



# **Rehabilitation and Fitness Exercise Experiences in Women Following Breast Cancer Surgery**

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# Objectives

At the end of the session, the attendee will be able to:

- Describe the standard of care for women surgically treated for breast cancer.
- Discuss the role of rehabilitation and the self-reported rehabilitation experiences of women surgically treated for breast cancer.
- Differentiate between impairment-driven rehabilitation and fitness exercise in breast cancer survivors.

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- A decorative graphic on the left side of the slide. It features a solid pink arrow pointing to the right at the top. Below it, several thin, curved black lines sweep downwards and to the right, creating a dynamic, abstract shape.
- ▶ I am a contract instructor for MedBridge (topic: cancer survivorship).
  - ▶ I have no other conflicts of interests or financial disclosures.



# Who is a Cancer Survivor?

- ▶ Any person who has been diagnosed with cancer, from the time of diagnosis through the balance of life (NCI, 2014). Adapted from National Coalition for Cancer Survivorship's 1986 definition.
- ▶ From the time of diagnosis, through the balance of his or her life. Family members, friends, and caregivers are also impacted by the survivorship experience and are therefore included in this definition (NCI, 2014).



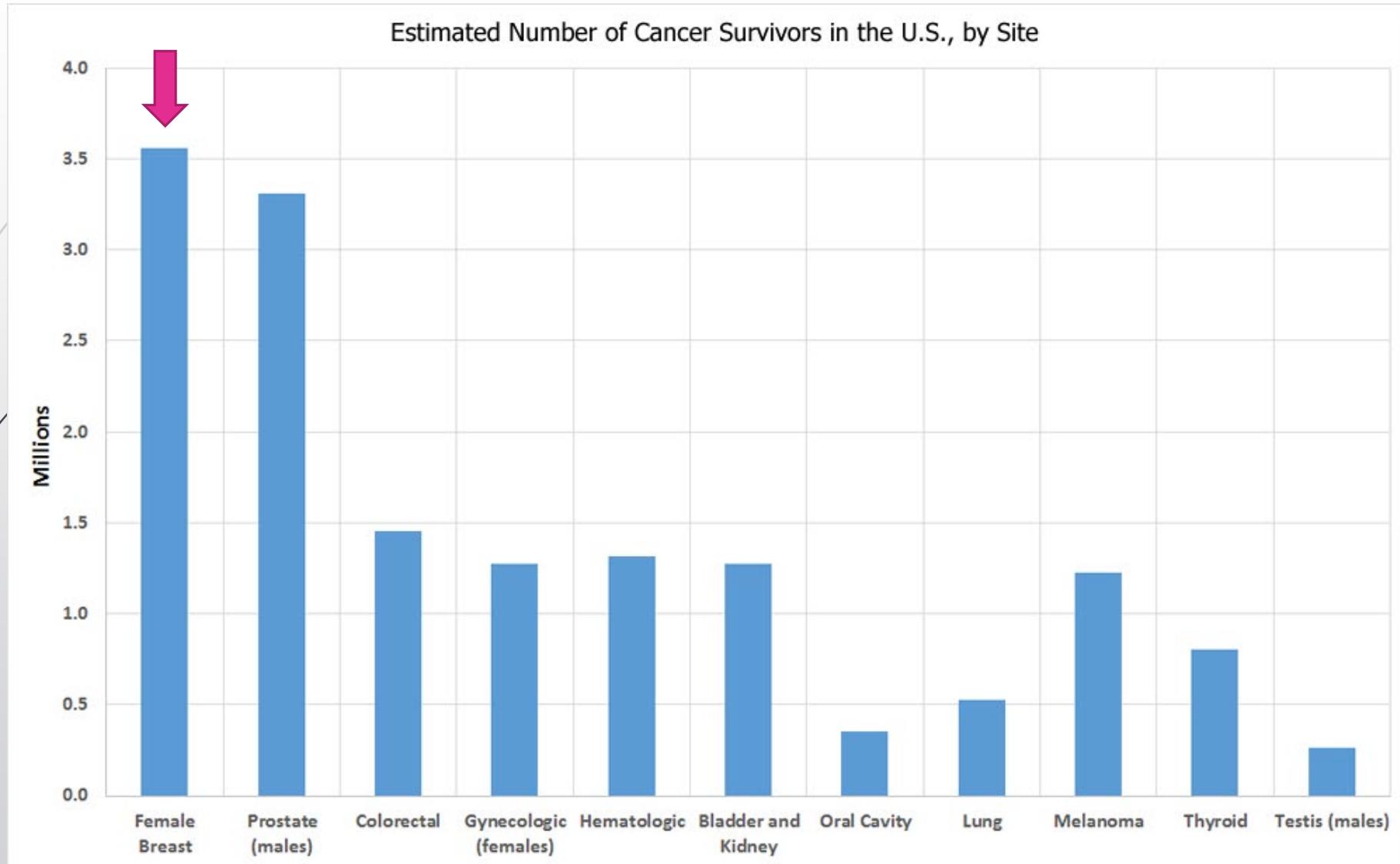
# United States Breast Cancer Statistics

