

Breast cancer: rehabilitation

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DESCRIPTION OF THE EVIDENCE COLLECTION

METHOD

This study revised articles from the MEDLINE (PubMed) databases and other research sources, with no time limit. To do so, the search strategy adopted was based on (P.I.C.O.) structured questions (from the initials “Patient”; “Intervention”; “Control” and “Outcome”). As keywords were used: Breast Neoplasm, Mastectomy, Mastectomy, Radical; Lymph Node Excision, Surgery, Lymphedema, Breast Cancer-related Lymphedema (BCRL); Arm/pathology, Postoperative Complications, Shoulder Joint, Range of Motion, Articular*; Shoulder Joint/Radiation Effects, Drainage, Manual Lymphatic Drainage, Decongestive (MLD), Lymphatic Therapy (DLT), Massage, Compression Bandages, Bandages, Alginates*, Physical Therapy Modalities, Exercise, Exercise/Physiology*, Exercise Therapy, Exercise Training, Exercise Movement Techniques, Exercise Tolerance, Weight Lifting*, Kinesiotherapy, Musculoskeletal Manipulation, Prevention and Control, Primary Prevention, Postoperative Care, Rehabilitation, Early Intervention, Recovery of Function, Disability Evaluation, Complications*, Survivor*, Neoplasm Recurrence; Immune System, Stress, Psychological; Quality of Life, Value of life, Sickness Impact Profile, Life Style, Risk, Risk Factors, Overweight, Diet, Food, Diet Therapy, Diet Reducing, Dietetics, Malnutrition, Nutrition Policy, Nutritional Sciences, Pressure*, Intermittent Pneumatic Compression, Intermittent Pneumatic Compression Devices, Hydrotherapy, Complementary Therapies, Cognitive Therapy, Mind-body Therapies, Mindfulness, Meditation, Psychotherapy, Psychophysics, Holistic Health, Adaptation, Psychological; Self-help Groups, Psychotherapy, Group*; Occupational Therapy, Social Support.

With the above keywords crossings were performed according to the proposed theme in each topic of the (P.I.C.O.) questions. After analyzing this material, articles regarding the questions were selected and, by studying those, the evidences that fundamented the directives of this document were established.

LEVEL OF RECOMMENDATION AND EVIDENCE:

- A:** Strong consistency experimental or observational studies.
- B:** Fair consistency experimental or observational studies.
- C:** Case reports (uncontrolled studies).

D: Opinion lacking critical evaluation, based on consensus, physiological studies or animal models.

OBJECTIVES:

Offering information regarding rehabilitation in breast cancer.

CONFLICTS OF INTERESTS:

There are no declared conflicts of interests.

INTRODUCTION

Breast cancer is the most common neoplasia among women, with estimated 1.4 million new cases a year and is responsible for, approximately, 460 thousand deaths a year worldwide¹ (**D**).

Treatment is diversified and includes, above all, major surgeries such as mastectomy, either conservative or radical, associated with axillary lymph nodes drainage, sentinel node biopsy, radiotherapy, adjuvant and/or neoadjuvant chemotherapy, hormonal therapy, with very positive results on the improvement of survival in this population^{2,3} (**B**).

There are particularities in the continuance of rehabilitation, in the dependence on clinical presentation and the type of treatment and surgery performed. Even in the cases of less invasive surgeries, the loss of muscular strength can be close to that observed in more invasive surgeries.

Regarding sensitivity and articular amplitude, patients that have undergone less invasive surgeries have greater sensitivity in the thoracic wall within up to two years when compared to more invasive surgeries, and those that have undergone more radical surgery take longer to recover adequate shoulder joint amplitude⁴ (**B**).

The increase in life expectancy observed nowadays demands ever more prolonged and specialized care so that the survival is associated with improvement in the quality of life, given that both the disease and the treatment are capable of producing motor, sensitivity, painful, cognitive, and psychological disabilities⁵ (**D**).

Rehabilitation stands out in this process, since it offers instruments that aim to prevent and minimize disability, as well as provide the greatest possible functionality, and to develop psychosocial potential⁶ (**D**). Its importance is very clear regarding the high prevalence

of potential complications: up to 67% of patients will have shoulder joint restriction along the treatment, 68% of which will develop pain both in the shoulder and in the upper limb and up to 34% of these women will present lymphedema⁷ (B). The chance of developing lymphedema is greater in irradiated patients, with OR = 1.46, 95% CI 1.16-1.84⁷ (B).

