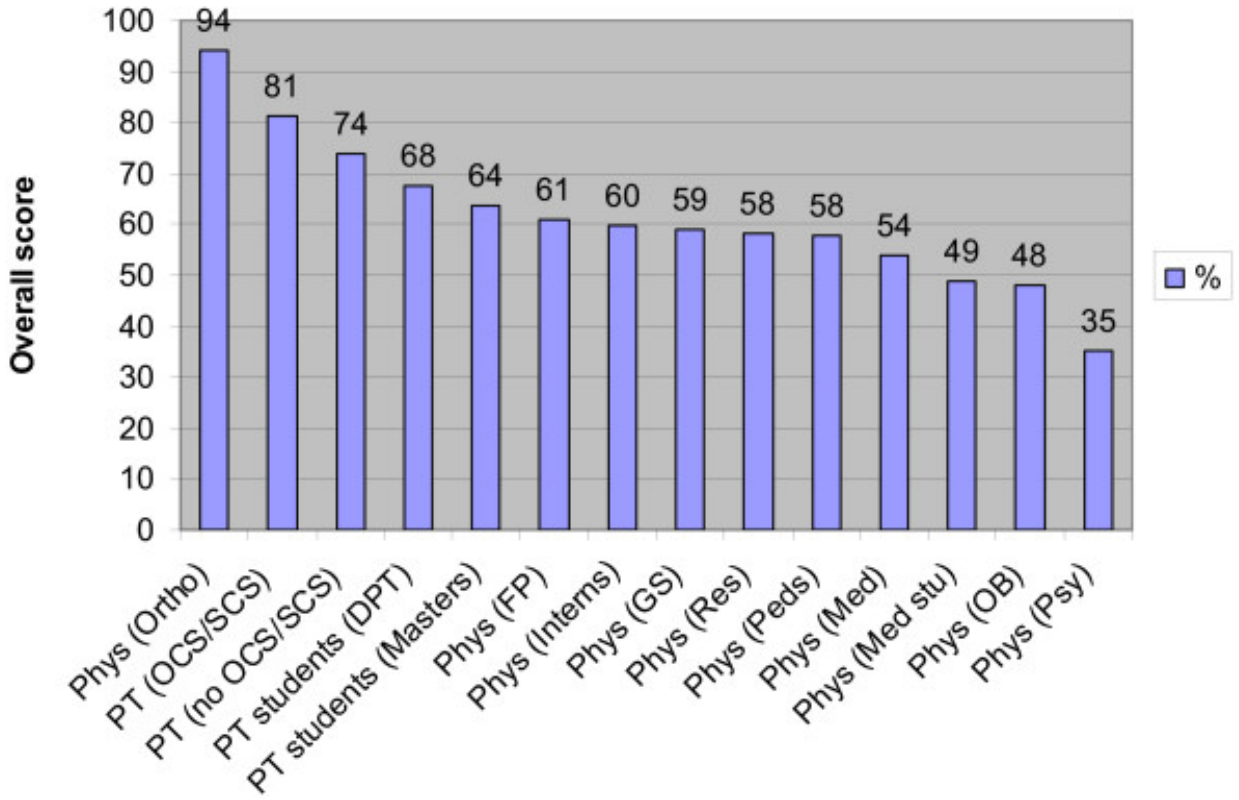
Underutilization of Physical Therapy

- 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

Chevillle AL, et al. *J Clin Oncol*. 2008;26:2621-2629.