- ▶ 16.9 million cancer survivors as of January, 2019 (Bluethmann, Mariotto, & Rowland, 2016).
- ▶ Of the 16.9 million, 3.6 million (23%) are breast cancer survivors. The largest group of cancer survivors (Miller et al., 2016).
- ▶ More than 2.6 million (75%) breast cancer survivors are 60 years of age or older, 7% are less than 50 years of age (Miller et al., 2016).

Bluethmann, S.M., Mariotto, A.B., Rowland, J.H. (2016). Anticipating the "Silver Tsunami": Prevalence Trajectories and Comorbidity Burden among Older Cancer Survivors in the United States. *Cancer Epidemiology Biomarkers and Prevention*, 25,1029-1036.

Miller, K. D., Siegel, R. L., Chieh, C., Mariotto, A. B., Kramer, J.L., Rowland, J. H., . . . Jemal, A. (2016). Cancer treatment and survivorship statistics, 2016. *CA A Cancer Journal for Clinicians*, 66, 271-289.

# Survivor Groups (16.9 million in total)



National Cancer Institute, Office of Survivorship. (2016). *Estimated number of cancer survivors in the U.S., by site*. Retrieved from <https://cancercontrol.cancer.gov/ocs/statistics/graphs.html>



# Early Detection and Diagnosis

- ▶ Mammography is the low-dose x-ray, early detection modality (American Cancer Society, 2019). Recommended ages are:
  - ▶ 40 to 44 years of age – should have the opportunity to begin annual screening
  - ▶ 45 to 54 – should have annual screening mammography
  - ▶ 55 years of age and older – can transition to biennial screening or continue to have annual screening. Based on overall health and life expectancy of 10+ years continue screening.
- ▶ Biopsy to confirm malignancy

# Prognostic and Treatment Determinants

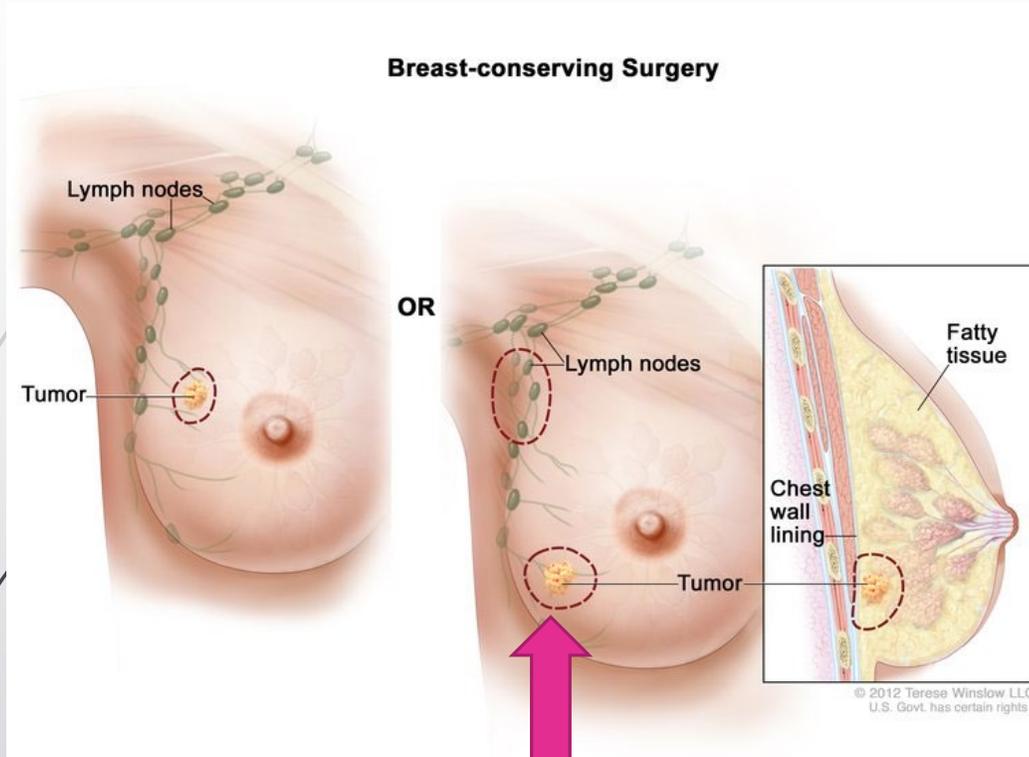
- ▶ The TNM system (NCCN, 2018)
  - ▶ Tumor – based on size and extension
    - ▶ T<sub>0</sub> No sign of tumor; T<sub>1</sub>-T<sub>3</sub> size, T<sub>4</sub> size and extent
  - ▶ Node – lymph node involvement
    - ▶ N<sub>0</sub> N<sub>1</sub> N<sub>2</sub> N<sub>3</sub> axillary nodes and spread to others
  - ▶ Metastasis – spread to distant sites
    - ▶ M<sub>0</sub> M<sub>1</sub>
- ▶ Estrogen/Progesterone Receptors (Positive/Negative)
- ▶ HER2 Neu Receptor (Positive/Negative)
- ▶ Premenopausal/Menopausal
- ▶ Oncotype Dx test (0-100 score)



