

Occupational Therapy Practice Guidelines for Post-Surgical Breast Cancer Survivors

Shamima Sitabkhan

Department of Occupational Therapy, University of Texas Medical Branch

OCCT 6251: Capstone IV

Dr. April C. Cowan

Dr. Patricia Fingerhut

December 11, 2020

Acknowledgements

I want to acknowledge and thank April C. Cowan, OTD, OTR, CHT, mentor for the post-professional doctorate program, Claudia Hilton, PhD, MBA, OTR, FAOTA, and the professors in the occupational therapy department at the University of Texas Medical Branch for guiding me through the capstone development process with their expertise, understanding, and enthusiasm.

Special thanks to Brooke Ellis, PT, DPT, Wendy Williams, PT, and the rehabilitation team at Texas Health Presbyterian Plano Hospital for their support and expertise on this subject.

Finally, I want to acknowledge and thank my husband, Zoher, and my three daughters, Amreen, Amy, and Alisha, for inspiring and encouraging me throughout this journey. I am forever grateful for their tireless support and inspiration that enabled me to pursue my dream to achieve my doctorate degree in occupational therapy.

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Abstract

Cancer continues to grow at an alarming rate globally and in the United States. Breast cancer is one of the leading cancer diagnoses in women, and surgery is a common treatment option for breast cancer. Breast surgery leads to numerous challenges with a unique set of complications affecting breast cancer survivors' functional abilities and quality of life (QoL). To effectively address these unique set of complications, cancer rehabilitation professionals, including occupational therapy (OT) practitioners, need to have specific training, advanced skills, and clinical judgment in the field of oncology rehabilitation. This paper addresses the need for population-specific OT clinical practice guidelines (CPGs), as a resource to OT practitioners, with recommendations on evidence-based assessments and interventions to holistically address the physical, psychosocial, spiritual, and functional needs of this population. The *Occupational Therapy Practice Guidelines for Post-Surgical Breast Cancer Survivors* were developed after completing a thorough needs assessment, communication with the interdisciplinary oncology team, an intensive review of current research on the efficacy of assessments and interventions within the scope of OT, and the application of OT theory to practice guidelines. The CPGs provide recommendations on completing a comprehensive assessment, guidance on interventions to address symptom management, and a list of recommended upper extremity exercises for the OT practitioner while working with this population. The CPGs were implemented with a one-person case study with outcomes indicating that the CPGs may be effective at increasing functional abilities and maximizing QoL for individuals after surgical intervention for breast cancer.

Occupational Therapy Practice Guidelines for Post-Surgical Breast Cancer Survivors

Cancer rehabilitation is an area of growing need, with statistics revealing a staggering number of people diagnosed with cancer globally and in the United States. Per the World Health Organization [WHO], approximately 2.1 million people are diagnosed worldwide with breast cancer each year (2020). The American Cancer Society [ACS] (2018) estimated 1,762,450 new cases of cancer and 271,270 new cases of breast cancer diagnosed in the United States in 2019. It is estimated that 30% of women's cancer is breast cancer (ACS, 2018), and it is the most common cancer in women in the United States (De Groef et al., 2015). For breast cancer diagnosis, surgery continues to be the most common treatment for patients leading to numerous side effects impacting their functional status and QoL (Chan et al., 2010). Per Ghazinouri et al. (2005), there are many options to treat breast cancer, but often they are accompanied by intolerable side effects because of these treatments (as cited in Yang et al., 2018).

The focus of rehabilitation should be on decreasing these side effects, increasing functional abilities, and improving QoL of cancer survivors. Current oncology rehabilitation treatment protocols lack focus on the wide range of medical, emotional, and functional challenges that impact the QoL of breast cancer survivors (Mosher et al., 2013). OT plays an essential role in helping cancer survivors address their physical, emotional, psychological, and functional challenges (Silver & Gilchrist, 2011). To safely and effectively provide OT, there is a need to develop evidence-based practice guidelines as an educational resource and to provide advanced skills training to OT practitioners on assessments and interventions that are population-specific due to post-surgical complications, cancer-related fatigue, pain, lymphedema concerns, body image issues, and functional limitations that this population typically encounters (Nadler et al., 2017; Braveman & Hunter, 2017).

Background

Per Dr. Thomas G. Frazier, a clinical professor of surgery at Thomas Jefferson University in Philadelphia, surgery is typically the first line of attack against breast cancer with the goal to maximize the patient's ability to function (Frazier, 2013). With a breast cancer diagnosis, there are different options and types of surgeries; radical mastectomy, modified radical mastectomy, axillary lymph node dissection, and reconstructive breast surgeries; breast implants, Latissimus Flaps, Transverse Rectus Abdominis Myocutaneous (TRAM) Flap, and Deep Inferior Epigastric Perforator (DIEP) surgery (Loh & Musa, 2015; Chan et al., 2010). After undergoing breast surgery, a multimodal and interdisciplinary approach to rehabilitation can improve the clinically relevant outcomes for post-surgical breast cancer patients (Santa Mina et al., 2017). OT practitioners are encouraged to be a part of the interdisciplinary team to improve function and QoL of this population (Silver & Gilchrist, 2011).

OT practitioners need to address the problems and challenges faced by this population within their scope of practice. It is imperative that the OT practitioners review the post-surgical precautions depending on the type of surgery, adhere to it during therapy, and teach clients how to adhere to their surgical precautions while engaging in daily activities (Braveman & Hunter, 2017). With breast surgery, more than 50% of the breast cancer survivors will experience one or more long term upper extremity impairments, such as decreased shoulder motion and shoulder pain, which can last months to years after surgery (Baima et al., 2017; Bahrami et al., 2012). Problems with shoulder dysfunction can lead to difficulty performing daily activities such as reaching overhead or fastening clothes from behind (Chan et al., 2010). During therapy, OT practitioners should address physical symptoms of limited motion, pain, lymphedema, scarring, and axillary web syndrome (AWS), also known as cording, which are common complications

that occur post-surgery for breast cancer. Lymphedema and AWS are common complications in almost 50% of breast cancer patients and are associated with pain and limited motion of the upper extremity (Park, 2017; Datar & Jagtap, 2019). Pain, fatigue, anxiety, and sleep disorders typically result in decreased ability to engage in meaningful occupations for this population (Stagl et al., 2014). OT practitioners should encourage their clients to find ways to re-engage in meaningful activities of daily living and to incorporate exercises into their daily routines as it is beneficial in cancer recovery (Braveman & Hunter, 2017).

The other common challenge faced by this population is the profound effect the diagnosis and treatments for breast cancer have on their emotional health and spiritual needs (Nguyen et al., 2015). The person, post-surgery for breast cancer, typically encounters issues with their femininity, body image, and sexual functioning (Nguyen et al., 2015). Furthermore, this population is often faced with an immunocompromised system, cancer-related fatigue, pain, and other challenges limiting their physical ability to go to their place of worship. Per Shi and Singh (2019), spirituality and religious beliefs provide meaning, value, hope, and a will to live. It is essential that spirituality concerns are addressed during therapy with this population. Due to these numerous difficulties and symptoms affecting post-surgical breast cancer survivors, the goal of this capstone project is to formulate population-specific OT practice guidelines as a resource to lessen the severity of their symptoms, improve engagement in meaningful occupations, and optimize their QoL.

Clinical Question

Based on the literature review, post-surgical breast cancer survivors typically encounter a unique set of challenges and problems relating to their physical, emotional, psychosocial, and spiritual needs, which can profoundly impact their functional abilities and QoL (Nguyen et al.,

2015). Due to these numerous complications and issues, the focus of cancer rehabilitation by health care professionals, including OT practitioners, should be on decreasing these challenges to improve function and QoL of cancer survivors (Silver & Gilchrist, 2011). Cancer rehabilitation continues to grow, and there is a growing need for OT practitioners to practice cancer rehabilitation. The literature search revealed a lack of population-specific educational resources, advanced skills, and specialized training for OT practitioners to comprehensively assess and provide effective treatment interventions for post-surgical breast cancer survivors. The American Occupational Therapy Association [AOTA] in 2017, published OT practice guidelines entitled *Occupational Therapy Practice Guidelines for Cancer Rehabilitation with Adults* (Braveman & Hunter, 2017), which provide recommendations for working with adults with cancer. This document lacks recommendations targeted towards the unique challenges and problems encountered explicitly by post-surgical breast cancer survivors. These reasons led the author to the following clinical question.

Clinical Question

What types of occupational therapy assessments and interventions are effective at increasing functional outcomes for individuals after surgical interventions for breast cancer?

Literature Review

Database Search

A comprehensive literature search using electronic databases was performed to gain more knowledge on the topic and locate the best available evidence on *Occupational Therapy Assessments and Interventions for Post-Surgical Breast Cancer Patients*. The databases of the *American Journal of Occupational Therapy* (AJOT), AOTA, PubMed, Cochrane Library, CINAHL, Ovid Medline, OTSeeker, and Google Scholar were searched using a combination of

the following terms: Occupational therapy, physical therapy, oncology rehabilitation, breast cancer, post-surgical breast cancer, oncology assessments, cancer evaluation, cancer outcome measures, axillary web syndrome, exercises, pain, lymphedema, breast cancer surgeries, body image, mindfulness, yoga, myofascial massage, neoplasms, survivorship, treatment guidelines, educational resources, functional activities, practice guidelines, and quality of life. Key terms were first searched and then combined using Boolean operators of ‘AND’ and ‘OR.’ A total of 1628 articles were identified. Additional sources were obtained using the reference lists of relevant articles and searching for breast cancer needs, assessments, treatment, and rehabilitation. Inclusion criteria were set for articles published in the English language between 2010-2020, occupational therapy, physical therapy, and oncology rehabilitation for post-surgical breast cancer diagnosis, human subjects, and adults over 18 years of age. Exclusion criteria were limited to the English language, under the age of 18 years, oncology diagnosis without breast cancer, breast cancer without surgery, and any publication prior to 10 years. Please refer to Figure 1 for the flow diagram of the comprehensive search strategy process. After reviewing the above studies, the following gaps in the literature were encountered.

Needs and Gaps in Literature

Lack of a holistic treatment approach. Currently, OT lacks comprehensive interventions addressing the physical, emotional, psychological, and spiritual challenges that impact this population’s QoL (Mosher et al., 2013).

Lack of educational resources. Oncology care providers, including OT practitioners, lack advanced skills, in-depth knowledge, and clinical reasoning while working with this population (Nadler et al., 2017; Braveman & Hunter, 2017) and need focused educational resources.

Lack of knowledge on upper extremity exercises. Oncology care providers, including OT practitioners, report a lack of knowledge on the types of exercises, timeline for the different exercises to be incorporated, precautions, and post-surgical complications with the different types of surgeries that this population typically encounters (Nadler et al., 2017).

Lack of multimodal approach to pain management. The literature review reveals a lack of multimodal pain interventions in OT, addressing this population's acute and chronic pain (Bahrami et al., 2012).

Lack of patient knowledge of lymphedema. An area of concern is that post-surgical breast cancer survivors often avoid using their affected arm due to fear of causing or increasing lymphedema (Keilani et al., 2016).

Lack of functional activities incorporated in therapy. The literature lacks incorporation of occupation-based functional activities as part of therapeutic treatment interventions.

Lack of research. The published evidence lacks research conducted by OT practitioners, as most of the research projects are conducted by surgeons, physical therapists (PTs), dietitians, and oncology nurses. Per Braveman and Hunter (2017), OT practitioners need to be involved in conducting more research in the field of oncology, as only a handful of studies include OT.

Lack of population-specific practice guidelines. Braveman and Hunter (2017) published general OT practice guidelines for cancer rehabilitation, which is found to be lacking in recommendations to target the problems specifically encountered by post-surgical breast cancer survivors.

Methods

The *Occupational Therapy Practice Guidelines for Post-Surgical Breast Cancer Survivors* were developed after intensive review of current research studies and the published

literature on the efficacy of biomechanical assessments and interventions within the scope of OT. The following methods were incorporated to create the comprehensive, evidence-based OT practice guidelines.

I. Literature Review (Figure 1)

An exhaustive literature review was conducted using multiple electronic databases and hand searching of cited references as listed in the Database Search section. Please refer to figure 1 for the flow diagram of the comprehensive search strategy process.

II. Needs Assessment (Table 1)

A needs assessment was completed to determine the usefulness of population-specific practice guidelines as a tool to improve the quality of healthcare, improve client satisfaction, and to promote high-quality OT services to post-surgical breast cancer survivors. Upon completing the needs assessment, it was determined that population-specific OT CPGs to target the unique challenges encountered by post-surgical breast cancer survivors was needed to improve their functional abilities.

III. Communication (Form A)

Unstructured interviews and meetings were conducted with the oncology surgeons, oncologists, oncology nursing staff, PTs, and other healthcare professionals to provide information on the benefits of OT to address the rehabilitation needs of post-surgical breast cancer survivors. The following are a sample of topics discussed during the interviews; defining the scope of OT, educating the client on energy conservation techniques, grading of functional activities and tasks to improve performance of daily activities, using non-pharmacological pain management techniques such as myofascial massage and positioning, educating the client on the effectiveness of decreasing lymphedema through exercises, massage strokes, and compression

garments, addressing emotional concerns such as body image issues, and explaining how OT practitioners can offer options to address the client's spiritual needs. Additionally, blank referral forms for OT (Form A) and business cards with contact information were provided to healthcare professionals to improve the workflow process. The outpatient OT department noted an increase in OT referrals to evaluate post-surgical breast cancer survivors in the weeks following the interdisciplinary meetings. It is recommended to continue to meet with the team every quarter.

IV. Evidence Table (Table 2)

A total of 29 relevant research studies were reviewed for their research design, level of evidence, and efficacy of their interventions. A summary of these findings is provided in the evidence table (Table 2). All studies identified in this review were within the scope of OT rehabilitation. The reader is advised to refer to the full-length articles for a thorough understanding of the studies listed under the reference section.

V. Appraisal Tool (Table 3)

The Grade Definitions Rating System by U.S. Preventive Services Task Force, 2016, is an appraisal tool used in the CPGs to rate the interventions by their quality and strength and grouped per the area of interest. Braveman and Hunter (2017) support using this tool in *Occupational Therapy Practice Guidelines for Cancer Rehabilitation with Adults*. The practice guidelines have incorporated this appraisal tool to rate the strength and quality of the treatment interventions and grouped them as *Strong, Moderate, Limited, or Insufficient Evidence* based on available evidence and clinical expertise. It is advised that these recommendations be used as a guide and resource while working with this population. Please refer to Table 3 for details on this rating system.

VI. Application of Theory to Practice Guidelines

Biomechanical frame of reference. Per Turpin and Iwama (2011), the biomechanical frame of reference (FOR) emphasizes the prevention and reduction of deformity and impairment. The biomechanical perspective was used as a guide to explore assessments and interventions that addressed range of motion (ROM), strength, pain, sensation, edema, and scarring to enable the patient to improve their functional abilities.

Person-Environment-Occupation model (Figure 2). The Person-Environment-Occupation (PEO) theoretical model (Law et al., 1996) was used in combination with the biomechanical perspective to develop these practice guidelines, as the PEO model emphasizes a holistic approach to addressing the physical, emotional, psychological, and spiritual needs of this population to improve occupational performance. Please refer to Figure 2 for the PEO model diagram as applicable to post-surgical breast cancer survivors.

VII. OT Evaluation: Post-Surgical Breast Cancer Survivors (Appendix A).

Using the OT theoretical model of PEO and the biomechanical FOR, the OT practitioner, in collaboration with the client, should complete a comprehensive assessment and develop a plan of care with interventions that improve functional outcomes and optimize QoL for post-surgical breast cancer survivors. Recommendations on assessment tools and functional outcome measures to conduct a comprehensive evaluation have been discussed in this section. Please refer to Table 4 for the list of selected assessments and functional outcome tools suggested for this population.

VIII. Functional Outcome Measures (Forms B, C, & D)

The recommended functional outcome measures for this target population are the Shoulder Pain and Disability Index (SPADI) (Form B) for shoulder pain and disability (Breckenridge & McAuley, 2011), Short Form-12 Health Survey (SF-12) (Form C) for mental health and physical factors affecting QoL (Delgado-Sanz et al., 2011), and Functional

Assessment of Cancer Therapy-Breast (FACT-B) (Form D) for a population-specific outcome measure for QoL for post-surgical breast cancer survivors (Chopra & Kamal, 2012). Please refer to Forms B, C, and D for copies of these outcome measures. Additional assessment tools and outcome measures have been discussed in the *Occupational Therapy Evaluation: Post-Surgical Breast Cancer Survivors* section of this paper.

IX. Interventions that Address Symptom Management (Appendix B).

i. Interdisciplinary approach to address cancer rehabilitation. OT practitioners are encouraged to be a part of the interdisciplinary rehabilitation team to improve function and influence the QoL of this population (Silver & Gilchrist, 2011).

ii. Special considerations for post-surgical interventions for breast cancer. Post-surgical precautions, depending on the type of surgery, have been discussed under this section. It has been strongly emphasized that the OT practitioner should review the therapy order, consult with the physician with any concerns or questions, adhere to the surgical precautions during therapy, and teach clients how to adhere to these precautions while engaging in daily activities (Braveman & Hunter, 2017).

iii. Interventions to address physical needs. Based on clinical expertise and available research, OT interventions that address the physical symptoms of limited upper extremity ROM, weakness, scarring, AWS/cording, pain, and lymphedema have been reviewed under this section. A list of recommended upper extremity exercises for post-surgical breast cancer survivors has been provided under Appendix C. These exercises are intended to be used by the therapist as a guide and should be modified based on the therapist's clinical judgment, the timeline of healing, and patient tolerance.

iv. Interventions to address activities of daily living needs. OT interventions that address cancer-related fatigue with ways to incorporate meaningful activities using energy conservation techniques, grading functional tasks, and modifications to the environment to improve safety and functional abilities have been discussed in this section.

v. Interventions to address psychosocial needs. OT interventions that address the challenges of stress and anxiety related to fear of morbidity, mortality, and body image issues have been discussed under this section.

vi. Interventions to address spiritual needs. The client may not be able to physically attend their place of worship due to their immunocompromised system, pain, fatigue, and other challenges. OT interventions that address this challenge by providing different options to enable the client to continue to address their spiritual needs have been discussed under this section.

