Deanship of Graduate Studies
Al-Quds University

Comparisons Study of Supervised Physiotherapy Intervention and Home Program on Pain, Fatigue & Functional Abilities among Women Post Breast Cancer

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MPT Thesis

Jerusalem- Palestine

1445\2023

Comparisons Study of Supervised Physiotherapy Intervention and Home Program on Pain, Fatigue & Functional Abilities Among Women Post Breast Cancer

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A thesis submitted in partial fulfillment of the requirement for the degree of Master of Physiotherapy - Deanship of Graduate Studies -Al-Quds University

Jerusalem- Palestine

1445\2023

Deanship of Graduate Studies

Al-Quds University

Thesis Approval

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Jerusalem- Palestine

1445/2023

Dedication

To my compassionate father, my role model in life.

To beloved mother, I cannot find the words that can give it justice, because it is an odyssey of love and joy of a lifetime.

To my husband, my companion, the highest symbol of sincerity and loyalty.

To my children.

To my father-in-law, my teacher, my role model, and my role model in life.

To my husband's mother, an example of dedication and giving.

To my dear supervisor, Dr. Esra' Hamdan, the source of inspiration and my great guide.

Declaration

This thesis is submitted in partial fulfillment of the requirement for the Master's degree in Physiotherapy.

I declare that the content of this thesis (or any part of the same) has not been submitted for a higher degree to any other University or institution.

Signed: *Enas Safadi*

Date: 28 / December / 2023

Acknowledgment

First, I must thank God Almighty, who has enabled me to reach this high academic stage and paved the way for me to be among you today to discuss my master's thesis.

I also extend my thanks and gratitude to my dear father, my honorable mother, my beloved husband, my father, and my mother-in-law, who was my first support in reaching what I have achieved.

I want to express my highest gratitude to Dr. Esra' Hamdan, as her supervision and granting me much time was the first hand in producing this scientific thesis in the form it appeared, and her guidance and advice played an essential role in completing my scientific studies.

I also extend my sincere thanks to all the members of the study sample who gave me a lot of their time and made much effort so that the message produced the most accurate and effective results.

Finally, I would like to thank everyone who left me smiling.

Comparisons Study of Supervised Physiotherapy Intervention and Home Program on Pain, Fatigue, And Functional Abilities among Women Post Breast Cancer

Prepared by: Enas Kamel Ali Safadi

Supervisor: Dr. Esra Hamdan

Abstract

Background: Appreciation to early diagnosis and enhanced treatment, the survival rate in patients with breast cancer has improved. However, breast cancer survivor women often suffer from long-term complications such as pain fatigue, reduced ROM, and functional abilities. Physiotherapy has been identified as a viable and successful intervention strategy that can help reduce some of the side effects of cancer treatments. Supervised physiotherapy intervention that includes exercises to improve ROM, as well as manual therapy techniques such as mobilization and stretching, help with improving function and reducing pain. A home exercise program can also be beneficial to help maintain and improve ROM.

Aim of the study: to investigate and compare the effects of supervised physiotherapy intervention and unsupervised home programs on pain, fatigue, functional abilities, and shoulder range of motion in breast cancer survivor women.

Materials and methods: A prospective quasi-experimental, 2-arm parallel research on 84 breast cancer patients was done. The intervention program included 3 sessions a week for 8 weeks. 40 women (Group A) received supervised physiotherapy intervention, while 44 women (Group B) followed an unsupervised home program. The outcome measures were pain intensity by visual analog scale, shoulder range of motion by goniometer and the quick dash questionnaire, Fatigue by the brief Fatigue Inventory, and assessment of aerobic capacity and endurance by the 6-minute walk test. Statistical analysis was carried out utilizing paired and independent t-tests.

Results: Both intervention groups improved significantly after the intervention. When compared to Group B, Group A showed a higher reduction in pain (p 0.001), exhaustion (p 0.001), and improved functional abilities (p 0.001). Furthermore, Group A improved significantly on the Six Minute Walk Test scale (p 0.001) and shoulder range of motion (p 0.001).

Conclusion: The study found that exercise programs significantly reduced fatigue in breast cancer patients, improved functional abilities, and reduced pain, while physiotherapy had a greater impact on fatigue and functional abilities

Keywords: women post breast cancer, supervised physiotherapy intervention, home program, fatigue, functional abilities.

دراسة مقارنة تدخل العلاج الطبيعي الخاضع للإشراف والبرنامج المنزلي حول الألم والارهاق والقدرات الوظيفية بين النساء بعد سرطان الثدي

إعداد: ايناس كامل علي صفدي
إشراف: الدكتورة اسراء حمدان

ملخص عن الدراسة باللغة العربية

المقدمة: إن التشخيص المبكر والعلاج المكثف، يؤدي الي زيادة معدل البقاء على قيد الحياة لدى المريضات المصابات بسرطان الثدي. ومع ذلك، فغالبًا ما تعاني الناجيات من سرطان الثدي من مضاعفات منهكة طويلة الأمد مثل الألم والتعب وانخفاض المدى الحركي والقدرات الوظيفية. وحيث وصف تدخل العلاج الطبيعي الخاضع للإشراف على أنه استراتيجية تدخل فعالة وناجحة يمكن أن تساعد في تقليل بعض الآثار الجانبية الناتجة عن علاج سرطان الثدي. والذي يتضمن تمارين لتحسين نطاق الحركة، بالإضافة إلى تقنيات العلاج اليدوي مثل التحريك والتمدد، والتي تؤدي الى تحسين القدرة الوظيفية وتقليل الألم. وكذلك أيضا برنامج التمارين المنزلية مفيد للمساعدة في الحفاظ على نطاق الحركة وتحسينه.
هدف الدراسة: تهدف هذه الدراسة إلى فحص ومقارنة آثار تدخل العلاج الطبيعي الخاضع للإشراف والبرامج المنزلية غير الخاضعة للرقابة على الألم والتعب والقدرات الوظيفية ونطاق حركة الكتف لدى النساء الناجيات من سرطان الثدي.

المنهج المتبع للدراسة: تم إجراء دراسة شبه تجريبية ومزدوجة الذراع على 84 مريضة مصابة بسرطان الثدي. يتضمن برنامج التدخل 3 جلسات أسبوعيًا لمدة 8 أسابيع. تلقت 40 امرأة (المجموعة أ) تدخلًا للعلاج الطبيعي تحت الإشراف، بينما اتبعت 44 امرأة (المجموعة ب) برنامجًا منزليًا غير خاضع للرقابة. وكانت مقاييس النتائج هي شدة الألم بواسطة المقياس التناظري البصري، ونطاق حركة الكتف بواسطة مقياس الزوايا واستبيان اعاقات الذراع والكتف واليد (المختصر)، والتعب من خلال مقياس الارهاق، وتقييم القدرة الهوائية والتحمل من خلال اختبار المشي لمدة 6 دقائق. تم إجراء التحليل الإحصائي باستخدام اختبارات(t) المقترنة والمستقلة.

نتائج الدراسة: كلا مجموعتي التدخل تحسنت بشكل ملحوظ بعد التدخل. بالمقارنة مع المجموعة ب، أظهرت المجموعة (أ) انخفاضًا أعلى في الألم ($p=0.001$)، والتعب ($p=0.001$)، وتحسين القدرات الوظيفية ($p=0.001$). علاوة على ذلك، تحسنت المجموعة (أ) بشكل ملحوظ على مقياس اختبار المشي لمدة ست دقائق ($p=0.001$)، ومدى حركة الكتف ($p=0.001$).

الاستنتاج: وجدت الدراسة أن برامج التمارين العلاجية خفضت بشكل كبير من التعب لدى مريضات سرطان الثدي، وحسنت القدرات الوظيفية، وخفضت الألم، في حين كان للعلاج الطبيعي تأثير أكبر للتقليل من التعب وزيادة القدرات الوظيفية.

الكلمات المفتاحية: النساء بعد سرطان الثدي، تدخل العلاج الطبيعي تحت الإشراف، البرنامج المنزلي، التعب، القدرات الوظيفية.

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List of abbreviations

BMI	**Body Mass Index**
FAB	**Fatigue Assessment Battery**
Q-DASH	**Quality of Life Disability and Function-Short Form**
Six-Minute Walk Test	**Six-Minute Walk Test**
Shoulder ROM	**Shoulder Range of Motion**
VAS	**Visual Analogue Scale**
T-test	**Two Independent Sample T-test**
p-value	**Probability value**
Pretest	**Pre-intervention assessment**
Middle Test	**Mid-intervention assessment**
Posttest	**Post-intervention assessment**
Group A	**Supervised physiotherapy intervention group**
Group B	**Home intervention group**
SD	**Standard deviation**
BC	**Breast cancer**
CRF	**cancer-related fatigue**
BCRL	**Breast cancer-related lymphedema**
(QoL)	**Quality of life**

Chapter One

Introduction

1.1 Introduction

1.2 Problem Statement

1.3 Study Justification

1.4 Study Objectives

1.5 Study Hypothesis

1.6 Research Questions

1.7 Terminology

1.1 Introduction

Breast cancer (BC) is the most common neoplasm (Raman, Cimpean, & De Miglio, 2023). Also, it is one of the causes of cancer mortality among women worldwide (Giaquinto et al., 2022). In 2020, 2.3 million women were diagnosed with breast cancer .

Adverse effects include fatigue, pain, loss of sensation, weakness, and sometimes axillary web syndrome. Patients also frequently experience shoulder range of motion and weakness in their muscles. Furthermore, reduced activity, motivation and interest, exhaustion, apathy, generalized weakness, abnormal sleep patterns, irritability, and sadness are all possible symptoms that might occur post-breast cancer treatment.

Additionally, an unpleasant subjective symptom includes total tiredness to exhaustion, often called fatigue. Defined fatigue associated with cancer as "an unusual, persistent, subjective sense of tiredness related to cancer or cancer treatment that interferes with usual functioning. Breast Cancer patients experience fatigue that is more severe, more upsetting, and less likely to be alleviated by rest (). Persistent fatigue and pain maybe two of the adverse effects that contribute to these patients' lost disability-adjusted life years and poor quality of life (Amarsheda & Bhise, 2021). Although fatigue typically goes away after treatment is finished, over 40% of breast cancer patients still experience persistent fatigue years later (Misiąg, Piszczyk, Szymańska-Chabowska, & Chabowski, 2022). It is progressively accepted that fatigue is a substantial long-term side-effect among breast cancer patients (Fu et al., 2022). In addition, about one in five women (22%) report having upper body symptoms six months after surgery, and 15 to 25 percent report that their upper body function is still compromised six years after surgery. (Mackereth, Farrell, Bardy, Molassiotis, & Finnegan-John, 2015), with pain, stiffness, reduced range of motion, and muscular strength. These problems can affect many patients' ability to participate in routine activities and function physically, reducing their functional capacities.

Patients and the healthcare system bear a significant financial burden as a result of the treatment for breast cancer, which emphasizes volume control using garments with compression and physical therapy (Schmidt et al., 2012)(Claire Davies et al., 2020). It is necessary to develop strategies to reduce the risk of BCRL in high-risk individuals and enhance patient quality of life (C. Davies, K. Levenhagen, K. Ryans, M. Perdomo, & L. Gilchrist, 2020). There is a growing interest in aerobic and resistance exercise as a safe and effective

complement to treatment for breast cancer to decrease or prevent side effects (C. Davies et al., 2020; Hasenoehrl et al., 2020). Further, exercise can be tailored for symptom management, improved functional abilities, and emotional well-being (Campbell et al., 2019; Dinapoli, Colloca, Di Capua, & Valentini, 2021).

For breast-female cancer patients who are the survivors, physiotherapy is an important part of the symptomatic treatment. The primary objective is to improve their functional abilities as a whole. This is done, among other things, by lessening the symptoms of cancer and other conditions that make it hard for patients to do things. In addition, it is essential to effectively assist patients in adapting to their new functional restrictions and maintaining a realistic level of physical activity and self-reliance within the constraints imposed by the characteristics of the disease (Eyigor & Kanyilmaz, 2014).

Moreover, physiotherapists play a crucial role in the treatment of conditions that might be related to breast cancer such as shoulder pain, cancer-related fatigue, axillary web syndrome, and chest wall restrictions are some common physical impairments that can occur after breast cancer treatments (hormone therapy, reconstruction, radiation, chemotherapy, and surgery.

Studies have shown that up to 50% of women who have undergone surgery, particularly mastectomy, may experience decreased ROM in the shoulder, arm, and chest. Thus, Range of motion (ROM) exercises are an important part of rehabilitation for women who have undergone treatment for breast cancer, as surgery and radiation therapy can lead to decreased ROM in the shoulder, arm, and chest. Supervised physiotherapy intervention that includes exercises to improve ROM, as well as manual therapy techniques such as mobilization and stretching, help with improving function and reducing pain. A home exercise program can also be beneficial to help maintain and improve ROM(Claire Davies, Kimberly Levenhagen, Kathryn Ryans, Marisa Perdomo, & Laura Gilchrist, 2020).

1.2 Problem Statement

Over the last two decades, there has been a notable increase in the number of cancer cases among Palestinians, according to numerous studies conducted in the Palestinian territories. — from 1,073 cases in 2000 to 2536 cases in 2016 in the West Bank alone. In comparison to 2015, there was a 5.8% increase in cancer cases in 2016. 15% of cancer cases in Palestine involve Palestinian women with breast cancer (Leal, Oliveira, & Carrara, 2016).

Physiotherapy has been identified as a viable and successful intervention strategy that can help reduce some of the side effects of cancer treatments. (Santa Mina et al., 2018). Further, Physiotherapy is safe, and has a positive effect, following obtaining treatment for breast cancer (Jubran, Ali Nashat Shaar, Sawsan Hammad, & Khadija Jarrar, 2018).

Specifically, Physiotherapeutic exercises have helped improve physical activity and performance, reducing chronic and acute pain, improving functional abilities, and improving overall body composition (Al Ali & Mugenya, 2021; Olsson Moller, Beck, Ryden, & Malmstrom, 2019). Additionally, adherence to PT instructions is an essential part of the treatment's effectiveness. Consequently, PT interventions combined with patient therapeutic education may enhance patients' efficiency, physical activity levels, and in general for women who have survived breast cancer. Therefore, this gives the researcher enough motives to search and study how physiotherapy may affect complications and in particular, Pain fatigue, and functional abilities among Palestinian women post-breast cancer.

1.3 Study Justification "Rational"

Several organizational strategies have been established in different countries to meet breast cancer patients and enhance their performance and comfort. However, in Palestine, there is no known or specific strategy or even guidelines to follow regarding physiotherapy intervention post-breast cancer treatments especially in governmental hospitals.

The evidence supports the efficiency of supervised versus unsupervised PT interventions for breast cancer survivors as they have several rehabilitation needs, which means that individualization is essential for optimum rehabilitation (Keilani, Hasenoehrl, Neubauer, & Crevenna, 2016). Thus, the results concerning the efficiency of the supervised physiotherapy intervention will enhance a woman's breast cancer ability to function more effectively. Accordingly, these factors encourage the researcher to discover how the interrelationships between physiotherapy intervention and the health care system in governmental Palestinian hospitals in the occupied Palestinian territory affect positively or negatively the complications post breast cancer treatments. Furthermore, the study's findings will also be advantageous to physiotherapists, physicians, and MOHs, who can apply them to establish a management physiotherapy protocol that prevents fatigue and enhances functional abilities in patients with breast cancer after treatment.

1.4 Study Hypothesis

1. There is a significant effect of a supervised physiotherapy intervention on reducing fatigue and improving functional abilities through physiotherapy intervention programs at $P \leq 0.05$.
2. There is no significant effect of the personal variables (age, occupation, marital status, BMI) on the physiotherapy intervention for women post-breast cancer outcomes at $P \leq 0.05$.
3. There is a significant effect of an unsupervised exercise home program on a range of motion and improving functional abilities through physiotherapy intervention programs at $P \leq 0.05$.

1.5 Study Objectives

1. To investigate the effect of a supervised physiotherapy intervention on reducing fatigue and increasing functional abilities through physiotherapy intervention and home programs on breast cancer women outcomes.
2. To investigate the effect of personal variables (age, occupation, marital status, BMI) on the prognosis of fatigue and functional abilities post-woman breast cancer outcomes.
3. To investigate the long-term effects of unsupervised exercise home programs on the range of motion and functional abilities of women post-breast cancer.

1.6 Research Questions

- Is the treatment effect of a supervised physiotherapy program on reducing fatigue and improving functional abilities through physiotherapy intervention programs among women post-breast cancer more effective than an unsupervised exercise home program?
- Is there any effects of personal variables (age, occupation, marital status, BMI) on the prognosis of fatigue and functional abilities post-woman breast cancer outcomes?
- Is the treatment effect of an unsupervised exercise program on a range of motion and improving functional abilities through physiotherapy intervention programs for women post-breast cancer more effective than an unsupervised exercise program?

1.7 Terminology

- **Aerobic Exercise:** This is used to describe the type of structured, repetitive physical activity that demands the body's metabolic process to obtain energy from oxygen. (Olsson Moller et al., 2019).
- **Breast cancer:** thickening or lump in the breast a change in a breast's size, shape, or appearance; skin dimpling, redness, pitting, or other change; alteration in the appearance of the nipple or the skin around it (areola); and/or. Unusual discharge from the nipple(Patel et al., 2017).
- **Fatigue:** Defined as "a subjective state of overwhelming and sustained exhaustion with a decrease in capacity for physical and mental work not relieved with rest" (Su et al. 2022)
- **Functional ability:** The ability of a person to perform daily tasks in a way that meets their basic needs in terms of their physical, psychological, cognitive, and social needs is referred to as this.. (https://medicine.jrank.org/pages/673/Functional-Ability.html).
- **Physiotherapy:** Physiotherapy is concerned with human function and movement as well as maximizing physical potential. In the areas of promotion, prevention, treatment/intervention, habilitation, and rehabilitation, it aims to identify and maximize movement potential(Ginsburg et al., 2020).
- **Resistance Exercise:** defined as exercise that increases muscle strength, power, and strength by using body weight or external resistance. It may also have a positive effect on mobility, function, and independence. (Ali et al., 2022)
- **Range of motion (ROM):** the extent or limit to which a part of the body can be moved around a joint or a fixed point; the totality of movement a joint is capable of doing. The range of motion of a joint is gauged during passive ROM (assisted) **PROM** or active ROM (independent) **AROM** (https://www.verywellhealth.com/overview-range-of-motion-2696650)

Chapter Two

Literature Review

2.1 Theoretical Framework

2.2 Similar Studies

2.1 Theoretical Framework

2.1.1 Anatomy and Physiology of the Breast

There are 15 to 20 lobes, or sections, in each breast. They are positioned similarly to a daisy's petals. Lobules are numerous, smaller structures found within each lobe. These result in dozens of small milk-producing bulbs. Ducts are tiny tubes that connect the lobes, lobules, and bulbs. The areola is a dark patch of skin that contains the ducts that lead to the nipple. The spaces between lobules and ducts are filled with fat. Although the breasts don't consist of muscles, the ribs and area beneath every breast are covered in muscles. Additionally, blood vessels and lymphatic vessels are found in each breast. The lymph nodes are tiny, bean-shaped organs that are reached by the lymph vessels. These lymph nodes are located in the chest, under the arm, and above the vertebral column(Loveless & Ihm, 2015).

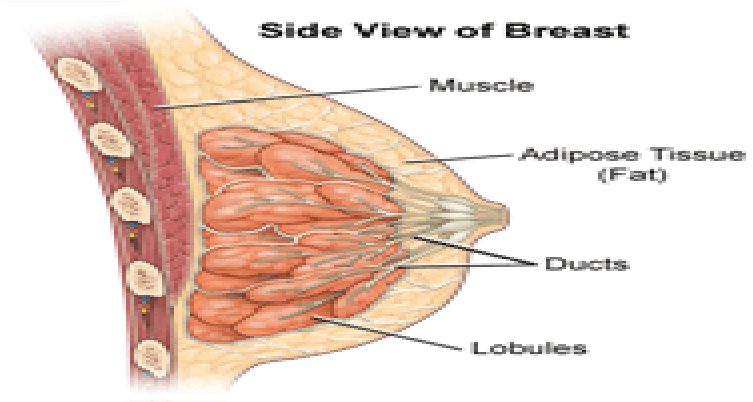

Figure 2.1 shows the anatomy of the female breast, side view

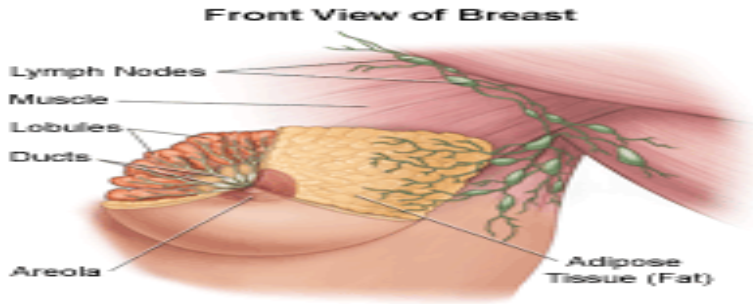

Figure 2.2 shows the anatomy of the female breast, front view

Anatomically, the milk-producing glands of the breast are situated in front of the chest wall. They rest on the pectoralis major muscle and are supported by ligaments that join the breast to the chest wall. The way the breasts are constructed is in a circle. The fat that covers the lobes determines the size and shape of the breasts. Every lobe is composed of lobules, which house the glands responsible for producing milk in response to hormone stimulation. Breast cancer always progresses silently. Most patients find out they have their condition through regular screenings. Others may exhibit nipple discharge, a breast lump that was unintentionally found, or a change in the size or shape of the breasts. However, mastalgia is a common condition. A physical examination, imaging, especially mammography, and tissue biopsy are necessary for the diagnosis of breast cancer. The survival rate rises with earlier diagnosis. Tumors that spread hematologically and lymphatically happen to have poor prognoses and metastatic disease. This explains and emphasizes the importance of breast cancer screening programs.