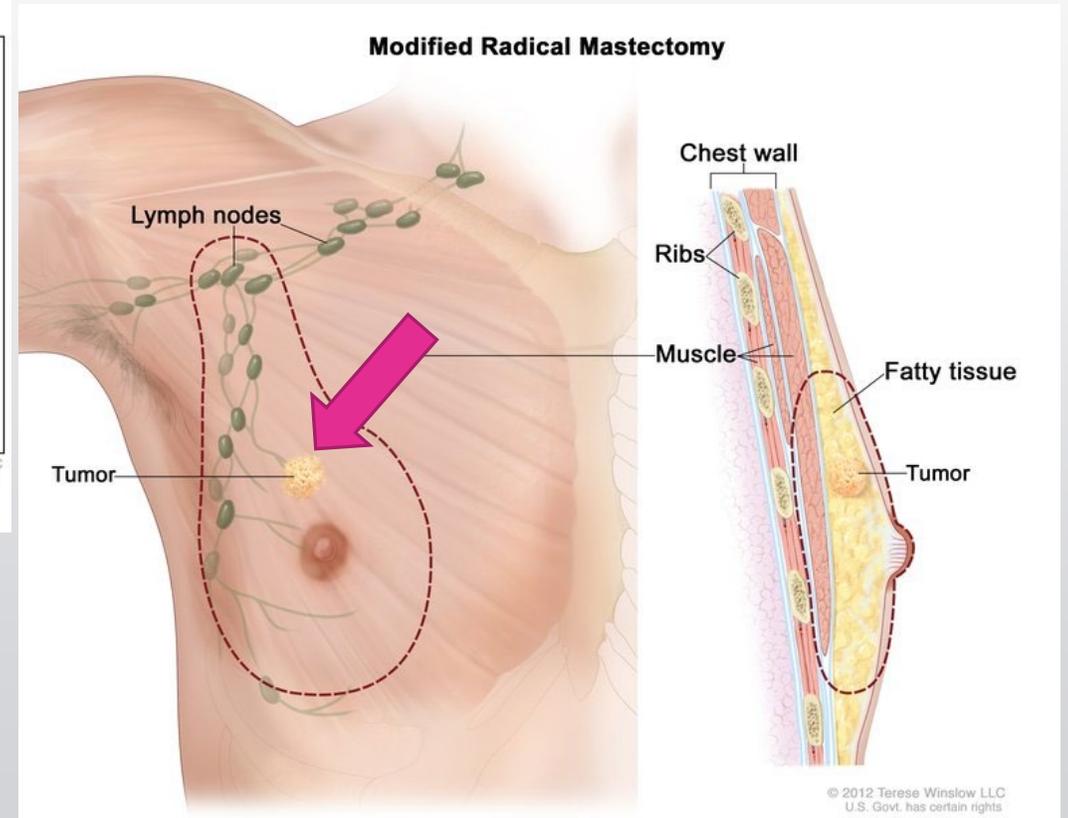
# Treatment

- ▶ Surgery, typically primary treatment
  - ▶ Mastectomy – Simple/Total
  - ▶ Modified Radical Mastectomy
  - ▶ Breast Conserving Surgery – Lumpectomy
- ▶ Chemotherapy, Hormone therapy, Immunotherapy
  - ▶ Typically, adjuvant treatment
- ▶ Radiation
  - ▶ Typically, adjuvant treatment