X. Case Study: Application of the Clinical Practice Guidelines (Appendix D).

A one-person case study was conducted with the application of the CPGs to an individual after surgical interventions for breast cancer. Please refer to Appendix D for details of the case study.

Results

The Occupational Therapy Practice Guidelines for Post-Surgical Breast Cancer Survivors were developed by integrating evidence-based research with clinical expertise to address client needs, wants, and preferences. The practice guidelines provide detailed information and recommendations on assessment tools and treatment interventions that may be effective at increasing functional outcomes for post-surgical breast cancer survivors. The practice guidelines' effectiveness was assessed with its application to a one-person case study, with positive improvements noted in the individual's functional outcomes and QoL after surgical

interventions for breast cancer. The client was assessed using population-specific, evidence-based OT assessments and provided with treatment interventions, focusing on an interdisciplinary, multimodal, and holistic approach as recommended by the evidence. OT was provided by a licensed OT practitioner in a hospital-based outpatient clinic three times a week for six weeks. The client's initial evaluation and discharge scores were recorded on the functional outcome measures of the SPADI for the pain and disability and the FACT-B Total Score for the perceived QoL. Please refer to the table below for details of the client's recorded scores on these functional outcome measures.

Case-Study - Scores on the SPADI and FACT-B Outcome Measures

Functional Outcome Measure	Evaluation Scores	Discharge Scores	Change in Scores	Minimal Clinically Important Difference
SPADI - Pain	48 %	26 %	(-) 22 %	(-) 8 % for decrease in pain (rehabmeasures.org, 2015)
SPADI - Disability	57.5 %	8.8 %	(-) 48.7 %	(-) 10 % for decrease in disability (rehabmeasures.org, 2015)
FACT-B Total Score - Perceived QoL	96 points	115 points	(+) 19 points	(+) 6.6 points for improvement of QoL (Brady et al., 1997)

Discussion

The Occupational Therapy Practice Guidelines for Post-Surgical Breast Cancer Survivors provides persuasive evidence that the suggested approaches effectively increase functional outcomes for individuals after surgical interventions for breast cancer. Many cancer survivors live with significant disabilities due to the diagnosis and side effects of cancer

treatments (Silver & Gilchrist, 2011). Post-surgical breast cancer survivors encounter additional population-specific challenges due to post-surgical complications, cancer-related fatigue, pain, lymphedema concerns, and psychological problems (Nadler et al., 2017; Braveman & Hunter, 2017). The literature review reveals a lack of educational resources, in-depth knowledge, and advanced skills that the OT practitioners need to safely assess and provide effective interventions while working with this population (Nadler et al., 2017; Braveman & Hunter, 2017). The CPGs provide the OT practitioners with evidence-based best practice assessments and interventions that are population-specific, holistic, multimodal, and with an interdisciplinary approach to improve this population's functional abilities and QoL.

Syntheses of the guideline recommendations are summarized based on applying the theoretical model of PEO (Law et al., 1996) and the biomechanical FOR to the external evidence. Additionally, the application of the suggested CPGs to OT practice using a one-person case study is summarized below. The literature review and the case study outcomes provide convincing evidence on the practical value of the CPGs for OT practitioners treating post-surgical breast cancer survivors.

Findings to Theory

I. PEO Model. The CPGs uses the PEO theoretical model to address the different components of the Person, Environment, and Occupation.

Person. The CPGs holistically addresses the person component. Post-surgical breast cancer survivors typically encounter physical, emotional, psychological, and spiritual challenges that are profound. It is essential to incorporate meaningful activities and graded physical exercises to improve ROM, strength, posture, and function. Additionally, education on the principles of energy conservation techniques of pacing, prioritizing, and planning their daily

routines to decrease fatigue is recommended. Relaxation techniques with breathing exercises, myofascial massage, yoga, meditation, and music should be part of their therapy, as it has positive outcomes with this population (Bahrami et al., 2012; Lafçi & Öztunç, 2015). The emotional, psychological, and spiritual challenges have been addressed in detail in the CPGs.

Environment. The environment in the PEO model is used in a broad sense to include the physical, social, cultural, and socioeconomic context. The challenges encountered in this area have been addressed through education and modifying the physical barriers in the home using adaptive equipment and home modifications for the client's safety and function. Additionally, addressing social support is essential when coping with malignant disease (Chu et al., 2016).

Occupation. The OT practitioner should consider all aspects of the person's self-care, work, and leisure activities during treatment. Per Bilodeau et al. (2017), an interdisciplinary approach is essential for considering a return to work on the continuum of cancer care. Leisure tasks that are important to the client need to be addressed during therapy as a domain of occupation (AOTA, 2020). Improving the person's ability to perform self-care tasks, work, and leisure can potentially impact their QoL.

Occupational performance. The outcome of applying the CPGs to post-surgical breast cancer survivors is to optimize occupational performance. The objective is to consider the client factors, performance patterns, contexts, and improve performance skill areas listed in the fourth edition of the *Occupational Therapy Practice Framework: Domain and Process [OTPF-4]* (AOTA, 2020). The goal is to improve occupational performance through improved functional outcomes and QoL for post-surgical breast cancer survivors.

II. Biomechanical Frame of Reference. In addition to the PEO model, the biomechanical FOR is used as a guide, as this FOR emphasizes prevention and reduction of

deformity and impairment (Turpin & Iwama, 2011). The biomechanical FOR will guide the assessment and interventions for the restoration of ROM, strength, pain, sensation, edema management, scarring, and wound care. These are all vital components of the OT assessment and treatment of post-surgical breast cancer survivors. This FOR is closely tied to the medical model, and collaboration is strong between the surgeon and the therapist. Goals will focus on improving motion, strength, and decreasing pain, scarring, and edema to enable the patient to resume their meaningful occupations of self-care needs, work, and leisure activities with family and friends.

Findings to Practice - Case Study

The proposed CPGs were implemented using a single participant case study design in a hospital-based outpatient OT department. Improvements in the client's ipsilateral shoulder ROM, strength, decrease in scarring, and resolution of the AWS were indicated by implementing the assessments and interventions suggested in the CPGs. No edema was noted the upper extremities from circumferential measurements taken. The client was proactively referred for a consultation with a lymphedema specialist due to lymph nodes removed during surgery. The client's pain was managed with multimodal techniques with a good decrease in pain indicated per change in the SPADI pain scores from evaluation to discharge. The client demonstrated improvements in functional abilities with independence in self-care tasks, participating with simple meal preparation, laundry, light household chores, returning to part-time work, and engaging in leisure activities with the family. The overall scores on the SPADI disability scores indicated a decrease in perceived disability from the time of evaluation to discharge. Additionally, the client could attend to her spiritual needs through online services and eventually attend church services in person. The client demonstrated improved perceived QoL as indicated by the changes in her FACT-B Total scores from evaluation to discharge. The client received interdisciplinary care

with services provided by the OT practitioner, PT, lymphedema specialist, clinical psychologist, oncology nurses, oncologist, and the oncology surgeon. In conclusion, based on the client's satisfaction from her OT interventions, adhering to the recommendations of the CPGs, and from clinical experience, the *Occupational Therapy Practice Guidelines for Post-Surgical Breast Cancer Survivors* effectively increased the client's functional outcomes after surgical interventions for breast cancer.

Implications for Occupational Therapy Practice

As part of the interdisciplinary rehabilitation team, OT practitioners can positively influence the QoL of post-surgical breast cancer survivors by assessing and implementing interventions that address the physical, emotional, spiritual, and psychosocial implications of the disease and cancer treatment complications. However, OT services are currently underutilized within cancer care services in most practice settings (Silver & Gilchrist, 2011). Cancer rehabilitation requires advanced and specific training in oncology rehabilitation due to the complications and problems faced by this population (Silver & Gilchrist, 2011). In keeping with the guidelines of Vision 2025 (AOTA, 2017), the proposed CPGs can provide OT practitioners with a resource on evidence-based OT assessments and interventions to improve the health, well-being, and QoL of post-surgical breast cancer survivors. OT practitioners and students are strongly encouraged to use evidence-based resources to enhance and guide their practice (Braveman & Hunter, 2017). Additionally, the theoretical model of PEO, in combination with the biomechanical FOR, was incorporated to balance both the top-down and the bottom-up approaches therapists might use while addressing the needs of post-surgical breast cancer survivors.

Conclusion

The *Occupational Therapy Practice Guidelines for Post-Surgical Breast Cancer Survivors* were developed to provide the OT practitioner with an educational resource and a guide to address the rehabilitation needs specific to post-surgical breast cancer survivors. The *Occupational Therapy Practice Guidelines for Cancer Rehabilitation with Adults* (Braveman & Hunter, 2017) was used as a foundation for this capstone project to improve the quality and consistency of holistic OT assessments and interventions to increase functional abilities of individuals after surgery for breast cancer. A thorough review of the CPGs will provide OT practitioners with an in-depth understanding of the population-specific challenges of upper extremity weakness, arm pain, lymphedema, limited ROM of the shoulder, cancer-related fatigue, and functional limitations in performing meaningful activities. The guidelines also address the psychological aspects of undergoing breast surgery, body image issues, and fear of morbidity and mortality. The guidelines provide options to meet the client's spiritual needs when immunocompromised system problems, pain, and fatigue limit their ability to attend their place of worship. Additionally, the application of the CPGs to a one-person case study suggests the effectiveness of the guidelines with increases noted in the functional outcomes for the individual post-surgery for breast cancer. To summarize, the *Occupational Therapy Practice Guidelines for Post-Surgical Breast Cancer Survivors* provides a guide and a resource of comprehensive OT assessments and treatment interventions that may be effective at increasing the functional outcomes for individuals after surgical intervention for breast cancer.

Limitations and Recommendations for Future Research

A limitation of the CPGs is that the data collected is limited to a one-person case study. A pilot study to determine the feasibility of a larger, fully powered study would be the recommended next step. Based on that study's outcome, future research studies investigating the

results of implementing the CPGs with a large sample size would allow for generalization of the results to post-surgical breast cancer survivors. Additionally, the application of the CPGs to conduct a qualitative research study could provide in-depth subjective information and identify the essence of the experiences (Phillips-Pula, Strunk, & Pickler, 2011) on functional abilities and QoL of post-surgical breast cancer survivors. Another area for future research is for OT practitioners to explore the benefits of getting involved with breast cancer patients prehabilitation needs. Prehabilitation for cancer is defined as a process that occurs between diagnosis and the start of acute care with a goal to lessen the rehabilitation needs and improve the QoL of this population (Santa Mina et al., 2017).

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Table 1.**Needs Assessment**

Needs Assessment for OT Practice Guidelines for Post-Surgical Breast Cancer Survivors. Date Completed: 1/20/2020					
Clinical Question of Concern under Investigation: What types of occupational therapy interventions are effective at increasing functional outcomes for individuals after surgical interventions for breast cancer?					
Current Outcomes: How things are...	Desired Outcomes: How things should be...	Needs: What is the source of the problem?	Evidence: What does the best available evidence tell us?	Project Steps: What are we going to do about it?	Evaluation Items: How do we measure indications of project success?
<p>□ Cancer continues to grow at an alarming rate globally and in the United States. For 2019, it was estimated that there will be 1,762,450 new cases of cancer and 271,271 new cases of breast cancer diagnosed in the United States (American Cancer Society [ACS], 2018).</p> <p>□ For breast cancer diagnosis, surgery continues to be the most common treatment for the patient (Chan et al., 2010).</p>	<p>□ For effective and quality rehabilitation, the needs of this population should be addressed using a holistic approach considering their physical, emotional, psychological, and spiritual needs (Currid et al., 2011; Mosher et al., 2013).</p> <p>□ There should be a multimodal and interdisciplinary approach to cancer care to improve the clinically relevant outcomes for post-surgical breast cancer</p>	<p>□ The need is for OTs to be a part of the rehabilitation team for holistic rehabilitation as post-surgical complications and the diagnosis of breast cancer typically present with numerous physical, emotional, psychological, and spiritual challenges that impact this population's QoL (Mosher et al., 2013; Ram et al., 2013).</p> <p>□ The need is for OTs to incorporate graded, meaningful activities during rehabilitation to</p>	<p>□ Best available evidence strongly recommends a holistic approach to rehabilitation with post-surgical breast cancer survivors (Currid et al., 2011; Mosher et al., 2013).</p> <p>□ OT treatment protocols incorporating graded functional activities typically improve engagement in meaningful activities and the perceived QoL of this population (Mirandola et al., 2018; Park, 2017; Ibrahim & Al-Homaidh, 2011).</p>	<p>□ Review the current literature for best available evidence for occupational therapy rehabilitation with post-surgical breast cancer survivors.</p> <ul style="list-style-type: none"> • Create an Evidence Table to summarize the research design, efficacy of the interventions, and findings of the relevant studies. • Implement an Appraisal Tool to determine the quality and strength of the OT interventions and to 	<p>□ Recommend use of standardized functional outcome measures to detect and measure changes through self-administered outcome measures that are short, easy to understand, and have good psychometric properties (Breckenridge & McAuley, 2011; Chopra & Kamal, 2012; Delgado-Sanz et al., 2011).</p> <p>□ The Shoulder Pain and Disability Index (SPADI), Short Form-12 Health Survey (SF-</p>

<p>□ There are different options and types of surgeries; radical mastectomy, modified radical mastectomy, axillary lymph node dissection, and reconstructive breast surgeries; breast implants, Latissimus Flaps, Transverse Rectus Abdominis Myocutaneous (TRAM) Flap, and Deep Inferior Epigastric Perforator (DIEP) (Loh & Musa, 2015; Chan et al., 2010).</p> <p>□ The post-surgical breast cancer survivors present with a unique set of problems, challenges, and complications in addition to the problems typically faced by patients dealing with cancer (Testa et al., 2014; Thavarajah et al., 2015).</p> <p>□ Current treatment protocols lack focus on the wide range of medical, emotional, and practical challenges that impact the QoL of breast cancer survivors (Mosher et al., 2013).</p>	<p>patients (Santa Mina et al., 2017).</p> <p>□ Treatment guidelines, skills training, educational resources for effective therapy interventions should be accessible to the oncology care providers to provide safe and effective rehabilitation (Braveman & Hunter, 2017; Nadler et al., 2017).</p>	<p>improve this population's functional abilities and QoL (Ibrahim & Al-Homaidh, 2011; Fong et al., 2018).</p> <p>□ The need is for OTs to incorporate structured exercises and to provide education on types of exercises that this population can safely perform due to cancer-related fatigue, pain, and post-surgical complications (Nadler, 2017; Amatya et al., 2017).</p> <p>□ The need is for OTs to provide multimodal interventions for pain and stress management as 30%-50% of post-surgical breast cancer patients' will experience pain (Mosher et al., 2013; Bahrami et al., 2012).</p> <p>□ The need is for OTs to provide education on lymphedema, as the post-surgical breast cancer survivor often does not use the affected arm due to fear of causing and increasing lymphedema</p>	<p>□ OT exercises incorporating range of motion, stretching, and strengthening are associated with improved motion, decreased pain, improved posture, and improved functional abilities (De Groef et al., 2015; Loh & Musa, 2015; Park, 2017; Yang et al., 2018; Galantino & Stout, 2013; Baima et al., 2017).</p> <p>□ Best available evidence reveals that OTs should incorporate mindfulness techniques, yoga, music, breathing exercises, and myofascial massage are important interventions to decrease pain, stress, and anxiety for this population (Bahrami et al., 2012; Massingill et al., 2018; Drackley et al., 2012; Lafci & Oztunc, 2015).</p> <p>□ Exercises and physical activities are beneficial and help decrease lymphedema (Chan et al., 2010; Park, 2017).</p> <p>□ Best available evidence reveals that OT educational resources, skills training, and practice guidelines are essential and should be accessible to OTs for safe</p>	<p>group them per area of interest.</p> <ul style="list-style-type: none"> • Application of OT theory to practice guidelines. Use of the PEO and Biomechanical frame of reference to guide the interventions for OT in the practice guidelines. • Create clinical practice guidelines with evidence-based OT assessments and interventions that address symptom management for the post-surgical breast cancer survivors. • Implementation of the OT practice guidelines to a one-study participant to assess the effectiveness of the recommended interventions. <p>□ Disseminate knowledge by creating, presenting it to other OTs, and publishing the OT practice guidelines to holistically address the unique set of challenges and</p>	<p>12), and Functional Assessment of Cancer Therapy-Breast (FACT-B) are recommended outcome measures that assess and monitor changes in shoulder pain, function, and the perceived QoL for this population (Neuner et al., 2014; Roy, MacDermid et al., 2009; Thoomes-de Graaf et al., 2016).</p> <ul style="list-style-type: none"> • Implementation of the practice guidelines on a one-study participant and measuring the effectiveness based on the minimal clinically important difference (MCID) for the outcome measures.
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		<p>(Keilani et al., 2016; Park, 2017; Chan et al., 2010).</p> <p>□ The need is for advanced occupational therapy skills, in-depth knowledge, and clinical reasoning while working with this population (Braveman & Hunter, 2017).</p>	<p>and effective rehabilitation for this population (Nadler, 2017; Braveman & Hunter, 2017).</p>	<p>complications that are typically encountered by post-surgical breast cancer survivors.</p> <p>□ Continue to communicate with the oncology surgeons, post-surgical breast cancer survivors, occupational therapists, and other healthcare professionals for their guidance and expertise on effectively addressing the needs of this population.</p>	
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Table 2
Evidence Table