JADPRO LIVE at APSHO

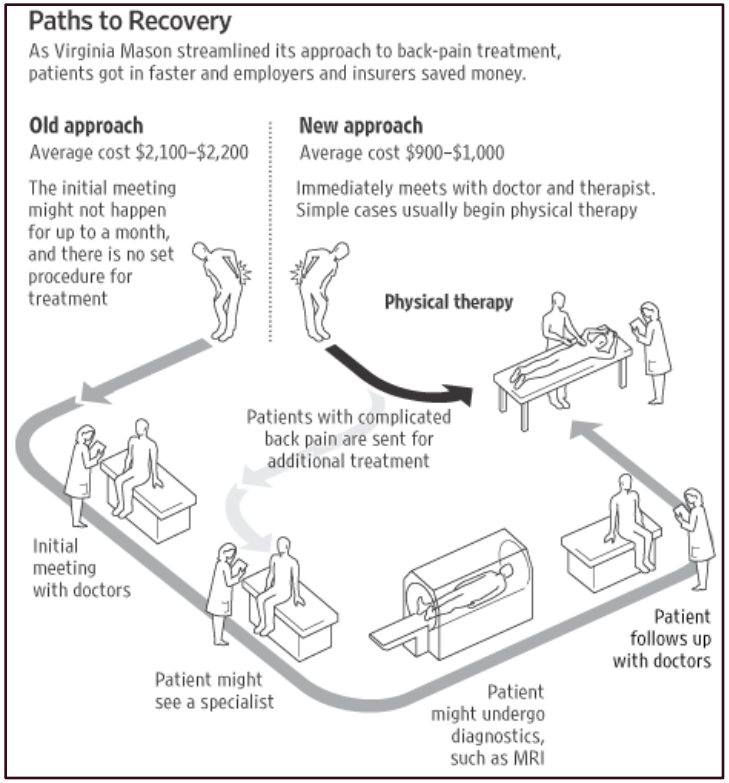
Musculoskeletal Knowledge



Childs JD, et al. *BMC Musculoskelet Disord*. 2005;6:32. Used with permission.

JADPRO LIVE at APSHO

A Novel Plan Helps Hospital Wean Itself Off Pricy Tests

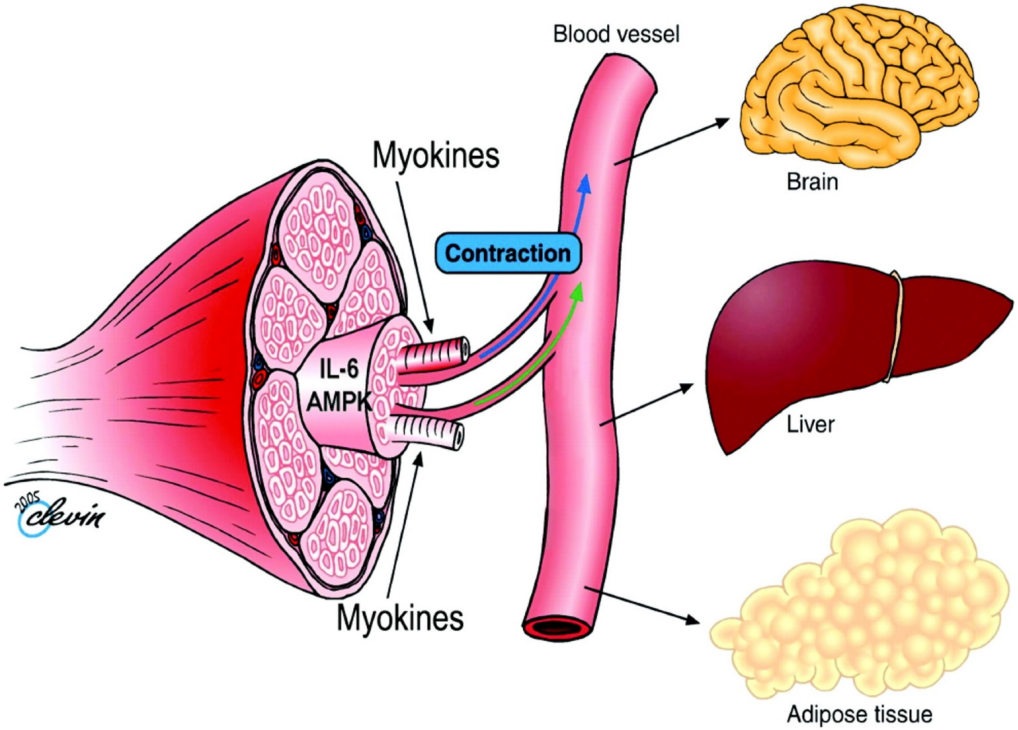


Fuhrmans V. *The Wall Street Journal*. Jan. 12, 2007.