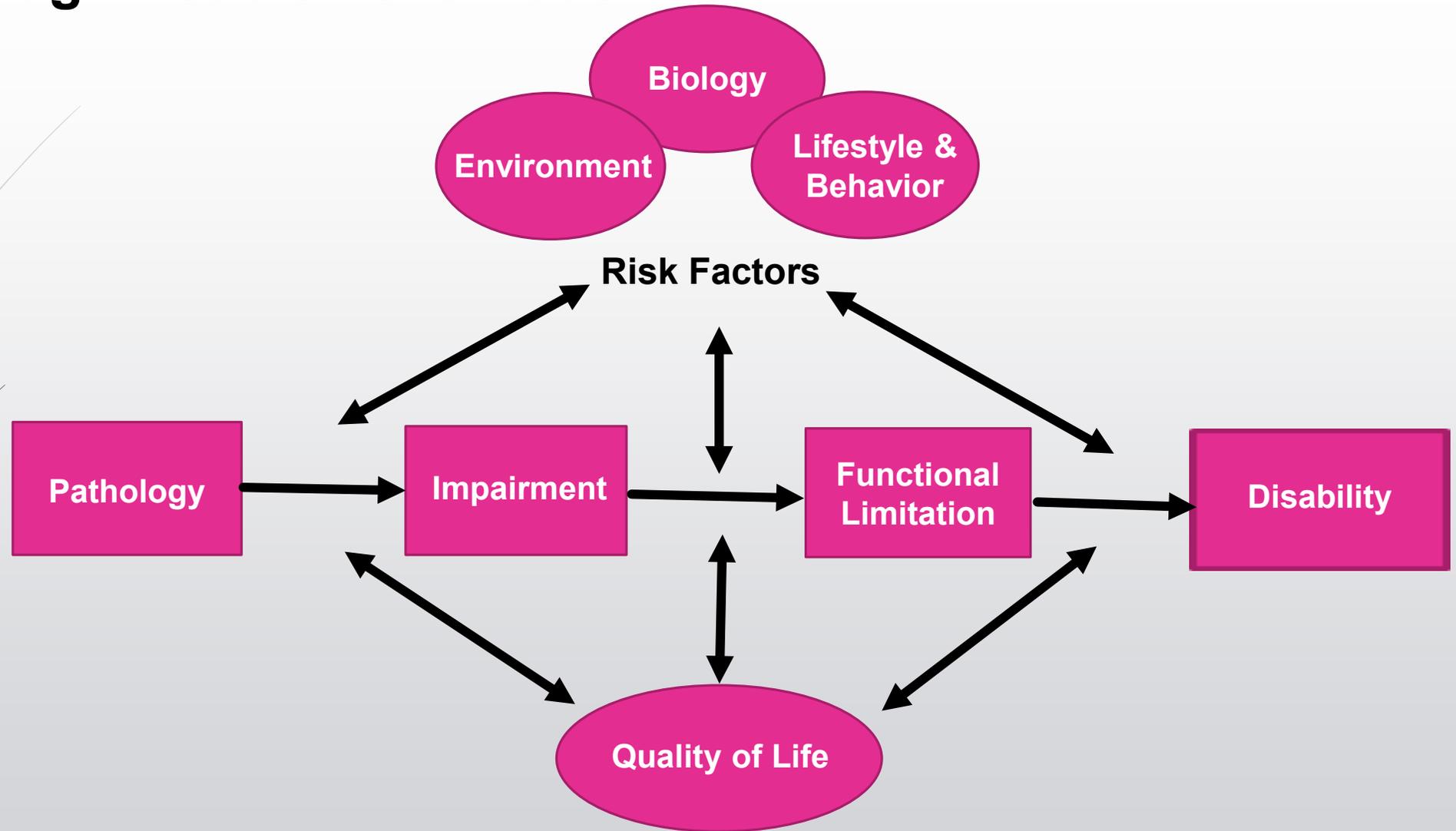
## Breast Conserving Surgery



## Modified Radical Mastectomy



# Nagi Disablement Model



Nagi, S. Z. (1965). Some conceptual issues in disability and rehabilitation. In M. B. Sussman (Ed.), *Sociology and rehabilitation* (pp. 100-113). Washington, DC: American Sociological Association.

