Rehabilitation for the Older Adult with Cancer

Prepared and presented by:
Jodi Steele
Physiotherapist
BKin. BSc. (PT)
Course Objectives

- Understand the most relevant cancers in the older adult population and their medical treatments.
- Learn appropriate exercise techniques and safety considerations, how to administer an oncology assessment and how to design an individualized fitness plan for your client’s abilities and goals.
Agenda

- Introduction
- What you need to know about cancer!
- Types of cancer: treatments and rehab
- Exercise prescription
- Conclusions
# Staging: TNM Classification

<table>
<thead>
<tr>
<th>STAGE</th>
<th>TUMOR SIZE</th>
<th>PALPABLE NODES</th>
<th>METASTASIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>&lt; 2 cm</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>II</td>
<td>2 - 5 cm</td>
<td>No or Yes (ipsilateral)</td>
<td>None</td>
</tr>
<tr>
<td>III</td>
<td>&gt; 5 cm</td>
<td>Yes Ipsilateral</td>
<td>None</td>
</tr>
<tr>
<td>IV</td>
<td>Doesn’t Matter</td>
<td>Doesn’t Matter</td>
<td>Yes</td>
</tr>
</tbody>
</table>
# Grades of Cancer

<table>
<thead>
<tr>
<th>GRADE</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (lowest)</td>
<td>Well differentiate (anaplasia) tissue cells, cells generally appear normal and are NOT growing rapidly.</td>
</tr>
<tr>
<td>2</td>
<td>Moderately - differentiated tissue cells.</td>
</tr>
<tr>
<td>3 (highest)</td>
<td>Poorly differentiated tissue cells, cells do not appear normal and tend to grow and spread aggressively.</td>
</tr>
</tbody>
</table>
Treatments

- Surgery
- Radiation
- Chemotherapy
- Hormonal Therapy
- Immunotherapy
- Bone Marrow and Stem Cell Transplant
Treatment: Surgery

- Removal of primary cancer

Older Adult:
- Fragile skin
- Decreased mobility for skin care
- Unable to inspect area
Treatment: Chemotherapy

- The goal is to destroy cancerous cells with minimal damage to normal healthy cells

- Considerations for the Older Adult:
  - General unwell feeling
  - Blisters, soreness, numbness tingling in hands and feet
  - Changes in blood work
  - Chemo fog
Role of the Therapist

- Special considerations for the older adult
  - Nausea
  - Fatigue
  - Dizziness
  - Drop in blood counts
  - Neuropathies - balance and falls
Treatment: Radiation

- Destroy cancer cells with minimal injury to normal tissue
- Cells that reproduce frequently are extremely sensitive to radiation
- Muscle and neural tissue are resistant to radiation
Radiation - How does it work?

Patient with Breast cancer receives 60 Gy (Grey)
- 1.8 - 2.0 Gy a day, for 30 days, 6 weeks

- 40 Gy skin damage
- 50 Gy bone damage
- 60 Gy soft tissue and fascial damage
Role of the Therapist

- “Radiation is a time to maintain not gain”
- No passive treatments - may push tissue too far
- Only active range of motion
- Radiation is accumulative (17th treatment)
- Burning becomes worse: skin reddens, weeps, peels off, increases discomfort, itches, increases pain
Hormonal Therapy

- Another form of systematic therapy
- Used to reduce risk of recurrence in breast and prostate cancer
- Hormone therapies strive to prevent the sex hormone from impacting the cell
## Hormonal Therapy

<table>
<thead>
<tr>
<th>HORMONAL THERAPY</th>
<th>SIDE EFFECTS</th>
<th>USED TO TREAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamoxifen</td>
<td>Nausea and indigestion, weight gain, changes to period, depression, tiredness, blood clots, visual problems</td>
<td>Breast Cancer</td>
</tr>
<tr>
<td>Arimidex</td>
<td>Hot flashes and sweats, vaginal dryness, hair thinning, skin rashes, vaginal bleeding, joint pain, muscular stiffness, risk of osteoporosis</td>
<td>Breast Cancer</td>
</tr>
</tbody>
</table>
Orthopedic Concerns in the Older Adult

- Loss of muscle tone
- Loss of muscle strength
- Loss of tensile strength of the ligaments and tendons

Examples
- Trigger finger
- De Quervain’s tenosynovitis
- Tendonitis
Role of the Therapist

- Clients may be experiencing hot flashes, joint pain and weight gain
- Refer clients to doctor to help minimize these discomforts
- Diet and Exercise play a key role in maintaining ‘Body Mass Index’
- Exercise play a key role in bone density
- Using conservative treatment treat soft tissue injuries
Cancer Types