Author/Year	Level of Evidence/Study Design	Purpose of Study	Participants	Interventions	Results	Strengths/Weaknesses of study
Park (2017). https://doi.org/10.1007/s12282-016-0747-7	Level I Randomized Controlled Trial	Effects of Complex exercises versus conventional decongestive therapy on shoulder motion and pain, from lymphedema for post mastectomy patients.	-RCT study with 69 participants. The Complex Exercise group 1, n=35, and Conventional Decongestive therapy group 2, n=34. -Adults with breast cancer related lymphedema who had undergone mastectomy.	-The Complex Exercise group performed structured exercises. -The Conventional Decongestive Therapy performed lymphedema management. -Use of the VAS and the goniometer. ANOVA with pre-and post-was measured within and between the two groups.	- Structured exercises improved ROM and decreased pain to the upper extremity -No increase in lymphedema was noted with the exercises. -Patients with decreased pain and improved ROM, tend to have improved ability to participate with functional activities and have improved quality of life.	<u>Strengths:</u> -The assessors were blinded to group allocation -Licensed OT's conducted the therapy programs. -Reliable and valid outcome tools such as the VAS and goniometer were used. <u>Weaknesses:</u> -10% dropout rate -No outcome tools to measure quality of life even though it is mentioned.
Chan et al. (2010). 10.1002/cncr.27476	Level I Systematic Review	Effectiveness of exercise programs on shoulder mobility and lymphedema.	Six RCTs from 2002 to 2008 of women with axillary lymph node dissection. There was an average of 27 to 205 participants. Mean age<60 years.	Different treatment strategies with use of various exercise programs were including: weight training, aerobics, stretching, and ROM exercises.	-Early exercises avoided deterioration of shoulder ROM for post-surgical breast cancer patients. -There was no increase of post-operative lymphedema with exercises.	<u>Strengths:</u> This study did a thorough review of literature conducted of RCT studies done from 2002-2008. <u>Weaknesses:</u> -English only studies were reviewed.
Baima et al. (2017). 10.1007/s13187-015-0940-y	Level I Randomized Controlled Trial	To determine the effectiveness of an Independent home exercise program to improve shoulder motion, pain, and strength for improved quality of life in the post-surgical breast cancer population	- RCT study with 60 participants in two groups. The in-person teaching group1, n=36, and video training group 2, n=24. Participants for this study had breast cancer with surgery. -Ages were between 35 to 81 years.	Three types of shoulder exercises; Codman's, scapular squeezes, and supine shoulder flexion exercises were performed in this study.	No difference between the in-person teaching, n=29, and video training, n=5 in outcomes for shoulder ROM. No significant difference in the pain scores between the two groups.	<u>Strengths:</u> Different ways of providing treatment with a home program. <u>Weaknesses:</u> -Limited sample size, significant differences in the two groups, variability of the surgery types, and poor inter-rater reliability. -Some participants did additional exercises outside of the study.

Table 2
Evidence Table

Author/Year	Level of Evidence	Purpose of Study	Participants	Interventions	Results	Strengths/Weaknesses
De Groef et al. (2015). https://doi.org/10.1016/j.apmr.2015.01.006	Level I Systematic Review	To review the effectiveness of postoperative exercise modalities for the treatment of pain and impaired ROM of the shoulder for breast cancer patients.	18 RCTs reviewed. N=30 to 344 subjects in the different studies. Sixteen studies specified that all subjects were women.	Four categories of interventions were studied; stretching, AROM/AAROM, passive mobilizations, and multifactorial.	-Active exercises, manual stretching, education with a home program, was beneficial for improving shoulder ROM, and decreasing pain. -Low load exercises postoperatively, and after 7-10 days, implementing an increase in the intensity by a skilled therapist.	<u>Strengths:</u> -Comprehensive literature review. -The search included English, French, and Dutch articles. <u>Weaknesses:</u> -Ages not provided. -Different types of interventions, outcome tools, and different timing of implementation of the exercises
Loh and Musa (2015). 10.2147/BCTT.S47012	Level I Systematic Review	A systematic review of effectiveness of rehabilitation methods in the post-operative breast cancer patients. Areas considered were physical, nutritional, occupational, cognitive, and psychological outcomes.	- 7 studies consisting of different study designs from 2009-2014. -Adults 18 years and older. Females with post-surgical breast cancer were included. -Ages ranged from 46.3 to 62.1 years. -Total number of participants ranged from 193 to 5645.	Interventions included skilled therapist PT and OT's providing different types of exercises (weight training, home based exercises). Psychosocial (CBT), Alternative/Complementary (Yoga), and Nutritional interventions also provided.	Exercise improved shoulder function, movement, strength, and wound healing, regardless of type of exercise or time of implementation. Other outcomes were not conclusive for benefits of nutrition, social, emotional and cognitive functioning.	<u>Strengths:</u> Holistic approach to problems with post-surgical breast cancer patients. <u>Weaknesses:</u> -Only full text English studies -inconsistent criteria for inclusion and exclusion of subjects made it difficult to extract and synthesize the data.
Testa et al. (2014). https://doi.org/10.1186/1753-6561-7-S1-O5	Level I Randomized Controlled Trial	To evaluate the functional improvements of shoulder mobility, analgesic effects of EPRB and its effects on QOL	RCT with n=70 women, from March 2010 to February 2011. Mean age = 54.3 yrs. Subjects were from an inpatient and outpatient clinic, planned for radical or segmental mastectomy with axillary dissection.	Subjects were assessed preoperatively for QOL with EORTC QLQ-30 and EORTC QLQ-BR23 questionnaires. They were assessed for ROM of the shoulder using a goniometer, and pain was assessed with the VAS. -Details of the different exercises provided.	Preoperatively there was no significant difference in the two groups. -At 12 months, the pain decreased for the treatment group. -Shoulder motion was improved in all ranges at operative day five. -QOL at six months improved for the treatment group in functional, emotional, and social functioning	<u>Strengths:</u> -Large sample size of 70 participants in this study. -Clear timeline of the exercise protocol listed in the study. <u>Weaknesses:</u> -Study was limited to only one hospital. Generalization of the sample used is weak.

Table 2
Evidence Table

Author/Year	Level of Evidence	Purpose of Study	Participants	Interventions	Results	Strengths/Weaknesses
Yang et al. (2018). 10.1097/MRR.000000 0000000288	Level I Systematic Review.	Systematic review of preoperative exercise on improving ipsilateral extremity function post-surgery for breast cancer.	Six studies with two RCTs of moderate quality, and three Prospective Cohort studies, and one prospective observational study - Sample size varied from 30 to 396 subjects. -Age range was from 35-81 years	Four of the studies had preoperative exercise programs. Two of the studies measured the preoperative functional level, pain, and ROM, with no intervention provided to this group. Comparisons of activity level prior to surgery and their ROM, pain, and strength post-operatively.	-Results from each study had improvements in their shoulder ROM and decreased pain as compared to the non-exercise group. -Patients with higher baseline activity level reported a better sense of wellbeing and healing.	<u>Strengths:</u> Good inclusion and exclusion criteria listed. <u>Weaknesses:</u> -The quality of the studies was of low to moderate quality. -The sample size was small for the RCTs and there was no blinding of subjects or assessor. -Only English and published articles were reviewed.
Bahrami et al. (2012). https://www.ncbi.nlm.nih.gov/pubmed/23922580	Level I Randomized Controlled Trial	The aim of this RCT study was to determine the effectiveness of pain management post-surgery for breast cancer using non-pharmacological interventions.	A RCT with 70 post-surgical breast cancer patients were studied during a four-month period	Multimodal pain management techniques of relaxation methods and breathing exercises, compassionate care by the oncology team, and providing information pain management techniques.	Providing the patient with knowledge regarding cancer pain management techniques had improved ability to perform daily activities with less interference from the pain. Breathing techniques and relaxation methods reported better pain control.	<u>Strengths:</u> -Good use of statistical tests in this study. <u>Weaknesses:</u> -Poor description of the relaxation methods used in this study. -Study did not mention if pharmacologic interventions were used post-surgery and for how long.
Garssen et al. (2013). 10.1002/pon.3034	Level I Randomized Controlled Trial	This study evaluated the effectiveness of stress management training on addressing the psychological effects of post-operative breast cancer survivors.	A RCT with 70 post-surgical breast cancer patients were included in this study.	Stress management techniques of guided imagery, meditation, mindfulness, and counselling with a trained psychologist were conducted during four sessions in a 90-day period after surgery.	Patients rated 8.1 to 8.6 out of 10 for satisfaction from these sessions. Improved QoL was reported by the participants who received the stress management counselling.	<u>Strengths:</u> Numerous valid outcome measures used <u>Weaknesses:</u> -Only four sessions were implemented during the 90-day period. -Small sample size -Placebo of session with psychologist affected outcomes.

Table 2
Evidence Table

Author/Year	Level of Evidence	Purpose of Study	Participants	Interventions	Results	Strengths/Weaknesses
Massingill et al. (2018). PMID: 30108667	Level I Randomized Controlled Trial	This study was to determine the value of myofascial massage provided over eight weeks, to address pain and limited mobility following breast cancer surgery.	-Total number of participants n=21. -The experimental group received myofascial massage and the control group received relaxation massages over a period of eight weeks. -Participants were 18 years and older who had undergone breast cancer surgery 3-18 months prior to the study.	A total of 16 sessions of massage; myofascial for one group and Swedish massage for the control group by licensed massage therapists. -The SF-12 for QoL, McGill Pain Questionnaire, and a survey developed by Wingate completed.	There was a significant improvement in the QoL, decrease in pain, and improvements in mobility with the myofascial massage group and no change in the Swedish massage control group.	<u>Strengths:</u> -Well defined criteria for subject selection and equal amount of time and attention provided to both groups. <u>Weaknesses:</u> -Small sample size used in the study. -Study conducted at one hospital. -Physical therapy treatments not considered
Ibrahim and Al-Homaidh (2011). 10.1007/s12032-010-9536-x	Level I Meta-Analysis Study	Meta-analysis of six research studies to determine the effects of physical activity on breast cancer outcomes.	A total of six research studies were included with varying research designs. There was a total of 12,108 women included in the six studies.	Different levels of physical activity were considered based per the metabolic equivalents (MET-h/week).	All levels of physical activity support evidence on breast cancer outcomes with studies reporting reduced breast cancer mortality by 30% to 41 %.	<u>Strengths:</u> -Large sample size considered between the six studies. <u>Weaknesses:</u> -Different studies had different cut offs for measuring the MET-hr/week and rating the level of activity. -The activity levels were self-reported by the participants. No objective measurements were taken.
Keilani et al. (2016). 10.1007/s00520-015-3068-z	Level I Systematic Review.	To determine effects of strength exercise on secondary lymphedema in breast cancer patients.	Total of nine studies of different research designs were included. This study did not include the total number of participants in the nine studies.	Lymphedema was measured circumferentially, volumetric measurements, and with the use of a BIS. Studies reported different types of strength training used. FACT-B QoL questionnaire was used in four of the nine studies.	The overall conclusion was that safe resistive exercises are not contraindicated for lymphedema but may be beneficial in reducing it.	<u>Strengths:</u> -Outcome measures and tools of good psychometric properties were used in these studies. <u>Weaknesses:</u> -Some of the studies used are over outdated; over 10 years ago.

Table 2
Evidence Table

Author/Year	Level of Evidence	Purpose of Study	Participants	Interventions	Results	Strengths/Weaknesses
Lafci and Oztunc (2015). www.internationaljournalofcaringsciences.org	Level I Randomized Controlled Trial	RCT study to investigate the effects of music on sleep quality in breast cancer patients	RCT with n=30. Experimental group was provided with relaxing Turkish music from 9:00 pm till 1:00 am for seven consecutive nights. The control group was not allowed to listen to any music and no treatment was provided to this group.	The VAS scores and the PSQI for sleep quality scores were recorded at the first meeting and then after the experiment was conducted for seven nights.	Relaxing music improved the quality of sleep and reduced insomnia caused by breast cancer and cancer-related treatments.	<u>Strengths:</u> -The results show positive effects on sleep quality and decrease in pain for this population. <u>Weaknesses:</u> -Small sample size used. -Only a one week study period was used which may not be sufficient to draw conclusions about the sustainability of the outcomes.
Zhou et al. (2015). 10.1371/journal.pone.0131802	Level I Meta-Analysis Study	A meta-analysis was conducted on 11 RCTs studying the effects of expressive writing on the physical and psychological health of breast cancer patients, including post-surgical patients.	Review of 11 RCTs were performed that included breast cancer patients with different treatments received and the use of expressive writing with its impact of the physical and psychological health of the participants.	The analysis was conducted by grouping the RCTs by the outcome measures of physical health and psychological health and the follow-up data from time of pre-surgery to post-surgery.	This study revealed that there was a short-term positive effect of expressive writing on the physical health of the participant for three months or less with no long-term effects. There was no significant change in the psychological health from expressive writing.	<u>Strengths:</u> -There were many participants, 1,178, included in the 11 RCTs. <u>Weaknesses:</u> -Data analysis was not described. -Interventions used in the studies were not well defined.
Kasawara et al. (2018). https://10.1080/09593985.2017.1419522	Level I Meta-Analysis Study	To study the effects of Kinesio Taping (KT) on lymphedema secondary to mastectomy related to breast cancer.	Seven studies were included in this study. Studies were mainly randomized pilot studies. Total number of participants included were 303 women lymphedemas secondary to mastectomy.	Different studies used different outcome measures and tools for assessing lymphedema and pain. Volumetric, BIS, circumferential measurements were used for measuring lymphedema. VAS was used for pain in some studies. The EORTC was used for QoL in some of the studies.	The meta-analysis revealed KT had positive effects on reducing upper limb lymphedema by increasing lymph flow. Additionally, KT had positive effects on reducing pain to the affected arm. Application of the KT ranged from 3 X week for 3 weeks to 5 X week for 4 weeks, depending on the study.	<u>Strengths:</u> -Large number of participants were included. <u>Weaknesses:</u> -Poor quality of studies included in the meta-analysis.

Table 2
Evidence Table

Author/Year	Level of Evidence	Purpose of Study	Participants	Interventions	Results	Strengths/Weaknesses
Datar and Jagtap (2019). 105-111. 10.5958/0973-5674.2019.00055.8	Level I Randomized Controlled Trial	To study the effect of myofascial release and stretching on Axillary Web Syndrome.	Post-surgical breast cancer survivors n=20. Two groups of 10 participants in each group. Group A was provided with myofascial release and moist heat for four weeks. Group B was provided with stretching exercises and moist heat for four weeks.	The VAS for pain, goniometer for ROM measurements, and DASH for functional limitations were assessment tools used in this study.	This study revealed that myofascial release showed significant improvements over stretching exercises to decrease pain, improve shoulder mobility, and improve function for patients with Axillary Web Syndrome.	<u>Strengths:</u> -Assessment tools with good psychometric properties were used in this study. <u>Weaknesses:</u> -Small sample size. -Details of the myofascial release and exercises not clearly defined.
Jensen-Johansen et al. (2018). 10.1371/journal.pone.0192729	Level I Randomized Controlled Trial	The objective of this study was to examine the effects of expressive writing to improve physical symptoms, regulate emotional health with a reduced number of visits to the physician.	This study had 507 post-surgical breast cancer patients between the ages of 27-70 years. Experimental group n=253, and control group n=254. Patients were between 8 and 12 weeks' post-surgery.	Numerous self-reported questionnaires were used in this study; PHQ-15, MCS-D, TAS-20, ECQ-R, and SCS-C. Participants were instructed to write 20 minutes, once a week for three weeks.	The results indicated that there were no significant differences in physical outcomes with expressive writing with this population. There were small differences noted with emotional health with writing about their own cancer.	<u>Strengths:</u> -Large sample used in this study. -Outcome measures with good psychometric properties, per the study. <u>Weaknesses:</u> -change in the study design from three groups to two groups due to statistical power considerations
Smykla et al. (2013). https://doi.org/10.1155/2013/767106	Level I Randomized Controlled Trial	The aim of this study was to assess the efficacy of Kinesio Taping for women with breast cancer related lymphedema.	Total of 65 women post breast cancer surgery. Group 1 n=20 with K-T, Group 2 n=22 with Kinesio Taping w/ surgical plasters, and Group 3 n=23 with compression dressing.	A licensed physical therapist performed the treatments for all three groups, 3 X week for 4 weeks. An optoelectronic Perometer was used for measuring edema.	The study revealed that the Kinesio Taping minimally decreased lymphedema but was not as effective as the multi-layered compression dressings.	<u>Strengths:</u> -Licensed therapist performed the treatments for all three groups. <u>Weaknesses:</u> -Poor description of the taping in group 2. -Small sample size.
Ram et al. (2013). 10.4103/0973-1075.110234	Level II Non-randomized trial with two groups.	To study the effectiveness of group psycho-education on depression and QoL of breast cancer survivors who had recently undergone different treatments.	Non-randomized trial with 34 adult women suffering from metastatic breast cancer and received treatment for it. Women were of various age groups.	The experimental group received group psycho-education to improve well-being and decrease depression. The Well-Being Index Five was administered as pre- and post-test.	This study revealed that 97.1% of the experimental group reported an improved state of well-being and decreased anger and depression after group psycho-education.	<u>Strengths:</u> Decrease in anger and depression with psycho-education. <u>Weaknesses:</u> -Lacking results of the control group. -Small sample size. -reduces generalizability.