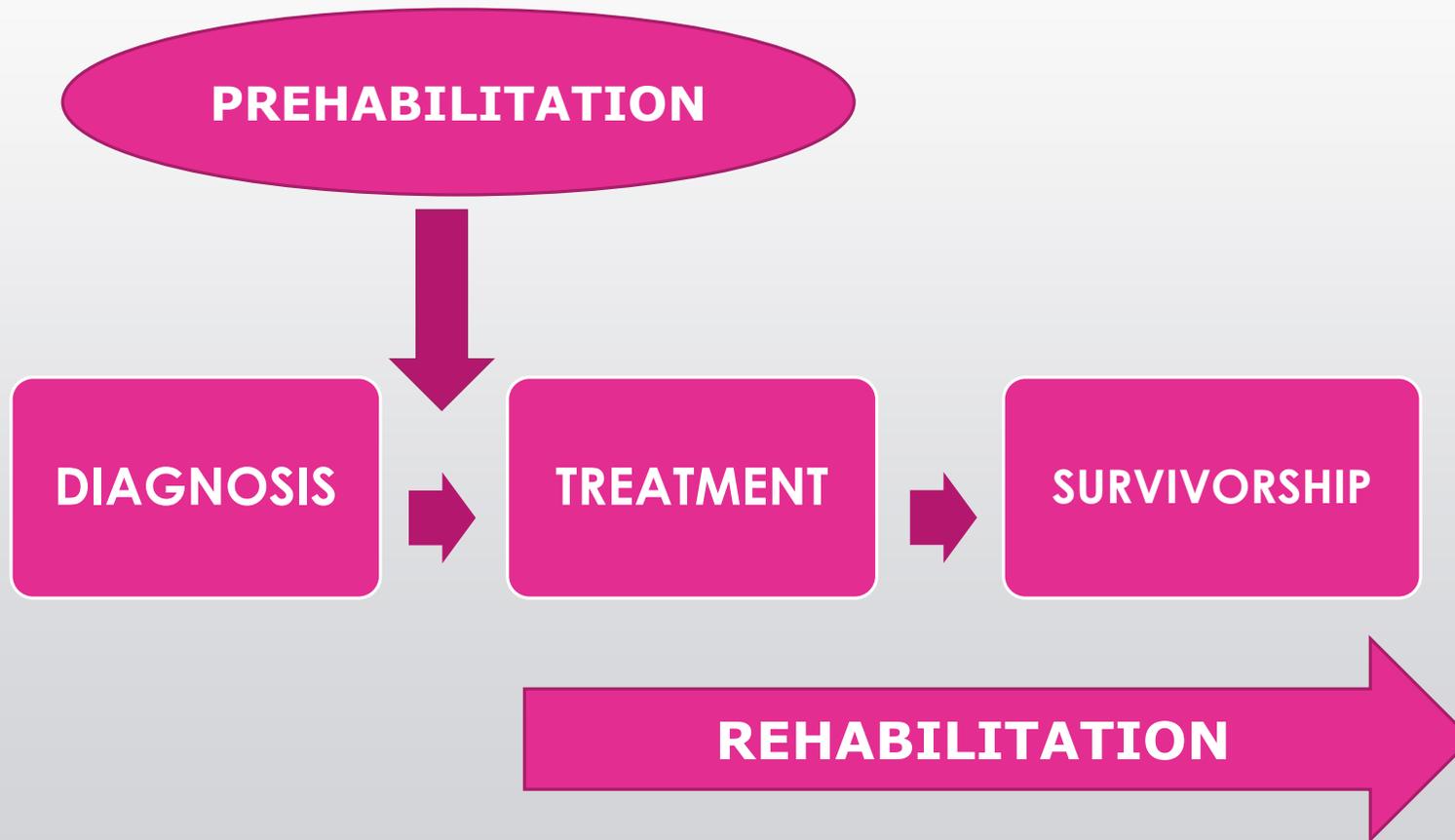
Pope, A. M., & Tarlov, A. R. (Eds.). (1991). *Disability in America: Toward a national agenda for prevention*. Washington, DC: National Academy Press.



# Cancer Rehabilitation

- *is medical care that should be integrated throughout the oncology care continuum and delivered by trained rehabilitation professionals who have it within their scope of practice to diagnose and treat patients' physical, psychological, and cognitive impairments in an effort to **maintain or restore function, reduce symptom burden, maximize independence, and improve quality of life** in this medically complex population* (Silver et al. , 2015, p. 3636).

# Cancer Rehabilitation Continuum





# Cancer Prehabilitation

- ➔ *Process on the continuum of care that occurs between the time of cancer diagnosis and the beginning of acute treatment, includes physical and psychological assessments that establish a baseline functional level, identifies impairments, and provides targeted interventions that improve a patient's health to reduce the incidence and the severity of current and future impairments (Silver, Baima, & Mayer, 2013, p. 307).*

**Moderate physical activity** has been associated with a decrease risk of death from breast cancer (50-53%).



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# Prehabilitation for Breast Cancer Survivors