- 60% of new diagnosis with cancer are over the age of 65 years
- 70% of cancer deaths are over the age of 65 years

- Most common Types
  - Skin
  - Lung
  - Colorectal
  - Breast
  - Prostate

## Assessment Form

<table>
<thead>
<tr>
<th>Personal Trainer:</th>
<th>Date Started:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Name:</td>
<td>Sex: M F</td>
</tr>
<tr>
<td>Diagnosis:</td>
<td>Grade:</td>
</tr>
<tr>
<td>Stage:</td>
<td></td>
</tr>
<tr>
<td>Oncology:</td>
<td>Support:</td>
</tr>
</tbody>
</table>

### History of Current Condition

- [ ] Chemotherapy
- [ ] Radiation
- [ ] Hormone Therapy
- [ ] Other: ____________

### Current Functional Limitations

<table>
<thead>
<tr>
<th>Personal Care:</th>
<th>Vocational:</th>
<th>Recreation:</th>
<th>Sleep:</th>
<th>Driving:</th>
</tr>
</thead>
</table>

### Past Medical History

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>________________</td>
</tr>
</tbody>
</table>
Facts about Older Adults

- Over 1/3 of older adults treated for cancer will have some kind of outstanding limitations
  - Fatigue
  - Pain
  - Decreased ability to perform ADL’s
  - Mobility issues
  - Cognitive defects
  - Sleep disturbances
Performance Indicators

BRIEF FATIGUE INVENTORY

DATE: ____________________________ NAME: ____________________________

Throughout our lives, most of us have times when we feel very tired or fatigued. Have you felt unusually tired or fatigued in the last week? ☐ Yes ☐ No

1. Please rate your fatigue (weariness, tiredness) by circling the one number that best describes your fatigue right NOW.

   No fatigue
   0 1 2 3 4 5 6 7 8 9 10 As bad as you can imagine

2. Please rate your fatigue (weariness, tiredness) by circling the one number that best describes your USUAL level of fatigue during the past 24 hours.

   No fatigue
   0 1 2 3 4 5 6 7 8 9 10 As bad as you can imagine

3. Please rate your fatigue (weariness, tiredness) by circling the one number that best describes your WORST level of fatigue during the past 24 hours.

   No fatigue
   0 1 2 3 4 5 6 7 8 9 10 As bad as you can imagine

4. Circle the one number that describes how, during the past 24 hours, fatigue has interfered with your:

   A. General Activity

      Does not interfere
      0 1 2 3 4 5 6 7 8 9 10 Completely interferes
Performance Indicators

**PATIENT SPECIFIC FUNCTIONAL SCALE**

**Initial Assessment**

Please identify up to three important activities that you are unable to do or are having difficulty with as a result of your cancer. Today, are there any activities that you are unable to do or having difficulty with because of your cancer?

**Follow-up Assessments**

When you were initially assessed, you identified that you had difficulty with the activities listed below. Today, do you still have difficulty with the listed activities? Please score each item in the list.

**Patient-specific activity scoring scheme (Point to one number)**

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>unable to perform activity</td>
<td>Able to perform activity at the same level as before injury or problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Initial</th>
<th>Follow-up</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date:</td>
<td>Date:</td>
<td>Date:</td>
</tr>
</tbody>
</table>
Breast Cancer: Overview

- Lumpectomy vs. mastectomy
- Chemotherapy
- Radiation
- Hormone treatment
- HER2NU and Herceptin
Shoulder Dysfunction

- Frozen shoulder due to immobility and pain
- Tendonitis due to postural problems

**Treatments:**
- Mobilizations
- Contract Relax
- Low load prolonged stretch
- Leaukotape
Cording or Webbing Syndrome
DARE: Depression, Abduction, Rotation, Extension
Breast Cancer:
Self Stretch (DARE)
Scar Tightness

- Scar Massage
- PROM
- AAROM: wand
Joint Pain

- Hormone replacement drugs and Herceptin have been known to cause joint pain
- Presents like Osteoarthritis

Treatment:
- Heat
- Exercise (ROM, non weight bearing)
Lymphedema: Major issue for the Older Adult

Treatment:
- Skin Care
- Bandage
- Massage
- Exercise

Maintenance:
- Skin Care
- Sleeve
- Exercise
Breast Cancer - Range of Motion of the Shoulder

- Avoid climbing up the wall
- Wand exercises
- Pendulum
- PNF patterns: Diagonal 1 and Diagonal 2
Breast Cancer - Postural Exercises