Table 2
Evidence Table

Author/Year	Level of Evidence	Purpose of Study	Participants	Interventions	Results	Strengths/Weaknesses
Mirandola et al. (2018). https://doi.org/10.1007/s00520-017-3930-2	Level III Longitudinal Assessment Cohort Study.	To study the positive effects of Adapted Physical Activity (APA) protocol to the benefits on shoulder-arm mobility and QOL for post-surgical breast cancer survivors.	N=140 completed the APA intervention and n=112 at the 8 wks. and n=20 at the 1.5 yrs. Age range= 36 to 76 years. - Longitudinal Assessment cohort study to assess the outcomes at 8 wks., and at 1.5 yrs.	-Baseline assessment for AROM of shoulder & sit and reach test. - interventions from a previously used protocol published by Mirandola et al. (2014). -ROM exercises, postural exercises, circuit exercise training, low resistive exercises, and breathing exercises were used at different stages of the program.	-Statistically significant increase in surgical shoulder ROM and mobility at 8wk of APA intervention. Improvements in the SF-12 scores for improved mental and physical scores. -Pain was decreased for the shoulder at the 8wk time. -At 1.5 yr., the QOL scores on physical was lower due to guarding and decreased use of the arm.	<u>Strengths:</u> This study looked at the effects of APA after an extended period; at 1.5 yrs. <u>Weaknesses:</u> -Had to refer to the exercise protocol that they had previously used in another article using APA protocol, as mentioned in this study. -Results were based on a small sample size of n=20 for the follow up study in 1.5 yrs.
Smoot et al. (2016). 10.1097/PHM.0000000000000045	Level III Prospective, Longitudinal Study	To evaluate the trajectories of and predictors of upper extremity changes in function in the first year after breast cancer surgery.	- Prospective, longitudinal study with preoperative and postoperative measurements taken on upper extremity and function. -Women with a mean (SD) age of 54.9 (11.6) years. -N=396 subjects. -Patients from two public hospitals and four community practices.	Variety of outcome tools was utilized in this study. To study ROM a goniometer was used, grip strength with a Jamar Dynamometer, pain with the NRS and BPI questionnaire, and QOL with a KPS and Self-administered Comorbidity Questionnaire.	-one month post-operative had decrease in shoulder motions. -Pain scores were highly variable depending on the type of surgery. - pain had lower QOL scores. -Engaging in exercise before surgery had greater shoulder ROM.	<u>Strengths:</u> -Good inclusion of commonly reported problems. Large sample size with good inclusion and exclusion criteria listed. <u>Weaknesses:</u> -previous studies used to determine relevant predictors. -studies referenced but are difficult to access.

Table 2
Evidence Table

Author/Year	Level of Evidence	Purpose of Study	Participants	Interventions	Results	Strengths/Weaknesses
Springer et al. (2010). 10.1007/s10549-009-0710-9	Level III Prospective, Observation Cohort Study	The purpose of this study was to determine the extent of upper limb dysfunction for patients assessed at the three, six, and twelve months post-operatively.	- This study is a prospective, observation cohort study of women prior to breast cancer surgery. -Final analysis based on a total of 94 subjects. -Subjects n=94 were in the study. -The age groups ranged from <45 to >65 years, at time of diagnosis.	Subjects were assessed pre-operatively by a skilled therapist on their baseline ROM, pain, volume and girth measurements of the arm, and the ULDQ (n=27) items on shoulder function tasks based on a Hard, Moderate, Easy, and Routine difficulty of function.	The shoulder ROM improved significantly from the three-six month to the 12 months (p<0.03). -Pain for 60% of the subjects was at 0/10, at the one month post operation and 80% at 0 (no pain) out of 10, at the three-six and 12-month visit. -Strength was improved at 12-months.	<u>Strengths:</u> - Reliable and valid outcome tools. -Skilled therapist used in the study group. <u>Weaknesses:</u> -use of various types of surgery and treatments -The levels of intervention differed -Subjects from military background and younger age group.
Nilsson et al. (2016). 10.1136/bmjopen-2015-007997	Level III Prospective Cohort Study	To study the association between the physical activity level preoperative and recovery after breast cancer surgery.	220 participants with surgical interventions for breast cancer studied preoperatively and post-operatively at three and six weeks.	Physical activity was assessed using the SGPALS outcome measure. Levels of physical activity were based on the type of activity and time engaged in the activity during a week.	Inactive patients had a lower QoL as compared to patients with moderate to vigorous levels of activity.	<u>Strengths:</u> -A large sample size was used in this study. -Outcome measure with good psychometric properties. <u>Weaknesses:</u> -Eligible participants were excluded due to time constraints of the study nurse.
Chen et al. (2010). 10.1093/aje/kwp209	Level III Prospective Cohort Study	To determine the association between exercise and QoL for post-surgical breast cancer survivors.	A total of 1825 participants completed this study with interviews conducted at 18 and 36 months' post-surgery.	-An interview to assess the types of exercises performed during the first 18 months after surgery and another interview at 36 months after surgery to assess the consistency of exercises performed. -The General Quality of Life Inventory was used to assess QoL at baseline and at 36 months' post-surgery.	This study found that QoL improved by regularly exercising and maximizing functions affected by cancer and its related treatments.	<u>Strengths:</u> -A large sample size. -Effects were studied over an extended period. <u>Weaknesses:</u> -Physical activity information based on recreational activities and not daily living activities. -Generic outcome measures were used to assess QoL -Only the Chinese population included in this study.

Table 2
Evidence Table

Author/Year	Level of Evidence	Purpose of Study	Participants	Interventions	Results	Strengths/Weaknesses
Atanes Mendes Peres et al. (2017). 10.1002/pri.1642	Level III Cross-Sectional Study	The purpose of this study is to compare the body postures of women who had a mastectomy alone versus breast reconstruction surgery.	A study of 76 participants who underwent breast surgery between 1-5 years were included in this study. Two groups were defined: women who underwent breast reconstruction (n=38) and women who had mastectomy alone (n=38).	The women had photographs analyzed using Postural Analysis Software using different views including the head, shoulders, scapula, pelvis, and trunk.	The study revealed that there was a significant difference in the vertical alignment of the trunk indicating trunk rotation for the breast reconstruction group. There were no significant differences between the groups for the head, shoulders, scapula, and pelvis.	<u>Strengths:</u> This study reveals a need for multi-disciplinary rehabilitation is emphasized. <u>Weaknesses:</u> -The study lacks analysis of trunk rotation, which may have affected the results. -Only the photographs were used for analysis and no physical assessment for posture analysis.
Nadler et al. (2017). 10.1007/s00520-017-3640-9	Level IV Descriptive survey Study with Analysis of Outcomes.	To get a perspective of oncology care providers, including occupational therapists, on exercises with cancer survivors.	A survey was given to 120 participants with questions regarding exercise guidelines for cancer patients.	A survey with 42 questions based on a Likert scale was administered to the participants. The Canadian Physical activity guidelines for cancer patients was used for exercise guideline identification.	A high percentage of 68% of respondents stated that they were not aware of any exercise guidelines for cancer patients. Approximately 80% of the participants reported poor knowledge of which patients, how much exercise, and the types of exercises to recommend to cancer patients.	<u>Strengths:</u> -The survey included professionals within an oncology interdisciplinary team with specific questions on exercises and rehabilitation needs for the patients. <u>Weaknesses:</u> -Participants were from a single cancer care center. -Poor generalization of the results to the population.
Drackley et al. (2012). http://dx.doi.org/10.1188/12.CJON.121-124	Level IV Descriptive Survey Study with Analysis of Outcomes.	This study was piloted to determine the effectiveness of myofascial massage to decrease pain, anxiety, tension to improve the overall well-being of post-surgical breast cancer patients.	A survey was given to 46 patients who had undergone post-operative mastectomy a day earlier. One session of 23 minutes of massage was provided to the participants.	Massage to the neck, shoulders and hands were provided to the patients while in bed in a supported seated position. The Visual Analog Scale (VAS) for pain was used prior and post massage.	A total of 30 participants completed the post-massage survey with 91% of the participants very satisfied with the massage and recommended it to reduce pain and stress from the surgery.	<u>Strengths:</u> -Massage was provided by a licensed physical therapist. -Outcome measure of the VAS to report pain. <u>Weaknesses:</u> -Poor generalization due to the small sample size

Table 2
Evidence Table

Author/Year	Level of Evidence	Purpose of Study	Participants	Interventions	Results	Strengths/Weaknesses
Mosher et al. (2013). 10.1111/tbj.12107	Level IV Descriptive Survey Study with Analysis of Outcomes.	The goal of this study was to describe the impact of metastatic breast cancer and treatments including surgery, on their QoL.	Surveys were completed by 44 women with metastatic breast cancer with different types of treatments including surgeries, chemotherapy, and radiation.	Participants were assigned into four groups to complete expressive writing or neutral writing of four essays over a period of 4-7 weeks. Expressive writing instructions were to write deep thoughts and feelings about cancer. Neutral writing was to describe yesterday's activities.	Qualitative analysis revealed 44% had appearance concerns, decreased daily activities due to fatigue (55%) and pain (61%). Decreased QoL was reported due to fear of death (43%), morbidity (25%), and due to social constraints (48%).	<u>Strengths:</u> -Holistic approach to study the impact of breast cancer and its treatments to physical, emotional, and psychological health of the patients. <u>Weaknesses:</u> -Small sample size. -Other treatment interventions were not considered; it was limited to expressive writing.
Warpenburg (2014). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4684108/	Level V Case Report	To study the beneficial effects of deep friction massage to decrease the scar fibrosis for breast cancer patients receiving radiation as a treatment in combination with surgery.	57-year-old female who underwent lumpectomy and radiation with fibrosis and Axillary Web Syndrome. Details of the deep friction massage techniques are provided in this report.	The massage technique implemented decreased pain, spasms, and burning sensation of the arm.	The use of manual therapy with deep friction massage revealed good decrease in scarring, pain, and hypersensitivity of the ipsilateral arm for the participant of this case report.	<u>Strengths:</u> Good description of the massage techniques provided in the report. <u>Weaknesses:</u> It is a level V study with no control or comparison groups to assess the effectiveness of this massage technique.

A/AAROM=Active/Active Assisted range of motion, ANOVA=Analysis of Variance, APA=Adapted Physical Activity, BC=Breast Cancer, BIS=Bioimpedance Spectroscopy, BPI=Brief Pain Inventory, CBT=Cognitive Behavior Therapy, CONSORT=Consolidated Standards of Reporting Trials, ECQ-R = Emotional Control Questionnaire-Rehearsal subscale, EORTC QLQ-BR23= European Organization for Research and Treatment of Cancer Quality of Life for B(R)east Cancer-Specific questionnaire, EORTC QLQ-C30= European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Version 3.0, EPRB=Early Physical Rehabilitation Program, HLM=Hierarchical linear modeling, KPS=Karnofsky Performance Status, MCSD = Marlowe-Crowne Social Desirability, MMT=Manual Muscle Testing, NRS=Numeric Rating Scale, OT=Occupational Therapist, PEDro= Physiotherapy Evidence Database, PHQ-15 = Patient Health Questionnaire Somatic Symptoms subscale-15, PSQI=Pittsburg Sleep Quality Index, PT=Physical Therapist, QOL= quality of life, RCTs=Randomized Controlled Trials, ROM=Range of Motion, SCS-C = Social Constraints Scale, SD=Standard Deviation, SPSS=Statistical Package for the Social Sciences, TAS-20 = Toronto Alexithymia Scale, ULDQ=Upper Limb Disability Questionnaire, VAS=Visual Analogue Scale.

Table 3**Grade Definitions Rating System by U.S. Preventive Services Task Force, 2016. Details of the Rating Scale**

Strong Evidence	<ul style="list-style-type: none"> • 1 - Systematic Review • 1 - Meta-Analysis • Consistent results in 2 or more level I RCTs
Moderate Evidence	<ul style="list-style-type: none"> • Consistent results in one level I RCT study plus one or more lower-level studies
Limited Evidence	<ul style="list-style-type: none"> • One Level II study or consistent results in multiple lower-level studies
Insufficient Evidence	<ul style="list-style-type: none"> • Lack of evidence or poor-quality evidence

Appendix A

Occupational Therapy Evaluation: Post-Surgical Breast Cancer Survivors

This section details the importance of completing a comprehensive OT evaluation and developing an individualized plan of care (POC) for the client to improve functional outcomes and maximize QoL. As described in the fourth edition of the *Occupational Therapy Practice Framework: Domain and Process* [OTPF-4] (AOTA, 2020), the process of completing an OT evaluation consists of consultation and screening, developing an occupational profile, analysis of occupational performance, and synthesis of the evaluation process. The OTPF-4 describes consultation and screening by reviewing the history, administering screening tools, and collaborating with the interdisciplinary team. The occupational profile is described as an understanding of the person's history, social context, environmental context, routines and patterns of their daily activities, what they value, areas of strength and weaknesses as it relates to their meaningful occupations; self-care tasks, instrumental activities of daily living, work activities, leisure activities, and the client's priorities and goals (AOTA, 2020). The analysis of occupational performance is identifying the client's strengths, assets, problems, and barriers that support or hinder occupational performance. The OT practitioner should conduct a thorough analysis and assessment of contexts, performance skills and patterns, and client factors. The synthesis of the evaluation process is described as reviewing and consolidating the information to determine the impact of client factors and performance skills and patterns, on occupations for the person (AOTA, 2020).

It is recommended that the OT practitioner use assessments specific to breast cancer and additionally, assessments used with a wide variety of other conditions to perform a comprehensive evaluation. The application of the OT theoretical model is recommended to guide

the OT practitioner while completing the evaluation and developing a POC for the client. The CPGs recommend a combination of the biomechanical FOR and the PEO model (Law et al., 1996) as it guides the assessments and treatment interventions to prevent and reduce deformity and to focus on a holistic approach to improve occupational performance. This enables the OT practitioner to use both a bottom-up and a top-down approach to address the needs of post-surgical breast cancer survivors.

Biomechanical Frame of Reference

- ***Range of motion.*** A visual assessment and a detailed evaluation using a goniometer to measure the degrees of motion of bilateral upper extremities is recommended (Park, 2017; Testa et al., 2014; Datar & Jagtap, 2019). Most often, shoulder and scapular motion are most affected due to the proximity of the surgery and due to surgical precautions limiting shoulder motion to 90 ° for the first few weeks (Braveman & Hunter, 2017).
- ***Strength.*** Due to surgical precautions and restrictions, strength testing should be initiated when the client is medically allowed to perform resistive activities safely post-surgery and tolerate strength testing. The OT practitioner should refer to the physician's therapy referral for specific restrictions and adhere to it. If the OT practitioner has any questions or concerns, it is recommended that the clinician consults with the physician to clarify the therapy orders. Manual Muscle Testing for bilateral UEs and the use of the Dynamometer for grip are recommended for assessing strength (Smooth et al., 2016).
- ***Lymphedema.*** Visual assessment for edema and circumferential measurements taken on bilateral upper extremities for comparison is recommended (Harris et al., 2012; Silver & Gilchrist, 2011). It is recommended that circumferential measurements be taken at four points; metacarpal-phalangeal joints, the wrist, 10 cm distal to the lateral epicondyles, and 12

cm proximal to the lateral epicondyles (Harris et al., 2012). A difference of more than 2.0 cm on any of the four points may warrant treatment for the lymphedema (Harris et al., 2012; Silver & Gilchrist, 2011). Close monitoring and referral to a lymphedema specialist are recommended with any lymph nodes excised with breast surgery, as the client is at a higher risk for developing lymphedema (Braveman & Hunter, 2011).

- ***Pain.*** The use of self-reported pain assessments such as the Numeric Rating Scale or the Visual Analog Scale is recommended at the start, during, and end of each OT session (Silver & Gilchrist, 2011; Park, 2017). Use of the self-reported questionnaire; SPADI for pain rating at the time of evaluation, re-evaluation, and discharge is also recommended to assess and monitor pain over time (Breckenridge & McAuley, 2011).
- ***Skin integrity.*** Initially, a visual assessment of the skin to determine the healing of the surgery sites should be performed. If there are any signs of infection, redness, warmth, discharge, red streaks, increased pain, or odor, the oncologist's office should be contacted immediately (Harris et al., 2012). Additionally, the OT practitioner should assess the integrity of the flap or graft for signs of healing and blood supply (Braveman & Hunter, 2017). Clinical expertise supports that the client should be educated on the signs of infections and instructed to monitor the surgical sites intermittently throughout the day.
- ***Scarring/cording.*** Initially, a visual assessment of the area is performed to determine if the incision site is well healed. The OT practitioner should palpate the incision site to determine the firmness of the tissue, mobility of the scar tissue, cording/AWS, and for any warmth and increased pain on touch (Warpenburg, 2014; Datar & Jagtap, 2019; Aras et al., 2014; Crawford, 2012).

- Sensation.*** The client may have Chemo-Induced-Peripheral-Neuropathy (CIPN), as many clients may be on chemotherapy drugs. A decrease in sensation can cause the client to demonstrate challenges in completing fine motor tasks associated with ADLs and IADLs. Clinical expertise supports the use of functional sensation testing for light touch and hot/cold. Detailed sensory testing should be completed if any problems are noted from the functional testing or if the client reports sensory problems. Detailed testing with the Semmes Weinstein monofilament testing for light touch is recommended (Melchior et al., 2009). Clinical expertise supports sensation testing for assessing the client's ability to safely engage in daily tasks.
- Coordination.*** Observation and interview provide a significant amount of detail on the coordination difficulties faced by the client. Clinical expertise supports observing the client performing functional tasks in the clinic, such as buttoning their shirt, combined with assessment tools, to provide the OT practitioner a more comprehensive picture of the client's coordination. The Nine-Hole-Peg-Test (NHPT) by Mathiowetz et al., 1985 (Rehabmeasures.org, 2019) and the Disabilities of the Arm, Shoulder and Hand (DASH) by Gummesson et al., 2003 (Braveman & Hunter, 2017) are recommended tests to assess and monitor fine and gross motor coordination. Additional selected assessment tools and functional outcome measures are listed below in Table 4.
- Fatigue.*** Surgery may acutely affect cardiovascular fitness due to decreased mobility and inactivity from post-surgical precautions and complications (Silver & Gilchrist, 2011). The client's cancer-related tiredness and fatigue may significantly limit their ability to participate in daily self-care tasks and interfere with daily functioning. The recommended assessment tool to monitor fatigue and its impact on function is the Brief Fatigue Inventory (BFI) by

Mendoza et al., 1999 (Braveman & Hunter, 2017). Additional selected assessment tools and functional outcome measures are listed below in Table 4.