Figure 2.3 shows the anatomy of breast and breast cancer

2.1.1 Etiology of breast cancer

In general health screening for females, it is important to detect aspects related to an increased incidence of breast cancer development(Screening & Prevention Editorial, 2002; Zucca-Matthes, Urban, & Vallejo, 2016). There are seven broad categories of risk factors for breast cancer:

1. Age: Age-adjusted breast cancer incidence is increasing due to the aging of the female population.

2. Gender: Females are the chief sufferers of breast cancer.

3. Personal breast cancer history: The risk of developing primary cancer in the contralateral breast further is increased by a history of primary breast cancer.

4. Histologic risk factors: Histologic abnormalities discovered by breast biopsy constitute a significant category of risk factors for breast cancer. Among these anomalies are lobular carcinoma in situ (LCIS) and proliferative alterations with atypia. Genetic risk factors and the history of breast cancer in a family's First-degree relatives of breast cancer patients carry a two- to three-fold increased risk of contracting the illness. Genetic factors may account for 25% of cases in women under 30 years of age, but they only account for 5% to 10% of all cases of breast cancer. The two main genes linked to an increased risk of breast cancer are BRCA1 and BRCA2.

5. Genetic risk factors with breast cancer in the family history: There is a two to three times higher risk of breast cancer in first-degree relatives of those who already have the disease. Genetic factors may be responsible for 5–10% of all cases of breast cancer, but they may also be the cause of 25% of cases in women under the age of thirty. Breast cancer risk is most strongly correlated with the BRCA1 and BRCA2 genes.

6. Reproductive risk factor: Reproductive milestones are thought to increase a woman's lifetime estrogen intake, which may increase her risk of breast cancer. Menstruation establishing before the age of 12 null parity occurring after the age of thirty, and menopause happening after the age of fifty-five are a few of these**.**

7. Exogenous hormone use: To treat a range of illnesses, progesterone and estrogen are administered therapeutically or in excess. The two most common uses are hormone replacement therapy for postmenopausal women and contraception for premenopausal women.

Figure2.4. shows the risk factors for breast cancer

2.1.2 Epidemiology of breast cancer

Cancer is one of the non-communicable diseases with the highest mortality rates in the world, accounting for 12% of all fatalities, with 12 million new cases diagnosed each year. About 24.2% of female cancer cases are caused by this disease(Han et al., 2018). In 2025, breast cancer will account for 11.7% of all cancer cases, exceeding lung cancer as the leading cause of cancer incidence worldwide with an estimated 2.3 million new cases in women. (Peairs, Choi, Stewart, & Sateia, 2017; Samani, Ebrahimi, Zadeh, & Safaee, 2022; H. Sung et al., 2021)

Invasive breast cancer affects 1 in 8 women in the USA (12.4%) during their lifetime (Peairs et al., 2017) over 2 million new cases of breast cancer were reportedly diagnosed globally in 2018 according to the American Cancer Society; there were 2,470 new cases of invasive breast cancer diagnosed in males and 252,710 in women in 2017. The lifetime chance of developing breast cancer in the United States increased from one in eleven in the 1970s to one in twelve now, partly because of increased screening, postmenopausal hormone replacement therapy, rising obesity rates, and altered reproductive patterns (Appiah, Mai, & Parmar, 2022; Ferlay et al., 2021).

While rates in most other world regions ranged between 10 and 15 per 100,000, the highest incidence rates (>80 per 100,000 females) were identified in Australia/New Zealand, Western Europe, Northern America, and Northern Europe, and the lowest rates (<40 per 100,000) in Central America, Western Africa, and Micronesia/Polynesia(Ayre & Parker, 2019). the prevalence rate of 28.6 per 100,000 Breast Cancer in the United Arab Emirates(Arnold et al., 2022).

In the West Bank, the cancer incidence was approximately 53.7 per 100,000 Palestinians in 2010. (MoH, 2011). Of these cases, 18.8% were breast cancer (Jaradat et al., 2016) (MoH, 2011). BC is the most common type of cancer in Palestine, accounting for 18.7% of all cancer cases and ranking first (34.3%) among cancers in women. (Palestinian Health Information Centre, 2021). Palestine has a higher incidence and death rate of 53.5 and 22.6 per 100,000 females (World Health Organization, 2020). More than 60% of Palestinians with BC are diagnosed at a late stage (The United Nations Population Fund, 2020), and after five years of diagnosis, one in three women death. With 526 cases or 16.5% of all cancer cases registered in the West Bank in 2020, breast cancer was the most common cancer to receive a diagnosis.

Moreover, breast cancer accounted for 32.0% of all cancer cases in Palestinian women and was the first type of cancer to be reported in women. Furthermore, the primary cause of death for women was breast cancer, which was followed by colon cancer.

2.1.3 Pathophysiology and histopathology of breast cancer

Genetic alterations and DNA damage are the root causes of breast cancer, and exposure to estrogen can affect both. Genes that cause cancer, such as BRCA1 and BRCA2, or defects in DNA can occasionally be inherited. Consequently, the risk of developing breast cancer is increased if there is a family history of breast or ovarian cancer. In a healthy individual, the immune system targets cells with faulty development or DNA. Tumors grow and spread when breast cancer patients encounter this failure. The connection between breast cancer and the basement membrane defines whether the cancer is invasive or non-invasive. Lobular carcinoma in situ (LCIS) and ductal carcinoma in situ (DCIS) are the two primary subtypes of noninvasive breast tumors. (DCIS) (Al-Shamsi et al., 2023).

It is thought that LCIS raises the risk of breast cancer. The enlarged and filled acini and conformity to the normal contour of the lobule are indicative of LCIS. Pathologists identify four primary types of DCIS: comedo, solid, cribriform, and papillary. Pathologists think that DCIS has a wider range of morphological variations than LCIS(Alkabban & Ferguson, 2023).

2.1.4 Breast cancer complications

Complications of breast cancer are different between patients. However, fatigue, nausea, vomiting, short-term hair loss, diarrhea, a drop in blood cell count, a change in weight, nerve pain, difficulty breathing, mouth ulcers, and sore throat are the most common complications (Alkabban & Ferguson, 2023).

2.1.4.1 Fatigue

In cancer patients, fatigue is the most prevalent and harmful symptom, with prevalence rates ranging from 10% to 90%. Patients with breast cancer who experience higher rates of fatigue have been found to respond less well to treatment and have lower quality of life. Nevertheless, cancer-related fatigue (CRF), is one of the most prevalent symptoms of the disease, (Dhara et al., 2021; Guru, Manoor, & Supe, 2018).

Cancer-related fatigue (CRF) is defined as "a distressing, persistent, subjective sense of tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning," according to NCCN guidelines(Muthanna, Karuppannan, Hassan, & Mohammed, 2021). Different chemotherapy agents, surgical procedures, and radiation treatments can cause acute or persistent CRF, which affects how tolerable a patient's treatment is. CRF can be short-term or long-term between 25% and 33% of survivors of cancer for a maximum of ten years following therapy (Harrington, Fisher, Lee, Cohn, & Malone, 2023)

2.1.4.2 Functional abilities

The concept of functional capacity has been widely employed in disability and rehabilitation studies as a measure of a person's capacity for physical activity (García-González et al., 2023). The ability to physically participate in physical activity is a prerequisite for self-care in general and a component of behaviors that promote health in particular when done to improve or maintain one's health. Physical independence could be compromised if physiological systems fail to function properly (Charati et al., 2022).

2.1.4.3 Range of motion

The incidence of decreased range of motion (ROM) among women post-breast cancer can vary depending on the type and extent of treatment received. Studies have shown that women who have undergone surgery, particularly mastectomy, are at a higher risk for decreased ROM in the shoulder, arm, and chest, as compared to those who have received non-surgical treatments. The incidence of decreased ROM can also be affected by the patient's age, overall health, and the presence of other co-morbidities (Min et al., 2021; Yang, Gu, Qian, Wang, & Chai, 2021).

Studies have found that women who have undergone axillary lymph node dissection, a surgical procedure to remove lymph nodes from the armpit, have a higher risk of developing shoulder and arm problems such as decreased ROM (Chen, Li, Jiang, & Jia, 2023).

2.2. Similar Studies

In the past years. many research studies have explored the effectiveness of therapeutic exercise and patient education on fatigue, functional capacity, and pain in breast cancer–related fatigue. A randomized control trial was conducted on 80 participants. They were divided into a supervised exercise group (n=40), and an unsupervised exercise group (n=40). Both groups received patient education and applied for three sessions per week over eight weeks. They concluded that a supervised exercise program and patient education significantly reduced fatigue and increased functional capacity post-breast cancer with compared to an unsupervised exercise program(Klein, Kalichman, Chen, & Susmallian, 2021).

A meta-analysis and systematic review of randomized controlled studies on the impact of exercise on the rehabilitation of women who have had breast cancer surgery in 2022. It concluded that aerobic exercise improved shoulder flexion and internal rotation range, decreased upper limb dysfunction, and increased muscle strength during flexion and abduction. It also decreased the intensity of the pain. Shoulder elbow movement decreased the occurrence and improved the range of shoulder external rotation(Prieto-Gómez et al., 2022).

The results demonstrated that performing a water-based exercise program can improve shoulder range of flexion, external rotation, and abduction., water-based exercise appeared to improve pain perception (Lin, Chen, Liu, & Cao, 2023).

Further, in a systematic review study, a total of 24 studies arrived at which exercises were beneficial for reducing fatigue post-breast cancer. The authors concluded that aerobic and resistance exercises were effective in reducing breast cancer-related fatigue(Maccarone, Venturini, Menegatti, Gianesini, & Masiero, 2023).

Another systematic review by Ribeiro et al. (2019) aimed to evaluate the effectiveness of multimodal physiotherapy interventions for upper limb diminishing after breast cancer treatments and the review included a total of 12 studies, which found that multimodal physical therapy interventions, particularly stretching exercises combined with general active exercises, were effective in improving range of motion, reducing pain, and improving quality of life in women with breast cancer who had undergone surgery and radiation therapy. The review also concluded that multimodal physical therapy interventions were effective in treating upper limb impairments after breast cancer treatments and it should be considered an important component of the management of these impairments. The authors recommend that future studies should

focus on the long-term effects of these interventions and investigate the optimal duration and frequency of therapy (Ma et al., 2020).

Also, the systematic review that was carried out included a total of 11 studies, that evaluated various physiotherapy interventions such as exercise programs, manual therapy, and kinesiotaping. The study found that physiotherapy interventions, particularly exercise programs, and manual therapy, were effective in improving the range of motion and reducing pain in women with breast cancer who had undergone a mastectomy(Ribeiro et al., 2019).

An umbrella study encompassing 24 systematic reviews of exercise interventions for fatigue in breast cancer patients produced encouraging results. The study found that exercise, particularly resistance and aerobic training, is an effective way to improve cancer-related fatigue (CRF) in these individuals. Of the 21 studies, the majority concluded that exercise had positive effects; three showed no appreciable benefit. In a similar spirit, the GRADE assessments of eight reviews discovered moderate-quality evidence despite these disadvantages; the study highlights the potential benefits of exercise in managing fatigue in individuals with breast cancer(De Groef et al., 2015).

The research found that all 94 breast cancer survivors had at least one musculoskeletal condition post-therapy. Physically active women reported fewer problems, suggesting exercise's preventive effect. Most women who received physiotherapy found it beneficial for rehabilitation. Regular exercise and physiotherapy programs may reduce the prevalence of musculoskeletal diseases, enhancing the overall health and well-being of survivors(Jiang et al., 2020).

A meta-analysis of nine studies found that supervised exercise programs significantly reduce cancer-related fatigue (CRF) in breast cancer survivors compared to conventional care. Both resistance and aerobic exercise showed positive effects, with aerobic exercise improving fatigue more than resistance therapy (Rangel, Tomás, & Fernandes, 2019).

Shoulder range of motion was shown to be considerably improved by supervised physical therapy in a trial including 35 women undergoing radiation treatment for breast cancer. By the third assessment, the flexion, abduction, and external rotation deficiencies that the therapy group had previously experienced had been overcome. Although there were no significant alterations in upper limb perimetry the enhanced range of motion underscores the advantages

of physical therapy for patients with breast cancer following treatment(Meneses-Echávez, González-Jiménez, & Ramírez-Vélez, 2015a).

As far as the searches of published literature in the Palestinian territories, several studies have been carried out about breast cancer; however, previous studies among Palestinian physiotherapists are rare. Further, to our knowledge, none of them have explored or studied the effect of physiotherapy and exercise therapy among women after breast cancer treatment has finished. Thus, this study will evaluate the supervised physiotherapy intervention and unsupervised home program on pain, fatigue, and functional abilities among women post-breast cancer.

Summary

The researcher reviewed the available studies that will be evaluated the supervised physiotherapy intervention for reducing pain, and fatigue, and improving functional activity post-breast cancer. Previous studies among Palestinian physiotherapists are rare. Thus, this research will compare the effect of a supervised physiotherapy intervention on reducing fatigue and increasing functional abilities and the effects of unsupervised home programs on breast cancer women's outcomes.

In the next chapter, the methodology will be discussed.

Chapter Three
Methods and Materials

3.1 Study Design

3.2 Study Setting

3.3 Study Sample

3.4 Data Collection

3.5 Suggested Program

3.6 Statistical Analysis

3.7 Ethical Considerations

Chapter Three

This chapter aims to present the research methodology that is represented in the design, data collection tools and procedures, study intervention, statistical analysis, sampling method, sample size, and inclusion and exclusion criteria, in addition to the ethical considerations of this study.

3.1 Study Design

This study adopted a prospective quasi-experimental, 2-arm parallel convenience sample that was conducted on BC survivor women to evaluate the effects of supervised physiotherapy intervention and unsupervised home program on pain, fatigue, and functional Abilities. Women post-mastectomy participants were assigned by persuasion either to intervention (supervised physiotherapy intervention) or control (unsupervised home program) groups upon their desire, wish, and convenience. Mostly, proximity or distance to participants' place of residence (intervention allocation), and the desire of the women was the main reason for allocating participants to either group (Supervised physiotherapy intervention versus unsupervised home exercise program).

3.2 Study Setting

The study was conducted at :

1. Dr. Thabit Thabit Hospital in Tulkarm, West Bank. Formerly Al-Jihad Hospital, is a governmental hospital managed by the Palestinian Ministry of Health. With a capacity of 158 beds, it was built during the Ottoman era. It is made up of many surgical specializations (such as orthopedics and general surgery).

2. Rafidia Hospital, AT the physiotherapy /outpatient department. Rafidia is a neighborhood in the western part of the Palestinian city of Nablus. Rafidia Hospital is the principal of 14 Palestinian public hospitals in the West Bank. As a governmental hospital, it's tied to the Palestinian Ministry of Health, capacity of 200 beds and 628 employees. Founded in 1976 to provide specialist medical and surgical services. It is made up of several surgical wards (general)
3. Al Watani Government Medical Hospital, founded in 1888 under the Ottoman Empire. Now, with a capacity of 55 clinical beds, the hospital serves approximately two million citizens in the northern governorates of the West Bank through its various departments, which include emergency, internal medicine for men and women, intensive care, Oncology, hematology, outpatient clinics, daycare, radiology, laboratory, and pharmacy.
4. Al Safadi Physiotherapy Clinic was founded on January 1, 2017, by the physiotherapist Abdel Fattah Al-Safadi. From this date until now, the clinic has received a large number of various types of patients which the clinic dealt with, such as with fractures, back and neck pain, shoulder problems…etc.

3.3 Study Sample

3.3.1 Sampling Method

The convenience method in this quasi-experimental study was adopted.

Women post-mastectomy participants were assigned by persuasion either to intervention or control groups upon their desire, wish, and convenience Mostly, proximity or distance to participants' place of residence (intervention allocation), and the desire was the reason for allocating participants to either group (Supervised physiotherapy intervention versus unsupervised home exercise program).

3.3.2 Sample Size

In accordance with the use of clinical judgment as well as with a sample size calculator in order to specify the smallest effect size to consider to be relevant to this study. The researcher decided to recruit patients from the period from March 2023 up until September 2023. By the end of September 2023, we had a total of 84 patients. Forty participants were in the intervention group

(supervised physiotherapy intervention) and 44 participants were in the control group (unsupervised physiotherapy intervention).

3.3.3 Inclusion Criteria

- ✓ Women who had a diagnosis of BC.
- ✓ Participants aged above 18 old years.
- ✓ Have finished breast cancer treatment (surgery, chemotherapy, or radiotherapy, but possibly still in hormone therapy) at the last 3 months of intervention.
- ✓ Having stages one, two, and three of treatment of breast cancer.

3.3.4 Exclusion Criteria

The patient will be excluded from the study if they have one of the following criteria :

- ✓ Participants below the age of 18 and above 60.
- ✓ Women who are still on breast cancer treatment of chemotherapy or radiotherapy or did not complete their more than 3 months ago.
- ✓ Men who have been diagnosed with breast cancer.
- ✓ Having stage four of treatment of breast cancer.
- ✓ History of malignancy in the area of treatment or other areas.
- ✓ Cardiopulmonary or pulmonary disorders such as cardiovascular disease, obstructive pulmonary disorders, congestive heart failure, and pulmonary edema.
- ✓ Neurological deficits such as stroke, spinal cord injury, peripheral nerve injury, etc.
- ✓ Infected wound or soft tissue in the area of treatment.

3.4 Data Collection

3.4.1 Tools of data collection

- **Data collection sheet**, the researcher used to develop a data collection sheet composed of 3 parts;

- Socio-demographic information; composed of 9 items to assess name, age, occupation, height, weight, BMI, marital status, educational level, and place of living.
- Past medical history of neurological deficits like (neuropathy)

- Type of treatment of breast cancer like hormonal or radiotherapy and chemotherapy
- Surgical history characteristics (What stage of cancer, Site of surgery, Type of surgery).

3.4.2 Outcome Measures

➢ 3.4.2.1 Visual Analogue Scale (VAS)

psychometric measuring tools are designed to document a variety of disease-related symptom severity in individual patients and use this data to rapidly determine symptom severity and control the disease in a way that is statistically measurable and reliable.

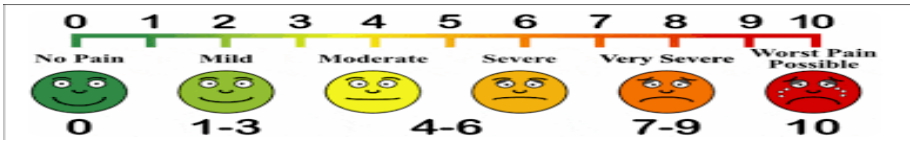

Figure 3.1 Visual analogue scale

➢ 3.4.2.2 (6)- Minute Walk Test

Is a sub-maximal exercise test used to evaluate aerobic capacity and endurance, assess the distance over a walking time of 6 minutes, and compare the difference in performance capacity (da Silva Leal, de Oliveira, & Carrara, 2016).

➢ 3.4.2.3 A Brief Fatigue Inventory (BFI)

is a brief, valid, and reliable tool for measuring fatigue related to cancer. The 24-hour fatigue impact and severity are measured by the BFI. 9 objects on a 0–10 numerical scale (Suleiman et al., 2019)

➢ 3.4.2.4 Quick DASH Questionnaire

The quick DASH is a convenient, reliable, and valid patient-reported outcome instrument to assess upper extremity disability in breast cancer patients (LeBlanc et al., 2014).

➢ 3.4.2.5 The Goniometer

It is a valid and reliable instrument that measures the available range of motion at a joint. The same measuring instrument was used to avoid any instrument errors (Pratt & Ball, 2016).

3.4.3 Study Procedures

Ethical approval was obtained from the Ethics Committee at Al-Quds University and permission from the Ministry of Health. Advertisements for the recruitment of participants for the supervised physiotherapy intervention and in the physiotherapy department at Thabet Thabet Governmental Hospital in Tulkarm were then initiated.

Then every eligible participant was invited. After an explanation about the study, the participants chose the group of study that they would be signed for, and then each woman signed the consent form. At that session, the researcher began to fill out the personal data form for each participant and perform the outcome measures for the participants.

The therapeutic sessions for the intervention groups (physiotherapy intervention) were conducted according to the social and psychological state and acceptance of the disease. Married women and those with a close place of residence were first placed close to each other in the group therapy group, and single women with common interests were placed in a group group. Who does not prefer to conduct the session with anyone alone.