- Chin Tuck
- Scapular Retractions
- Middle and lower trap
- Seated row
Prostate Cancer: Overview And Treatment

- Curable if detected early
- Mean age of diagnosis is 67 years
- Treatment: surgery, radiation and hormone therapy
Prostate Cancer

- De-conditioning
- Radiation burns
- Age-related comorbidities
- Catheter
- Urinary incontinence

- Pain
- Anemia/fatigue
- Gynecomastia
- Hot flashes
- Surgical recovery
Pelvic floor muscle exercises (Kegel exercises)

- Strengthens the pubococcygeous muscles
- Pre and post-treatment training can improve the recovery of urinary incontinence
- Must first teach muscle identification
- Strive for 100 contractions/day
  - Quick, rhythmic contractions
  - Slow, sustained contractions
Colorectal Cancer: Overview and Treatment

- Slow growing cancers that start on the inside wall of the bowel and then spread to the lymph nodes
- Stage of cancer determines prognosis
- Recurrence is common
- Treatment: surgery and chemotherapy
Colorectal Cancer: Issues for the Older Adult

- Large Incisional Scarring
- Hernia
- Pain
- Dumping Syndrome
- Colostomy bag
- Major De-conditioning
- Electrolyte imbalances
Colorectal Cancer: Therapist Role

- Watch for dehydration
- Exhale with exertion
- Avoid heavy lifting
- Large muscle groups
- Ball exercises - watch colostomy bag
- Core stability
Colorectal Cancer

- Pelvic Floor
- Transverse Abdominus
- Rectus Abdominus
- Floor Exercises
- Ball Exercises
Non small cell: slow growing, spread to lymph nodes, make up 75% of lung cancers

Small cell: grow more rapidly, spread to distant parts of body

Control of disease is often achievable although a cure is rare

Treatment: surgery and radiation in non small cell and chemotherapy in small cell
<table>
<thead>
<tr>
<th>STAGE</th>
<th>CRITERIA</th>
<th>5 YEAR SURVIVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Stages</td>
<td>-</td>
<td>16%</td>
</tr>
<tr>
<td>Localized</td>
<td>Tumour present at primary site only</td>
<td>50%</td>
</tr>
<tr>
<td>Regional</td>
<td>Lymph node involvement</td>
<td>21%</td>
</tr>
<tr>
<td>Distant</td>
<td>Metastatic sites</td>
<td>3%</td>
</tr>
</tbody>
</table>
Lung Cancer:
Issues for the Older Adult

- De-conditioned
- Extreme weight loss
- Risk of bone mets and fracture
- Shortness of breath
- Tight rib cage
- Poor posture
- Surgical scarring
Lung Cancer

- Breathing Techniques
- Small bouts of cardio
- Exercises begin in sitting
- Focus on exhaling
- Thoracic extension and Shoulder flexion
- Work balance
- Opening of the chest
- Scar massage
Melanomas: Overview and Treatment

- Very aggressive cancer
- Spreads along skin and then to lymph nodes, liver, lung and brain
- Treatment: surgery, radiation and interferon
Melanomas

- Lymphedema
- Skin flap
- Major surgical scarring
- Heavy limbs
- Proximal strains
Melanoma

- Lymphedema bandaging for affected extremity during all exercise
- Discuss risk of falls
  - Changes in center of gravity due to weight of affected limb
  - Prolonged bedrest leading to atrophy
- Interval training to decrease congestion
- Water activities
Exercise Prescription and Testing
### General Exercise Prescription for Clients with Cancer

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>At least 3-5 times/week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTENSITY</strong></td>
<td>• 50-70% HRR&lt;br&gt;• 60-80% MHR&lt;br&gt;• 11-14 RPE (Borg Scale)</td>
</tr>
<tr>
<td><strong>TIME</strong></td>
<td>• At least 20-30 min continuous&lt;br&gt;• Deconditioned patients may need short intervals (e.g. 3-5 min) with rest intervals</td>
</tr>
<tr>
<td><strong>TYPE</strong></td>
<td>Combination of strength and resistance training</td>
</tr>
</tbody>
</table>
Target Heart Rate: Max Heart Rate

- Example for 60-80% of MHR for a 65 year old female with a resting heart rate of 70 bpm

  - %MHR = 220 - age
  - 60% MHR = (220 - 65)(0.6)
  - 60% MHR = 155(0.6)
  - 60% HRR = 93 bpm