Person-Environment-Occupation (PEO) Model

Person

- ***Activities of daily living (ADLs)/Instrumental activities of daily living (IADLs).*** Due to numerous challenges from cancer-related fatigue, pain, feeling depressed, and surgical precautions, the client may need assistance for completing self-care tasks of bathing, dressing, toileting, feeding, and transfers (Silver & Gilchrist, 2011). Additionally, IADLs consisting of meal preparation, grocery shopping, paying bills, and completing laundry tasks are examples of daily tasks that may be tiring for the client to engage in (Silver & Gilchrist, 2011). Clinical expertise supports interview, observation of completion of tasks in the clinic setting, and use of functional outcome measures such as the Canadian Occupational Performance Measure (COPM) developed by Law et al., 2014 (Braveman & Hunter, 2017), to assess the performance of ADLs/IADLs. Examples of additional selected assessment tools and functional outcome measures are listed below in Table 4.
- ***Emotional and psychosocial needs.*** The client, post-surgery, is vulnerable to emotional problems due to body image issues and fear of mortality and morbidity (Nguyen et al., 2015). Clinical expertise supports the use of interview and therapeutic use of self to facilitate the client to discuss their emotional challenges. It is essential for the OT practitioner to build a rapport with the client to enable them to discuss and reveal their personal issues with the clinician. Interdisciplinary teamwork is significant in providing the client with the support and interventions needed (Mosher et al., 2013). In certain situations, the OT practitioner may need to request a clinical psychologist's referral after discussing it with the client and the

physician. It is within the scope of OT to work with the client and to develop goals to improve emotional health with the use of stress management techniques such as expressive writing, relaxation techniques, and mindfulness techniques (Mosher et al., 2013; Ram et al., 2013).

- ***Spiritual needs.*** The OT practitioner should use clinical judgment and therapeutic use of self to explore if the client has any spiritual needs resulting from post-surgical complications, immunocompromised state, pain, and cancer-related fatigue limiting them from attending their place of worship (Phenwan et al., 2019; Shi & Singh, 2019). Clinical expertise supports that the OT practitioner should discuss and develop goals to provide optional ways for the client to meet their spiritual needs; use of online streaming of sermons, conversing and praying with friends on the phone, reading or listening on audio the holy book, and setting aside a quiet place and time to pray at home.

Environment

- ***Physical, social, and cultural contexts.*** Semi-structured interviews with the client on the home environment set up, support from family and friends, and cultural factors that may impede or support healing should be discussed. Family/caregiver input is highly valuable and should be considered when developing a POC for the client's functional improvements. Use of the SPADI by Roach et al., 1991, for perceived disability, Work-Environment Impact Scale (WEIS) by Moore et al., 1998 (Braveman & Hunter, 2017), are recommended assessments and outcome measures to help determine the level of difficulty and to develop goals to address the challenges accordingly.

Occupations

- **Daily activities/work tasks/leisure activities.** Use of interview to assess the client's daily routines, work tasks, leisure activities should be discussed using a semi-structured format. Importance of completing some of the ADLs and IADLs in the clinic setting and discussions to determine the barriers and supports for completion of the tasks are recommended (Braveman & Hunter, 2017). Assessing the client's work tasks with details on the task components and barriers to performing these tasks along with simulation of the work tasks in the clinic should be considered (Petito et al., 2019). Additionally, re-engaging the client in their preferred leisure tasks is healing and should be assessed during the evaluation. Per Soga et al., 2017, leisure activities such as gardening increases the individual's life satisfaction, and well-being. The recommended functional outcome measures to assess occupations is the COPM by Law et al., 2014 (Braveman & Hunter, 2017). Examples of additional selected assessment tools and functional outcome measures are listed below in Table 4.

Occupational Performance

- **Functional outcomes.** In keeping with the guidelines of AOTA's Vision 2025, the CPGs were developed by integrating evidence-based research and clinical expertise to improve the well-being and maximize the QoL of this population. Per the PEO model, the outcome from the transactive interaction between the Person, Environment, and Occupation is Occupational Performance (Law et al., 1996). During evaluation and developing the client's POC, the OT practitioner should focus on the client's ability to improve occupational performance. To assess factors that affect occupational performance and impact the person's perceived level of disability and QoL, the functional outcome measures, the SPADI (Breckenridge & McAuley, 2011) (Form B)

and the FACT-B (Cella et al., 1993 as cited in Chopra & Kamal, 2012) (Form D), are recommended for this population.

- ***Quality of life.*** The overall assessment of perceived QoL with client-reported physical, mental, and social well-being is examined using interviews, discussion with family and caregivers, and the use of outcome measures such as the FACT-B or the SF-12 (Delgado-Sanz et al., 2011). These outcome measures are recommended to assess and measure changes in the perceived QoL for the post-surgical breast cancer survivors. The FACT-B is a breast cancer-specific outcome measure, and the SF-12 (Form C) looks at the physical and mental factors that impact a person's QoL.

The CPGs provide recommendations based on evidence-based research integrated with clinical expertise to guide the OT practitioner throughout the process of conducting a comprehensive OT evaluation with post-surgical breast cancer survivors. It is important that the OT practitioner use their clinical judgment based on the client's specific needs and circumstances regarding the appropriateness of the suggested assessment tools and battery of tests listed in the CPGs.

Table 4.
List of Selected Assessment Tools/Outcome Measures

(Please note that the following is a list of selected assessment tools and outcome measures provided to the clinician as a guide to choose from based on the client's specific needs, circumstances, and the OT practitioner's clinical judgment).

Areas of Assessment	Selected Assessment Tools/Outcome Measures
Range of Motion	-Standard Goniometer
Strength	-Manual Muscle Testing (MMT) -Dynamometer for grip
Lymphedema	-Circumferential measurements
Pain	-Numeric Pain Scale -Visual Analog Scale -Shoulder Pain and Disability Index (SPADI) by Roach et al., 1991 (Breckenridge & McAuley, 2011).
Sensation	-Semmes Weinstein Monofilament Testing
Coordination	-Nine-Hole-Peg-Test (NHPT) by Mathiowetz et al., 1985 (Rehabmeasures.org, 2019). -Disabilities of Arm, Shoulder and Hand (DASH) by Gummesson et al., 2003 (Braveman & Hunter, 2017). -Functional Dexterity Test (FDT) by Aaron and Jansen, 2003 (Rehabmeasures.org, 2017).

	-Purdue Pegboard Test by Tiffin, 1948 (Rehabmeasures.org, 2013).
Fatigue	-Brief Fatigue Inventory (BFI) by Mendoza et al., 1999 (Braveman & Hunter, 2017). -Functional Assessment of Chronic Illness Therapy Fatigue Scale recommended by Silver & Gilchrist, 2011.
ADLs/IADLs/Work/Leisure	-Canadian Occupational Performance Measure (COPM) by Law et al., 2014 (Braveman & Hunter, 2017). -FIM by Uniform Data System for Medical Rehabilitation, 1997 (Braveman & Hunter, 2017). -Instrumental Activities of Daily Living Scale by Lawton, 1969 (Braveman & Hunter, 2017). -Katz Index of Independence in ADL by Katz et al., 1963 (Braveman & Hunter, 2017). -Kohlman Evaluation of Living Skills (KELS) by Kohlman-Thomson & Robnett, 2016 (Braveman & Hunter, 2017).
Quality of Life	-Functional Assessment of Cancer Therapy-Breast (FACT-B) by Cella et al., 1993 (Chopra & Kamal, 2012). -Short Form-12 Health Survey (SF-12) recommended by Delgado-Sanz et al., 2011).

Appendix B

Interventions that Address Post-Surgical Breast Cancer Symptom Management

Per the *OTPF -4* (AOTA, 2020), intervention plan development, implementation, and review are driven by collaboration with the client, clinical reasoning, synthesizing the data gathered during the evaluation and reevaluation, applying the selected theoretical model and frame of reference, and evidence-informed practice to establish the POC for the client.

Additionally, per the *OTPF-4* (AOTA, 2020), outcomes from providing the therapy services result in identifying change in occupational participation, transition, or discontinuation of OT services.

Intervention plan development, implementation, and review

- The OT practitioner should develop objective and measurable goals in collaboration with the client that address the desired functional outcomes (AOTA, 2020; Braveman & Hunter, 2017).
- The OT practitioner should establish OT interventions based on available best practices established on evidence-based research integrated with clinical expertise.
- The OT practitioner should implement the OT interventions with chosen occupation-based activities, use interventions that support the occupation, use education and training for the well-being of the client, and advocate to promote occupational justice to empower the clients to utilize resources to fully participate in meaningful occupations (AOTA, 2020; Braveman & Hunter, 2017).
- The OT practitioner should reevaluate and review the client's progress and response to intervention and modify the POC as needed (AOTA, 2020).

Outcomes

- The OT practitioner should determine the procedures to continue to assess and monitor the progress towards goals and determine the outcomes from the recommended OT interventions and treatment approaches. The review of intervention may result in the continuation of current POC, modification of the POC, transition to a new level of care with referral to other services as appropriate, or discontinuation of OT services with discharge planning (AOTA, 2020).

Interventions that Address Symptom management

I. Interdisciplinary Approach to Address Cancer Rehabilitation

Due to the complex and unique challenges faced by post-surgical breast cancer survivors, an interdisciplinary program is strongly recommended to address their needs (Thavarajah et al., 2015). An interdisciplinary approach to cancer care by specialists is essential to improve the person's physical function, reintegrate them back into their daily lifestyle, and potentially improve their QoL (Mayer et al., 2018). Per Braveman and Hunter, 2017, OT practitioners are an essential component of the interdisciplinary team in the cancer care continuum to address problems with occupational performance.

Evidence

Strong. Strong evidence exists for an interdisciplinary program to treat patients with breast cancer to optimize their outcomes (Level I: Zhou et al., 2015; Level V: Amatya et al., 2017; Santa Mina et al., 2017; Silver & Gilchrist, 2011).

Summary

There is strong evidence that OT services as part of an interdisciplinary team are beneficial to improve the outcomes for cancer survivors regardless of cancer type or stage (Braveman & Hunter, 2017). It is highly recommended that rehabilitation programs are designed

to address both the physical and emotional symptoms, using an interdisciplinary team approach to improve QoL and functional outcomes for breast cancer survivors.

II. Special Considerations for Exercises with Breast Cancer Surgeries

- Post-mastectomy, limit shoulder motion to 90 deg. in all planes for the first four weeks postoperatively (Aras et al., 2014).
- With a Transverse Rectus Abdominis Muscle (TRAM) flap, Deep Inferior Epigastric Perforator (DIEP) flap, or Superficial Inferior Epigastric Perforator (SIEP) flap surgery, the patient should be bent at the waist while ambulating and keep the head of the bed (HOB) at 30 degrees to avoid pulling on the abdominal incision site for the first four weeks postop. Use of a walker, wedge pillow, and recliner are recommended to maintain postoperative precautions. The patient should avoid lifting, pushing, pulling, or strenuous activities for the first six weeks. Occupational therapists should provide patient education on adhering to these precautions during the performance of daily activities (Aras et al., 2014; Breastcancer.org, 2019; Cancercenter.com, 2020; Cancerresearchuk.org, 2013; Guysandthomas.nhs.uk, 2020).
- With a Latissimus Dorsi flap reconstruction surgery, the patient should avoid stress to the Latissimus Dorsi incision site by keeping the shoulder in neutral with the arm at their side while ambulating; HOB at 30 degrees for the first four weeks postoperatively. No lifting, pushing, pulling, or strenuous activities for the first six weeks (Aras et al., 2014; Breastcancer.org, 2019; Cancercenter.com, 2020; Guysandthomas.nhs.uk, 2020; Cancerresearchuk.org, 2013).

Other considerations with breast cancer survivors

- Avoid using the ipsilateral arm for blood pressure readings (Aras et al., 2014).
- Avoid using the ipsilateral arm for blood draws or injections (Aras et al., 2014).

- Fever at or above 100 degrees Fahrenheit may indicate a neutropenic fever. Contact the oncologist's office immediately (Braveman & Hunter, 2017; Aras et al., 2014).
- Breast cancer survivors typically have decreased bone mass and are generally on medication for it. Patients with bone metastasis are more prone to fractures (Braveman & Hunter, 2017; Aras et al., 2014).
- Cancer patients typically have an immunocompromised system due to the medications and are more susceptible to infections (Braveman & Hunter, 2017; Aras et al., 2014).

III. Interventions to Address Physical Needs

- ***Limited upper extremity (UE) range of motion (ROM) and weakness***

Post-surgical breast cancer survivors typically have limitations of their ipsilateral arm with limited motion, pain, guarding, weakness, lymphedema, and functional limitations (Park, 2017). Exercises are an essential component of increasing UE ROM, strength, decreasing pain, decreasing lymphedema, and improving overall physical function. Exercises, including ROM, gentle stretching, and progressive resistive exercises, should be based on the timeline of healing, surgical precautions, and patient tolerance (Chan et al., 2010). OT practitioners should incorporate exercises and physical activity into the client's daily routines for improving health, wellness, functional abilities, and QoL (Silver & Gilchrist, 2011; Braveman & Hunter, 2017).

Typically, for the first two weeks' post-surgery, exercises need to be based on the positioning of the UE and should include ROM exercises for the elbow, forearm, wrist, and digits till the drains are removed (De Groef et al., 2015). At four weeks postoperatively, the client is typically allowed to perform all upper extremity ROM exercises. Please refer to *Upper Extremity Exercises for Post-Surgical Breast Cancer Survivors* for details of the exercises listed in Appendix C.

Daily functional activities should be encouraged to progressively increase UE ROM and strength (Yang et al., 2018; Braveman & Hunter, 2017). Participating in activities of daily living can be graded up from washing one's face to washing hair and completing upper body dressing to reaching for the clothes in the closet. Resistive activities such as picking up a plate, loading and unloading the dishwasher, putting away groceries, and carrying a laundry basket can be integrated into the client's daily routine.

Evidence

Strong. Strong evidence exists that structured exercises improve ROM and decrease pain for post-surgical breast cancer survivors (Level I: Park, 2017; Baima et al., 2017; Yang et al., 2018; Level III: Springer et al., 2010). Evidence exists that early exercises improve shoulder motion for this population (Level I: Chan et al., 2010; De Groef et al., 2015;). Exercises improve patients shoulder motion, strength, and functional abilities after surgery for breast cancer (Level I: Loh & Musa, 2015). Exercises improve shoulder motion, function, and QoL (Level I: Testa et al., 2014; Level III: Mirandola et al., 2018; Chen et al., 2010; Smoot et al., 2016).

Summary

Strong evidence supports that exercises improve motion, strength, ability to participate in functional activities, and improve QoL of post-surgical breast cancer survivors. Per Spence et al., 2010, OT practitioners should encourage clients to perform exercises regularly and incorporate physical activities in their daily routines as it is beneficial for the clients before, during, and after treatments (as cited in Braveman & Hunter, 2017).

- ***Upper extremity pain***

Post-surgical pain can often be debilitating with pectoral tightness, scapular protraction, myofascial pain, and trigger points (Aras et al., 2014). OT practitioners use non-pharmacologic

multimodal interventions to help with managing the client's pain; techniques such as positioning the arm and scapula, myofascial massage, exercises, Kinesio Taping, deep breathing exercises, relaxing music, yoga, and meditation (Aras et al., 2014; Massingill et al., 2018; Lafci & Oztunc, 2015). Patients should consult with their physician for questions regarding the pharmacologic management of their pain symptoms.

Evidence

Strong. Strong evidence exists that myofascial massage decreases pain and improves QoL for post-surgical breast cancer survivors (Level I: Massingill et al., 2018; Level IV: Drackley et al., 2012). Evidence supports that structured UE exercises and positioning significantly decreases pain for this population (Level I: Park, 2017; Level I: De Groef et al., 2015; Level I: Testa et al., 2014; Level I: Bahrami et al., 2011; Level I: Lafci & Oztunc, 2015; Level III: Smoot et al., 2016). Evidence exists that myofascial massage helps decrease acute pain from surgery (Level I: Massingill et al., 2018; Level I: Datar & Jagtap, 2019).

Moderate. Moderate evidence exists that Kinesio Taping helps decrease pain for this population (Level I: Kasawara et al., 2018).

Limited. Limited evidence supports the use of transcutaneous electrical nerve stimulation (TENS) to decrease pain for post-surgical breast cancer survivors (Level V: Aras et al., 2014; Braveman & Hunter, 2017).

Summary

OT practitioners should address post-surgical pain symptoms with their clients. Strong evidence exists that myofascial massage, exercises, positioning, breathing exercises, music, yoga, and meditation help manage pain. Moderate evidence supports that Kinesio Taping helps

with pain management for this population. Limited evidence exists that modalities such as the TENS help alleviate pain symptoms for post-surgical breast cancer survivors.