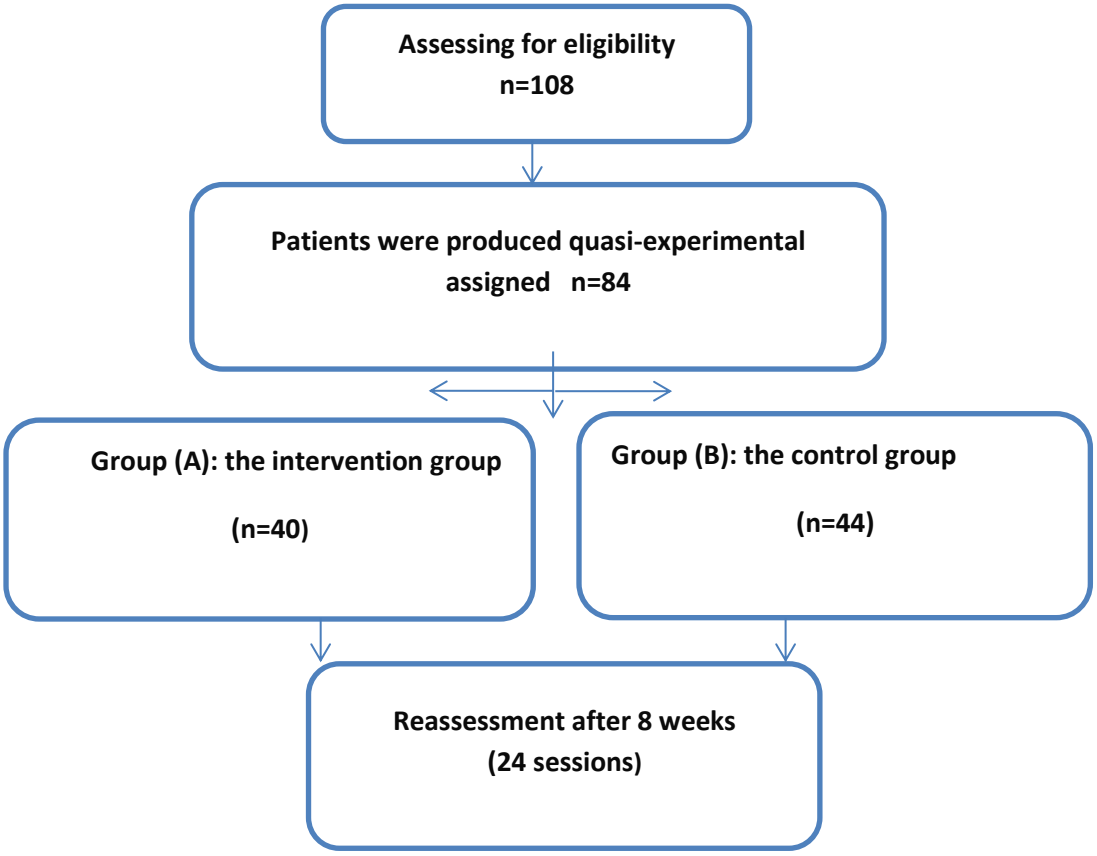

Figure 3- 2 Flow chart of the participants and allocation

3.5 Suggested Program

Group (A): Intervention group (Supervised Physiotherapy Intervention)

Participants in this group received a supervised physiotherapy intervention three times a week for 8 weeks. Physiotherapy intervention includes a combination of techniques such as a regular rehabilitation program of aerobic, resistance, and flexibility exercises and home programs based on scientific evidence to treat and improve physical function and reduce fatigue (Dieli-Conwright et al. 2018).

Table 3.1: The physiotherapy intervention for the experimental group

Physiotherapy intervention	Consist of	Time
Warm-up	✓ Prepare mentally and physically for your chosen activity.	5-10 min
Aerobic Exercise	✓ Intensity: 50-70% of max. heart rate ✓ Type: walking cycling aerobic activity.	3 x 5 times per week. 30 minutes
Range of Motion Exercise	Intensity: 10/15 reps . Type: Supervised range of motion program of an ARM joint (shoulder, elbow, wrist, fingers).	must be observed by FITT Guidelines.
Resistance Training	- Intensity: 12/15 reps of 60 % of 1RM - Type: Supervised resistance program of major muscle groups.	2/3 times a week.
Cool down	Cool down for 5-10 sec This exercise must be worked on for: (Regulating your heart rate, Preventing injuries,….ext.).	5-10 min

For more Detailed of the physiotherapy intervention program for the experimental group is in (Appendix7)

Group (B): Control group (Unsupervised Home Program)

Participants in this group received unsupervised physical therapy interventions (home program) three times a week for 8 weeks. Physical therapy intervention includes a combination of techniques such as a regular rehabilitation program for a range of motion, aerobic, resistance, and flexibility exercises, based on scientific evidence to treat and improve physical function and reduce fatigue (Dieli-Conwright et al. 2018).

Table 3.2 The physiotherapy intervention for the control group

Physiotherapy intervention	Consist of	Time
Warm-up	✓ Prepare mentally and physically for your chosen activity.	5-10 min
Aerobic Exercise	✓ Intensity: 50-70% of max. heart rate ✓ Type: walking cycling aerobic activity.	3 x 5 times per week. 30 minutes
Range of Motion Exercise	Intensity: 10/15 reps . Type: Supervised range of motion program of an ARM joint (shoulder, elbow, wrist, fingers).	must be observed by FITT Guidelines.
Resistance Training	- Intensity: 12/15 reps of 60 % of 1RM - Type: Supervised resistance program of major muscle groups.	2/3 times a week.
Cool down	Cool down for 5-10 sec This exercise must be worked on for: (Regulating your heart rate, Preventing injuries,….ext.).	5-10 min

For more Detailed of the home program for the control group is in (Appendix 8)

3.6 Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) package, version 23 (SPSS Inc., Chicago, IL), was used to conduct the statistical analysis. To describe the sample by age and gender, descriptive statistics (means, frequencies, and standard deviation) were used. To find differences between the two groups, inferential statistics (paired sample t-tests and two independent sample t-tests) were run on parametric variables. Pearson's correlation was used by the researcher with continuous variables. At $P < 0.05$, statistical significance was established.

3.7 Ethical Considerations

The MPT committee and the Al Quds University Research Ethical Committee gave their approval for the study. Before being recruited for the study, the participants were fully informed about the procedures and the goals of the research, with approval from the Ministry of Health. Without any limitations, participants could decline or leave the study at any moment. To protect patient confidentiality, written informed consent was obtained, and all patient data was processed anonymously. (Appendix 10).

Chapter Four

Results Presentation, Analysis & Discussion

4.1 Results Presentation and Analysis

4.2 Results Discussion

4.3 Study Strengths & Limitation

Chapter Four

4.1 Results Presentation and Analysis

4.1.1 Descriptive Statistics of variables

Patients were recruited from the study sample of 84 breast cancer women patients divided into two groups, group A is the supervised physiotherapy intervention group of 40 women and the unsupervised home program group of 44 women.

- **Age of participants**

The mean age of the whole participants in the study was 55.3 years old years the intervention (A) and control (B) groups. In both groups, the most common age group is 40-49, followed by 30-39 and 20-29. The intervention group has a slightly higher proportion of people aged 40-49 (41.7% vs. 50.0%), while the control group has a slightly more proportion of people ages 30-39 (14.3% vs. 11.4%), (Figure 4.1).

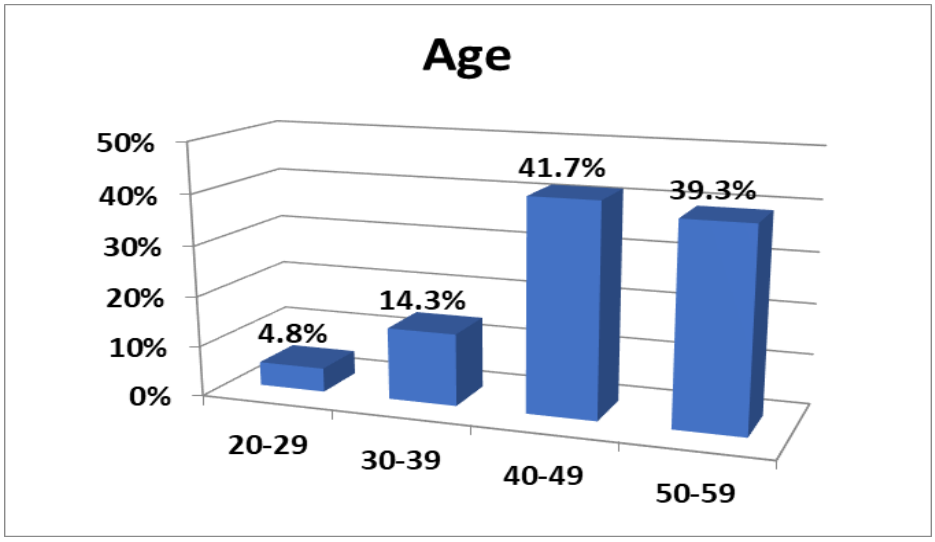

Figure 4.1 The percentages of the Age categories in the study sample

Occupation of participants

The housewife was the most common occupation in both intervention and control groups, with 50% of intervention participants and 52.3% of control participants. Other occupations were less prevalent, with 30% from government institutions and 6.8% from non-government institutions, Figure (4.2).

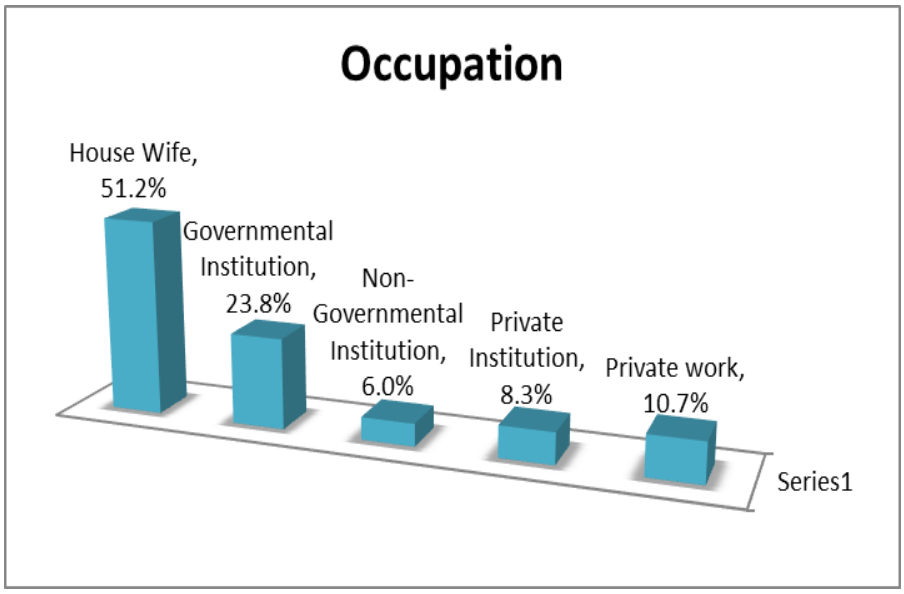

Figure 4. 2 The percentages of the Occupation categories in the study sample

Marital Status of participants

The majority of the women in the study sample are married 73.8%, (Figure 3.4).

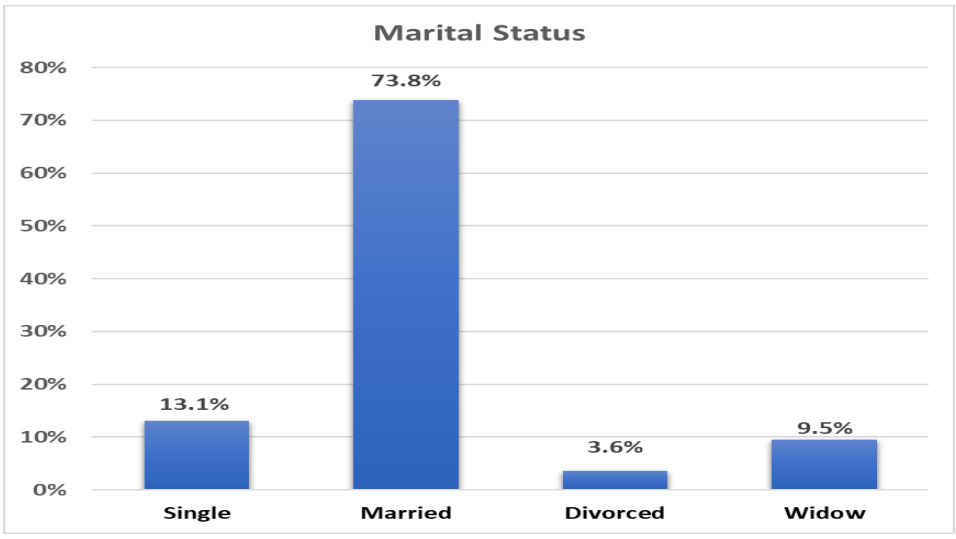

Figure 4.3 The percentages of the Marital Status in the study sample

BMI of Participants

Most of the women in the study sample have BMI=30.0 to <40 (57.1%) or BMI=25.0 to <30 (27.4%), (Figure 4.4).

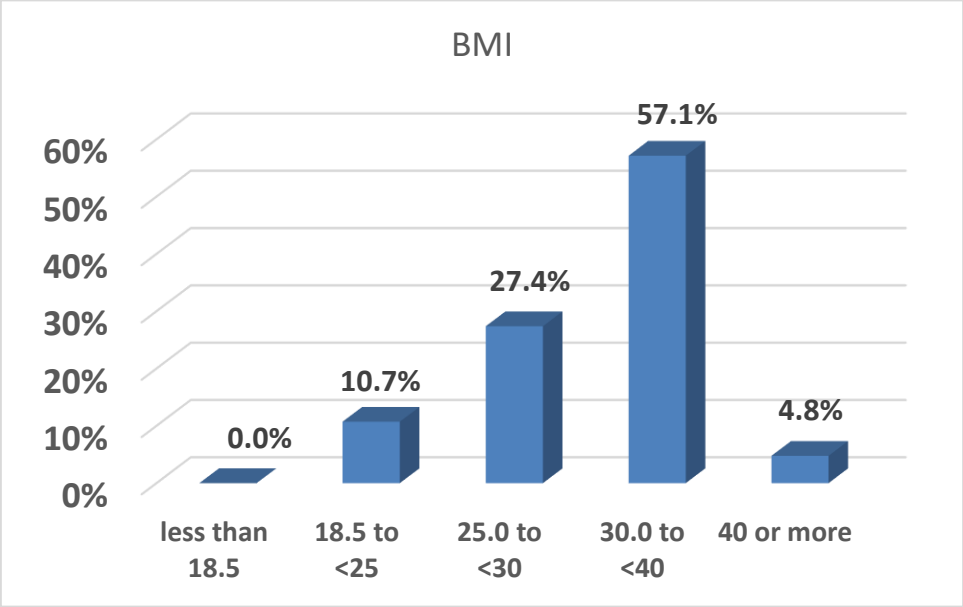

Figure 4.4 The percentages of the BMI categories in the study sample

4.2 Normality distributed of the Repeated Measures ANOVA (Within-Subjects) test of Differences according to the Intervention Time

The study shows significant differences in VAS Scales of pain at 0.05 as well as levels in fatigue, Q-DASH, Six Minute Walk Test, Shoulder Flexion Range of Motion, between three time(Pre ,Mid and Pos Tests).

Table (4.1) shows that Pain **(VAS):** Exercise programs reduced pain significantly in both study groups. The Post-test VAS scale (Mean=1.23) was significantly lower than the Mean (Mean=3.63) and Pretest (Mean=6.85).

Further , exercise programs reduced **(Fatigue)** significantly in both study groups, with a Post-test (mean of 1.14), a Middle-test mean of 2.94, and a Pretest (mean of 5.52).

Functional abilities: Exercise programs significantly improved functional abilities in both study groups according to **Q DASH**, with a Post-test (mean of 4.17), a Middle test mean of (19.96), and a Pretest mean of (50.83).

(Six Minute Walk) Test: The Post-test (Mean=436.24) showed a significant difference in the mean of the total scale compared to the Middle test (Mean=331.38) and Pretest (Mean=227.26).

Shoulder Flexion (ROM) the Post-test (Mean=180) had a significant higher Shoulder Flexion ROM scale than the Middle test (Mean=178.87) and Pretest (Mean=173).

Table (4.1): Means, Standard Deviations, and the results of the Repeated Measures ANOVA (Within-Subjects) test of Differences according to the Intervention Time (N=84).

		Intervention Time				
Test	**Intervention Groups**	**Pretest**	**Middle test**	**Post-test**	**F-test**	**P-value**
		Mean ± S.D	Mean ± S.D	Mean ± S.D		
Fatigue	A (N=40)	5.54 ± 2.48	2.26 ± 1.48	0.35 ± 0.42	158.448	0.000
	B (N=44)	5.51 ± 2.65	3.55 ± 2.04	1.86 ± 1.44	110.857	0.000
	Total (N=84)	5.52 ± 2.56	2.94 ± 1.9	1.14 ± 1.32	243.096	0.000
Q-DASH	A (N=40)	57.83 ± 23.03	16.63 ± 11.62	0.67 ± 1.95	205.782	0.000
	B (N=44)	44.47 ± 26.03	22.99 ± 15.8	7.35 ± 7.92	99.866	0.000
	Total (N=84)	50.83 ± 25.41	19.96 ± 14.25	4.17 ± 6.75	246.426	0.000
Six-Minute Walk Test	A (N=40)	220.9 ± 92.04	341.87 ± 83.97	466.17 ± 57.84	244.948	0.000
	B (N=44)	233.05 ± 101.08	321.84 ± 94.26	409.02 ± 82.21	194.420	0.000
	Total (N=84)	227.26 ± 96.49	331.38 ± 89.54	436.24 ± 76.8	387.711	0.000
Shoulder Flexion Range of Motion	A (N=40)	168.23 ± 20.22	178.03 ± 4.61	180 ± 0	12.745	0.000
	B (N=44)	177.34 ± 5.87	179.64 ± 1.43	180 ± 0	8.652	0.000
	Total (N=84)	173 ± 15.19	178.87 ± 3.42	180 ± 0	16.922	0.000
VAS Pain	A (N=40)	6.85 ± 2.33	2.8 ± 1.4	0.38 ± 0.63	309.488	0.000
	B (N=44)	6.84 ± 2.22	4.39 ± 1.66	2 ± 1.14	239.916	0.000
	Total (N=84)	6.85 ± 2.26	3.63 ± 1.73	1.23 ± 1.24	468.159	0.000

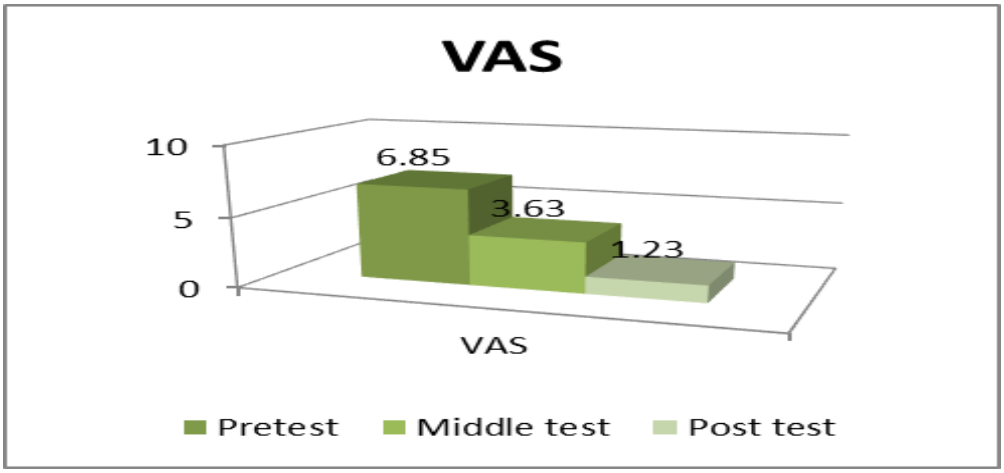

Figure 4.5 The Mean values of VAS according to the Intervention Times

Pain score: Exercise programs reduced pain significantly in both study groups. The Post-test VAS scale (Mean=1.23) was significantly lower than the Mean middle-test (Mean=3.63) and Pre-test (Mean=6.85).

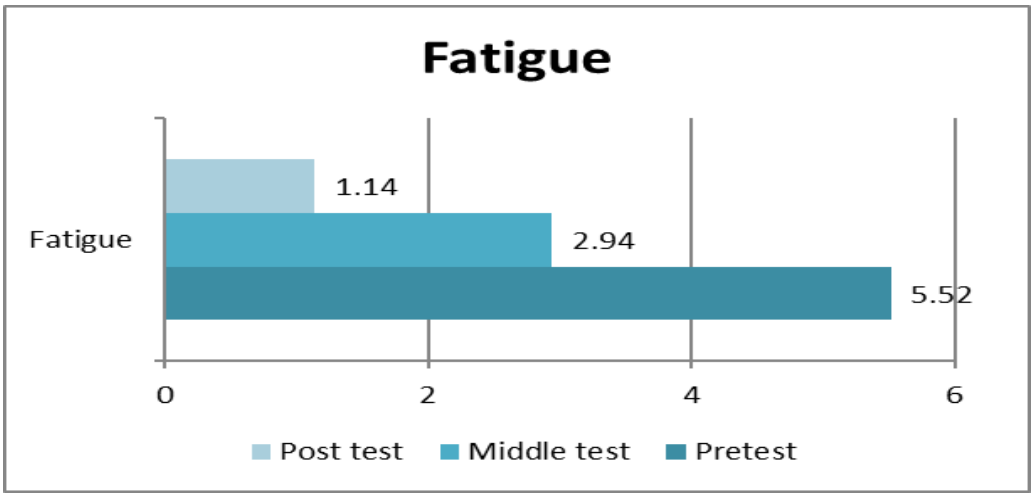

Figure 4.6 The Mean values of Fatigue according to the Intervention Time

Fatigue: Exercise programs reduced fatigue significantly in both study groups, with a Post-test (mean of 1.14), a Middle-test (mean of 2.94), and a Pre-test (mean of 5.52).