In an average follow-up of nine years after mastectomy, ranging from six to thirteen years, it was observed that patients that have undergone radiotherapy presented more lymphedema than those who were not irradiated, 14% versus 3%. The development of ipsilateral shoulder morbidity was also greater in irradiated than in non-irradiated patients, 45% versus 15%, with moderate to severe intensity articular amplitude in 5% of cases, and only on irradiated patients ($p = 0.004$), whereas the incidence of omodynia complaints was 17% on irradiated patients, against only 2% on non-irradiated patients ($p = 0.001$)⁸ (B).

1. DOES MANUAL LYMPHATIC DRAINAGE IMPROVE BREAST CANCER-RELATED LYMPHEDEMA?

It is estimated that 34% of women subjected to mastectomy will present some degree of lymphedema, hence the importance of defining its adequate treatment⁷ (B).

On most therapeutic programs, the treatment of lymphedema is based on the Complex Decongestive Therapy, also referred to as Complex Physical Therapy, which includes the use of Manual Lymphatic Drainage, MLD, associated with Functional Compression Bandages, FCB, and exercises. Initially, MLD provides reduction of the lymphedema volume, however 52% of patients will present enlargement of the lymphedema over 10% of its value at the end of the manual lymphatic drainage intensive treatment⁹ (B). Not using the bandage or elastic gloves increases the significant risk of lymphedema after one year of treatment, with RR = 1.55 (CI 95% 1.3-1.76) and RR = 1.61 (CI 95% 1.25-1.82), whereas not performing solely the lymphatic drainage does not modify the risk of lymphedema⁹ (B). Women diagnosed with lymphedema at, approximately, fifteen months after removal of an average of fifteen lymph nodes and submitted to MLD, showed similar therapeutic results to women with breast cancer with the same characteristics submitted to educational therapy after a twelve-month drainage intensive treatment. In a twelve-month follow-up, women with lymphedema at, approximately, thirty-four months, half of them submitted to radical mastectomy and the other half submitted to other segmentary removals, with lymphedema installation in average twenty-two months after surgery, were submitted to classical Complex Physical Therapy and maintenance. Part of the patients received MLD one to three times a week, in addition to bandage and education, and the remaining ones only bandage and education. The risk of lymphedema enlargement during the maintenance phase was the same for the women that either received MLD or not¹⁰ (B).

RECOMMENDATION

MLD, in combination with the other interventions, helps in the control of lymphedema in the therapeutic phase, however, does not provide benefits once the lymphedema is stabilized and maintenance cares are indicated. As of this moment, MLD used isolatedly does not show superior results to the conventional rehabilitation treatment, Physical or Complex Decongestive Therapies, in the approach of patients with breast cancer-related lymphedema^{9,10} (B). There is an ongoing randomized, blind, and controlled study to confirm this information¹¹ (A).

2. DOES THE USE OF COMPRESSIVE GLOVES/SLEEVES OR BANDAGES IMPROVE BREAST CANCER-RELATED LYMPHEDEMA?

The functional compressive bandaging, FCB, as mentioned above, is part of the Complex Decongestive Therapy. As also mentioned above, it leads to lymphedema reduction in the therapeutic phase and not using bandages or elastic gloves increases the significant risk of lymphedema after one year of treatment, with RR = 1.55 (CI95% 1.3-1.76) and RR = 1.61 (CI 95% 1.25-1.82), whereas not performing solely the lymphatic drainage does not modify the risk of lymphedema⁹ (B).

Recently, new alginate bandages, which become rigid after drying for six hours, has been shown to be an alternative so the patient can maintain the bandage during the weekends¹² (B). The technique of performing FCB with alginate bandages as part of the Complex Decongestive Therapy showed significant reduction of volume in the lymphedema-affected limb, when compared to the conventional compressive bandaging technique, in addition to providing significant comfort to patients according to the Likert Scale¹² (B).

Regarding the ideal pressure (mmHg) to be exerted by bandaging with conventional bandages, studies showed the difference between pressures from 20 to 30 mmHg and 44 to 58 mmHg, showing that the compressive bandaging with 20 to 30 mmHg subpressure is better tolerated and attains the same volume reduction when compared to the compressive bandaging with 44 to 58 mmHg pressure¹³ (B).