- ***Post-surgical scars and axillary web syndrome (AWS)***

Scar management is vital to decrease tissue adherence causing limitations in motion, pain, sensory impairments, and limitations in functional abilities. AWS or cording can occur with a tight cord from the axilla down the arm, causing pain, limitations in shoulder and elbow motion, sensory impairments, and limiting the use of the affected arm for functional use (Datar & Jagtap, 2019). Myofascial release, soft tissue manipulation, and silicone gel application to the scar sites effectively decrease scar firmness and improve the pliability of the tissue (Crawford, 2012). Decreased firmness of the scar and the surrounding fibrosis can also help improve circulation to the area (Aras et al., 2014). The clinician should ensure that the area is healed and avoid any shearing effect on the grafts and flaps from the massage. Additionally, there should be no infection in the area to prevent spreading it. AWS typically responds to manual therapy with soft tissue mobilizations, deep friction massage, and neural flossing (Warpenburg, 2014; Werner, 2012).

Evidence

Strong. Strong evidence exists that myofascial release with tissue mobilization and neural flossing decreases AWS (Level I: Datar & Jagtap, 2019; Drackley et al., 2012; Massingill et al., 2018; Level V: Warpenburg, 2014).

Summary

AWS can cause significant tightness in the arm, limiting motion, causing pain, and affecting sensation to the arm. There is strong evidence that myofascial release with tissue mobilization improves scar pliability, decreasing pain, improving circulation, and healing.

Neural flossing is strongly recommended to reduce stress to the nerves and improve sensation. The OT practitioner should work on interventions to decrease scarring and cording to improve mobility, decrease pain, normalize sensation, and improve the client's ability to use the arm for activities of daily living.

- ***Upper extremity lymphedema***

Lymphedema is a common complication that occurs with breast cancer survivors' post-surgery (Park, 2017). The OT practitioner can educate the client on monitoring the arm for changes in edema and skin hygiene. Lymphedema specialists can help the client manage their lymphedema using special techniques of manual lymphatic drainage (MLD) massage strokes, use of compression bandages and garments, pneumatic pumps, and education on skin hygiene (Aras et al., 2014; Park, 2017). Exercises and physical activities are an integral part of the treatment for lymphedema and should be incorporated into the client's rehabilitation program (Aras et al., 2014). An OT practitioner can choose to pursue this specialty practice by getting certified in lymphedema through certification courses.

Evidence

Strong. Exercises do not cause or increase lymphedema and should be incorporated into the client's cancer rehabilitation (Level I: Park, 2017; Chan et al., 2010). Resistive exercises are not contraindicated but may help reduce lymphedema (Level I: Keilani et al., 2016). Kinesio Taping had positive effects on reducing lymphedema and pain for the postoperative patients (Level I: Kasawara et al., 2018). Compression dressings, pneumatic pumps, and MLD techniques are effective ways to manage lymphedema (Level I: Park, 2017; Smykla et al., 2013).

Moderate. Kinesio Taping was not as effective as compression dressings for reducing lymphedema for breast cancer patients' post-surgery (Level I: Smykla et al., 2013; Kasawara et al., 2018).

Summary

Strong evidence exists that exercises and physical activities help reduce lymphedema and do not cause or increase it. Compression dressings, pneumatic pumps, and educating the patient on MLD techniques are effective ways to decrease and manage lymphedema (Park, 2017). Kinesio Taping was found to be beneficial for lymphedema reduction in a meta-analysis study. However, other studies revealed that Kinesio Taping was not as effective as other treatments for lymphedema management.

IV. Interventions that Address Activities of Daily Living Needs

Occupational therapy interventions address ways to incorporate meaningful activities using energy conservation techniques, grading functional tasks, and recommending modifications to the environment to improve safety and functional abilities. The environmental factors need to be addressed by modifying the physical barriers in the home with the use of adaptive equipment and home modifications as deemed appropriate for the client's safety and function. "Occupational therapy practitioners evaluate how a client's home environment supports their performance of meaningful occupations . . ." (Petito et al., 2019, p. 17).

- ***Cancer-Related Fatigue***

Cancer-related fatigue is a common condition that affects 60% to 90% of cancer patients (Braveman & Hunter, 2017). It is often associated with pain, shortness of breath, deconditioning, and weakness, negatively affecting participation in daily occupations and QoL (Braveman & Hunter, 2017). OT practitioners can educate and help the client by reviewing energy

conservation techniques of prioritizing, planning, and positioning to make it more effective and less tiring to complete activities (Aras et al., 2014). Participating in daily exercises, participating in activities they enjoy, and incorporating them into daily activities improves their activity tolerance, functional abilities, and QoL (Ibrahim & Al-Homaidh, 2011; Carter et al., 2016).

Evidence

Strong. All levels of physical activity support evidence on outcomes reducing breast cancer mortality by 30% to 41% (Level I: Ibrahim & Al-Homaidh, 2011). Evidence exists that clients with moderate to high levels of active lifestyles had improved QoL compared to clients leading an inactive lifestyle (Level III: Nilsson et al., 2016). Physical activity and exercise produce significant improvements in cancer-related fatigue (Carter et al., 2016). Resistive and aerobic exercises have a positive effect on cancer-related fatigue, and patients should be encouraged to participate in an exercise regime (Level V: Aras et al., 2014). Energy conservation techniques and stress management lead to positive outcomes for cancer-related fatigue (Level V: Santa Mina et al., 2017; Aras et al., 2014; Braveman & Hunter, 2017).

Summary

Strong evidence exists that exercises and participation in physical activities have a positive effect on cancer-related fatigue. Energy conservation techniques improve the efficacy of task performance for the client. OT practitioners are well suited to grade the task and modify the environment to improve their client's ability to participate in their daily living activities and enable them to engage in meaningful occupations.

V. Interventions that Address Emotional Concerns

Clients with cancer diagnosis typically present with feelings of fear, uncertainty, and stress, with almost 60% of the population reporting stress and distress after cancer diagnosis

(Braveman & Hunter, 2017). Anxiety and stress-related to morbidity and mortality with cancer can be significant factors affecting the client's emotional health. Post-surgical breast cancer survivors typically encounter additional emotional challenges due to body image changes from breast surgery. Body image often involves more than the physical appearance and includes perceptions, thoughts, feelings, and behaviors related to the client's body and functioning (Braveman & Hunter, 2017). Different OT techniques with the therapeutic use of self have demonstrated positive outcomes, as revealed by reviewing qualitative studies and interviews conducted with this population. Examples of OT interventions include cognitive behavioral therapy, problem-solving, mindfulness techniques, discussions on self-image and core values, expressive writing, and spirituality (Garssen et al., 2013).

Evidence

Strong. Strong evidence exists that stress management techniques of guided imagery, meditation, mindfulness, and counseling have improved satisfaction and QoL for post-surgical breast cancer survivors (Level I: Garssen et al., 2013). Evidence supports that myofascial massage decreases pain and stress for this population (Level I: Massingill et al., 2018). Evidence supports that relaxing music improves sleep quality and decreased stress for patients undergoing breast cancer treatments (Level I: Lafci & Oztunc, 2015). Evidence supports that expressive writing has positive effects on this population's physical and psychological health (Level I: Jensen-Johansen et al., 2018; Zhou et al., 2015).

Moderate. Moderate evidence supports that psycho-education helps decrease depression and improve the QoL for breast cancer survivors (Level II: Ram et al., 2013; Level IV: Mosher et al., 2013).

Summary

Strong to moderate evidence indicates that addressing cancer-related physiological issues is beneficial for persons with cancer and especially when breast surgery is performed. Evidence exists that expressive writing reveals benefits on improving the patients' well-being, but one study states the effects were short term (Zhou et al., 2015). The OT practitioners are well suited to address the psychosocial problems faced by post-surgical breast cancer survivors by implementing a combination of techniques to increase the QoL of this population.

VI. Interventions that Address Spiritual Needs

OT practitioners are well suited to address issues related to the spiritual needs of post-surgical breast cancer survivors. Per Shi and Singh (2019), spirituality and religious beliefs can provide meaning, value, hope, and a will to live. Patients with good spiritual well-being have satisfaction with their healthcare, are more accepting of their disease, have a lower risk of depression, and have a better QoL (Phenwan et al., 2019). Often, this population is faced with an immunocompromised system, cancer-related fatigue, pain, and other challenges limiting their ability to go to their place of worship physically. OT practitioners can recommend different options to overcome these challenges and enable the client to address their spiritual needs. During therapy, the OT practitioner can review choices such as using online streaming or library of sermons, talking to the priest over the phone, praying in a quiet room, asking friends to pray for them, visiting to the hospital chapel or talking to the hospital chaplain, and listening on audio or reading the holy book, till the client can attend their place of worship in person.

Evidence

Strong. Strong evidence exists that spirituality helps breast cancer survivors feel like their lives were worthwhile, provide a sense of normalcy, and deeper connections to their family and community (Level IV: Phenwan et al., 2019; Level V: Shi & Singh, 2019). Per a qualitative

study on post-surgical breast cancer survivors, most women reflect that spirituality diminishes their negative emotions of hopelessness and depression and promotes a better adjustment to their illness (Level IV: Paredes & Pereira, 2018). Per a qualitative, descriptive study carried out by Barros da Silva et al. (2019), women with breast cancer revealed that spirituality helped them restore faith, hope, and support. Additionally, it encouraged them and improved their coping strategies.

Summary

Strong evidence supports that spirituality positively affects the patient's physical and emotional health with improved QoL. A study by Phenwan et al. (2019) reports that women with breast cancer had improved family relationships and maintained well-being even as their disease progressed. OT practitioners, within the scope of their practice, should address spirituality and provide options to enable their clients to meet this need.

Appendix C

Upper Extremity Exercises for Post-Surgical Breast Cancer Survivors

(*Note.* The upper extremity exercises and interventions were adapted from exercise protocols from; Mirandola et al., 2018; Aras et al., 2014; Breastcancer.org, 2019; cancercenter.com, 2020; Cancerresearchuk.org, 2013; Guysandthomas.nhs.uk, 2020. Additionally, clinical expertise supports the exercises listed below. For further information, the reader is advised to refer to the full-length articles in the reference section).

Phase I: Postoperative Week 4 – 6

Gradually increase the number of repetitions from 5 →10 Repetitions X 2 sets

(Exercises and number of repetitions should be modified based on the therapist's clinical judgment, the timeline of healing, and patient tolerance).

Supine

Gentle stretching of the shoulder:

- External rotation (with the elbow to the side of the trunk)
- Flexion (overhead and towards the pillow)
- Scaption (Angel wings in line with the scapula)

Clasped hands for shoulder:

- Scapular protraction/retraction
- Flexion (overhead and touching the pillow)
- Pectoral stretch (clasped hands under the head while bringing the elbows out to the sides)

Cane exercises for shoulder:

- External rotation/Internal rotation (elbows to the side of the trunk)
- Flexion
- Scaption

Seated

Active motion

- Shoulder Shrugs
- Shoulder Rolls
- Scapular Retraction
- External Rotation (Hands behind your head)
- Internal Rotation (Hands behind your low back)
- Shoulder pulleys

Standing (seated if balance is an issue)

- Wall Walking for shoulder flexion
- Wall walking for shoulder scaption
- Reaching for a target
- Towel stretches for internal and external rotation

Nerve flossing (Figure 3)

- Radial nerve flossing
 - Ulnar nerve flossing
 - Median nerve flossing

Manual therapy:

- Scar Management
 - Scar mobilization
 - Scar massage
 - Silicone gel inserts
- Myofascial massage

Phase II: Postoperative Week 6 – 10

Gradually increase the number of repetitions and resistance from 5 →10 repetitions X 2 sets and from easy → moderate → hard for the resistance. Continue with Phase I exercises with 10 →15 Repetitions X 2 sets.

(Exercises and number of repetitions should be modified based on the therapist's clinical judgment, the timeline of healing, and patient tolerance).

Thera-Band exercises

- Shoulder flexion
- Shoulder scaption
- External rotation
- Internal rotation
- Scapular retraction

Free weights

- Shoulder flexion
- Shoulder scaption
- External rotation
- Internal rotation
- Scapular retraction

Weighted dowel

- Shoulder flexion
- Shoulder scaption
- External rotation
- Internal rotation
- Scapular retraction

Appendix D

Case Study: Application of the Clinical Practice Guidelines

Patient History/Profile:

- Mary, a 46-year-old woman, was diagnosed with invasive stage III breast cancer after finding a lump on her left breast during a routine self-examination. Before the diagnosis of breast cancer, she did not have any medical problems and did not take any medications.
- Oncological treatment included neoadjuvant chemotherapy to reduce the size of the tumor prior to surgery. Surgery with double mastectomy with expanders was performed seven months after starting chemotherapy. The surgery was followed with 33 sessions of radiation therapy targeting the left axilla and chest wall. A year after the double mastectomy, the Deep Inferior Epigastric Perforator (DIEP) surgery was performed. The fatty tissue from the abdomen was used to fill the space from where the expanders were removed.
- During the first week after the DIEP surgery, the patient was diagnosed with a pulmonary embolism (PE), a hematoma in the left breast, and her hemoglobin levels fell to 6 g/dL (normal range: 12-15.5 g/dL for women). Surgery to drain the hematoma was performed, intravenous medications to control the PE was started, blood transfusions were given, and a nasogastric tube was inserted. Mary was kept in the Intensive Care Unit (ICU) for ten days, then transferred to the acute floor for an additional week before being discharged home.
- The client's intake history revealed that she is a single mother of two teenage daughters, ages 12 and 14. Her mother lives on the same street and is very supportive. The client is employed full time as a physical therapist at a pediatric outpatient clinic. Prior level of functioning revealed she was independent with all her activities of daily living (ADLs) and instrumental

ADLs (IADLs). Mary stated that she enjoyed going to the gym, playing board games with her daughters, listening to music, walking, and dancing.

Evaluation:

- During her hospital stay, the client, was evaluated by PT, and no orders for OT were received.
- OT and PT orders for outpatient therapy were received for “evaluate and treat at four weeks post-op.”
- The OT evaluation consisted of clinical observation, interview, assessing activities of daily living (ADLs) and instrumental ADL (IADLs) in the clinic setting, and objective measurements were taken of the upper extremity (UE) for range of motion, strength, coordination, sensation, observation of skin integrity, and circumferential edema measurements. Additionally, two outcome measures, the SPADI and FACT-B, were completed by the client.
- The SPADI was used to identify Mary’s shoulder pain and her perceived level of disability. The SPADI pain was calculated at 48% and SPADI disability at 57.5%. The FACT-B was used to assess Mary’s perceived QoL. Mary’s FACT-B Total score was calculated at the initial evaluation at 96 points out of 148.
- Post-op surgical precautions: The patient was instructed to sleep in a reclined position with the head of the bed at 30 degrees and keep her body bent at the waist for four weeks’ post-op to allow the incision on her abdomen to heal. Restrictions to lift were limited to 5 lbs. for six weeks post-op.

Interventions:

Occupational therapy services were provided three times a week for six weeks.

- **Upper extremity ROM and strength:**

Exercises at week 4-6 post-op included:

- i. Gentle stretching of the shoulder in external rotation (ER), internal rotation (IR), flexion, and scaption while supine.
- ii. Active range of motion (AROM) and Active Assisted ROM (AAROM) exercises X 10 repetitions each were as follows:
 - a. Supine- Shoulder flexion, scaption, ER, IR.
 - b. Supine- Non-weighted dowel for shoulder flexion, scaption, ER, IR.
 - c. Seated- Shoulder shrugs, scapular protraction/retraction, shoulder circles, elbow flexion/extension, forearm pronation/supination, wrist flexion/extension, digits fist and open, digits abduction/adduction, and thumb opposition.
 - d. Standing- Wall slides for shoulder flexion and scaption.
 - e. Standing-Towel exercises for shoulder IR and ER.
 - f. Seated- Shoulder pulleys for shoulder flexion and scaption.

Exercises at week 6-10 post-op: An increase in the number of repetitions of the above listed ROM exercises to 15 reps each and initiation of resistive exercises increased from 5 to 10 reps for each exercise.

- i. Thera-band exercises for shoulder external and internal rotation, flexion, scaption, and scapular retraction were performed. The level of resistance was increased from yellow (mild) → Red (low moderate) → green (moderate).
- ii. Hand-held weights were used during shoulder flexion, scaption, ER, IR, elbow bends, forearm rotation, and wrist flexion/extension. The weights started at 1 lb. and increased to 3 lbs.

- iii. Weighted dowel exercises for shoulder flexion, scaption, ER, and IR. Dowel weight started at 1 lb. and increased to 4 lbs.
- iv. Yoga poses were initiated based on patient tolerance for weight-bearing.
- **Axillary web syndrome (AWS):** Mary had significant cording on her arm, causing pain, difficulty with ROM, and limiting functional use of her arm. Manual therapy, soft tissue mobilization, and nerve flossing were performed.
- **Scar management:** Scar massage was performed on the incision sites of the chest and abdomen. Mary was instructed on massage techniques and soft tissue mobilization to improve tissue pliability and decrease scar adhesions.
- **Lymphedema:** Lymphedema education was provided to the patient on monitoring for skin hygiene, changes in edema, to perform daily massage strokes, and to avoid any constricting clothing or to take her blood pressure on the affected arm. The benefits of physical activities and exercises on lymphedema were discussed. The patient also had one session with a lymphedema specialist as she had two lymph nodes removed and was at risk for developing lymphedema. Per circumferential measurements taken, no edema was noted to bilateral upper extremities. No compression sleeve or bandages were recommended.
- **Pain:** The SPADI for pain score was calculated at 48% at the time of evaluation. Interventions with myofascial massage, use of cold pack, breathing exercises, yoga, meditation, music, and expressive writing were performed. Kinesio Taping was applied between the shoulder blades to decrease scapular protraction. Education on arm positioning and gentle stretching to decrease achiness and pain were provided to Mary.
- **Functional activities:** Mary rated her SPADI disability score during evaluation at 57.5%. Functional activities were incorporated during the therapy sessions. Education on energy

conservation techniques with prioritizing, planning, and proper body positioning was reviewed with Mary. Grading functional activities to encourage participation in ADLs/IADLs was performed. During the first week of OT, the patient had difficulty with dressing, showers, and toileting and was independent after that. Mary had difficulty with meal preparation, making her bed, and putting dishes in the overhead cabinets. After three weeks of OT, the client was independent with all IADL tasks. Functional transfers and bed mobility were difficult due to her surgery to the abdomen and weakness of her arms. The client worked with PT on transfers and log rolling techniques and could perform them independently within two weeks of therapy.