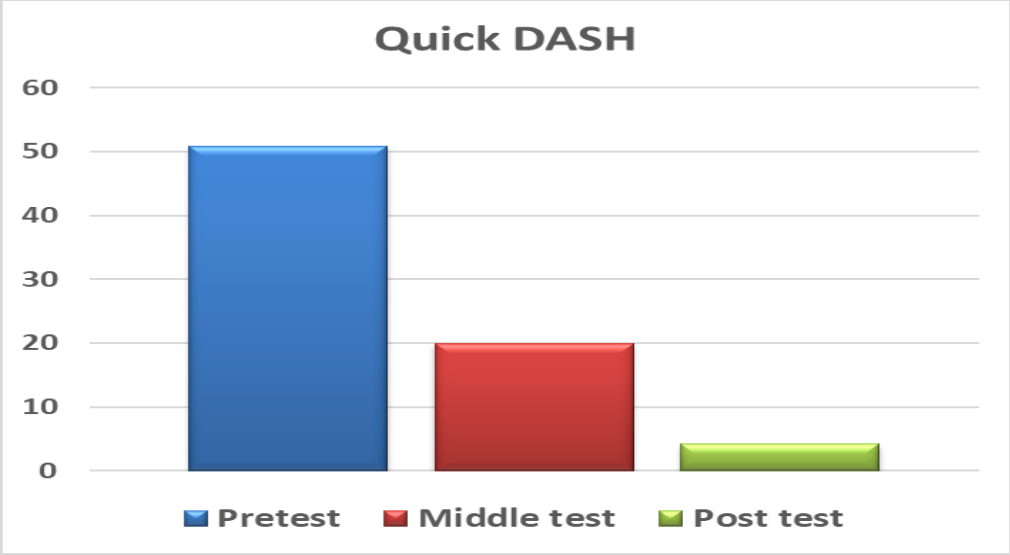

Figure 4.7 The Mean values of the Quick DASH scale according to the Intervention Times

Functional Abilities of Upper Limb: Exercise programs significantly improved functional abilities in both study groups according to Q DASH, with a Post-test (mean of 4.17), a Middle test mean of (19.96), and a Pretest mean of (50.83).

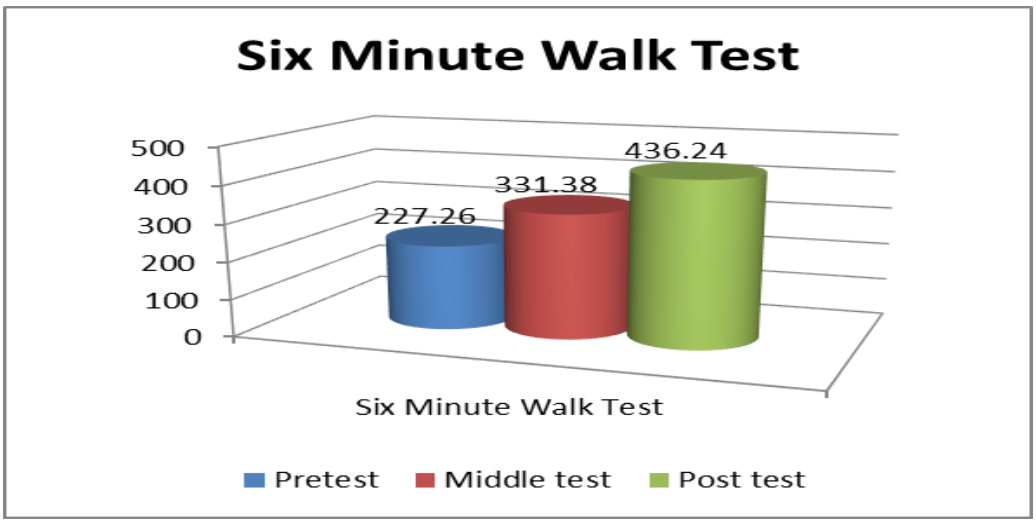

Figure 4.8 The Mean values of the Six Minute Walk Test according to the Intervention Time

Six-Minute Walk Test: The Post-test (Mean=436.24) showed a significant difference in the mean of the total scale compared to the Middle-test (Mean=331.38) and Pre-test (Mean=227.26).

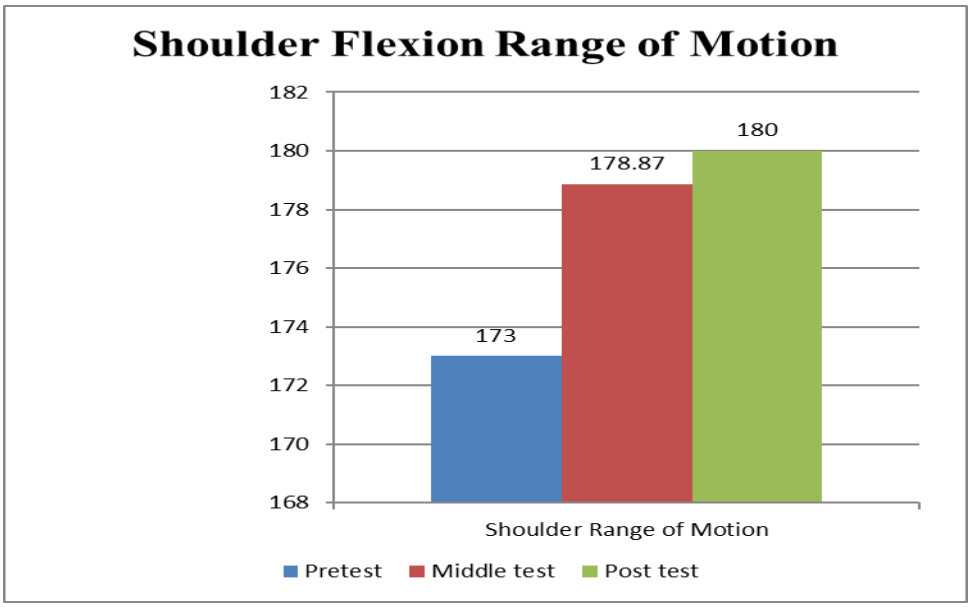

Figure 4.9 The Mean values of shoulder Flexion range of Motion according to the Intervention Times

Shoulder Flexion (ROM): The post-test (Mean=180) had a significantly higher Shoulder Flexion ROM scale than the Middle-test (Mean=178.87) and Pre-test (Mean=173).

Normality distributed of the results of the Two Independent Sample T-test of Differences according to the Intervention Groups (A, B).

The study compares the results of two independent samples of T-tests on the supervised physiotherapy intervention program and the unsupervised home program for dependent variables: Pain, fatigue, and functional abilities.

The results in Table (4.2) show:

- ✓ A significant difference in Intervention Groups in fatigue in) per middle and post-test in the two groups. The p-value was 0.000 in reducing fatigue in the physiotherapy intervention more than in the control group.
- ✓ Functional abilities according to the Q DASH score in the two groups. The p-value was 0.000 in physiotherapy intervention was more effective than the home intervention.

- ✓ Six Minute Walk Test in the pre-test p-value of 0.568, and the middle test p-value was 0. 309. With no significant difference in the mean 6MWT distance in the post-test p value was 0.000. The mean 6MWT distance (466.17 meters) compared to the home intervention group (409.02 meters).
- ✓ Shoulder Flexion Range of Motion significant difference in SROM between the physiotherapy and home intervention groups at the pretest p-value of 0.005, and middle test p value0.030. However, the percentages became equal in the post-test
- ✓ Visual Analogue Scale (VAS) pain score. On the pre-test, the p-value of 0.985 is not significant, but in the middle test, the p-value of 0.000 was significant, and the same post-test p-value of p 0.000. That the home intervention was less effective in reducing pain than the physiotherapy intervention.

Table (4.2): Means, Standard Deviations, and the Results of the Two Independent Sample T-test of Differences according to the Intervention Groups (A, B).

Test	Intervention Time	Intervention Group		T-test	P-value
		A (N=40)	B (N=44)		
		Mean ± S.D	Mean ± S.D		
Fatigue	Pretest	5.54 ± 2.48	5.51 ± 2.65	0.056	0.956
	Middle test	2.26 ± 1.48	3.55 ± 2.04	-3.274	0.002
	Posttest	0.35 ± 0.42	1.86 ± 1.44	-6.364	0.000
Q DASH	Pretest	57.83 ± 23.03	44.47 ± 26.03	2.481	0.928
	Middle test	16.63 ± 11.62	22.99 ± 15.8	-2.086	0.040
	Posttest	0.67 ± 1.95	7.35 ± 7.92	-5.192	0.000
Six-Minute Walk Test	Pretest	220.9 ± 92.04	233.05 ± 101.08	-0.574	0.568
	Middle test	341.87 ± 83.97	321.84 ± 94.26	1.024	0.309
	Posttest	466.17 ± 57.84	409.02 ± 82.21	3.650	0.000
Shoulder Range of Motion	Pretest	168.23 ± 20.22	177.34 ± 5.87	-2.863	0.005
	Middle test	178.03 ± 4.61	179.64 ± 1.43	-2.205	0.030
	Posttest	180 ± 0	180 ± 0	-----	-----
VAS Pain	Pretest	6.85 ± 2.33	6.84 ± 2.22	0.018	0.985
	Middle test	2.8 ± 1.4	4.39 ± 1.66	-4.711	0.000
	Posttest	0.38 ± 0.63	2 ± 1.14	-7.973	0.000

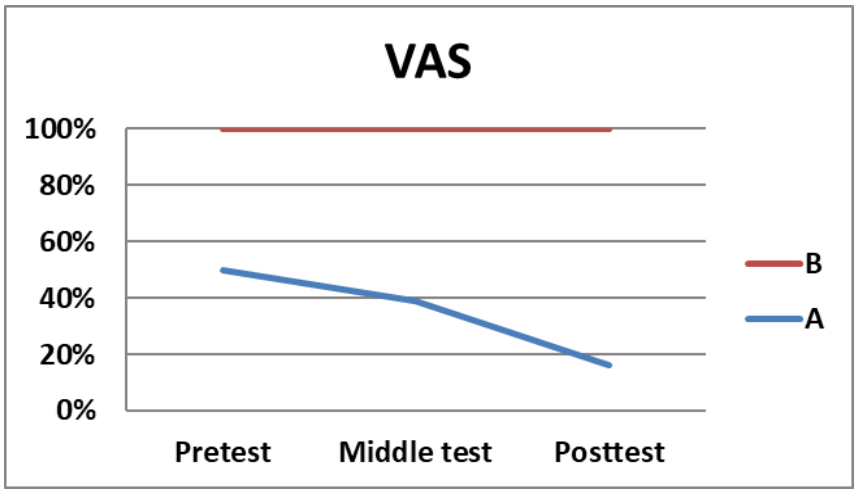

Figure 4.10 The Mean values of Pain (VAS) according to the Intervention Group (A, B)

Visual Analogue Scale (VAS) for pain score on the pre-test p-value of 0.985 is not significant, but on the middle test, the p-value of 0.000 was significant, and the same post-test p-value of (p) 0.000 The home intervention was less effective in reducing pain than the physiotherapy intervention.

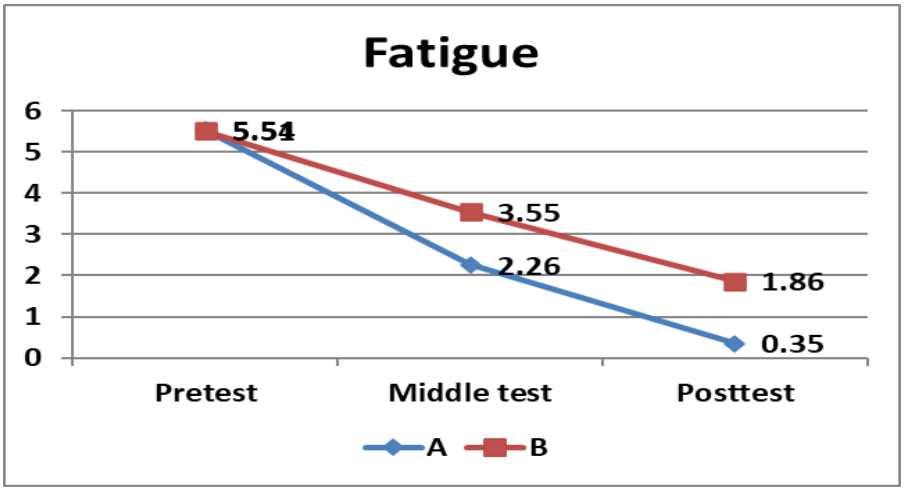

Figure 4.11 The Mean values of Fatigue according to the Intervention Group (A, B)

Show a significant difference in Intervention Groups in fatigue in per middle and post in the two groups P value was 0.000 in Reducing fatigue the physiotherapy intervention more than the control group**.**

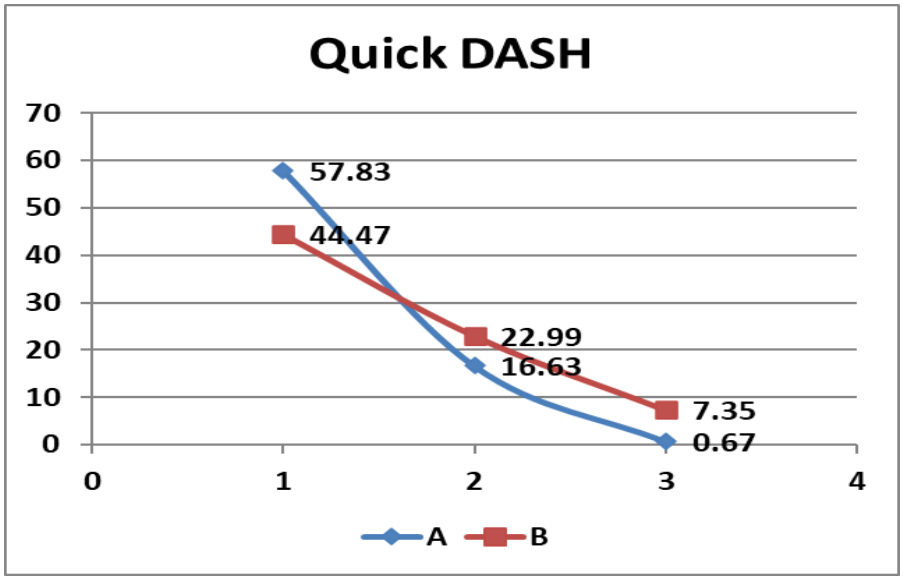

Figure 4.12 The Mean values of the Quick DASH scale according to the Intervention Group (A, B)

Functional abilities according to the Q DASH score in the two groups p value was 0.000 in the physiotherapy intervention was more effective than the home intervention.

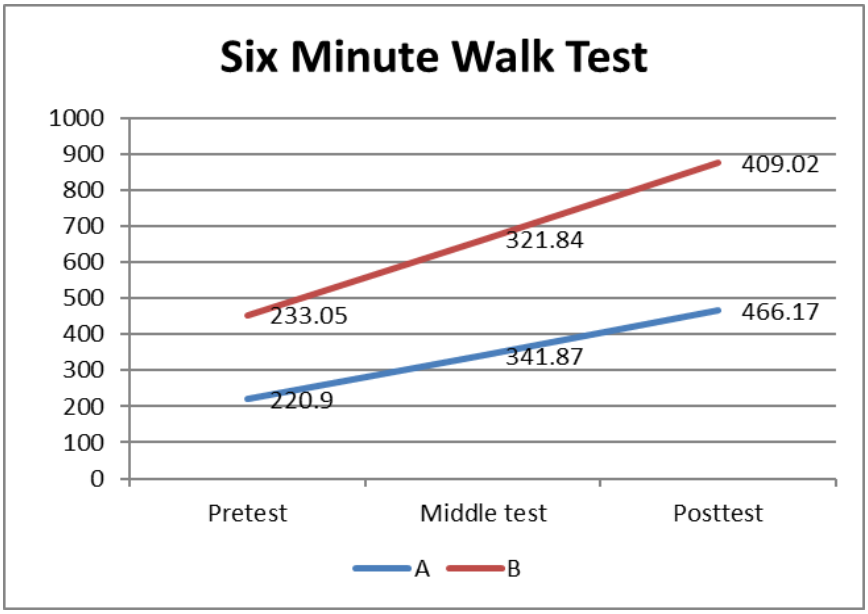

Figure 4.13 The Mean values of the Six Minute Walk Test according to the Intervention Group (A, B)

The six Minute Walk Test in the pretest p-value of 0.568 and the middle-test p-value was 0.309 no significant difference in the mean 6MWT distance in the post-test p-value was 0.000 the mean 6MWT distance (466.17 meters) compared to the home intervention group (409.02 meters).

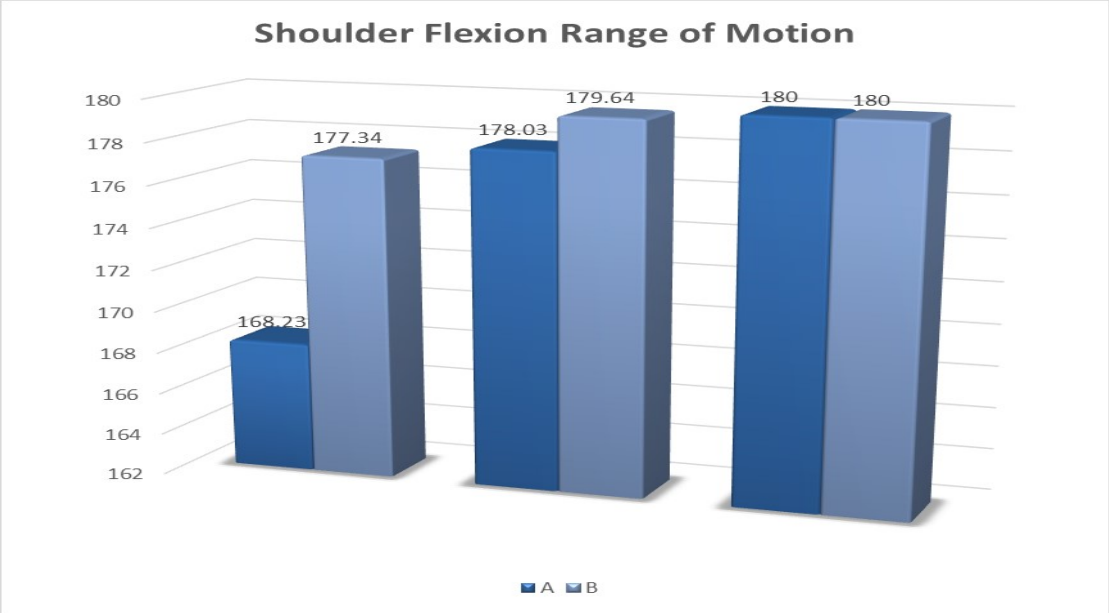

Figure 4.14 The Mean values of Shoulder Flexion Range of Motion according to the Intervention Group (A, B)

Shoulder Flexion Range of Motion significant difference in SROM between the physiotherapy and home intervention groups at the pretest p-value of 0.005 and middle test p value0.030 pretest and middle test, home intervention. improved SROM more than at the physiotherapy intervention.

4.2 Results Discussion

This study investigated physiotherapy and home intervention programs; it explored the effect of exercise programs on decreasing pain, and fatigue while improving functional abilities for breast cancer women's outcomes. This study's findings indicate that exercise treatments, both supervised and unsupervised, can considerably reduce pain, and fatigue and enhance Palestinian women's functional abilities post breast cancer. The current study additionally showed that the physiotherapy intervention (group A) was more successful in decreasing pain and fatigue than the home intervention (group B). This shows that supervised exercise programs, as compared to unsupervised ones, may be more effective at reducing pain and lowering fatigue in breast cancer survivors. This is most likely because supervised programs offer greater assistance and supervision, which can help participants stay motivated and stick to their exercise time.

The results showed that the mean of the total VAS scale in the Post-test is significantly lower than the mean of the total VAS scale in the Middle test which is also significantly lower than the mean of the total VAS scale in the Pretest... Consistency of our finding study was found with 44 breast cancer survivors who completed part of a 24-session exercise program at a Brazilian physiotherapy clinic Pain scores significantly decreased (Resnik & Borgia, 2011).

