BUILDING AND RESTORING PHYSICAL WELLNESS AFTER BREAST CANCER

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BUILDING AND RESTORING PHYSICAL WELLNESS AFTER BREAST CANCER

- The benefits of physical therapy before and after breast cancer surgery, radiation or chemotherapy
- How to find safe, appropriate cardiovascular exercises for your phase of healing
- Safe exercises to help you maintain strength and flexibility
- The impact that exercises such as yoga can have on healing, stamina and range of motion
Breathing Exercise
PHYSICAL WELLNESS

Muscular Endurance

Cardiorespiratory Fitness

Strength

Flexibility

Speed

Power
WHY IS EXERCISE SO GOOD?

• Lower your cancer risk
• Fewer and less severe side effects from treatment
  • More energy
  • Better mobility
  • More muscle and to feel stronger
  • Maintain a healthy weight
  • Keep your bones healthy
• Feel more confident and in control
  • Sleep better
  • Less stress
What is Cancer Treatment?

- Surgery
  - Lumpectomy
  - Mastectomy
  - Reconstruction
- Chemotherapy
  - Intravenous treatment
  - Hormone blocking treatment
- Radiation
  - Full
  - Partial
  - IORT
Physiological Responses of Exercise During Cancer Treatment

HEART

SIDE EFFECT
- ↑ Resting heart rate
- Abnormal left ventricle contractility
- ↓ Cardiac output and stroke volume

ADAPTATION TO EXERCISE
- ↓ Resting heart rate
- Strengthens myocardium
- ↑ Cardiac output and stroke volume
Cardiac Output (CO) = Heart Rate (HR) × Stroke Volume

Cardiac Output

Heart Rate

Stroke Volume
Physiological Responses of Exercise During Cancer Treatment

MUSCLE

SIDE EFFECT
- Destruction of skeletal muscle
- Atrophy/muscle weakness

ADAPTATION TO EXERCISE
- Increases protein synthesis
- Stimulates the release of hormones that increase growth and development/increases strength
Effects of atrophy on muscle:
- decreased size
- decreased strength
- decreased mobility

Fig. 1
DIFFERENT FORMS OF MUSCLE ATROPHY

1. Seven-day immobilization induces muscle atrophy.

Fig. 1 Masson trichrome staining of cross-sectional cryosections of the Tibialis anterior muscle from control (left panel) and C26 tumor-bearing (right panel) mice. The tumor load induces severe muscle fiber atrophy.
Physiological Responses of Exercise During Cancer Treatment

NEUROUS SYSTEM

SIDE EFFECT
- ↓ Motor function
- ↓ Coordination
- Neuropathy

ADAPTATION TO EXERCISE
- ↑ neurochemical availability at the cellular and tissue level and increases motor unit recruitment
- ↑ coordination
Physiological Responses of Exercise During Cancer Treatment

**LUNGS**

**SIDE EFFECT**
- ↓ Total lung capacity
- ↓ intake of oxygen ↓ removal of carbon dioxide

**ADAPTATION TO EXERCISE**
- ↑ intercostal muscle strength optimizing lung capacity
- ↑ ventilation and transport of air from the environment to cellular level
Physiological Responses of Exercise During Cancer Treatment

GASTRONINTESTINAL

SIDE EFFECT
- Loss of body fluids and electrolytes from diarrhea and vomiting
- Loss of appetite

ADAPTATION TO EXERCISE
- ↑ uptake of nutrients
- ↑ appetite
Physiological Responses of Exercise During Cancer Treatment

**MYELOSUPPRESSION**

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**SIDE EFFECT**
- ↓ bone marrow function lowering red, white blood cells, and platelets
- ↓ hemoglobin
- ↓ blood volume

**ADAPTATION TO EXERCISE**
- ↑ red blood cell production
- ↑ hemoglobin concentration
- ↑ blood volume
Red blood cell → Oxygen from lungs → Oxygen released to tissue cells → Oxygen bonded with hemoglobin molecules.

Hemoglobin molecules

Lymphocyte, Monocyte, Eosinophil, Basophil, Neutrophil
## Blood Values Appropriate for Exercise

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin</td>
<td>&gt; 10 g/dl</td>
<td>Higher at altitude</td>
</tr>
<tr>
<td>Platelet</td>
<td>&gt;50x10^9/L (150,000mm³)</td>
<td>Prevent hemorrhage</td>
</tr>
<tr>
<td>White Blood Cells</td>
<td>&gt;3x10^9/L (3,000mm³)</td>
<td>Avoid infection</td>
</tr>
<tr>
<td>Red Blood Cells</td>
<td>3.5 x 10^6/mm³</td>
<td>Women</td>
</tr>
<tr>
<td></td>
<td>4.3 x 10^6/mm³</td>
<td>Men</td>
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</tbody>
</table>
If Cancer Related Fatigue is defined as the combination of all physiological toxicities affecting the body and brain, then we know exercise is the treatment for this debilitating condition.
PHYSICAL WELLNESS
PHYSICAL WELLNESS: RECOVERY/PHYSICAL THERAPY

- Cardiovascular endurance
- Strength training
- Manual treatment
- Range of motion
- Postural retraining
- Core strength & stability (Pilates / Yoga)
- Lymphedema management
- Pain management
Cardiovascular Endurance

- Exercise intensity can be measured two ways:
  - RPE
  - Heart Rate
    - Max heart rate
    - Heart rate reserve
- Mode of exercise can vary
  - Walking/running
  - Biking
  - Elliptical
  - Zumba
  - Swimming
- Aerobic Testing
  - Treadmill
  - Bike
**Phases of Cancer Rehabilitation: Cardiovascular**