- **Work:** Mary was on light duty at her workplace and tentatively scheduled to resume full-time work after three months.
- **Leisure:** Mary was encouraged to engage in leisure tasks of her liking, walking, playing board games with her daughters, and listening to music.
- **Emotional challenges:** Mary verbalized how there were times when she felt she was in a very dark place. Family support, church friends, and talking to a clinical psychologist helped Mary during that time. The client felt that talking about her problems and feelings made it easier to deal with it. Expressive writing was recommended, and it helped Mary write down her feelings about cancer. Recommendations to do yoga, deep breathing techniques, and listening to music to decrease stress were discussed during OT.
- **Spiritual support:** Mary verbalized that being a Christian, she prayed frequently, read the bible, and asked her friends to pray for her throughout her recovery. She would listen to sermons online as she could not be in large crowds due to her immunocompromised system.

- **Interdisciplinary approach:** Mary was seen by an occupational therapist, physical therapist, lymphedema specialist, and consulted with a clinical psychologist. She continued to consult with her oncologist, oncology nurse, and radiation therapist on a regular basis. Her social network with her family, friends, and church members was a great source of support throughout her rehabilitation.

Outcomes:

- **UE ROM:** At the end of six weeks of occupational therapy, Mary had good AROM of bilateral UE's and was rated at WFL to all joints/all planes. Strength was assessed at WFL to all joints/all planes, and grip strength was at R: 50 lbs. L: 40 lbs.
- **AWS/cording:** No cording or AWS noted to the left arm/axilla.
- **Scar Management:** Good scar pliability was noted on palpation of the incision sites of the chest and abdomen area.
- **Lymphedema:** No lymphedema was noted per observation. The patient was instructed to follow up with the lymphedema specialist if she noted any changes in edema.
- **Pain:** At discharge, pain rating on the SPADI was calculated at 26%.
- **Functional outcome:** At discharge, Mary was independent with all her ADLs and IADLs. No difficulty was reported with functional tasks. Mary was encouraged to continue to incorporate energy conservation techniques during her daily activities. Mary's disability rating on the SPADI was at 8.8% at discharge.
- **Work:** Mary could do light-duty tasks at eight weeks' post-op from her DIEP surgery. She verbalized she was glad to be back to work and was managing light-duty tasks of chart audits and projects at work and was tentatively scheduled to return to full duty after three months' post-surgery.

- **Leisure:** The client reported she had started back with her yoga classes, listening to music, walking daily for 30 minutes, and spending time with her daughters playing board games on the weekends.
- **Emotional outcome:** Mary verbalized feeling more positive and felt more control over her life.
- **Spiritual outcome:** Mary resumed going to church on Sunday mornings and felt that the spiritual aspect helped her immensely with healing emotionally and physically.
- **Outcome scores:** Scores on SPADI for disability changed from 57.5% to 8.8% (10% MCID) (Rehabmeasures.org, 2015), and SPADI for pain from 48% to 26% (MCID of 8%) (Rehabmeasures.org, 2015). The scores for QoL on the FACT-B Total score changed from 96 points to 115 points (MCID of 6.6 points) (Brady et al., 1997).
- **Discharge recommendations:** At discharge from OT, Mary was instructed to continue with her home exercise program, perform her daily activities incorporating energy conservation techniques, participate in leisure activities, incorporate stress management techniques daily, and follow-up with her physician as needed.

Figure 1.
Flow Diagram: Comprehensive Search Strategy Process

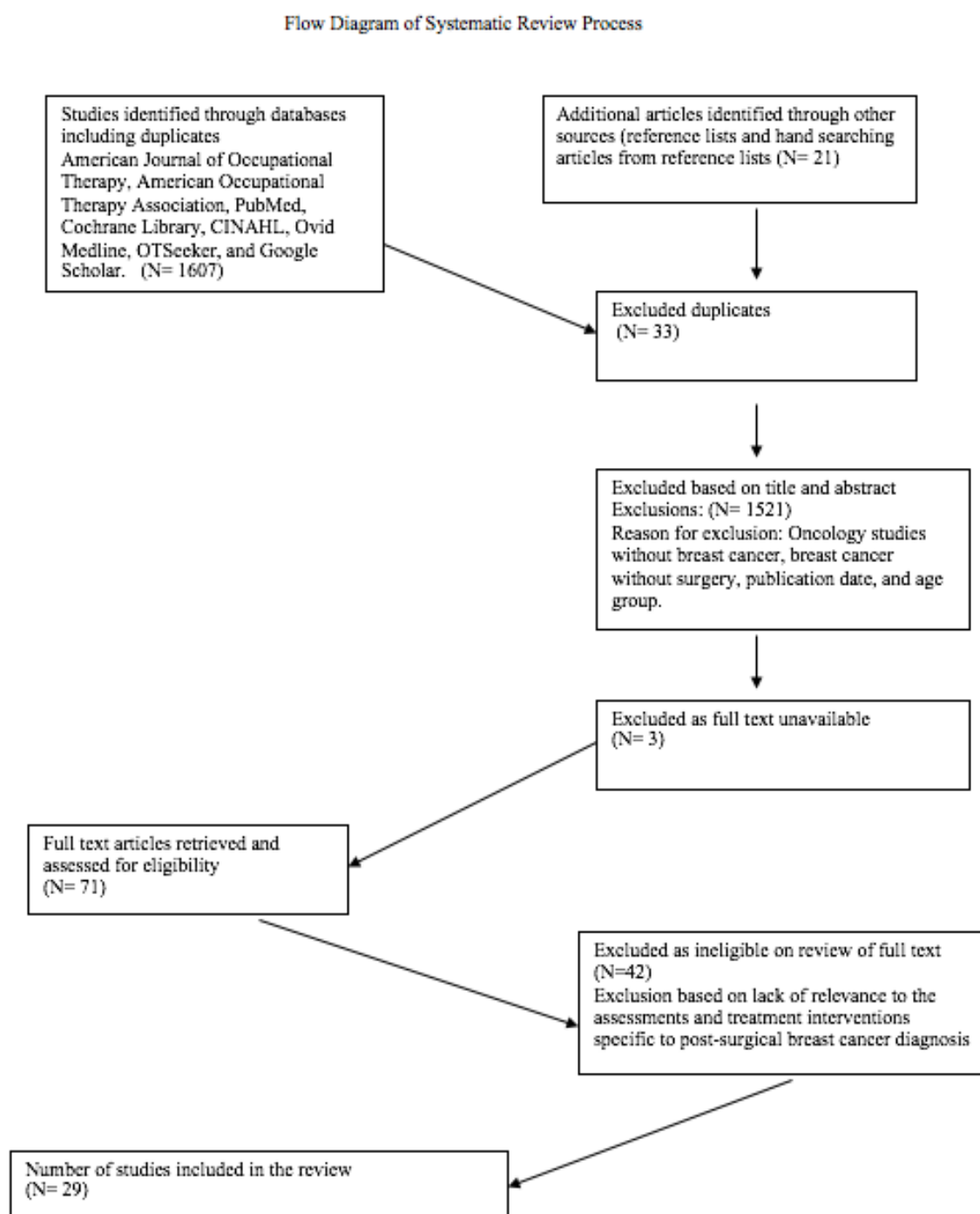
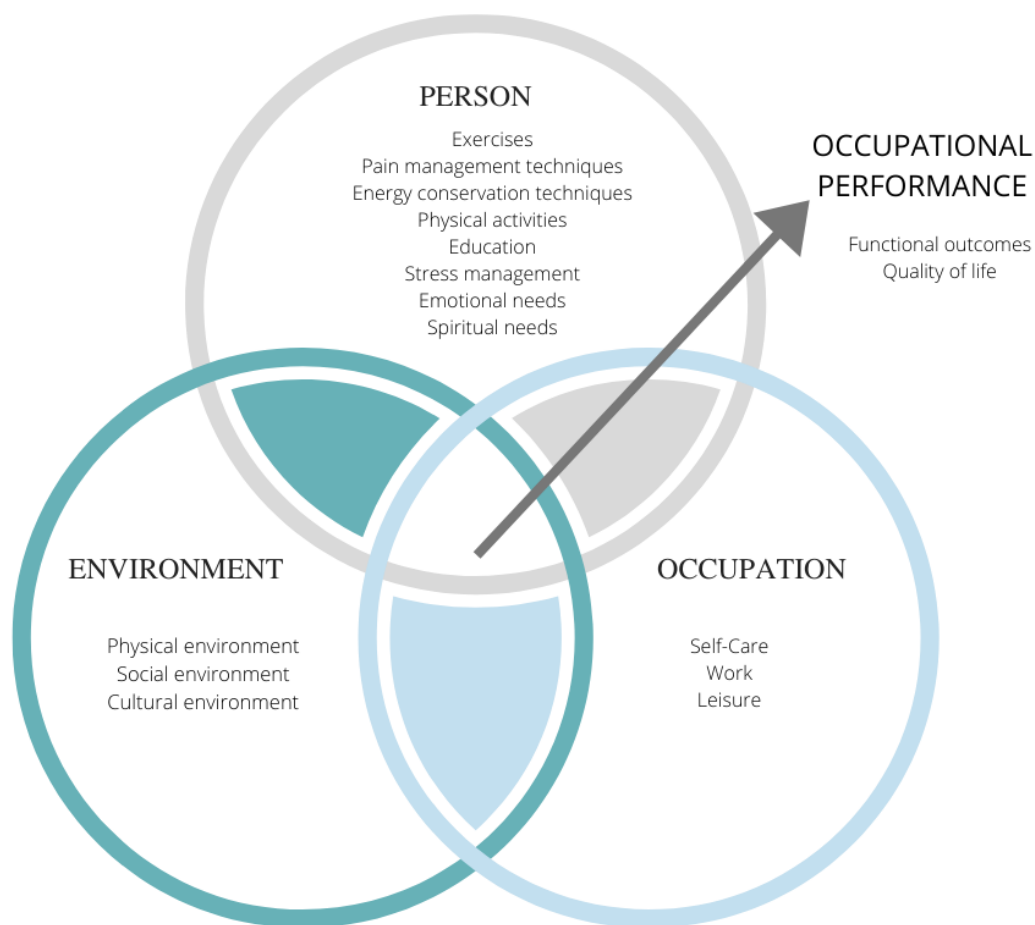


Figure 2. Person-Environment-Occupation (PEO) Model Diagram

Person-Environment-Occupation (PEO) Model



Adapted from Law et al. (1996).

Figure 3.

Nerve Flossing Exercises (Ulnar Nerve)

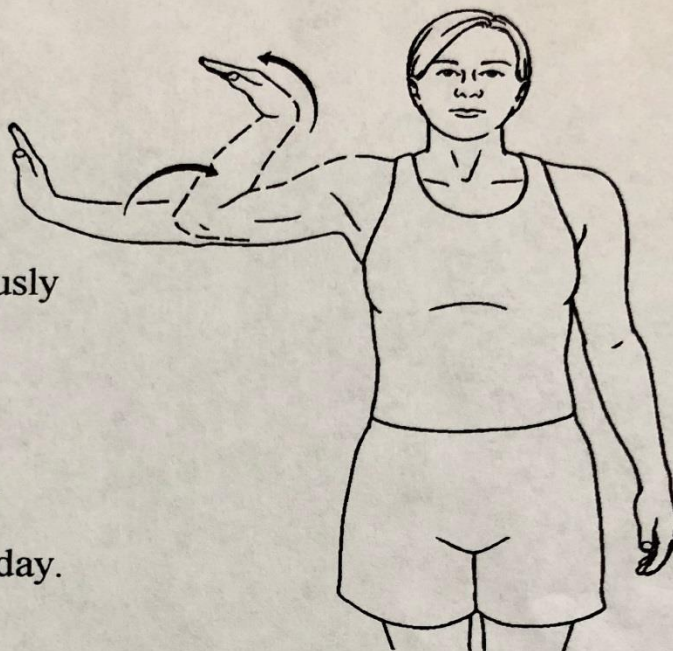
UPPER EXTREMITY - 62

ULNAR NERVE:

Flossing I

Stand with right arm
at shoulder height,
hand and fingers
bent back. Simultaneously
bend elbow and wrist.

Do ____ sets of ____
repetitions per session.
Do ____ sessions per day.



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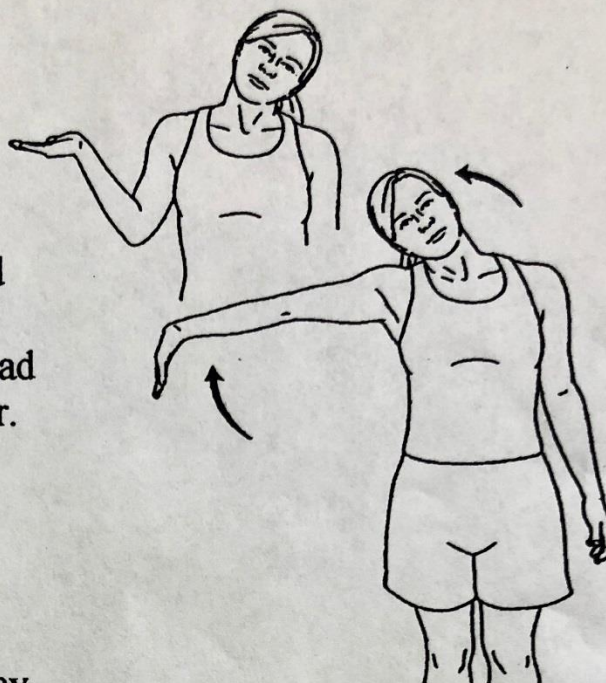
Median Nerve Flossing Exercises

UPPER EXTREMITY - 24

MEDIAN NERVE:

Flossing I

With right elbow bent and palm facing up as if holding a tray, head tilted away. Simultaneously straighten arm and tilt head toward involved shoulder.



Do ____ sets of ____
repetitions per session.
Do ____ sessions per day.

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UPPER EXTREMITY - 47

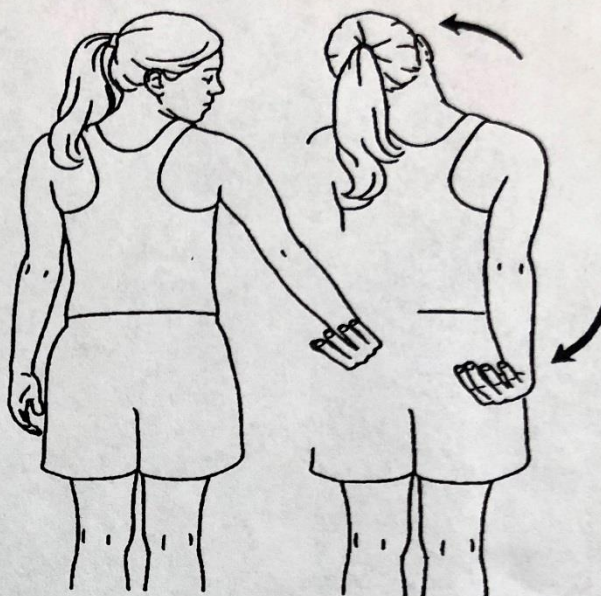
RADIAL NERVE:

Flossing I

Standing with right arm turned in, hand and fingers pulled up, look over shoulder, bring arm back, looking at palm. Simultaneously bring arm in to side and tilt head away.

Do _____ sets of _____ repetitions per session.

Do _____ sessions per day.