Also, our result was supported by a quasi-experimental study that included 84 adult patients, and data were collected using a variety of tools, including the VAS Scale for pain intensity, the Universal goniometer for shoulder range of motion (ROM), and a structured questionnaire. The average age of the women studied was 55.3% The bulk of the women in both groups were housewives and married. There was a highly significant difference in the study group's level of pain severity, shoulder movement, and functional status. In comparison to the control group (p 0.05). This indicates that the preventive program to avoid complications among women with breast cancer had a beneficial impact on decreasing patients' pain and improving shoulder movement, post-program, and three months following program implementation of the exercise program(de Rezende, 2022). Hence, home-based exercise programs could provide benefits for participants and decrease pain (Mohammed, 2016).

Further, the mean of the posttest of the VAS scale for Married women is significantly higher than the posttest VAS scales for single women, divorced women, and widows. Pain assessment is a subjective one and thus, the researcher attributes this to cultural issues, as married women bear domestic responsibilities in terms of raising children, caring for them, and various family obligations. Furthermore, for social and psychological issues married women sometimes tend to seek attention from their close families if they are in pain. This finding is consistent with other research that showed marital status is an independent factor associated with breast cancer and pain (Jassim, Doherty, Whitford, & Khashan, 2023).comparing is supported by research demonstrating that addressing psychological variables in pain rehabilitation is effective in lowering pain(Johannsen, Farver, Beck, & Zachariae, 2013; Veehof, Oskam, Schreurs, & Bohlmeijer, 2011).

The results showed that about 57% of the patients in our study sample had felt unusually tired or fatigued in the last week while about 43% had not in the pretest which was similar to what was previously reported in studies that showed almost half of the patients reported clinically significant fatigue(Box, Reul-Hirche, Bullock-Saxton, & Furnival, 2002; Hajj et al., 2022; Hyuna Sung et al., 2021). On the other hand, in the Middle test and the post-

test, the results showed most of the patients in the study sample had not felt fatigued in the last week. Similarly, a systematic review and meta-analysis study reveals that the difference in the extent of CRF symptom decrease between supervised and unsupervised therapies is not statistically significant ($p = 0.09$) (Hyuna Sung et al., 2021). This is also consistent with previous studies, such as Meneses-Echávez et al.'s meta-analysis, which comprised supervised therapies focused on resistance, endurance, and stretching exercises and reported substantial decreases in CRF(Reverte-Pagola, Sánchez-Trigo, Saxton, & Sañudo, 2022). Thus, with breast cancer survivors, both supervised and non-supervised exercise programs can be effective and beneficial for reducing fatigue and other symptoms.

Furthermore, a significant difference ($p = 0.01$) was found in the study's results between the supervised and non-supervised training programs. Group B's results were similar to ours in that they indicated a significant decrease in fatigue levels based on random effects analysis, which revealed significant differences between groups in supervised and unsupervised exercise programs. The overall fatigue T-test was highly significant ($p < 0.001$). On the other hand, supervised training initiatives might have a bigger impact in the short term. Similarly, a systematic review and meta-analysis were carried out to investigate the effects of supervised and unsupervised exercise programs on CRF in BC patients. The results indicated that both types of programs can decrease CRF in BC patients; however, in the short term, supervised exercise may have a greater impact.

Also, the results showed that the mean of the total Six Minute Walk Test scale in the Post-test is significantly higher than the mean of the total in the Middle test which is also significantly higher than the mean of the Pretest. A significant mean decrease of 104.118 meters ($p < 0.001$) was found when comparing the Pretest and Middle Test. This corresponds to a percentage change of [104.118 220.9 × 100% 220.9 104.118 × 100%]. In comparing the findings of this study to previous literature a systematic review found that resistance training and combined aerobic-resistance training interventions led to positive changes in the 6MWT distance (Meneses-Echávez, González-Jiménez, & Ramírez-Vélez, 2015b). Furthermore, it was supported by a meta-analysis of physical exercise as an effective strategy that positively affects breast cancer survivors' functional abilities and cardiorespiratory fitness(Jasna But-Hadzic et al., 2021), and BC participants were encouraged to train with other survivors or supervised exercise programs(Joaquim et al., 2022).

Further, the mean of the total Shoulder Range of Motion scale in the Post-test is significantly higher than the mean of the total Shoulder Range of Motion scale in the Middle test which is also significantly higher than the mean of the total Shoulder Range of Motion scale in the Pretest. The same results were concluded in the RCT study(Abdin, Lavallée, Faulkner, & Husted, 2019). Further, in a cohort study of 26 people with an average age of 56 years, the exercise intervention showed an increase in shoulder range of motion and strength, (Majed, Neimi, Youssef, Takey, & Badr, 2022).

The results also showed that the mean values of the pretest fatigue scale for the high BMI groups (30.0 to <40 and 40 or more) are significantly higher than that for the lower BMI groups (18.5 to <25 and 25.0 to <30). Several studies found an association between obesity and fatigue in breast cancer survivors supported our findings the study aimed to improve understanding of cancer-related fatigue risk factors and found Fatigue was consistently greater in younger and obese (Ceprnja & Maka, 2015), Obesity has been connected with CRF, with Evidence indicating that a higher body mass index (BMI) is a risk factor for CRF(Otto et al., 2012; Ruiz-Casado, Álvarez-Bustos, de Pedro, Méndez-Otero, & Romero-Elías, 2021). The prevalence of fatigue interfering with quality of life was 43%. Weight is positively associated with fatigue (Di Meglio et al., 2022). According to this study's findings, there is a significant connection between BMI and fatigue levels in breast cancer survivors, with higher BMI levels being related to more fatigue.

The results showed that there are significant differences at 0.05 level in the middle test of Q-DASH according to the Type of Surgery and in the pretest of Q-DASH according to the BMI. These results were similar to another study which showed that the mean of the middle Q-DASH scale for the Lumpectomy group is significantly lower than that for the Full Mastectomy group only as a comparable of our results of this study Validation of Quick DASH outcome measure in breast cancer survivors for upper extremity disability Quick DASH scores improved significantly in patients with high, moderate, or low UED On the Quick DASH, the majority of subjects with high UED (68.2%) obtained the least clinically relevant difference of 15 points(Álvarez-Bustos et al., 2021), but in another hand, The type of axillary surgery or post-mastectomy reconstruction had no impact on UED or QoL(LeBlanc, Stineman, DeMichele, Stricker, & Mao, 2014).

According to our findings, the type of breast surgery may influence the amount of disability and functional restrictions encountered by patients in their upper extremities. Similar to our result, in one study they showed that individuals who had a complete mastectomy and axillary radiotherapy had considerably more ROM restrictions. There have been some debates over the effect of mastectomy on shoulder ROM(Chrischilles et al., 2019).

Furthermore, taking into consideration the complicated connections between multiple aspects such as the type of surgery (mastectomy or lumpectomy), the type of surgery for axillary lymph nodes as ALND or SLNB, and radiation dose type of cancer treatment group Mixed (Chemotherapy+Hormone Therapy) and for the Mixed (Chemotherapy+Radiotherapy+Hormone Therapy) and for the Mixed (Chemotherapy+Radiotherapy+Hormone Therapy+Biological Therapy) are significantly higher than that for the Mixed (Radiotherapy+Hormone Therapy). The current study's findings on axillary treatment may differ from previous research (Ribeiro et al., 2019).

Regarding obese participants, the results showed that the mean values of the pretest fatigue scale for the high BMI groups (30.0 to <40 and 40 or more) are significantly higher than that for the lower BMI groups (18.5 to <25 and 25.0 to <30). Similar to this study's findings, obese participants showed substantially greater CRF symptoms than normal-weight subjects at baseline on both the Multidimensional Fatigue Symptom Inventory (MFSI) total (obese = 11.2 vs normal weight = 6.3; p = 0.03) and the Symptom Inventory (SI) (obesity = 3.5 vs normal weight = 2.9; p = 0.03)(Akbas et al., 2021). Also, a Systematic Review and Meta-Analysis of the Six-Minute Walk Distance in Breast Cancer Survivors results show controlling for BMI, healthy participants got a significantly greater distance than BCS (103 m; p 0.001)(Inglis et al., 2020).

The results showed that there are significant differences at 0.05 levels in the posttest of the Six Minute Walk scale only according to the level of education. This consisted of a systemic review and meta-analysis of RCT that concluded that the importance of educational programs will be beneficial in a range of motion to induce shoulder problems after mastectomy(J. But-Hadzic et al., 2021).

Further, the mean of the middle test of the Shoulder Flexion Range of Motion scale for the Full Mastectomy type of surgery and for the Lumpectomy type of surgery is significantly higher than that for Both Sides Lumpectomy type of surgery. supported by the study results are also supported by the study in Iraq aimed to determine the effectiveness of range-of-motion (ROM)

exercise in reducing shoulder impairment following a mastectomy. A randomized controlled trial (RCT) was done on 80 patients who had shoulder discomfort and impairment following a mastectomy. Patients were randomized to either the study or reference groups at random. The study group underwent ROM exercise, whereas the control group received no intervention. The study found that patients in the study group had better shoulder movement than patients in the comparison movement in the study group between the pre-test and post-test groups (Dong-suk, Hyeun-sil, Seung-ok, & Eun-mi, 2021). The study also discovered that there was a substantial improvement in shoulder Furthermore the study results are also supported by other studies done by Lee et al., (2021).

4.3 Study Strengths and Limitations

4.3.1 Study Strengths

- ✓ Strong methodology to ensure higher levels of scientific accuracy, as we used a prospective quasi-experimental, single-blind, 2-arm parallel research design.
- ✓ Sufficient data for statistically meaningful conclusions was provided by including 84 breast cancer survivors, showing an adequate sample size.
- ✓ Complete outcome measures to provide a complete picture of the effects of the therapies, as we used a range of well-validated methods to assess shoulder range of motion, pain, fatigue, functional abilities, and aerobic fitness.
- ✓ Important results as both groups improved, demonstrating the general advantages of fitness regimens for those who have survived breast cancer. Significantly, the enhanced value of supervised physical therapy intervention was demonstrated by the better development it produced in shoulder range of motion, functional skills, pain management, and fatigue management.
- ✓ Study findings will have important implications for clinical practice in Palestine.

4.3.2 Study Limitations

- ✓ Self-Reported Metrics: The use of self-reported measurements of fatigue, functional skills, and pain raises the possibility of response bias.
- ✓ Short-Term Monitoring: The study's follow-up period could have been rather brief, making it difficult to assess the long-term durability of the reported effects. Longer

intervals for follow-up should be used in future studies to assess the sustainability of intervention outcomes.

- ✓ Variable Adherence Levels: The variation in participants' adherence levels is a key limitation in the home-based physiotherapy program.

Chapter Five

Conclusions and Recommendations

5.1 Conclusions

5.2 Recommendations

Chapter Five

Conclusions and Recommendations

5.1 Conclusions.

After conducting this study, the researcher concluded the following:

- ✓ The study found that exercise programs significantly reduced pain intensity among both groups of breast cancer patients from the pretest to the posttests. Pain levels also decreased, with lower VAS scores in the post-test. The study also revealed a significant reduction in pain for the physiotherapy group.
- ✓ The study found that exercise programs significantly lowered fatigue levels among both groups of breast cancer patients from the pretest to the posttests.
- ✓ The exercise programs showed significant effectiveness across intervention times, with the post-test showing the lowest mean pain scores .
- ✓ Functional abilities had improved, with lower Q-DASH scores, enhanced performance in the Six Minute Walk Test, and improved Shoulder Range of Motion.
- ✓ These findings highlight the benefits of exercise programs in alleviating pain, reducing fatigue, improving functional capacities, and alleviating pain among breast cancer patients.
- ✓ The study compared the effectiveness of physiotherapy and home interventions in reducing fatigue and improving functional abilities.
- ✓ The physiotherapy intervention had a greater impact on functional abilities, as evidenced by lower Q-DASH scores.
- ✓ The home intervention had a higher impact on the shoulder range of motion, especially flexion and extension.

5.2 Recommendations

This study has many recommendations that can be classified into recommendations for researchers and recommendations for physiotherapists as follows:

5.2.1 Recommendation for Physiotherapists:

- ✓ Include Structured Exercise Programs: The study's conclusive evidence of the positive impact of exercise programs on fatigue levels, functional abilities, and pain reduction highlights the importance of including structured exercise programs in standard care for breast cancer patients. Individual patient demands preferences and physical circumstances should be taken into account while developing oncology treatment strategies.

- ✓ Prioritize Physiotherapy Interventions: physiotherapy interventions are so effective at reducing fatigue and improving functioning, that healthcare providers are encouraged to prioritize and emphasize the inclusion of physiotherapy in the comprehensive care of breast cancer patients. Oncologists and physiotherapists should work together to achieve a consistent and patient-centered approach.

- ✓ Combine Physiotherapy and Home therapies for Comprehensive Care: While physiotherapy therapies were shown to be beneficial, the study also found that home interventions improved shoulder range of motion. Healthcare practitioners should explore combining physiotherapy with home-based therapies to provide a complete and complete care approach. This mixed method may be modified to meet the specific needs and preferences of each patient.

- ✓ Regular Pain Monitoring: The significant reduction in pain levels found in the physiotherapy group underscores the need for frequent pain monitoring as an important aspect of the evaluation for breast cancer patients. Regular pain evaluations can help healthcare practitioners evaluate the efficacy of therapies and change treatment plans as needed, maintaining optimum pain management throughout the treatment process.

5.2.2 Recommendation for Researcher:

- ✓ Further Research on Home therapies: While physiotherapy therapies were more beneficial in some areas, the study implies that home interventions, particularly those aimed at improving shoulder range of motion, have merit.

- ✓ More studies should be conducted to investigate and improve particular home-based therapies, finding important activities or techniques that might optimize their efficacy. This study might result in more focused and individualized home exercise suggestions.
- ✓ Educate Healthcare Providers: It is critical to share the study's findings and provide more details on the advantages of physical activity for breast cancer patients. This includes teaching oncologists, physiotherapists, nurses, and other healthcare practitioners about the benefits of scheduled exercise. Such understanding can help to foster a more collaborative and integrated approach to patient care, ensuring that all members of the team are on the same page.
- ✓ Exercise Program Adherence: Recognizing the long-term advantages of exercise programs, healthcare practitioners should strongly promote and support patient adherence. Education on the benefits of continuous physical activity, along with continued support and encouragement, can help to establish a culture of regular exercise among breast cancer patients.

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➢ Appendixes

Appendix 1: data collection sheet

Data Collection Sheet

Date.: ---------- **Group: A B**

Section I: Personal Data

1. Participant's name……..
2. Age……
3. Occupation ……
4. Marital status……
5. Place of living…… .
6. Education level……

□ None

□ Special education

□ Primary education

7. Height……
8. Weight ……
9. BMI (Body Mass Index)----------

Section II: Medical History

1. Past medical history……
2. Past surgical history……
3. History of neurological or vascular deficits ……..

4. types of treatment for breast cancer used chemotherapy, radiotherapy, hormonal, and biological.

Section III: Outcome Measure

Outcome measures	Pre-test	Middle-test	Post-test
A brief Fatigue Inventory (BFI)			
Quick DASH Questionnaire			
Visual analogue scale (VAS)			
6-minute walk			
goniometer			

Appendix 2: Outcome Measures
A brief Fatigue Inventory (BFI)
English version

Brief Fatigue Inventory

STUDY ID# _____ HOSPITAL # _____

Date: _____/_____/_____ Time: _____

Name _____ _____ _____

Last First Middle Initial

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

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

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

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

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

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

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

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

A. General activity
0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely Interferes

B. Mood
0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely Interferes

C. Walking ability
0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely Interferes

D. Normal work (includes both work outside the home and daily chores)
0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely Interferes

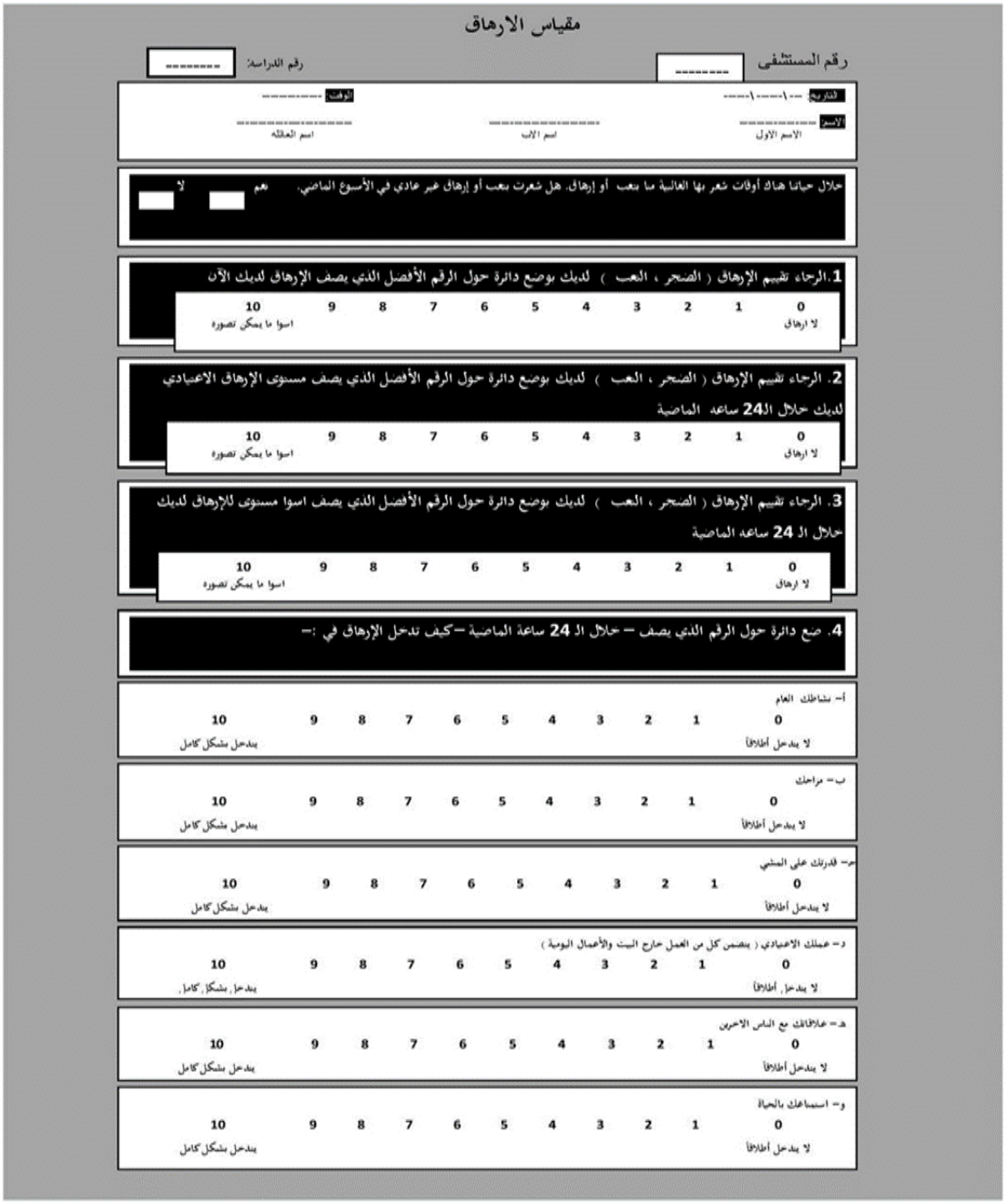
E. Relations with other people
0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely Interferes

F. Enjoyment of life
0 1 2 3 4 5 6 7 8 9 10
Does not interfere — Completely Interferes

Appendix 3: Outcome Measures

A Brief Fatigue Inventory (BFI)

Arabic Version



مقياس الارهاق

رقم المستشفى --------- رقم الدراسة: ---------

التاريخ --/--/---- الوقت ----------

الاسم ----------

الاسم الاول	اسم الاب	اسم العائله
----------	----------	----------

خلال حياتنا هناك أوقات شعر بها العالمية ما بتعب أو إرهاق. هل شعرت بتعب أو إرهاق غير عادي في الأسبوع الماضي: نعم ☐ لا ☐

1. الرجاء تقييم الإرهاق (الضجر ، التعب) لديك بوضع دائرة حول الرقم الأفضل الذي يصف الإرهاق لديك الآن

0	1	2	3	4	5	6	7	8	9	10
لا ارهاق										اسوا ما يمكن تصوره

2. الرجاء تقييم الإرهاق (الضجر ، التعب) لديك بوضع دائرة حول الرقم الأفضل الذي يصف مستوى الإرهاق الاعتيادي لديك خلال الـ24 ساعه الماضية

0	1	2	3	4	5	6	7	8	9	10
لا ارهاق										اسوا ما يمكن تصوره

3. الرجاء تقييم الإرهاق (الضجر ، التعب) لديك بوضع دائرة حول الرقم الأفضل الذي يصف اسوا مستوى للإرهاق لديك خلال الـ 24 ساعه الماضية

0	1	2	3	4	5	6	7	8	9	10
لا ارهاق										اسوا ما يمكن تصوره

4. ضع دائرة حول الرقم الذي يصف – خلال الـ 24 ساعة الماضية –كيف تدخل الإرهاق في :-