  - 80% MHR = (220 - 65)(0.8)
  - 80% MHR = 155(0.8)
  - 80% MHR = 124 bpm

- Therefore the Target heart rate is 93 bpm to 124 bpm
Target Heart Rate: Heart Rate Reserve

- Example for 50-70% of HRR for a 65 year old female with a resting heart rate of 70 bpm

  - \[ \%\text{HRR} = (\text{MHR} - \text{HR rest})(\%) + \text{HR rest} \]

  - 50% HRR = (155 - 70)(0.5) + 70
  - 50% HRR = 85(0.5) + 70
  - 50% HRR = 112.5 bpm

  - 70% HRR = (155 - 70)(0.7) + 70
  - 70% HRR = 85(0.7) + 70
  - 70% HRR = 129.5 bpm

Therefore the Target heart rate is 113 bpm to 130 bpm
## Rate of Perceived Exertion

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>NOTHING AT ALL</td>
</tr>
<tr>
<td>0.5</td>
<td>VERY, VERY LIGHT</td>
</tr>
<tr>
<td>1</td>
<td>VERI LIGHT</td>
</tr>
<tr>
<td>2</td>
<td>FAIRLY LIGHT</td>
</tr>
<tr>
<td>3</td>
<td>MODERATE</td>
</tr>
<tr>
<td>4</td>
<td>SOMEWHAT HARD</td>
</tr>
<tr>
<td>5</td>
<td>HARD</td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>VERY HARD</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>VERY VERY HARD (MAXIMAL)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>NO EXERTION AT ALL</td>
</tr>
<tr>
<td>7</td>
<td>EXTREMELY LIGHT</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>VERY LIGHT</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>LIGHT</td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>SOMEWHAT HARD</td>
</tr>
<tr>
<td>14</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>HARD (HEAVY)</td>
</tr>
<tr>
<td>16</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>VERY HARD</td>
</tr>
<tr>
<td>18</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>EXTREMELY HARD</td>
</tr>
<tr>
<td>20</td>
<td>MAXIMAL EXERTION</td>
</tr>
</tbody>
</table>
## INTERVAL TRAINING PROTOCOL

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Aerobic</th>
<th>Interval</th>
<th># of Exercises</th>
<th>Reminder</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>5 x 3 min</td>
<td></td>
<td>4</td>
<td>Zip up the abdominals!</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>5 x 3 min</td>
<td></td>
<td>4</td>
<td>Focus on shoulder stabilization.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>5 x 3 min</td>
<td></td>
<td>4</td>
<td>Increase your workout by adding another set.</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>5 x 3 min</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>4 x 5 min</td>
<td>20 sec, fast, 60 sec, moderate pace</td>
<td>5</td>
<td>Progress your workout by increasing the number of repetitions.</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>4 x 5 min</td>
<td></td>
<td>5</td>
<td>Focus on breathing.</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>4 x 5 min</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>4 x 5 min</td>
<td>30 sec, fast, 30 sec, moderate pace</td>
<td>6</td>
<td>Increase your workout by slowing down each repetition. “Count up, 2, 2, down, 2, 2.”</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>5 x 5 min</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>5 x 5 min</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>5 x 5 min</td>
<td></td>
<td>6</td>
<td>You have completed half of the program! Good job!</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>5 x 5 min</td>
<td>60 sec, fast, 60 sec, moderate pace</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>5 x 5 min</td>
<td></td>
<td>6</td>
<td>Focus on breathing.</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>5 x 6 min</td>
<td></td>
<td>6</td>
<td>Start balance exercises.</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>5 x 6 min</td>
<td>60 sec, fast, 45 sec, moderate pace</td>
<td>6</td>
<td>Start trying homework.</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>5 x 6 min</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>5 x 6 min</td>
<td></td>
<td>6</td>
<td>Now try advanced core stability!</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>5 x 6 min</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td>5 x 6 min</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>5 x 6 min</td>
<td></td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
## Interval Exercise Log

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Balance</th>
<th>Cardio</th>
<th>Cardio</th>
<th>Cardio</th>
<th>Cardio</th>
<th>Cardio</th>
<th>Stretch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Guidelines for the Older Adult

- Combination of strength training and aerobic exercise (interval training)
- 2 x/week supervised exercise
- Intensity should be moderate 60% to 80% of Maximum Heart Rate
- Duration should start at 35 minutes and then progression up to one hour
- Progression should start with increased duration then increase intensity
Case Study Questions

- What would you assess and monitor?
- What would your target heart rate range be?
- What exercises would you give this client?
References


4. [http://www.nccn.com/component/content/article/61/91.html](http://www.nccn.com/component/content/article/61/91.html)