Muscle: The Largest Endocrine Organ

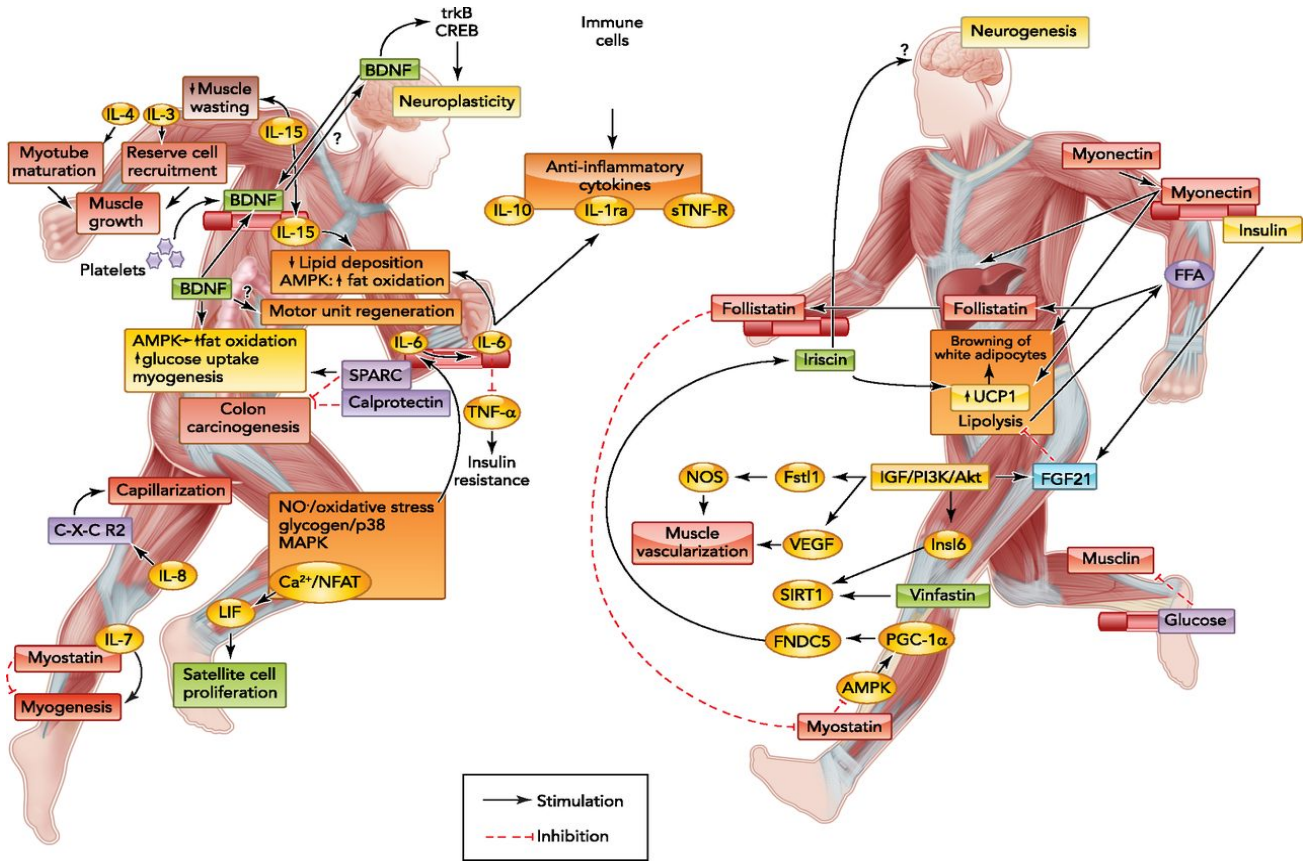
Myokines

Biologic Role of Contraction-Induced IL-6



Pedersen BK. *J Exp Biol*. 2011;214:337-346.