أ- نشاطك العام

0	1	2	3	4	5	6	7	8	9	10
لا يتدخل اطلاقاً										يتدخل بشكل كامل

ب- مزاجك

0	1	2	3	4	5	6	7	8	9	10
لا يتدخل أطلاقاً										يتدخل بشكل كامل

ج- قدرتك على المشي

0	1	2	3	4	5	6	7	8	9	10
لا يتدخل أطلاقاً										يتدخل بشكل كامل

د- عملك الاعتيادي (يتضمن كل من العمل خارج البيت والأعمال اليومية)

0	1	2	3	4	5	6	7	8	9	10
لا يتدخل أطلاقاً										يتدخل بشكل كامل

هـ- علاقاتك مع الناس الاخرين

0	1	2	3	4	5	6	7	8	9	10
لا يتدخل أطلاقاً										يتدخل بشكل كامل

و- استمتاعك بالحياة

0	1	2	3	4	5	6	7	8	9	10
لا يتدخل أطلاقاً										يتدخل بشكل كامل

Appendix 4:

Outcome measures

Quick DASH Shoulder Questionnaire (English version)

Quick DASH Shoulder Questionnaire

Please rate your ability to perform the following activities over the past week by circling the appropriate response.					
Activity	**NO Difficulty**	**Mild Difficulty**	**Moderate Difficulty**	**Severe Difficulty**	**Unable**
1. Open a tight jar	1	2	3	4	5
2. Do heavy household chores (scrub floors, wash walls, etc.)	1	2	3	4	5
3. Carry a shopping bag or briefcase	1	2	3	4	5
4. Wash your back	1	2	3	4	5
5. Use a knife to cut food	1	2	3	4	5
6. Recreational activities requiring force/impact through your arm, shoulder or hand (golf, hammering, tennis, shoveling, etc.)	1	2	3	4	5
Social Limitation	**Not Limited**	**Slightly Limited**	**Moderately Limited**	**Quite Limited**	**Extremely Limited**
7. During the past week, to what extent has your arm, shoulder or hand problem interfered with your normal social activities?	1	2	3	4	5
Work/ADL Limitation	**Not at All**	**Slightly Limited**	**Moderately Limited**	**Very Limited**	**Unable**
8. During the past week, were you limited in your work or other regular daily activities as a result of your arm, shoulder or hand problem?	1	2	3	4	5
Severity of Symptoms (over the past week)	**None**	**Mild**	**Moderate**	**Severe**	**Extreme**
9. Arm, shoulder or hand pain	1	2	3	4	5
10. Tingling (pins and needles) in your arm, shoulder or hand	1	2	3	4	5
Sleeping Limitation	**NO Difficulty**	**Mild Difficulty**	**Moderate Difficulty**	**Severe Difficulty**	**Unable to Sleep**
11. During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder or hand?	1	2	3	4	5
Work Module *(complete if appropriate)*					
Type of work/job you are performing:					
Rate the severity of the following symptoms in the last week...	**NO Difficulty**	**Mild Difficulty**	**Moderate Difficulty**	**Severe Difficulty**	**Unable**
1. Using your usual technique for work	1	2	3	4	5
2. Performing your usual tasks/work because of arm, shoulder or hand pain	1	2	3	4	5
3. Performing your work/tasks as well as you would like	1	2	3	4	5
4. Spending your usual amount of time doing your work	1	2	3	4	5
Sports/Performing Arts Module *Complete if your arm, shoulder or hand problem is impacting your ability to play a musical instrument or participate in a sporting activity.*					
Sport/Activity/Musical Instrument impacted:					
Did you have any difficulty...	**NO Difficulty**	**Mild Difficulty**	**Moderate Difficulty**	**Severe Difficulty**	**Unable**
1. Using your usual technique for playing your instrument or sport	1	2	3	4	5
2. Playing your musical instrument or sport because of arm, shoulder or hand pain	1	2	3	4	5
3. Playing your musical instrument or sport as well as you'd like	1	2	3	4	5
4. Spending your usual amount of time practicing or playing your instrument or sport	1	2	3	4	5

Appendix 5: Outcome measures

Quick DASH Shoulder Questionnaire (Arabic version)

إعاقات الذراع والكتف واليد (مختصر)

الرجاء أن تقيّم قدرتك على فعل النشاطات التالية خلال الأسبوع الماضي، و ذلك بوضع دائرة حول الرقم الذي يقع تحت الجواب المناسب.

	بلا صعوبة	بصعوبة خفيفة	بصعوبة متوسطة	بصعوبة شديدة	غير قادر
1. أن تفتح علبة جديدة أو مُحكمة الإغلاق.	1	2	3	4	5
2. أن تقوم بأعمال المنزل الثقيلة (مثل غسل الحيطان أو إزاحة الأثاث أو سواها من الأشياء الثقيلة).	1	2	3	4	5
3. أن تحمل كيس التسوق أو حقيبة الوثائق.	1	2	3	4	5
4. أن تغسل ظهرك.	1	2	3	4	5
5. أن تستخدم سكيناً لتقطيع الطعام.	1	2	3	4	5
6. أن تقوم بنشاطات ترفيهية تبذل فيها بعض القوة أو الدفع عبر ذراعك أو كتفك أو يدك (مثل لعب التنس أو سواها من الألعاب الأخرى).	1	2	3	4	5

	لا أبداً على الإطلاق	بشكل طفيف	بشكل متوسط	كثيراً	بشكل بالغ للغاية
7. خلال الأسبوع الماضي، هل أثرت المشكلة في ذراعك أو كتفك أو يدك بنشاطاتك الاجتماعية العادية مع عائلتك، أو أصدقائك، أو جيرانك، أو زملائك بالمهنة/النادي الاجتماعي؟ (ضع دائرة حول الرقم المناسب)	1	2	3	4	5

	غير محدود على الإطلاق	محدود بشكل طفيف	محدود بشكل متوسط	محدود جداً	غير قادر
8. خلال الأسبوع الماضي، هل أثرت المشكلة في ذراعك أو كتفك أو يدك بنشاط عملك أو أي نشاطات يومية اعتيادية أخرى؟ (ضع دائرة حول الرقم المناسب)	1	2	3	4	5

الرجاء تقدير شدة العوارض التالية التي أحسست بها خلال الأسبوع الماضي (ضع دائرة حول الرقم المناسب).

	لا يوجد	قليلاً	بشكل متوسط	بشدة	بشدة بالغة للغاية
9. وجع/ ألم/عوار في الذراع، أو الكتف، أو اليد.	1	2	3	4	5
10. وخز (مثل وخز الدبابيس و الإبر) في ذراعك، أو كتفك، أو يدك.	1	2	3	4	5

	لا صعوبة	صعوبة خفيفة	صعوبة متوسطة	صعوبة شديدة	صعوبة بالغة الشدة بحيث لا أقدر على النوم
11. خلال الأسبوع الماضي، كم كانت صعوبة نومك بسبب الوجع/ألم/عوار في ذراعك، أو كتفك، أو يدك؟ (ضع دائرة حول الرقم المناسب)	1	2	3	4	5

إعاقات الذراع والكتف واليد (مختصر): إجمالي درجات الإعاقات / الأعراض = [(مجموع عدد الإجابات) – 1] × 25 ، حيث(العدد) يساوي عدد الإجابات المكتملة.
العدد

لا يمكن حساب إجمالي الدرجات في مقياس إعاقات الذراع والكتف واليد (مختصر) إذا تجاوز عدد البنود الناقصة بنداً واحداً.

إعاقات الذراع والكتف واليد (مختصر)

وحدة قياس العمل (اختياري)

الأسئلة التالية تستفسر عن تأثير مشكلة ذراعك، أو كتفك، أو يدك على مقدرتك على العمل (بما فيه القيام بالأعمال المنزلية إن كان ذلك هو دور عملك الرئيسي).
الرجاء أن تذكر ما هو عملك/ وظيفتك: _____
☐ أنا لا أعمل (يمكنك ترك هذا القسم).

الرجاء أن تضع دائرةً حول الرقم الأفضل وصفاً لمقدرتك الجسدية خلال الأسبوع الماضي، هل عانيتَ أيةَ صعوبةٍ في

	لا صعوبة	صعوبة خفيفة	صعوبة متوسطة	صعوبة شديدة	غير قادر
1. أن تستخدم أسلوبك الاعتياديَ في عملك؟	1	2	3	4	5
2. أن تؤدّي عملكَ الاعتيادي، و ذلك بسبب وجع/ ألم/ عوار الذراع أو الكتف أو اليد؟	1	2	3	4	5
3. أن تؤدّي عملك بشكلٍ حسن مثلما تريد؟	1	2	3	4	5
4. أن تقضي نفس القدر من الوقت الذي تستغرقه عادةً لأداء عملك؟	1	2	3	4	5

وحدة قياس الرياضات / فنون الأداء (اختياري)

تتعلق الأسئلة التالية بتأثير مشكلة ذراعك، أو كتفك، أو يدك، على العزف على آلتك الموسيقية أو على لعب الرياضة أو كليهما.
إذا كنت تمارس أكثر من رياضة، أو تعزف على أكثر من آلة موسيقية، (أو الاثنين معاً)، فالرجاء الإجابة بالنظر إلى ذلك النشاط الذي تعتبره الأهم بالنسبة إليك.
الرجاء الإشارة إلى الرياضة أو الآلة الموسيقية الأكثر أهمية بالنسبة لك: _____
☐ أنا لا ألعب أي رياضة أو أعزف على أي آلة موسيقية (يمكنك ترك هذا القسم).

الرجاء أن تضع دائرةً حول الرقم الأفضل وصفاً لمقدرتك الجسدية خلال الأسبوع الماضي، هل عانيتَ أيةَ صعوبةٍ في

	لا توجد صعوبة	صعوبة خفيفة	صعوبة متوسطة	صعوبة شديدة	غير قادر
1. أن تستخدم أسلوبك الاعتيادي في عزفك على آلتك الموسيقية أو لعبك لرياضتك؟	1	2	3	4	5
2. أن تعزف على آلتك الموسيقية، أو تلعب الرياضة التي تحبها بسبب وجع/ ألم/ عوار الذراع أو الكتف أو اليد ؟	1	2	3	4	5
3. أن تعزف على آلتك الموسيقية أو تلعب رياضتك بشكلٍ جيدٍ مثلما تحب؟	1	2	3	4	5
4. أن تقضي نفس الوقت الاعتيادي في التمرين أو في العزف على آلتك الموسيقية أو لعب رياضتك؟	1	2	3	4	5

للحصول على إجمالي درجات وحدات القياس الاختيارية: اجمع القيم الرقمية لكل جواب، و قسّمها على الرقم 4 (عدد البنود)، ثم انقص منها العدد 1، و من ثم اضرب الحاصل بالرقم 25.
لا يمكن حساب إجمالي درجات وحدة القياس الاختيارية إذا كانت هناك أية بنود ناقصة.

Appendix 6: Outcome Measures

Six-Minute Walk Test (English Version)

SIX MINUTE WALK TEST WORKSHEET

Name_____ **DOB**_____**Test date**_____

Gender: M/F **Race** _____

Height ____ft ____in **Weight** _____lbs_____kg

Medications taken before the test (dose and time)

_____

_____

Supplemental O_2: no yes ____ L/min **Assistive device:** no yes _____

Pre Test/Baseline	**End of Test**
BP_____	**BP**_____
HR _____	**HR** _____
SpO_2_____	**SpO_2**_____
Dyspnea (Borg) _____	**Dyspnea (Borg)** _____
Fatigue (Borg) _____	**Fatigue (Borg)** _____

Stopped or paused before 6 minutes completed? No Yes, reason_____

_____

Other symptoms at the end of test: angina dizziness hip, knee, calf pain

other _____

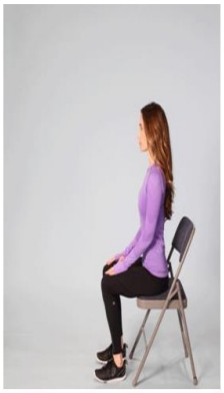
Number of laps_____(x100 meters) + final partial lap_____meters= total distance walked in 6 minutes: _____ meters

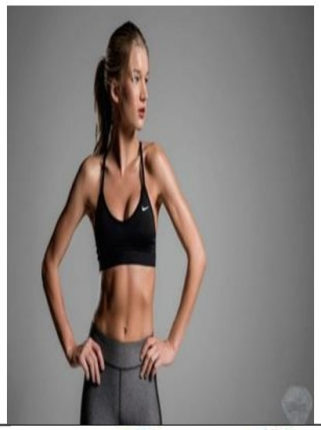
Comments:

Technician: _____

Appendix 7: The physiotherapy Intervention for the Experimental Group

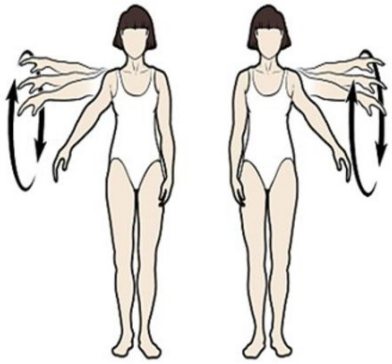
Physiotherapy intervention	Description	Time	Picture and Notes	Precautions
Deep Breathing Exercise	✓ Sit comfortably in a chair. ✓ Take a slow, deep breath through your nose. Let your chest and belly expand. ✓ Breathe out slowly through your mouth. ✓ Five repetition	**3 min**	Deep breathing can help you relax and ease discomfort and tightness around your incision (surgical cut). It's also a good way to relieve stress during the day.	This exercise should always be done before starting any session.
Warm-up exercise	✓ Prepare mentally and physically for your chosen activity. ✓ To increase your heart rate and therefore your blood flow which enables more oxygen to reach your muscles. ✓ Lower risk of injury. ✓ Better range of motion.	**10 min**	Warm-up exercises should always be done before starting any therapeutic exercise.	When you skip the warm-up, it makes your body more susceptible to sprained muscles, cramps, and other injuries. These injuries could prevent you from exercising altogether until you recover, and this is the opposite of the healthy lifestyle you are trying to.

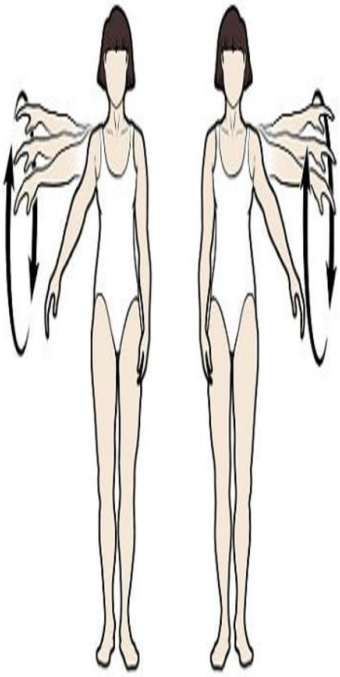
Exercise Phase Warm-up for (10min) Any three of the following accompanying exercises are selected for each treatment session				
Warm-up phase	**Exercise Description**	**Tim**	**Pictures**	**Notes**
Shoulder circle	✓ Lift both shoulders toward your ears. Keep your chin tucked in slightly. ✓ Gently rotate both shoulders forward, and then slow down and back, making a circle. ✓ Make 5 slow circles in one direction, then switch and make 5 slow circles in the opposite direction. ✓ Four repetition	**4 min**		
sit-to-stand exercise	✓ Sit toward the front edge of a sturdy chair without armrests. ✓ Place your hands lightly on each side of your body. ✓ Breathe in slowly. ✓ Breathe out as you slowly stand up. ✓ Stand and pause for a full breath in and out. ✓ Breathe in as you sit down slowly. ✓ Breathe out slowly. ✓ four repetitions. Rest between each repetition and the last 30 seconds	**4 min**		

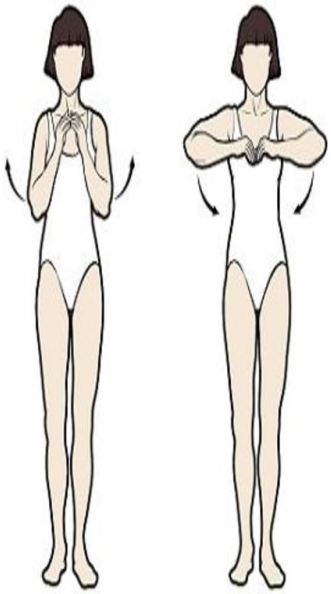
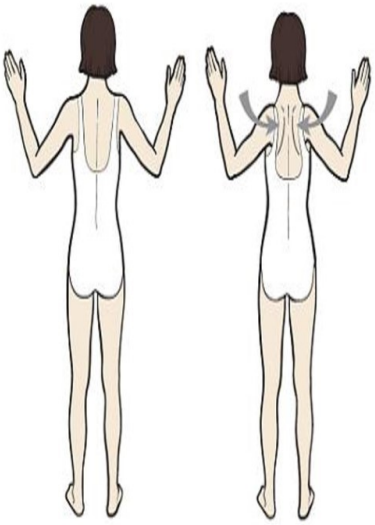
Upper body twist	✓ Stand up straight, with the feet shoulder-width apart. Raise the arms to the height of the shoulders. ✓ Rotate the body from side to side without moving the torso. ✓ Repeat this 5–10 times	**2 min**		
Shoulder shrugs	✓ Slowly lift your shoulders towards your ears and then down again. ✓ Repeat this 5-10 times.	**2 min**		
Hip circles	✓ Stand on one leg, using a wall or a heavy piece of furniture for support if necessary. ✓ Raise the other leg out to the side and move it in a circular motion. ✓ Perform 10 rotations with each leg. ✓ 2 repetitions with each leg.	**4 min**		

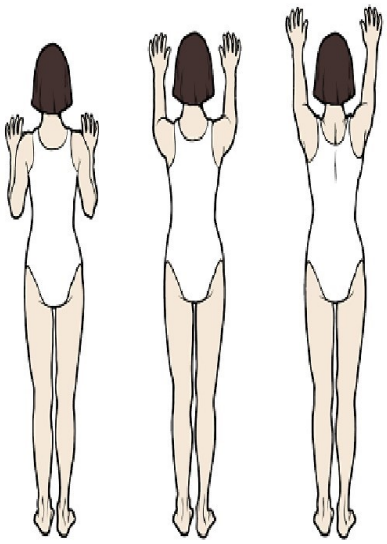
Lateral leg swings	✓ Face the wall or stable object, using one hand for balance. Now keep your left foot planted into the ground as you swing your right leg from side to side, in front of your body. Complete 10 repetitions, then switch sides.	**4 min**		
Side lunge	✓ Stand with your feet hip-width apart. ✓ Press into your right foot as you step your left foot over to the left. ✓ From here, squat down while bending your left leg and keeping your right leg straight. ✓ Pause briefly with your left knee over, but not beyond, your toes. Lift your hips and return your left foot to the starting position. ✓ Then I repeat the previous steps using the right foot instead of the left. ✓ Six repetitions. Rest between each repetition and the last 30 seconds.	**4 min**		

Physiotherapy Intervention	Descriptions	Time	Picture and notes	Precautions
Aerobic Exercise	Intensity: 50-70% of max heart rate. Type: walking cycling Aerobic activity.	3x 5 times per week -30 minutes maintaining As a long-term routine.		must be observed FIT Guidelines
The patient must walk either on foot for straight distances or by using a treadmill, according to The specified program is from three to five days a week. <u>Note</u>: This stage will be part of the home program that the patient will be asked to do because the duration of the session will be 60 minutes, to give her other exercises.				
Aerobic Phase	**Exercise Description**	**Tim**	**Pictures**	**Note**
Walking	**Walking at moderate speed continuously**	**First week (5 min)** **Second week (10 min)** **Third week (15 min)** **Fourth week (20 min)** **Fifth week (25 min)** **Six weeks (30 min)** **Seven weeks (30 min)** **Eight weeks (30 min)**		*Walking is a great and easy way to increase physical activity. *Improve Deep breathing. * Increasing the body's endurance *Walking long distances continuously without getting fatigued.

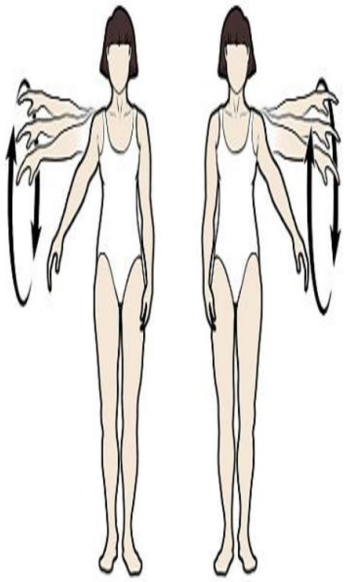
Physiotherapy intervention	Description	Time	Picture and Notes	Precautions
Range of motion (ROM) Exercise	✓ Intensity: 10/15 reps . ✓ Type: Supervised range of motion program of an ARM joint (shoulder, elbow, wrist, fingers).	2/3 times a week.		must be observed by FITT Guidelines.
Resistance Training Exercise	✓ Intensity: 12/15 reps of 60 % of 1RM. ✓ Type: Supervised resistance program of major muscle groups.	2/3 times a week		must be observed by FITT Guidelines.