Form A**Occupational Therapy Referral Form**

Physician's Orders <i>Please sign below and fax to 972-981-3209</i>		
Patient Name: _____ DOB: _____		
Narrative Diagnosis (required) / ICD-10 Codes: _____		
Frequency & Duration of Treatment: _____		
Physician-Prescribed Precautions: _____		
<input type="checkbox"/> Physical Therapy Evaluate and Treat Physical Therapy <input type="checkbox"/> Therapeutic Exercise <input type="checkbox"/> Aquatic Therapy <input type="checkbox"/> Gait Training <input type="checkbox"/> Manual Therapy/Joint Mobilization <input type="checkbox"/> Dry Needling <input type="checkbox"/> Traction <input type="checkbox"/> Iontophoresis <input type="checkbox"/> Modalities as needed ROM: None PROM AAROM AROM Weight-Bearing Status: _____ PT Special Programs <input type="checkbox"/> Orthopedic Program <input type="checkbox"/> Concussion Program <input type="checkbox"/> Vestibular Program <input type="checkbox"/> Neuro/Stroke Program <input type="checkbox"/> Parkinson's Program (LSVT BIG) <input type="checkbox"/> Oncology Rehab Program <input type="checkbox"/> Edema Program with bandages & garments as appropriate <input type="checkbox"/> Functional Capacity Evaluation <input type="checkbox"/> Other _____	<input type="checkbox"/> Occupational Therapy Evaluate and Treat Occupational Therapy <input type="checkbox"/> Therapeutic Exercise <input type="checkbox"/> Strengthening <input type="checkbox"/> Manual Therapy/Joint Mobilization <input type="checkbox"/> Orthosis Fitting/Management <input type="checkbox"/> Dry Needling <input type="checkbox"/> Modalities as needed ROM: None PROM AAROM AROM Weight-Bearing Status: _____ OT Special Programs <input type="checkbox"/> Orthopedic Program <input type="checkbox"/> Hand Therapy Program <input type="checkbox"/> Neuro/Stroke Program <input type="checkbox"/> Parkinson's Program (LSVT BIG) <input type="checkbox"/> Vision Rehabilitation Program <input type="checkbox"/> Oncology Rehab Program <input type="checkbox"/> Other _____	<input type="checkbox"/> Speech Pathology Evaluate and Treat Speech Pathology <input type="checkbox"/> Speech /Language Evaluation & Treatment <input type="checkbox"/> Cognitive Evaluation & Treatment <input type="checkbox"/> Voice Evaluation & Treatment <input type="checkbox"/> Bedside Swallow Evaluation & Treatment <input type="checkbox"/> Modified Barium Swallow SLP Special Programs <input type="checkbox"/> Concussion Program <input type="checkbox"/> Neuro/Stroke Program <input type="checkbox"/> Parkinson's Program (LSVT LOUD/Speak Out) <input type="checkbox"/> Swallowing Program <input type="checkbox"/> Oncology Rehab Program <input type="checkbox"/> Vocal Cord Dysfunction Program <input type="checkbox"/> Other _____
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">Physician Signature _____</div> <div style="width: 15%;">NPI # _____</div> <div style="width: 15%;">Date _____</div> <div style="width: 25%;">Time _____</div> </div> <div style="margin-top: 5px;"> Physician Name _____ </div>		

PATIENT IDENTIFICATION

Form B

Shoulder Pain and Disability Index (SPADI)

SHOULDER PAIN AND DISABILITY INDEX (SPADI)											
Patient Name _____						Date _____					
Please read carefully:											
Instructions: Please circle the number that best describes the question being asked.											
Pain scale:											
No pain at all	0	1	2	3	4	5	6	7	8	9	10 Worst pain Imaginable
How severe is your pain?											
1.	At its worst?										
	0	1	2	3	4	5	6	7	8	9	10
2.	When lying on the involved side?										
	0	1	2	3	4	5	6	7	8	9	10
3.	Reaching for something on a high shelf?										
	0	1	2	3	4	5	6	7	8	9	10
4.	Touching the back of your neck?										
	0	1	2	3	4	5	6	7	8	9	10
5.	Pushing with the involved arm?										
	0	1	2	3	4	5	6	7	8	9	10
Disability scale:											
No difficulty	0	1	2	3	4	5	6	7	8	9	10 So difficult it requires help
How much difficulty do you have?											
1.	Washing your hair?										
	0	1	2	3	4	5	6	7	8	9	10
2.	Washing your back?										
	0	1	2	3	4	5	6	7	8	9	10
3.	Putting on an undershirt or pullover sweater?										
	0	1	2	3	4	5	6	7	8	9	10
4.	Putting on a shirt that buttons down the front?										
	0	1	2	3	4	5	6	7	8	9	10
5.	Putting on your pants?										
	0	1	2	3	4	5	6	7	8	9	10
6.	Placing an object on a high shelf?										
	0	1	2	3	4	5	6	7	8	9	10
7.	Carrying a heavy object of 10 pounds?										
	0	1	2	3	4	5	6	7	8	9	10
8.	Removing something from your back pocket?										
	0	1	2	3	4	5	6	7	8	9	10
OTHER COMMENTS: _____											
Examiner: _____											
<small>With permission from: Williams JW Jr., Hollman DR Jr., Simel DL: Measuring shoulder function with the Shoulder Pain and Disability Index. <i>J Rheumatol</i> 1995; 22 (4): 727-732</small>											

Form C

Short Form-12 Health Survey (SF-12)

SF-12® Patient Questionnaire

Page 1 of 3

Patient Initials _____ Date of Birth: ____/____/____ Patkey: _____

Surgeon Name: _____ Date: _____

Examination Period: _____ Preop (1) _____ 3 Year (4)
 _____ Immediate Postop (2) _____ 5 Year (5)
 _____ 1 Year (3) _____ Other (specify) (6): _____

SF-12®:

This information will help your doctors keep track of how you feel and how well you are able to do your usual activities. Answer every question by placing a check mark on the line in front of the appropriate answer. It is not specific for arthritis. If you are unsure about how to answer a question, please give the best answer you can and make a written comment beside your answer.

1. In general, would you say your health is:

_____ Excellent (1)
 _____ Very Good (2)
 _____ Good (3)
 _____ Fair (4)
 _____ Poor (5)

The following two questions are about activities you might do during a typical day. Does YOUR HEALTH NOW LIMIT YOU in these activities? If so, how much?

2. MODERATE ACTIVITIES, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf:

_____ Yes, Limited A Lot (1)
 _____ Yes, Limited A Little (2)
 _____ No, Not Limited At All (3)

3. Climbing SEVERAL flights of stairs:

_____ Yes, Limited A Lot (1)
 _____ Yes, Limited A Little (2)
 _____ No, Not Limited At All (3)

During the PAST 4 WEEKS have you had any of the following problems with your work or other regular activities AS A RESULT OF YOUR PHYSICAL HEALTH?

4. ACCOMPLISHED LESS than you would like:

_____ Yes (1)
 _____ No (2)

5. Were limited in the KIND of work or other activities:

_____ Yes (1)
 _____ No (2)

Surgeon Initials _____ Date: _____

SF-12®

Page 2 of 3

Patient Initials _____ Date of Birth: ____/____/____ Patkey: _____

Surgeon Name: _____ Date: _____

Examination Period: _____ Preop (1) _____ 3 Year (4)
 _____ Immediate Postop (2) _____ 5 Year (5)
 _____ 1 Year (3) _____ Other (specify) (6): _____

SF-12® Cont'd:

During the PAST 4 WEEKS, were you limited in the kind of work you do or other regular activities AS A RESULT OF ANY EMOTIONAL PROBLEMS (such as feeling depressed or anxious)?

6. ACCOMPLISHED LESS than you would like:

_____ Yes (1)
 _____ No (2)

7. Didn't do work or other activities as CAREFULLY as usual:

_____ Yes (1)
 _____ No (2)

8. During the PAST 4 WEEKS, how much did PAIN interfere with your normal work (including both work outside the home and housework)?

_____ Not At All (1)
 _____ A Little Bit (2)
 _____ Moderately (3)
 _____ Quite A Bit (4)
 _____ Extremely (5)

The next three questions are about how you feel and how things have been DURING THE PAST 4 WEEKS. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the PAST 4 WEEKS –

9. Have you felt calm and peaceful?

_____ All of the Time (1)
 _____ Most of the Time (2)
 _____ A Good Bit of the Time (3)
 _____ Some of the Time (4)
 _____ A Little of the Time (5)
 _____ None of the Time (6)

Surgeon Initials _____ Date: _____

SF-12®

Page 3 of 3

Patient Initials _____ Date of Birth: ____/____/____

Patkey: _____

Surgeon Name: _____

Date: _____

Examination Period: _____ Preop (1) _____ 3 Year (4)
 _____ Immediate Postop (2) _____ 5 Year (5)
 _____ 1 Year (3) _____ Other (specify) (6): _____

SF-12® Cont'd:

10. Did you have a lot of energy?
 _____ All of the Time (1)
 _____ Most of the Time (2)
 _____ A Good Bit of the Time (3)
 _____ Some of the Time (4)
 _____ A Little of the Time (5)
 _____ None of the Time (6)
11. Have you felt downhearted and blue?
 _____ All of the Time (1)
 _____ Most of the Time (2)
 _____ A Good Bit of the Time (3)
 _____ Some of the Time (4)
 _____ A Little of the Time (5)
 _____ None of the Time (6)
12. During the PAST 4 WEEKS, how much of the time has your PHYSICAL HEALTH OR EMOTIONAL PROBLEMS interfered with your social activities (like visiting with friends, relatives, etc.)?
 _____ All of the Time (1)
 _____ Most of the Time (2)
 _____ A Good Bit of the Time (3)
 _____ Some of the Time (4)
 _____ A Little of the Time (5)
 _____ None of the Time (6)

Surgeon Signature _____ Date _____

Form D

Functional Assessment of Cancer Therapy-Breast (FACT-B)

FACT-B (Version 4)

Below is a list of statements that other people with your illness have said are important. Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

**PHYSICAL WELL-BEING**

		Not at all	A little bit	Some- what	Quite a bit	Very much
GP1	I have a lack of energy	0	1	2	3	4
GP2	I have nausea	0	1	2	3	4
GP3	Because of my physical condition, I have trouble meeting the needs of my family	0	1	2	3	4
GP4	I have pain	0	1	2	3	4
GP5	I am bothered by side effects of treatment	0	1	2	3	4
GP6	I feel ill	0	1	2	3	4
GP7	I am forced to spend time in bed	0	1	2	3	4

SOCIAL/FAMILY WELL-BEING

		Not at all	A little bit	Some- what	Quite a bit	Very much
GS1	I feel close to my friends	0	1	2	3	4
GS2	I get emotional support from my family	0	1	2	3	4
GS3	I get support from my friends	0	1	2	3	4
GS4	My family has accepted my illness	0	1	2	3	4
GS5	I am satisfied with family communication about my illness	0	1	2	3	4
GS6	I feel close to my partner (or the person who is my main support)	0	1	2	3	4
SI	<i>Regardless of your current level of sexual activity, please answer the following question. If you prefer not to answer it, please mark this box <input type="checkbox"/> and go to the next section.</i>					
GS7	I am satisfied with my sex life	0	1	2	3	4



FACT-B (Version 4)

Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

**EMOTIONAL WELL-BEING**

		Not at all	A little bit	Some- what	Quite a bit	Very much
GE1	I feel sad.....	0	1	2	3	4
GE2	I am satisfied with how I am coping with my illness.....	0	1	2	3	4
GE3	I am losing hope in the fight against my illness.....	0	1	2	3	4
GE4	I feel nervous.....	0	1	2	3	4
GE5	I worry about dying.....	0	1	2	3	4
GE6	I worry that my condition will get worse.....	0	1	2	3	4

**FUNCTIONAL WELL-BEING**

		Not at all	A little bit	Some- what	Quite a bit	Very much
GF1	I <u>am able to</u> work (include work at home).....	0	1	2	3	4
GF2	My work (include work at home) is fulfilling.....	0	1	2	3	4
GF3	I <u>am able to</u> enjoy life	0	1	2	3	4
GF4	I have accepted my illness	0	1	2	3	4
GF5	I am sleeping well	0	1	2	3	4
GF6	I am enjoying the things I usually do for fun.....	0	1	2	3	4
GF7	I am content with the quality of my life right now	0	1	2	3	4

FACT-B (Version 4)

Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

<u>ADDITIONAL CONCERNS</u>		Not at all	A little bit	Some- what	Quite a bit	Very much
B1	I have been short of breath.....	0	1	2	3	4
B2	I am self-conscious about the way I dress.....	0	1	2	3	4
B3	One or both of my arms are swollen or tender.....	0	1	2	3	4
B4	I feel sexually attractive	0	1	2	3	4
B5	I am bothered by hair loss	0	1	2	3	4
B6	I worry that other members of my family might someday get the same illness I have	0	1	2	3	4
B7	I worry about the effect of stress on my illness	0	1	2	3	4
B8	I am bothered by a change in weight	0	1	2	3	4
B9	I <u>am able to</u> feel like a woman	0	1	2	3	4
B10	I have certain parts of my body where I experience pain ...	0	1	2	3	4

Form E

Patient Questionnaire

OUTPATIENT THERAPY SERVICES REGISTRATION QUESTIONNAIRE

Name _____ Home# _____ Work# _____ Cell# _____

Do you prefer to be treated and/or evaluated in a private treatment room? ☐ Yes ☐ No

What brings you to therapy? _____

Surgery Date: _____

Are you currently receiving **any** home health services? ☐ Yes ☐ No*If you are receiving ANY home health services, your insurance may not cover concurrent home health and outpatient services.*

Date of injury: _____

Please describe how you were injured: _____

Have you had this or similar problems before? ☐ Yes ☐ NoHave you had *therapy* for this or similar problems before? ☐ Yes ☐ No

Describe prior episodes, related conditions and treatment outcomes. _____

Please list all Allergies ☐ NonePlease list all medications/herbs/vitamins you currently take, or attach a list of medications. ☐ None**Medical History**

Check all that you do have or have had:

☐ Asthma☐ Chronic Pain☐ Diabetes☐ History of Injury☐ High Blood Pressure☐ Mental Health Problem☐ Non-compliance☐ Parkinson's☐ Rheumatoid Arthritis☐ Seizures☐ DJD☐ Traumatic Brain Injury☐ Cardiac Disease☐ Depression☐ Fibromyalgia☐ History of Surgical Procedure☐ Parent/Child Issue☐ Cognitive Disorder☐ Obesity☐ Pregnancy☐ RSD- Reflex Sympathetic Dystrophy☐ Smoking☐ Asthma☐ Cancer or history of cancer☐ Pacemaker/Defibrillator☐ Other health conditions _____Please list any other medical / surgical history with dates ☐ None**Pain Symptoms** (Go to next section if pain is not an issue)

Rate your current pain on a 0-10 scale (0 = pain free, 10 = worst imaginable pain) _____

What has been the least pain rating recently _____

What has been the highest pain rating recently _____

PATIENT IDENTIFICATION

OUTPATIENT THERAPY SERVICES REGISTRATION QUESTIONNAIRE

(CONTINUE)

Where is the location of the pain? _____

What is the frequency of the your pain? ☐ Constant ☐ Intermittent

Do you have numbness or tingling? ☐ Yes ☐ No

What positions or activities make your pain worse? _____

What positions or activities make your pain better? _____

Other _____

Home/Vocational Status

What is your dominant hand? ☐ Right ☐ Left

Home environment: check all that apply ☐ Single story home ☐ Multistory home ☐ Apartment ☐ Mobile home

☐ Facility ☐ Stairs ☐ Steps ☐ Ramps ☐ Rails ☐ Alone ☐ Family ☐ Caretaker

Employment: ☐ Full Time ☐ Part Time ☐ Self Employed ☐ Student ☐ Retired for age

☐ Retired for medical reasons ☐ Homemaker ☐ Unemployed

Work related injury ☐ Yes ☐ No

Occupation: _____

Physical requirements of job: _____

Daily Activity Limitations _____

Physician Prescribed Restrictions _____

Previous/Current Exercise routine: _____

What are your normal leisurely activities/hobbies? _____

What is your goal for therapy? _____

Have you ever been physically, sexually, or emotionally abused? ☐ No ☐ Yes, in the past ☐ Yes, currently

Would you like to receive information on abuse resources? ☐ No ☐ Yes

Education Assessment

Primary language: ☐ English ☐ Spanish ☐ Other

Do you have any hearing problems? ☐ No ☐ Yes, _____

Do you have any vision problems? ☐ No ☐ Yes, _____

Do you have difficulty speaking? ☐ No ☐ Yes, _____

Do you have any problems remembering or thinking? ☐ No ☐ Yes, _____

Do you have any emotional barriers? ☐ No ☐ Yes, _____

Do you have any desire/motivation barriers? ☐ No ☐ Yes, _____

Do you have any cultural/religious issues that impact learning? ☐ No ☐ Yes, _____

Do you have financial concerns? ☐ No ☐ Yes, _____

How do you learn best? ☐ No Preference ☐ Verbal ☐ Written ☐ Visual ☐ Demonstration

How does your primary caregiver learn best?

☐ No Preference ☐ Verbal ☐ Written ☐ Visual ☐ Demonstration

Highest education level? ☐ Less than HS ☐ HS/GED ☐ Some College ☐ College _____

Signature of person completing form: _____ Time: _____ Date: _____

OUTPATIENT THERAPY SERVICES REGISTRATION QUESTIONNAIRE

(CONTINUE)

Where is the location of the pain? _____

What is the frequency of the your pain? ☐ Constant ☐ IntermittentDo you have numbness or tingling? ☐ Yes ☐ No

What positions or activities make your pain worse? _____

What positions or activities make your pain better? _____

Other _____

Home/Vocational Status

What is your dominant hand? ☐ Right ☐ LeftHome environment: check all that apply ☐ Single story home ☐ Multistory home ☐ Apartment ☐ Mobile home☐ Facility ☐ Stairs ☐ Steps ☐ Ramps ☐ Rails ☐ Alone ☐ Family ☐ CaretakerEmployment: ☐ Full Time ☐ Part Time ☐ Self Employed ☐ Student ☐ Retired for age☐ Retired for medical reasons ☐ Homemaker ☐ UnemployedWork related injury ☐ Yes ☐ No

Occupation: _____

Physical requirements of job: _____

Daily Activity Limitations _____

Physician Prescribed Restrictions _____

Previous/Current Exercise routine: _____

What are your normal leisurely activities/hobbies? _____

What is your goal for therapy? _____

Have you ever been physically, sexually, or emotionally abused? ☐ No ☐ Yes, in the past ☐ Yes, currentlyWould you like to receive information on abuse resources? ☐ No ☐ Yes

Education Assessment

Primary language: ☐ English ☐ Spanish ☐ OtherDo you have any hearing problems? ☐ No ☐ Yes, _____Do you have any vision problems? ☐ No ☐ Yes, _____Do you have difficulty speaking? ☐ No ☐ Yes, _____Do you have any problems remembering or thinking? ☐ No ☐ Yes, _____Do you have any emotional barriers? ☐ No ☐ Yes, _____Do you have any desire/motivation barriers? ☐ No ☐ Yes, _____Do you have any cultural/religious issues that impact learning? ☐ No ☐ Yes, _____Do you have financial concerns? ☐ No ☐ Yes, _____How do you learn best? ☐ No Preference ☐ Verbal ☐ Written ☐ Visual ☐ DemonstrationHow does your primary caregiver learn best? ☐ No Preference ☐ Verbal ☐ Written ☐ Visual ☐ DemonstrationHighest education level? ☐ Less than HS ☐ HS/GED ☐ Some College ☐ College _____

Signature of person completing form: _____ Time: _____ Date: _____