Myokines and Signaling Pathways



Fiuza-Luces C, et al. *Physiology (Bethesda).* 2013;28:330-358.
Image used with permission from the American Physiological Society.

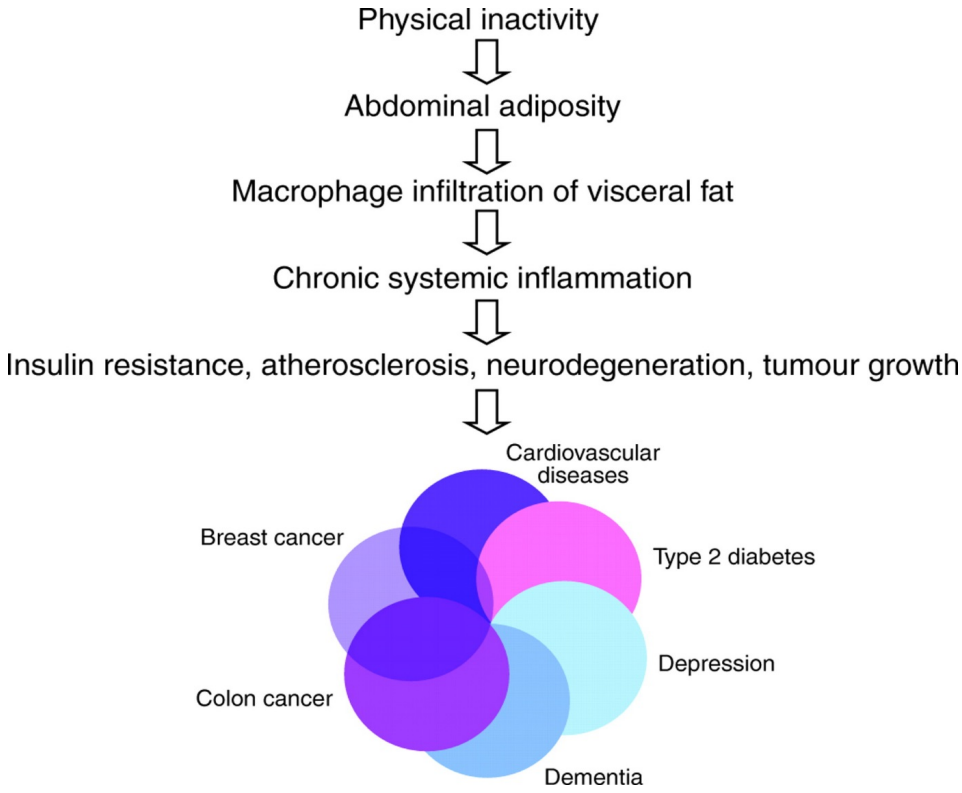
JADPRO LIVE at APSHO

Proinflammatory Cytokines

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

Laine J, et al. *Bone Marrow Transplant*. 2015;50:1352-1357; Goldberg JE, Schwertfeger KL. *Curr Drug Targets*. 2010;11:1133-1146.

Inactivity Leads to Chronic Inflammatory Disease



Pedersen BK. *J Exp Biol*. 2011;214:337-346.