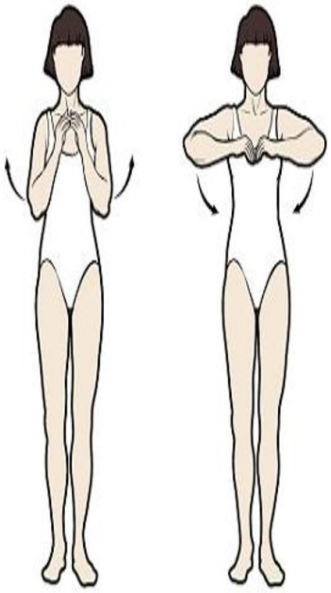
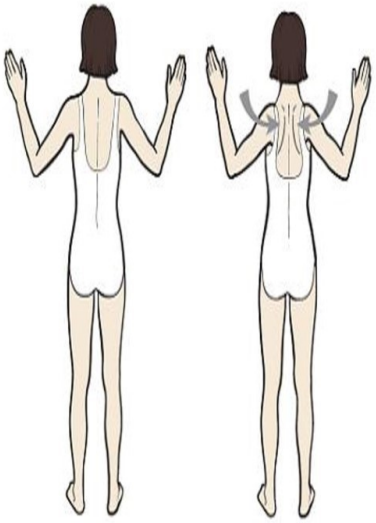
First week Three sessions a week				
(ROM) exe phase	**Exercise Description**	**Tim**	**Pictures**	**Notes**
Backward Arm Circles	✓ Stand with your feet slightly apart for balance. Raise your affected arm out to the side. Remember not to raise it higher than your range of motion restriction. If you do not have a range of motion restriction, raise it as high as you can without feeling discomfort. ✓ Make a slow backward circle in the air with your arm. Make sure you're moving your arm from your shoulder, not your elbow. Keep your elbow straight. ✓ Repeat this movement 5 times. Make each circle larger until they're as big as you can comfortably make them. Remember not to raise your arm higher than your range of motion restriction, if you have one. ✓ When you're done, slowly lower your arm to your side. ✓ 3 sets. The rest time from one cycle to another is 30 seconds.	**4 min**		✓ If you had surgery on both breasts, do this exercise with one arm at a time. Doing it with both arms at once will put too much pressure on your chest. ✓ If you feel any aching or if your arm gets tired, take a break. Keep going when you feel better.

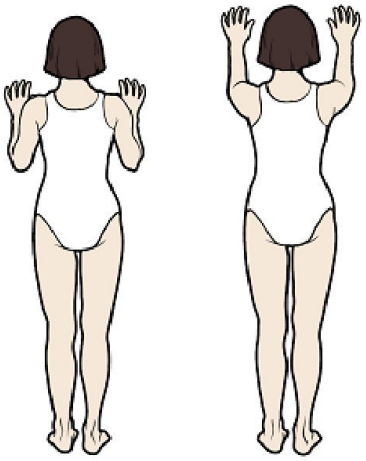
Shoulder Wings	✓ Place your hands on your chest or collarbone. ✓ Raise your elbows out to the side. Remember not to raise them higher than your range of motion restriction. If you do not have a range of motion restriction, raise them as high as you can, up to shoulder level. ✓ Slowly lower your elbows. ✓ Repeat this movement 5 times. When you're done, slowly lower your hands. ✓ 3set . The rest time from one set to another is 30 seconds.	**4 min**		This exercise will help you get back the outward movement of your shoulder. You can do it while sitting or standing.
W Exercise	✓Form a "W" with your arms out to the side and palms facing forward. ✓Try to bring your hands up so they're even with your face. If you cannot raise your arms that high, bring them to the highest comfortable position. Remember not to raise your arms higher than your range of motion restriction, if you have one. ✓Pinch your shoulder blades together and downward, as if you're squeezing a pencil between them. Keep squeezing them together and downward for 5 seconds. ✓Slowly bring your arms back to the starting position.	**4 min**		✓You can do this exercise while sitting or standing. ✓If you feel discomfort, hold your position and do the deep breathing exercise. If the discomfort passes, try to bring your arms back a little further. If it does not, do not reach any further.

	✓Repeat this movement 5 times. When you're done, slowly lower your hands. ✓3 cycles. The rest time from one cycle to another is 30 seconds.			
Forward Wall Crawls	✓ Stand facing a wall. Your toes should be about 6 inches (15 centimeters) from the wall. ✓ Reach as high as you can with your unaffected arm. Mark that point with a piece of tape. This will be the goal for your affected arm. If you had surgery on both breasts, set your goal using the arm that moves most comfortably. ✓ Place both hands against the wall at a comfortable level. Crawl your fingers up the wall as far as you can, keeping them even with each other. Try not to look up toward your hands or arch your back. ✓ When you get to the point where you feel a good stretch, but not pain, do the deep breathing exercise. ✓ Return to the starting position by crawling your fingers back down the wall. ✓ Repeat this movement 5 times. Each time you raise your hands, try to crawl a little bit higher. ✓ On the last crawl, use the other piece of tape to mark the highest point you reached with your affected	**4 min**		

	arm. This will let you see your progress each time you do this exercise. ✓ 3 cycles. The rest time from one cycle to another is 30 seconds.			

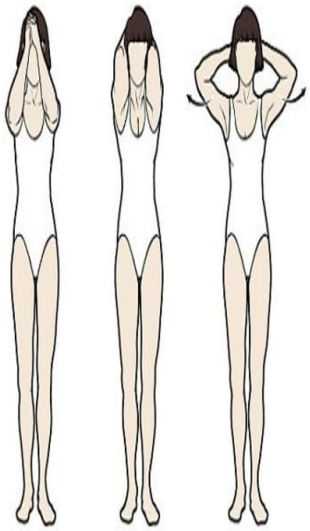
second week Three sessions a week				
(ROM) exe phase	**Exercise Description**	**Tim**	**Pictures**	**Notes**
Backward Arm Circles	✓ Stand with your feet slightly apart for balance. Raise your affected arm out to the side. Remember not to raise it higher than your range of motion restriction. If you do not have a range of motion restriction, raise it as high as you can without feeling discomfort. ✓ Make a slow backward circle in the air with your arm. Make sure you're moving your arm from your shoulder, not your elbow. Keep your elbow straight. ✓ Repeat this movement 10 times. Make each circle larger until they're as big as you can comfortably make them. Remember not to raise your arm higher than your range of motion restriction, if you have one. ✓ When you're done, slowly lower your arm to your side. ✓ 3 sets. The rest time from one cycle to	**5 min**		✓ If you had surgery on both breasts, do this exercise with one arm at a time. Doing it with both arms at once will put too much pressure on your chest. ✓ If you feel any aching or if your arm gets tired, take a break. Keep going when you feel better.

	another is 30 seconds.			
Shoulder Wings	✓ Place your hands on your chest or collarbone. ✓ Raise your elbows out to the side. Remember not to raise them higher than your range of motion restriction. If you do not have a range of motion restriction, raise them as high as you can, up to shoulder level. ✓ Slowly lower your elbows. ✓ Repeat this movement 10 times. When you're done, slowly lower your hands. ✓ 3 sets. The rest time from one cycle to another is 30 seconds.	**5 min**		This exercise will help you get back the outward movement of your shoulder. You can do it while sitting or standing.
W Exercise	✓Form a "W" with your arms out to the side and palms facing forward. ✓Try to bring your hands up so they're even with your face. If you cannot raise your arms that high, bring them to the highest comfortable position. Remember not to raise your arms higher than your range of motion restriction, if you have one. ✓Pinch your shoulder blades together and downward, as if you're squeezing a pencil between them. Keep squeezing them together and downward for 5 seconds.	**5 min**		✓You can do this exercise while sitting or standing. ✓If you feel discomfort, hold your position and do the deep breathing exercise. If the discomfort passes, try to bring your arms back a little further. If it does not, do not reach any further.

	✓ Slowly bring your arms back to the starting position. ✓ Repeat this movement 10 times. When you're done, slowly lower your hands. ✓ 3 sets. The rest time from one cycle to another is 30 seconds.			
Forward Wall Crawls	✓ Stand facing a wall. Your toes should be about 6 inches (15 centimeters) from the wall. ✓ Reach as high as you can with your unaffected arm. Mark that point with a piece of tape. This will be the goal for your affected arm. If you had surgery on both breasts, set your goal using the arm that moves most comfortably. ✓ Place both hands against the wall at a comfortable level. Crawl your fingers up the wall as far as you can, keeping them even with each other. Try not to look up toward your hands or arch your back. ✓ When you get to the point where you feel a good stretch, but not pain, do the deep breathing exercise. ✓ Return to the starting position by crawling your fingers back down the wall. ✓ Repeat this movement 10 times. Each time you raise your hands, try to crawl a little bit higher. ✓ On the last crawl, use the other piece of tape	**5 min**		As you become more flexible, you may need to take a step closer to the wall. This will let you reach a little higher.

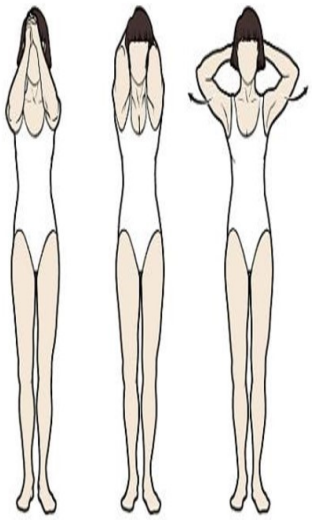
	to mark the highest point you reached with your affected arm. This will let you see your progress each time you do this exercise. ✓ 3 sets. The rest time from one cycle to another is 30 seconds.			

Third week Three sessions a week				
(ROM) exe phase	**Exercise Description**	**Tim**	**Pictures**	**Notes**
Arm Lifts	✓ Clasp your hands together in front of your chest. Point your elbows out. ✓ Slowly lift your arms upwards until you feel a gentle stretch, but no pain. ✓ Hold for 5 to 10 seconds (or 5 deep breaths) and then slowly return to the start position. ✓ Repeat 5 to 10 times.	**5 min**	 	This exercise can be done sitting or standing. It helps improve movement in your shoulders.
Shoulder Blade Squeeze	✓ Hold your arms at your side against your body with your elbows bent. ✓ Slowly bring your elbows straight backward, while squeezing your shoulder blades together to feel a gentle stretch. ✓ Hold this position for 5 to 10 seconds (or 5 deep breaths) and then slowly return to the start position.	**5 min**	 	This exercise can be done sitting (without resting your back on the chair) or standing. It helps to stretch your chest muscles.

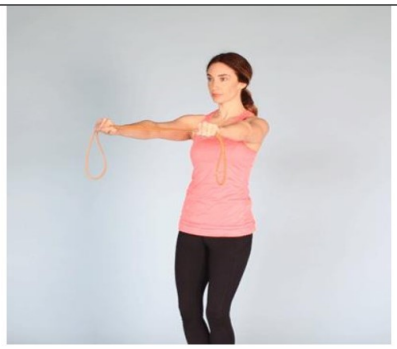
	✓ Repeat 5 to 10 times.			
Hands Behind Neck	✓ Put your hands together on your lap or in front of you. ✓ Slowly raise your hands toward your head. Keep your elbows together in front of you, not out to the sides. Keep your head level. Do not bend your neck. Keep your shoulder blades squeezed together. ✓ Slide your hands over your head until you reach the back of your neck. When you get to this point, spread your elbows out to the sides. ✓ Hold the highest position you can for 30 seconds. Use a stopwatch or timer to keep track. Remember to breathe normally. After 30 seconds, slowly bring your elbows back together, slide your hands over your head, and lower your arms. ✓ 5 reputations. Take rest time from reputation to another 10 seconds.	**5 min**		You'll need a timer or stopwatch for this stretch.

Side Wall Crawls	✓ Stand with your unaffected side closest to the wall, about 1 foot (30.5 centimeters) away from the wall. ✓ Reach as high as you can with your unaffected arm. Mark that point with a piece of tape. This will be the goal for your affected arm. ✓ Turn your body so your affected side is closest to the wall. If you had surgery on both breasts, start with either side closest to the wall. ✓ Crawl your fingers up the wall as far as you can. Remember to breathe normally. ✓ When you get to the point where you feel a good stretch, but not pain, do the deep breathing exercise. ✓ Return to the starting position by crawling your fingers back down the wall. ✓ Repeat this movement 5 times. ✓ On your last crawl, use a piece of tape to mark the highest point you reached with your affected arm. This will let you see your progress each time you do the exercise. ✓ If you had surgery on both breasts, repeat the exercise with your other arm. ✓ 3set. The rest time from one cycle to another is 30 seconds.	**4 min**		

Four week Three sessions a week				
(ROM) exe phase	**Exercise Description**	**Tim**	**Pictures**	**Notes**
Arm Lifts	✓ Clasp your hands together in front of your chest. Point your elbows out. ✓ Slowly lift your arms upwards until you feel a gentle stretch, but no pain. ✓ Hold for 10 to 15 seconds (or 5 deep breaths) and then slowly return to the start position. ✓ Repeat 10 to 15 times.	**8 min**		This exercise can be done sitting or standing. It helps improve movement in your shoulders.
Shoulder Blade Squeeze	✓ Hold your arms at your side against your body with your elbows bent. ✓ Slowly bring your elbows straight backward, while squeezing your shoulder blades together to feel a gentle stretch. ✓ Hold this position for 10 to 15 seconds (or 5 deep breaths) and then slowly return to the start position. ✓ Repeat 10 to 15 times.	**8 min**		This exercise can be done sitting (without resting your back on the chair) or standing. It helps to stretch your chest muscles.

Hands Behind Neck	✓ Put your hands together on your lap or in front of you. ✓ Slowly raise your hands toward your head. Keep your elbows together in front of you, not out to the sides. Keep your head level. Do not bend your neck. Keep your shoulder blades squeezed together. ✓ Slide your hands over your head until you reach the back of your neck. When you get to this point, spread your elbows out to the sides. ✓ Hold the highest position you can for 60 seconds. Use a stopwatch or timer to keep track. Remember to breathe normally. After 60 seconds, slowly bring your elbows back together, slide your hands over your head, and lower your arms. ✓ 5 reputations. Take rest time from reputation to another 20 seconds.	**7 min**		You'll need a timer or stopwatch for this stretch.

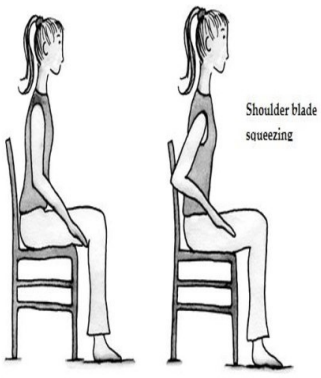
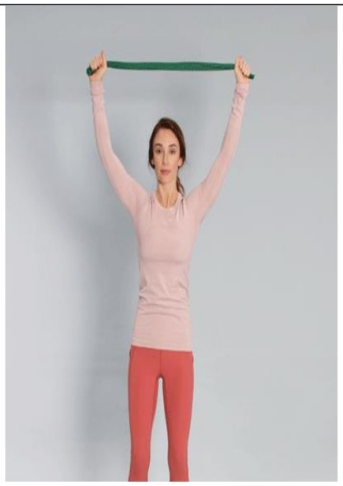
Side Wall Crawls	✓ Stand with your unaffected side closest to the wall, about 1 foot (30.5 centimeters) away from the wall. ✓ Reach as high as you can with your unaffected arm. Mark that point with a piece of tape. This will be the goal for your affected arm. ✓ Turn your body so your affected side is closest to the wall. If you had surgery on both breasts, start with either side closest to the wall. ✓ Crawl your fingers up the wall as far as you can. Remember to breathe normally. ✓ When you get to the point where you feel a good stretch, but not pain, do the deep breathing exercise. ✓ Return to the starting position by crawling your fingers back down the wall. ✓ Repeat this movement 10 times. ✓ On your last crawl, use a piece of tape to mark the highest point you reached with your affected arm. This will let you see your progress each time you do the exercise. ✓ If you had surgery on both breasts, repeat the exercise with your other arm. ✓ 3 cycles. The rest time from one cycle to another is 30 seconds.	**5 min**		

Band pull apart	✓ Hold the band and extend your arms straight out in front of you. ✓ Lengthen your spine and keep your elbows slightly bent. ✓ Pull the band apart as far as you can. ✓ Draw your shoulder blades together. ✓ Hold this position for a few seconds. ✓ Slowly return to the starting position. ✓ Repeat this movement 10 times. ✓ 2 sets.	**3 min**		

Fifth week **Three sessions a week**				
(ROM) exe phase	**Exercise Description**	**Tim**	**Pictures**	**Notes**
Back Climb	✓ Place your hands behind your back. Hold the hand on your affected side with your other hand. If you had surgery on both breasts, use the arm that moves most easily to hold the other. ✓ Slowly slide your hands up the center of your back as far as you can. You should feel a gentle stretch in your shoulder area. Remember to breathe normally. ✓ If you feel tightness near your incision, stop at	**4 min**		.

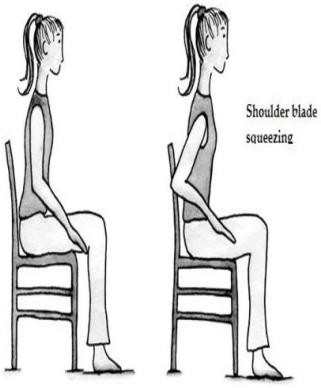
	that position and do the deep breathing exercise. If the tightness lessens, try to slide your hands up a little further. If it does not, leave your hands where they are. ✓ Hold this position for 30 seconds. Use a stopwatch or timer to keep track. After 30 seconds, slowly lower your hands. ✓ 5 rep			
Corner Wall Stretch	✓ Stand with your affected arm against the corner of a wall (door frameworks as well) with your armpit in the corner and the side of your hips pressed against the wall. ✓ Make goal post arms with the affected arm while keeping the armpit and hips glued in the same position against the wall. ✓ Take small steps to turn your hips away from the wall (picture 2) until you feel a stretch in any areas of tightness while keeping the armpit glued to the corner the of wall (or as close as possible). ✓ Hthe old stretch for 20 to 30 seconds and remember to breathe. If you find the stretch is too painful, back off a	**3 min**		This exercise is more advanced, so be sure to start with a small hip rotation and perform slowly.

	little by rotating your hips back towards the wall until it feels comfortable, then continue to hold. ✓ To come out of the stretch, take small steps to return to the start position. Then, slide your hand down the wall. ✓ Do a couple of shoulder rolls to reset, then repeat 3 to 5 times.			
Wand Exercise	✓Lie on your back with your knees bent. Hold the wand with both hands. Your hands should be as wide apart as your shoulders. ✓Lift the wand over your head as far as you can until you feel a gentle stretch, but no pain. Your unaffected arm will help lift the wand higher. ✓Hold for 20 to 30 seconds, and remember to breathe. If you find this stretch is too painful, lower your arms slightly, but continue to hold. Then, gently lower your arms to the start position. ✓Repeat 5 to 10 times. ✓To progress, repeat this exercise with your hands slightly wider apart than your hips or shoulders.	**5 min**		You'll need a timer or stopwatch for this stretch.

Shoulder blade squeeze	✓ Sit in a chair in front of a mirror. Face straight ahead. Do not rest against the back of the chair. ✓ Your arms should be at your sides with your elbows bent. ✓ Squeeze your shoulder blades together, bringing your elbows behind you toward your spine. Elbows will move with you, but don't force the motion with your elbows. Keep your shoulders level as you do this. Do not lift your shoulders toward your ears. ✓ Return to the starting position and repeat 5 to 7 times. ✓ 3 cycles.	**4 min**		This exercise also helps increase shoulder blade movement and improve posture.
Overhead band pull-apart	✓ Hold the band straight above your head. ✓ Pull the band apart as your lower your arms to shoulder height, pressing your hands out to the sides. ✓ Hold this position for a few seconds. ✓ Slowly return to the starting position, aiming to keep your shoulder blades down, away from your ears. ✓ Repeat this movement 10 times. ✓ 2 sets.	**3 min**		This exercise targets your shoulders, back, and triceps. It improves stability, mobility, and posture.

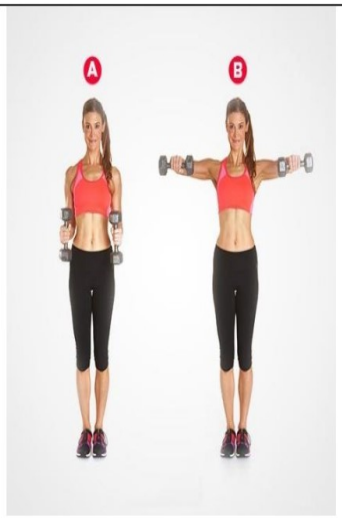
six week Three sessions a week				
(ROM) exe phase	**Exercise Description**	**Tim**	**Pictures**	**Notes**
Back Climb	✓ Place your hands behind your back. Hold the hand on your affected side with your other hand. If you had surgery on both breasts, use the arm that moves most easily to hold the other. ✓ Slowly slide your hands up the center of your back as far as you can. You should feel a gentle stretch in your shoulder area. Remember to breathe normally. ✓ If you feel tightness near your incision, stop at that position and do the deep breathing exercise. If the tightness lessens, try to slide your hands up a little further. If it does not, leave your hands where they are. ✓ Hold this position for 60 seconds. Use a stopwatch or timer to keep track. After 60 seconds, slowly lower your hands. ✓ 10 rep	**10 min**		.