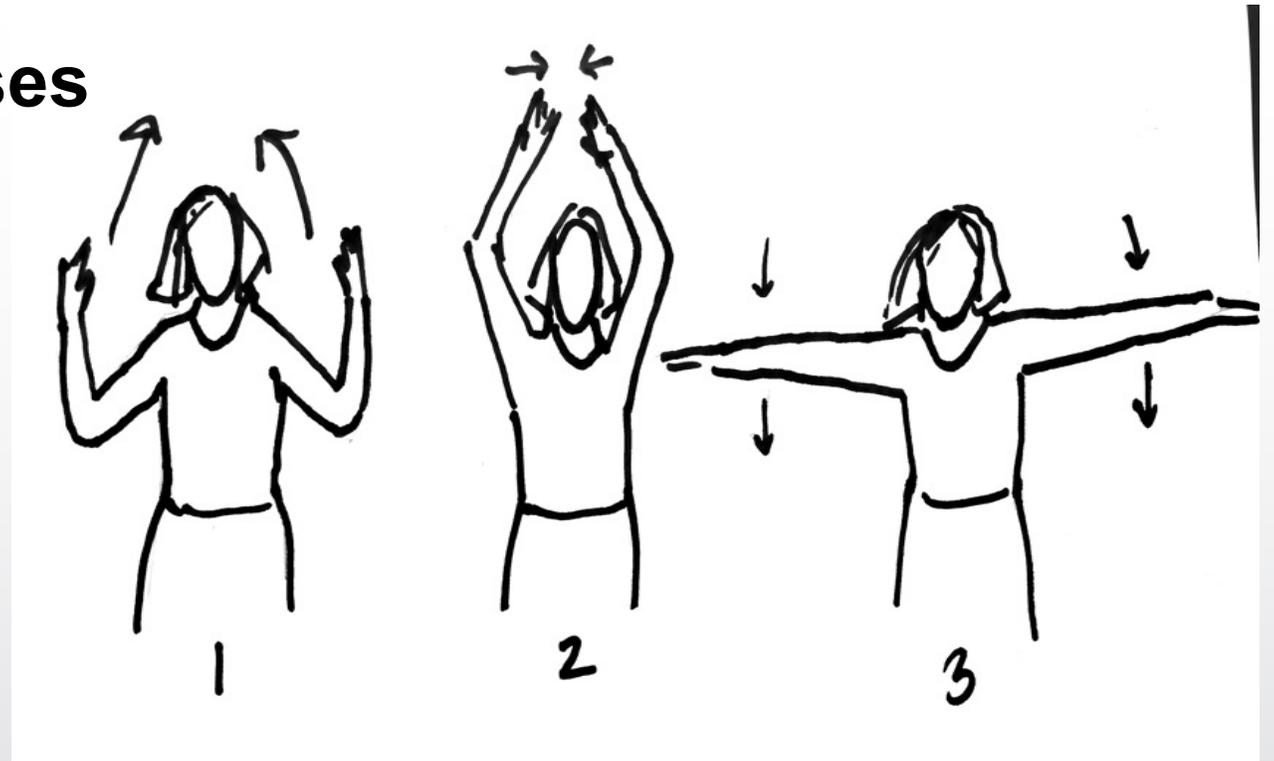
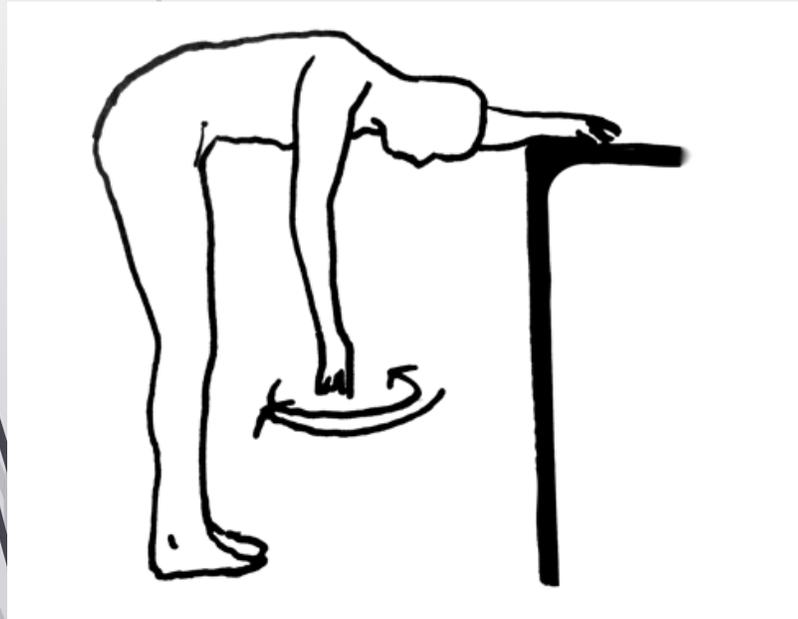
(Mina et al., 2017)

- Upper Quadrant Exercises (see rehabilitation exercises)
- Cardiopulmonary Exercises
- Nutrition
- Psychological interventions (↓ stress)
- Smoking Cessation (if relevant)

# Prehabilitation Exercises

1. **Codman's Exercise / Stir the Pot**  
3 sets of 10 circles, each direction

*Safe to do for everyone.*



2. **Scapular squeezes**

Steps 1,2,3

Reverse Steps 3,2, 1

*May be painful in those with shoulder problems. Modify by pulling shoulder blades down and in.*

# Prehabilitation Exercises



### 3. Reach for the Pillow

Reach up to touch pillow(s) with one hand, then switch, like you are swimming on your back. The pillow is behind your head, not under it.