Myokines and Myogenesis

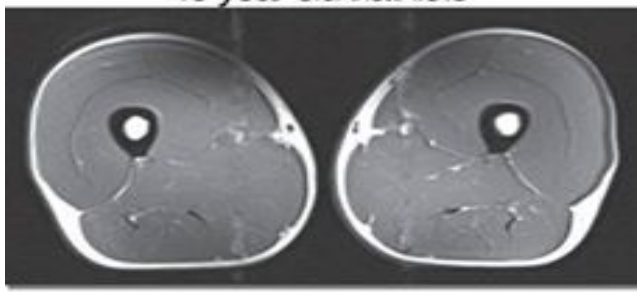
- Sarcopenia
- Dynapenia

Cruz-Jentoft AJ, et al. *Age Ageing*. 2010;39:412-423; Power GA, et al. *Med Sci Sports Exerc.* 2012;44:1235-1242; Mitchell WK, et al. *Front Physiol*. 2012;3:260; Pedersen BK. *Compr Physiol*. 2013;3:1337-1362; Pillon NJ, et al. *Am J Physiol Endocrinol Metab*. 2013;304:E453-E465; Clark BC. *Nutrition*. 2012;28:495-503; Turner CH, et al. *Exerc Sport Sci Rev*. 2003;31:45-50.

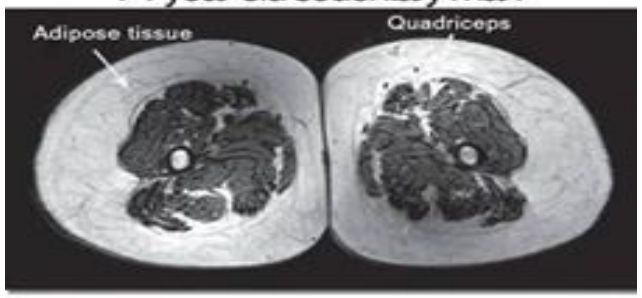
JADPRO LIVE at APSHO

USE IT OR LOSE IT

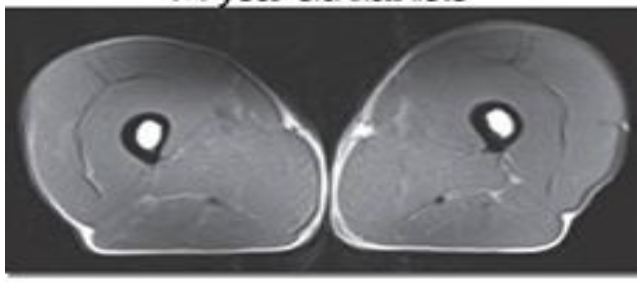
40-year-old triathlete



74-year-old sedentary man



74-year-old triathlete



Power GA, et al. *Med Sci Sports Exerc*. 2012;4:1235-1242; Wroblewski AP, et al. *Phys Sportsmed*. 2011;39:172-178.

JADPRO LIVE at APSHO

Strengthening the Elderly

Photo source: Thinkstock

Myokines, Muscle, and Osteogenesis

- Aromatase inhibitors
- Osteoporosis and osteopenia
- Falls and fractures

Hamrick MW, et al. *J Musculoskelet Neuronal Interact.* 2010;10:64-70.

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

JADPRO LIVE at APSHO

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**

JADPRO LIVE at APSHO

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]

1. http://www.worldometers.info/world-population/population-by-country/US.
2. www.enlightenamerica.com.
3. http://www.cdc.gov/chronicdisease/overview/.

JADPRO LIVE at APSHO

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

Holmes MD, et al. *JAMA*. 2005:293:2479-2486;
Meyerhardt JA, et al. *J Clin Oncol*. 2006;24:3535-3541.

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

www.acsm.org. Exercise guidelines for cancer survivors.

JADPRO LIVE at APSHO

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

National Comprehensive Cancer Network. (2015). NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines). Cancer-Related Fatigue. Version 2.2015.