Corner Wall Stretch	✓ Stand with your affected arm against the corner of a wall (door frameworks as well) with your armpit in the corner and the side of your hips pressed against the wall. ✓ Make goal post arms with the affected arm while keeping the armpit and hips glued in the same position against the wall. ✓ Take small steps to turn your hips away from the wall until you feel a stretch in any areas of tightness while keeping the armpit glued to the corner the of wall (or as close as possible). ✓ Holed stretch for 30 to 40 seconds and remember to breathe. If you find the stretch is too painful, back off a little by rotating your hips back towards the wall until it feels comfortable, then continue to hold. ✓ To come out of the stretch, take small steps to return to the start position. Then, slide your hand down the wall. ✓ Do a couple of shoulder rolls to reset, then repeat 3 to 10 times.	**6 min**		This exercise is more advanced, so be sure to start with a small hip rotation and perform slowly.

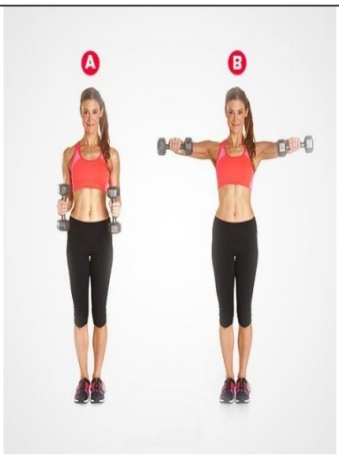
Wand Exercise	✓Lie on your back with your knees bent. Hold the wand with both hands. Your hands should be as wide apart as your shoulders. ✓Lift the wand over your head as far as you can until you feel a gentle stretch, but no pain. Your unaffected arm will help lift the wand higher. ✓Hold for 30 to 40 seconds, and remember to breathe. If you find this stretch is too painful, lower your arms slightly, but continue to hold. Then, gently lower your arms to the start position. ✓Repeat 10 to 15 times. ✓To progress, repeat this exercise with your hands slightly wider apart than your hips or shoulders.	**8 min**		You'll need a timer or stopwatch for this stretch.
Shoulder blade squeeze	✓Sit in a chair in front of a mirror. Face straight ahead. Do not rest against the back of the chair. ✓Your arms should be at your sides with your elbows bent. ✓Squeeze your shoulder blades together, bringing your elbows behind you toward your spine. Elbows will move with you, but don't force the motion with your elbows. Keep your shoulders level as you do this. Do not	**6 min**		This exercise also helps increase shoulder blade movement and improve posture.

	lift your shoulders toward your ears. ✓Return to the starting position and repeat 7 to 10 times. ✓4 cycles.			
Front raise	✓ Stand in the middle of the band and hold each end in the opposite hand, so the band crosses in front of your lower legs. ✓ Place your palms on your thighs. ✓ Raise your arms straight up in front of you, stopping when they're at shoulder height. Try to avoid swinging or rocking backward as you raise them. ✓ Pause before slowly returning to the starting position. ✓Repeat this movement 10 times. ✓2 cycles	**3 min**		

Seven week Three sessions a week All exercises are done by using weight (1k.g)				
(ROM) exe phase	**Exercise Description**	**Tim**	**Pictures**	**Notes**
Lateral Raises	✓ Hold a dumbbell in rt hand, stand straight, with your legs shoulder-width apart, and shoulders rolled back. Bend your elbow slightly. ✓ Raise your rt arm until they reach shoulder level. Pause and bring your arms down. Do 3 sets of 10 reps. ✓ Repeat the above on the left hand.	**6 min**		.
Shoulder Shrugs	✓ Grab a dumbbell in Rt's hand. Keep your hands by your side, palms facing inward. Stand straight. Keep your core tight, and shoulders rolled back. ✓ Raise your shoulders to your ears, pause, and lower your shoulders. Do 3 sets of 10 reps. ✓ Repeat the above on the left hand.	**6 min**		.

Dumbbell Bent Arm Side Raise	stand with your feet together, and bend your elbows so that your forearms are parallel with the floor (A). Press your elbows out and up until your upper arms are parallel to the floor (B). Pause at the top for two seconds before releasing back to the starting position. That's one rep. Do 10 reps.	**2 min**		.
Hammer Curl	✓Hold a dumbbell in RT hand and turn the arms so that palms face your body. Hug the elbows in toward your waist. Reach the weights up toward your shoulders as you keep the elbows hugged in. Lower the weights down by your sides and repeat 10 times. 3 set. ✓ Repeat the above on the left hand.	**3 min**		

Eight week Three sessions a week All exercises are done by using weight (1k.g)				
(ROM) exe phase	**Exercise Description**	**Tim**	**Pictures**	**Notes**
Lateral Raises	✓ Hold a dumbbell in rt hand, stand straight, with your legs shoulder-width apart, and shoulders rolled back. Bend your elbow slightly. ✓ Raise your rt arm until they reach shoulder level. Pause and bring your arms down. Do 3 sets of 15 reps. ✓ Repeat the above on the left hand.	**7 min**		.
Shoulder Shrugs	✓ Grab a dumbbell in Rt's hand. Keep your hands by your side, palms facing inward. Stand straight. Keep your core tight, and shoulders rolled back. ✓ Raise your shoulders to your ears, pause, and lower your shoulders. Do 3 sets of 15 reps. ✓ Repeat the above on the left hand.	**7 min**		.

Dumbbell Bent Arm Side Raise	stand with your feet together, and bend your elbows so that your forearms are parallel with the floor (A). Press your elbows out and up until your upper arms are parallel to the floor (B). Pause at the top for two seconds before releasing back to the starting position. That's one rep. Do 15 reps.	**4 min**		.
Hammer Curl	✓ Hold a dumbbell in RT hand and turn the arms so that palms face your body. Hug the elbows in toward your waist. Reach the weights up toward your shoulders as you keep the elbows hugged in. Lower the weights down by your sides and repeat 15 times. 3 set. ✓ Repeat the above on the left hand.	**5 min**		

Physiotherapy intervention	Description	Time	Picture and Notes	Precautions
Cool down	This exercise must be worked on for: ✓ Regulating your heart rate. ✓ Reducing the build-up of lactic acid. ✓ Preventing injuries. ✓ Body restoration. ✓ Stress relief and relaxation.	5-10 min	Cool-down exercises should always be done after finishing any therapeutic exercise.	Stopping quickly without a cool-down can result in light-headedness, dizziness, and/or fainting.

Exercise Phase cool-down for (10min) **Any three of the following accompanying exercises are selected for each treatment session**				
Cool down phase	**Exercise Description**	**Tim**	**Pictures**	**Notes**
Child's Pose	✓ Sit back on your heels with your knees out wide. ✓ Bend forward at hips and lower your chest between your thighs with your forehead resting on the ground. ✓ Extend your arms long and place your palms on the ground. ✓ Hold for 30 seconds to 1 minute.	**1 min**		Cooling down after your workout allows for a gradual recovery of pre-exercise heart rate and blood pressure
Corpse Pose	✓ Lie on your back with your arms alongside your body, palms facing up, and your feet slightly wider than your hips, with your toes, splayed out to the sides.	**1 min**		

	✓ Relax your body, and let go of any tightness or tension. ✓ Allow your body to fall heavily to the floor as you breathe deeply.			
Cat-Cow	✓ Get down on all fours with the hands directly under the shoulders. Make sure the back is flat. ✓ First, arch the back and lower the head, like a cat. ✓ Hold for 10 seconds, slowly breathing in and out. ✓ Next, move into the cow position by lowering the belly and raising the head. ✓ Hold this for 10 seconds. ✓ Alternate from cat to cow position four times.	**1 min**		
Ankle circle	Ankle circles Using one foot, draw circles with your toes; repeat with the other foot	**2 min**		
Seated Single Leg Hamstring Stretch	✓ While sitting on the floor, place one leg straight out. Bend the other leg at the knee and position the sole of that foot against your opposite inner thigh (against the straight leg). ✓ Extend both arms and reach forward. You may only be able to touch your knee, but as time goes by, work toward your foot. Hold for 30 seconds and switch legs	**2 min**		

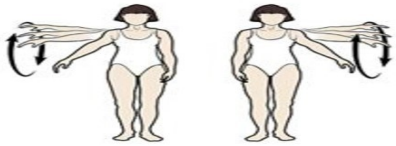
Side bends	✓ Start in a stand position with your body straight and your arms by your sides Slide one arm, then the other, a short way towards the floor, bending sideways.	**2 min**		

Physiotherapy intervention	**Description**	**Time**	**Picture and Notes**	**Precautions**
compression bandages will be done at the end of each session				
Compression bandages	✓ The optimal pressure on Low-pressure (20-30 mm Hg) short stretch bandages. ✓ -Compression bandages are worn 23 hours a day 7 days a week to reduce the swelling and improve the shape.	**10 min**		. Pain - Skin sensitivity. -Compression less than 15mmHg.

Appendix 8: The Physiotherapy Intervention for the Control Group

الأسبوع الأول

ارفع ذراعك المصابة إلى جانبك ثم قومي بعمل دائرة للخلف في الهواء بذراعك 5 تكرارات ل 3 مجموعات . وقت الراحة من دورة إلى أخرى ٣٠ثانية



ضعي يديك على صدرك ثم ارفعي مرفقيك إلى الجانب ثم انزلي مرفقيك ببطء.
كرري هذه الحركة 5 تكرارات ل 3 مجموعات. وقت الراحة من دورة إلى أخرى ٣٠ثانية.

واجهي الحائط ازحفي بأصابعك إلى أعلى الحائط بقدر ما تستطيعين ثم كرري هذه الحركة 5 تكرارات ل ٣ مجموعات .وقت الراحة من دورة إلى أخرى هو 30 ثانية.

يجب القيام بتمارين التنفس قبل البدء بعمل التمارين المطلوبة يجب الجلوس على كرسي وأخذ شهيق عميق ثم زفير 5 تكرارات .

تمارين الاحماء

يجيب البدء بها دائماً لما لها من أهمية في زيادة معدل ضربات القلب والاستعداد النفسي والعقلي لتمارين المطلوبة

وللأعلى لعضلات الكتف تمارين الاستدارة للأمام والخلف ولوح الكتف 10 تكرارات .

تمرين الجلوس إلى الوقوف واليدين على الفخدين 10 تكرارات .

قم بتدوير الجسم من جانب إلى آخر دون تحريك الجذع 10 تكرارات .

يسعدنا إبلاغكم أن برنامج التمرين العلاجي للسيدات المصابات بسرطان الثدي بعد استئصال الثدي متاح الآن. تم تصميم هذا البرنامج للمساعدة في استعادة الوظيفة البدنية وتقليل تأثير التعب ، ويتضمن أنشطة مثل التمدد والتقوية والتمارين الهوائية.

للتسجيل يرجى الاتصال (0597411550) إيناس صفدي

نتطلع إلى مساعدتك في الوصول إلى أهدافك!

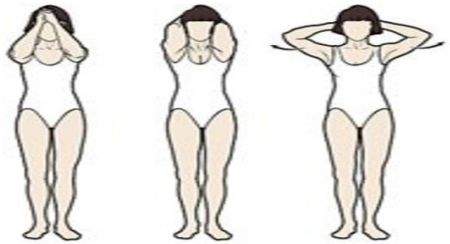
استلق على ظهرك مع ثني ركبتيك. امسك العصا بكلتا يديك .ارفع العصا فوق رأسك بقدر ما تستطيعين .استمر لمدة 20 إلى 30 ثانية .كرر ذلك من 5 إلى 10 مرات. . ل 3 مجموعات وقت الراحة من دورة إلى أخرى ٣٠ثانية.

امسك الشريط مباشرة فوق رأسك. اسحب الشريط بعيدًا عن بعضهما مع خفض ذراعيك إلى ارتفاع الكتف ، واضغط على يديك للخارج على الجانبين لبضع ثواني .كرر هذه الحركة 10 تكرارات ل 3 مجموعات . وقت الراحة من دورة إلى أخرى ٣٠ثانية.

الأسبوع السادس

تقومين بعمل تمارين الأسبوع الخامس ولكن بزيادة عدد التكرارات من 10 تكرارات إلى 15-20 تكرار .

ضع يديك معًا أمامك. ارفعي يديك ببطء نحو رأسك. حافظي على لوحي كتفك مضغوطين معًا. حرك يديك فوق رأسك حتى تصل إلى مؤخرة رقبتك. انشر مرفقيك على الجانبين لمدة 30 ثانية. أعد مرفقيك معًا ببطء مرة أخرى ، حرك يديك فوق رأسك ، وأنزل ذراعيك. كرري ذلك 5 تكرارات . ل 3 مجموعات وقت الراحة من دورة إلى أخرى ٣٠ثانية.



الأسبوع الرابع

تقومين بعمل تمارين الأسبوع الثالث ولكن بزيادة عدد التكرارات من 10 تكرارات إلى 15-20 تكرار .

الأسبوع الخامس

ضع يديك خلف ظهرك. حرك يديك ببطء إلى منتصف ظهرك بقدر ما تستطيع بعد 30 ثانية ، أنزل يديك ببطء. كرري من 5 إلى 10 تكرارات ل 3 مجموعات . وقت الراحة من دورة إلى أخرى ٣٠ثانية.

الأسبوع الثاني

تقومين بعمل تمارين الأسبوع الأول ولكن بزيادة عدد التكرارات من 10 تكرارات إلى 15-20 تكرار .

الأسبوع الثالث

اشبك يديك معًا أمام صدرك. وجهي مرفقيك للخارج. ثم ارفع ذراعيك ببطء لأعلى حتى تشعر بتمدد خفيف واستمري لمدة 5 إلى 10 ثوان (أو 5 أنفاس عميقة) ثم عودي ببطء إلى وضع البداية. كرري ذلك من 5 إلى 10 تكرارات . ل 3 مجموعات. وقت الراحة من دورة إلى أخرى ٣٠ثانية.

ضعي ذراعيك على جانبك مقابل جسمك مع ثني مرفقيك. اجلبي مرفقيك ببطء للخلف ، مع الضغط على لوحي كتفك معًا لتشعر بتمدد لطيف. استمري في هذا الوضع لمدة 5 إلى 10 ثوانٍ (أو 5 أنفاس عميقة) ثم عودي ببطء إلى وضع البداية. كرري ذلك من 5 إلى 10 تكرارات. ل 3 مجموعات . وقت الراحة من دورة إلى أخرى ٣٠ثانية.

تعليمات هامة :

يجي القيام بعمل التمارين الهوائية يوميا لمدة نصف ساعه عن طريق المشي .

ويجي عليك ألا تنسي القيام بتدليك يديك وتحت ابطك عن طريق التصريف اللمفاوي اليدوي يومياً ولمدة 15 دقيقة.

وأخيرا يجب ألا تنسي القيام بارتداء المشد الضاغط

الأسبوع الثامن

تقومين بعمل تمارين الأسبوع الخامس ولكن بزيادة عدد التكرارات من 10 تكرارات إلى 15-20 تكرار.

تمارين التبريد

يجب القيام بها دائما بعد الانتهاء من التمارين العلاجية وهي ضرورية لمنع الإصابات والدوار .

انحن للأمام عند الوركين وأنزل صدرك بين فخذيك مع وضع جبهتك على الأرض. مد ذراعيك طويلاً وضع راحتي يديك على الأرض. استمر لمدة 30 ثانية إلى دقيقة واحدة.

انزل على الأطراف الأربعة مع وضع اليدين تحت الكتفين مباشرة. تأكد من أن الظهر مسطح.

أولاً ، قم بتقوس الظهر وقم بخفض الرأس ، مثل القطة. انتظر لمدة 10 ثوان ، تنفس ببطء وزفير. بعد ذلك ، انتقل إلى وضع البقرة عن طريق خفض البطن ورفع الرأس. استمر في هذا الوضع لمدة 10 ثوانٍ. بدّل من وضع القطة إلى وضع البقرة أربع مرات.

الأسبوع السابع

امسك الدمبل بيدك ، قف بشكل مستقيم. ارفع أعلى ذراعك حتى تصل إلى مستوى الكتف. توقف قليلًا وانزل ذراعيك. قم بأداء 3 مجموعات من 10 تكرارات .3 مجموعات كرر ما سبق على اليد الأخرى.

.

امسك دمبل في يد ك اليمنى وقم بتدوير الذراعين بحيث تواجه راحة اليد جسمك. اخفضي الأوزان لأسفل من جانبيك وكرر ذلك 10 مرات. 3 مجموعات .كرر ما سبق على اليد اليسرى.

امسك الدمبل بيدك اليمنى قومي برفع كتفك الأيمن لأعلى وكرر 10 تكرارات 3 مجموعات ز كرري ما سبق على اليد اليسرى

Appendix 9: Ethical Approval

Al Quds University
Faculty of Health Professions
Jerusalem –Abu Dis

جامعة القدس
كلية المهن الصحية
القدس – أبو ديس

Research Ethics Subcommittee of Faculty of Health Professions
Letter of approval

Feb. 14, 2023
Ref. No.: RESC/2023-9

Dear Applicants, (**Dr. Esra Hamdan, Ms. Enas Odeh**)
Program: **MSc Physiotherapy Department**

The Research Ethics subcommittee of the Faculty of Health Professions has recently reviewed your proposal entitled (**Comparisons Study of Supervised Physiotherapy Intervention and Home Program On Lymphedema, Fatigue, And Functional Abilities Among Women Post Breast Cancer**) submitted by (**Dr. Esra Hamdan**). Your proposal is deemed to meet the requirements of research ethics at Al-Quds University, but further assessment is required by the Central Research Ethics Committee of Al-Quds University. We wish you all best for the conduct of the project.

Hussein ALMasri
Research Ethics Subcommittee Chair
Faculty of Health Professions

Hussein ALMasri

CC: File
CC: Committee members

Tel. Fax: 02 2791243 Email: dean@hpro.alquds.edu تلفاكس: 02 2791243

State of Palestine
Ministry of Health
Assistant Deputy for Allied Medical
Professions and Blood Banks

دولة فلسطين
وزارة الصحـــــة
الوكيل المساعد
للمهن الطبية المساندة وبنوك الدم

الاخ الدكتور معتصم محيسن المحتـــــــرم
الوكيل المساعد لشؤون المستشفيات والطوارئ

الموضوع: تسهيل مهمة

تحية طيبة وبعد،،

بعد التحية وبالاشارة للموضوع أعلاه، يرجى تسهيل مهمة الطالبة اخصائية العلاج الطبيعي ايناس عودة من جامعة القدس لعمل مشروع بحث كجزء من رسالة الماجستير بعنوان:
(دراسة مقارنة لتدخل العلاج العلاج الطبيعي الخاضع للاشراف والبرنامج المنزلي حول الوذمة اللمفية والارهاق والقدرات الوظيفية بين النساء بعد سرطان الثدي)
وذلك من خلال جمع بيانات البحث من السيدات اللاتي يتابعن علاجهن في المستشفيات التالية (رفيديا، الوطني، مستشفى طولكرم)، على ان يتم التعامل مع كافة المعلومات بسرية تامة وتستخدم لأغراض البحث العلمي فقط.

وتفضلوا بقبول فائق الاحترام،،

أخوكم
امانة النجار
الوكيل المساعد
للمهن الطبية المساندة وبنوك الدم

وارد دولة فلسطين
وزارة الصحة
مكتب الوكيل المساعد لشؤون المستشفيات والطوارئ
وارد رقم: 2023/3993
التاريخ: 9/8/2023

Appendix 10: inform consent

جامعة القدس \ ابو ديس

كلية المهن الصحية

دائرة العلاج الطبيعي والتأهيل

نموذج موافقة على المشاركة في بحث علمي:

مقارنات بين تدخل العلاج الطبيعي الخاضع للإشراف والبرنامج المنزلي حول الوذمة اللمفية والتعب والقدرات الوظيفية لدى النساء بعد سرطان الثدي في فلسطين / تجربة سريرية عشوائية

أنا الموقعة أدناه .....

أوافق عل المشاركة في البحث العلمي الذي ستقوم به أخصائية العلاج الطبيعي **إيناس عوده - صفدي**، ضمن برنامج الماجستير في العلاج الطبيعي - جامعة القدس.

لقد قامت الباحثة بشرح مفصل عن أهداف الدراسة والية البحث حيث أنني سأشارك في دراسة تهدف لدراسة تأثير تدخل العلاج الطبيعي المبكر على الألم ، والنتائج الوظيفية ، ونوعية الحياة للمرضى بعد عمليات سرطان الثدي في فلسطين ، علماً أنني استطيع الانسحاب من الدراسة متى شئت واعلم أن المعلومات الخاصة بي لن تستعمل إلا لغرض البحث العلمي.

طريقة التواصل مع الباحث:

للاستفسار يمكنكم التواصل مع (**إيناس صفدي**) عن طريق (رقم الهاتف**0597411550**) أو عنوان البريد **(com enassafadi90@gmail.)** (إذا كانت لديك بعض الأسئلة او الاستفسار عن الدراسة(.

التوقيع:..... **رقم الهاتف**.....

التاريخ..... **توقيع الباحث**.....