***May be painful in those with shoulder problems or axillary pain.  
Modify by using many pillows.***

# Fitness Exercise during Prehabilitation

- ▶ Fitness or conditioning exercises are intended to
  - ▶ improve strength and flexibility using resistance and stretching exercises
  - ▶ improve cardiovascular fitness through aerobic exercises (Mina et al., 2017).
- ▶ Research (Jones et al., 2012) findings indicate:
  - ▶ 1/3 of breast cancer survivors have lower cardiopulmonary fitness before and during adjuvant treatment (i.e.,  $VO_2$  of a 40-year old survivor is similar to a 70-year old healthy sedentary female).





# Nutrition

- ▶ Tumor environment is impacted by diet and exercise (Mina et al., 2017).
- ▶ Obesity and weight gain in breast cancer survivors is associated with greater risk of recurrence and decreased survival (as cited in ACS, 2016).
- ▶ Unfavorable prognosis is more likely in breast cancer survivors who are overweight or obese (Mina et al., 2017).

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- ACS (2017) recommends:
    - 2.5 cups of vegetables and fruit,
    - Whole grains (less refined),
    - Limit sugar-sweetened drinks,
    - Lean meat (fish, poultry), ↓ fry/charbroil,
    - Limit alcohol to 1 drink per day for women (12 ounces of beer, 5 ounces of wine, or 1½ ounces of 80-proof distilled spirits (hard liquor)).



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# Postoperative Rehabilitation

- Impairment-driven rehabilitation (Silvers, Baima, & Mayer, 2013).
- Most often instituted after local therapy (surgery or radiation) and/or systemic therapy (Mina et al., 2017).
- Focus is restoring function of upper quadrant
  - Mobility/flexibility exercises (Mina et al., 2017).
- Debate as to when to initiate rehabilitation exercises following surgery. Drains are often in place.

Silver, J.K., Baima, J., & Mayer, R.S. (2013). Impairment-driven cancer rehabilitation: An essential component of quality care and survivorship. *CA Cancer Journal for Clinicians*, 63, 295-317.

Mina, D. S., Brahmhatt, P., Lopez, C., Baima, J., Gillis, C., Trachtenberg, L., & Silver, J. K. (2017). The case for prehabilitation prior to breast cancer treatment. *PM&R*, 9, 5305-5316.

# Postoperative Rehabilitation

- ▶ Cheville et al., (2019) recommend:
  - ▶ Arm exercises not initiated for a few weeks if (a) drains are in place or (b) immediate breast reconstruction occurred.
- ▶ American Cancer Society (2017) recommends
  - ▶ First week after surgery (with physician's okay), perform usual grooming (comb hair, bathing, etc.)
  - ▶ Supine, raise arm above heart level, open/close hand 15-20 times, bend/straighten elbow – repeat 3-4 times/day.
  - ▶ Supine, perform diaphragmatic breathing.

Cheville, A. L., McLaughlin, S. A., Haddad, T. C., Lyons, K. D., Newman, R., & Ruddy, K. J. (2019). Integrated rehabilitation for breast cancer survivors. *American Journal of Physical Medicine & Rehabilitation*, 98, 154-164.

American Cancer Society. (2017). Exercises after breast cancer surgery. Retrieved from <https://www.cancer.org/cancer/breast-cancer/treatment/surgery-for-breast-cancer/exercises-after-breast-cancer-surgery.html>



# Postoperative Rehabilitation

- Flexibility exercises follow:
  - Wand exercise
  - Shoulder blade squeeze
  - Chest wall stretch
  - Elbow winging
  - Shoulder blade stretch
- Strength building exercises do not usually begin until 4-6 weeks after surgery.

<https://www.cancer.org/cancer/breast-cancer/treatment/surgery-for-breast-cancer/exercises-after-breast-cancer-surgery.html>



# Fitness Exercise

- First – be sure that impairments have been assessed. Treated or referred as appropriate.
- Aerobic exercises, interval training, resistance exercises etc. have been found to improve cardiovascular fitness, mood, fatigue, and QoL (as cited in Cheville et al., 2019).
- Assess for balance and gait if having or has had taxanes (neurotoxic).
- Assess cardiac status if received doxorubicin, trastuzumab (cardiotoxic).



# Cancer Rehabilitation Versus Fitness Exercise

- Impairment-driven rehabilitation
    - requires rehabilitation professionals (refer to definition of cancer rehabilitation).
  - Fitness exercise
    - conditioning exercise may be conducted by trainers (preferably those who have ACSM certification as cancer specialist). Cannot diagnose/treat, but has more awareness of cancer treatment-related effect.
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# Women's Rehabilitation Experiences following Breast Cancer Surgery

## ► Purpose

- To examine the rehabilitation experiences of women following breast cancer surgery.