Improving Exercise Adherence

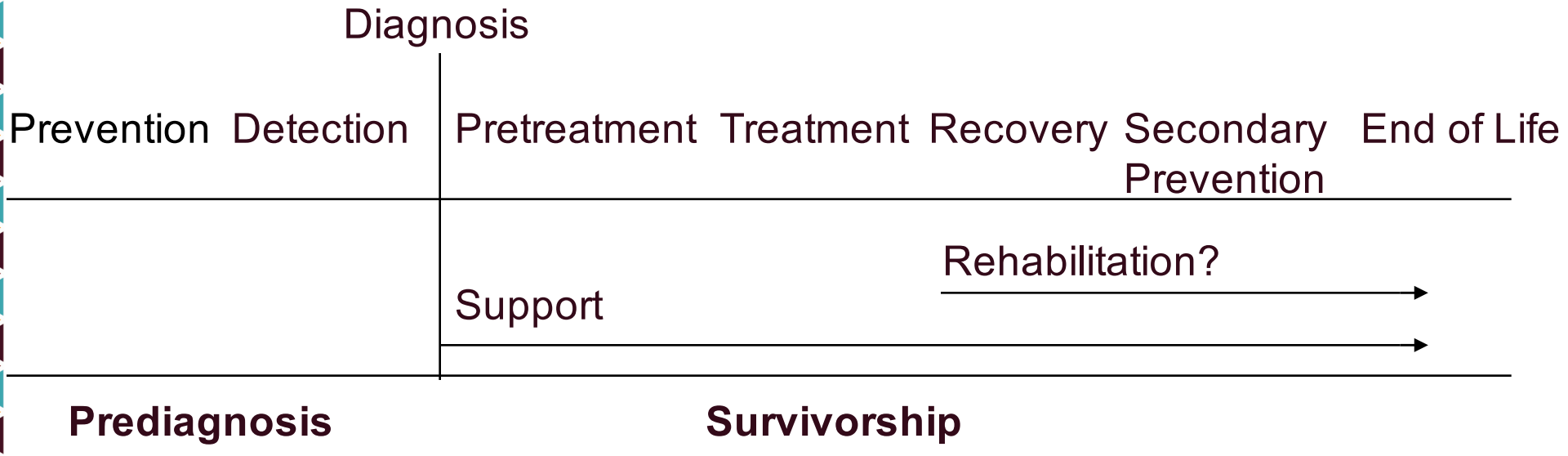
- Provide information as to how exercise will benefit well-being and recovery
- Identify patient's perceived barriers to exercise
- Establish patient-generated goals and expectations

Oncology Rehabilitation

Physical Therapy

JADPRO LIVE at APSHO

Role of Physical Therapy Throughout the Cancer Care Continuum



Courneya KS. Physical activity and cancer: An introduction. *Recent Results in Cancer Research* series, Volume 186. Nov 2010.

JADPRO LIVE at APSHO

Oncology Rehabilitation

Left image courtesy of http://www.hopkinsmedicine.org/.
Right image courtesy of http://www.onthemendpt.net/oncology-rehab-during-and-after-treatment/.

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

Hofman M, et al. *Oncologist.* 2007;12(suppl 1):4-10.

JADPRO LIVE at APSHO

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

Bower JE, et al. *Psychoneuroendocrinology*. 2005;30:92-100; Horne JA. *Biol Psychol*. 1981;12:241-290; Teo W, et al. *J Sports Sci Med*. 2011;10:600-606; Steensberg A, et al. *Am J Physiol Endocrinol Metab*. 2003;285:E433-E437.

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

Borneman T, et al. *J Pain Symptom Manage*. 2010;39:486-501.

JADPRO LIVE at APSHO

Audience Response Question

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**

JADPRO LIVE at APSHO

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

JADPRO LIVE at APSHO

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 **JL92**
B. ACSM cancer survivor exercise guidelines recommend 75 min/wk of moderately intense aerobic exercise during cancer treatment **JL93**
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 **JL94**
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 **JL95**

JADPRO LIVE at APSHO

Posttest Question #2

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**

JADPRO LIVE at APSHO