- **Phase I**: 1-3 RPE. During treatment (chemo and/or RAD). 2-3 sessions/week. 20-30 minutes. 3 months
- **Phase II**: 3-6 RPE. Following surgical/hormonal treatment or completion of phase I. 3 sessions/week. 3 months
- **Phase III**: 4-8 RPE. Following completion of phase II. 3-4 sessions/week. 3 months
- **Phase IV**: 6-10 RPE. Following completion of phase II. 3-4 sessions/week. 3 months
Strength

Improves functional independence and improves bone density

- Weight
- Reps
- Sets

ONLY CHANGE ONE VARIABLE AT A TIME!
Phases of Cancer Rehabilitation: Strength

- **Working a % of you 1 Rep Max (1RM)**
  - **Phase I**: 30-45% of 1 RM. During treatment (chemo and/or RAD). 2-3 sessions/week. 3 months
  - **Phase II**: 40-60% of 1 RM. Following surgical/hormonal treatment or completion of phase I. 3 sessions/week. 3 months
  - **Phase III**: 60-85% of 1 RM. 3 sessions/week. 3 months
  - **Phase IV**: 65-95% of 1 RM. Following completion of phase II. 3-4 sessions/week. 3 months
Some targeted therapies will seek out the Estrogen in your body to prevent its ability to “feed” your tumor.

Although this will greatly reduce reoccurrence, it can have some unfortunate side effects because it will also block the hormone’s use and production in other parts of your body.

Estrogen helps to improve our muscle tone and elasticity and without it...

- Decreased strength
- Less muscle to assist in burning calories
- Increased stiffness
Manual Treatment

- Muscle tension release
- Increased relaxation

- Edema and lymphedema management
- Improved ROM

- Improved healing
- Increased chest mobility
Flexibility

• ROM
  • Simple post-surgical exercises
  • Gravity assisted followed by gravity resisted

• Stretching
  • Specific muscle isolation with prolonged hold

• Yoga
  • Brings prolonged muscle hold followed by stretch
  • More effective method of lengthening muscles over time than stretching alone
Muscular Endurance

Posture Exercises
- Scapular squeezes
- Progressive Resistive Exercises (PREs)

Balance and Core Strengthening
- Neuropathy treatment
  - Single leg stance
  - Proprioceptive exercises
- Pilates

Yoga
- Uses body weight for resistance—easier on joints
- Encourages postural awareness in poses
- Strong focus on balance
Yoga Precautions

- You can try anything! Just be smart and listen to your body.

- Be cautious with poses that have high demand on your chest muscles such as:
  - Plank
  - Downward dog
  - Wheel

- With Chaturanga Dandasana
  - Modify: use plank, avoid upward dog
  - Avoid many repetitions

- Be aware that heated yoga may be more demanding on your lymphatic system
Exercise and Lymphedema

First things first...

Exercise is good for your lymphatic system, both for prevention and if you have lymphedema!!!
Exercise and Lymphedema

You can live with a lowered capacity of the lymphatic system your whole life and never get lymphedema. However, it is important for you to be proactive for the rest of your life in the prevention of lymphedema. If you experience any of these symptoms while performing an activity, then STOP and REST!!

- Generalized Achiness of the Arm
- Generalized Fatigue of the Arm
- Generalized Heaviness of the Arm
- Generalized Tingling of the Arm
Exercise and Lymphedema

- Whether it is the removal of 1, 2, or 20 nodes, it is still very difficult to predict a predisposition to lymphedema development.
- Any trauma to the lymph system can affect the capacity of the system to meet the demands placed upon it.
- There are other precipitating factors:
  - **OVER STRESSING** your lymph system during periods of activity.
  - Health Related Issues
  - Genetic Predisposition
Exercise and Lymphedema

• Lymphedema: protein-rich accumulation of fluid
  • The capacity of the lymph system is changed as a result of a structural compromise e.g. surgery or radiation therapy

• The capacity of your system to cope with the increased demand on the lymph system could be reduced or SLOWED
Exercise and Lymphedema

• If you’ve had lymph nodes removed and are fearful of lymphedema and/or have experienced consistent symptoms, schedule an appointment with a specialist to help to assess your risk in accordance with your symptoms.
Exercise and Lymphedema

- If you have lymphedema symptoms, you will likely need to wear a compression garment and take other precautions when you exercise.
Exercise and Lymphedema

Strenuous Activity for long periods of time
- moving house, redoing areas in house
- house cleaning, yard work, sport/hobbies

Repetitious Activity for long periods
- Typing, Painting, Pulling Weeds,
  Sweeping, Raking

Change in Pressure for long periods of time
- Airplane flights > 2 hours - suggest wearing compression garment 20-30mmHg
  The garment is an ASSISTIVE DEVICE and helps MOVE Lymph Fluid

Injury - cut, scratch, puncture wound - clean and protect wound. If slow to heal, or infected may need ANTIBIOTICS
How to stick with an exercise program

- Be accountable to your physical therapist.
- Make it fun.
- Switch up what you do so you don’t get bored.
- Make exercise social.
- Make exercise a priority.
- Exercise first thing in the morning.
- Exercise on your way home from work.
- Exercise even when you think you’re too tired.
- Keep an exercise journal.
- Reward yourself.
- Be flexible.
Opportunity to CREATE a new physical wellness that you didn’t have prior to your cancer diagnosis.
Insurance Coverage

- Physical Therapy is usually well-covered for all breast cancer patients
  - Physical Therapy to treat diagnosis codes such as lymphedema, shoulder stiffness/pain, difficulty walking, and abnormal posture are considered “medically necessary” by insurance
- Oncology Rehab accepts most major insurance carriers including Medicare
- One on one Yoga sessions and group classes
- Exercise Assessment and Prescription
QUESTIONS?