## ► Research Questions

- What is the rehabilitation exercise experience of women following breast cancer surgery?
- Is there a relationship between rehabilitation exercises and functional ability in women following breast cancer surgery?
- What are the current exercise behaviors of women who are breast cancer survivors?



## ➤ Design

- Descriptive-correlational

## ➤ Sample Recruitment

- 1400 registrants of the Breast Cancer Registry of Greater Cincinnati invited to complete a mailed questionnaire.
- 46% return rate - 594 met eligibility criteria

## ➤ Sample Demographics

- 27 to 80 years of age, Mean= 58 yrs
- 94% Caucasian, 3% African American
- 50% reported > that high school education



## ➤ Results

### ➤ Breast Cancer History

- 70% MRM
- 56% 5-20 ALND
- 72% adjuvant chemotherapy
- 40% radiation

### ➤ Post-operative morbidities

- 19% seroma
- 14% adhesive capsulitis (frozen shoulder)
- 20% lymphedema
- 60% numbness at surgical site

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- **Question 1:** What is the rehabilitation exercise experience of women following breast cancer surgery?
    - 363 (61%) of the survivors reported being instructed to perform upper body exercises on the operated side.
    - 39% 142/363 - instructed by a doctor
    - 37% 134/363 – instructed by a nurse
    - 8% (28/363) – instructed by physical therapist
    - Written instruction and “talking about exercise” most common instruction methods
    - Diversity on when to initiate exercises, duration, frequency, and length of time to continue exercises.

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- ▶ **Question 2:** Is there a relationship between rehabilitation exercises and functional ability in women following breast cancer surgery?
    - ▶ 48% of women who received instruction strongly agreed (10 on 10-point scale) that they performed exercises as recommended.
      - ▶ 55% strongly agreed that the exercises increased full movement of arm and shoulder on operative side.
      - ▶ 45% strongly agreed that the exercises increased strength of arm and shoulder on operative side.
      - ▶ 49% strongly agreed that performing the exercises helped them perform ADL.
    - ▶ A significant association was found between **performing postoperative exercises as recommended** and **increased functional ability** ( $p < .0001$ ).

➤ **Question 3:** What are the current exercise behaviors of women who are breast cancer survivors? (strength & flexibility of upper/lower body, balance, bone building exercises).

➤ 27% reported that they NEVER exercise for 30 minutes per week.

➤ 27% reported doing exercises 1-2 days/week (30 min)

➤ 28% reported doing exercises 3-4 days/week (30 min)

➤ 5% reported doing exercise every day (30 min).

➤ 51% reported NEVER doing balance or bone strength exercises.

➤ A significant association was found between women who **performed postoperative exercises as recommended** and **current exercise behaviors** ( $p < .006$ ).

THE  
ANSWER

# Implications

- ▶ Rehabilitation nurses are well-positioned to evaluate:
  - ▶ *how and when rehabilitation exercises are taught to breast cancer survivors,*
  - ▶ *whether the instructions are understood and the exercises are being performed in a safe and progressive manner,*
  - ▶ *whether upper body functional ability is improved,*
  - ▶ *whether survivors are performing total body exercise that meet physical activity guidelines (p. 199)?*



# Conclusion

*The performance of postoperative rehabilitation exercises may be helpful in increasing upper body flexibility and strength in breast cancer survivors. Rehabilitation nurses and oncology nurses can have a instrumental role in providing postoperative rehabilitation care in the breast cancer survivor population (p. 200).*

# ACS Recommended Fitness Exercise

- ▶ 150 minutes per week of moderate intensity activity (e.g., walking, leisurely bicycling) or
- ▶ 75 minutes per week of vigorous intensity activity (e.g., jogging, running) or
- ▶ Equal combination of both plus ADL (ACS, 2017).
- ▶ 2 to 3 sessions per week of strength training (Schmitz et al., 2010). Safe for breast cancer survivors at risk for or with lymphedema.

American Cancer Society. (2017). *ACS guidelines for nutrition and physical activity*. Retrieved from <https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/guidelines.html>

Schmitz, K.H., Courneya, K.S., Matthews, C., Denmark-Wahnefried, W., Galvao, D.A., Pinto, B.M., . . . (2010). American College of Sports Medicine roundtable on exercise guidelines for cancer survivors. *Medicine & Science in Sports & Exercise*, 42, 1409-1426.



# Important Takeaways for Rehabilitation Nurses

- Be aware and assess for breast cancer treatment-related effects.
- Assess functional ability pre- and post-treatment in breast cancer survivors.
- Differentiate between impairment-driven rehabilitation and fitness/conditioning exercises.
- Assess the breast cancer survivor's knowledge of rehabilitation exercises.
- Refer to appropriate rehabilitation team member (e.g., physical or occupational therapist).