RECOMMENDATION

The technique of performing Compressive Bandaging with Alginate may be employed, because in addition to reducing lymphedema on patients, it provides greater comfort¹² (B).

FCB contributes to lymphedema control and reduction, both in the therapeutic and in the maintenance phases¹² (B). The compressive functional bandaging with conventional bandages should be maintained with a 20 to 30 mmHg pressure, which provides good volume reduction, and results in greater tolerability by patients¹³ (B).

3. DOES INTERMITTENT PNEUMATIC COMPRESSION HELP IN THE TREATMENT OF BREAST CANCER-RELATED LYMPHEDEMA?

The exclusive treatment with Intermittent Pneumatic Compression (IPC), during two two-week cycles, five times a week in two-hour daily sessions, with constant 60 mmHg compression, with a five-week interval between cycles, has similar results to the post-mastectomy, unilateral radical surgery, lymphedema clinical treatment, if compared to the conservative treatment based in textbooks with information about skin care, orientations for the performance of activities of daily life and preventative orientations regarding lymphedema appearance¹⁴ (B).

The combination treatment, with the use of IPC and MLD, as well as the use of compressive gloves and skin care for ten days, with ten minutes daily using compression between 40-50 mmHg and reevaluation within thirty days, showed a volume reduction in lymphedema on patients submitted to breast surgery and/or radiotherapy intervention, with average volume 45.3 ± 18.2 ml versus 26 ± 22.1 ml, with $p < 0.05$ ¹⁵ (B).

RECOMMENDATION

ICP as a mean of treatment of post-mastectomy lymphedema is not effective when used isolatedly¹⁴ (B). ICP as a mean of treatment of lymphedema, in combination with other decongestive therapies, shows effectiveness in the volume reduction of lymphedema¹⁵ (B).

4. DOES EARLY PHYSICAL THERAPY HELP IN PREVENTING BREAST-CANCER POST-OPERATIVE LYMPHEDEMA?

For women submitted to unilateral radical mastectomy associated to axillary drainage, early physical therapy is considered the approach that starts on the third to the fifth day after surgery. Early physical therapy includes MLD, scar tissue massage, and assisted and active shoulder joint exercises, it is effective in preventing the development of lymphedema in the period of twelve months after surgery, with reduction of the absolute risk AR = 1.66 (CI 95% 0.42-2.90), benefitting one out of six patients treated (NNT = 6 with CI 95% 3-14)¹⁶ (B). Even correcting this risk by adjusting it to the presence of BMI > 25 kg/m, an isolated risk predictor for lymphedema¹⁷ (B), there is still benefit from the early physical therapy, with OR = 0.22 (CI 95% 0.07-0.72)¹⁶ (B).

For women with early stage breast cancer, submitted to radical mastectomy or conservative tumor resection, in combination with axillary drainage, either with or without adjuvant radiotherapy, chemotherapy, or hormonal therapy, no significant differences were found in assessing the possibility of appearance of lymphedema after two years from surgery, between performing physical therapy with and without shoulder movement constraint¹⁷ (B).

RECOMMENDATION

Early physical therapy must be used in the prevention of lymphedema following radical mastectomy, because the combination of MLD with scar tissue massage, and assisted and active shoulder exercises benefits one in six patients treated¹⁶ (B). Exercises must be stimulated with no movement constraint to the operated limb¹⁷ (B).

5. DOES EXERCISE IMPROVE BREAST-CANCER RELATED LYMPHEDEMA?

The implementation of an educational program for the practice of physical exercises in patients submitted to mastectomy and axillary drainage must be recommended and stimulated by the whole staff treating these patients. Studies show that the practice of light weight high repetition resisted exercises neither increases the risk of lymphedema, nor alters arm volume in patients submitted to breast surgery with axillary dissection^{17,18} or in patients with lymphedema¹⁹ (B).

The patients submitted to breast surgery with axillary dissection must be encouraged to keep the practice of unrestrained physical exercises, with no fear of developing lymphedema, since the sole risk factor for the appearance of lymphedema after axillary drainage is the presence of BMI > 25 kg/m¹⁷ (B).

There are no differences regarding cicatrization ability, presence of seroma, aspiration requirement, or surgical wound complications between starting resisted-exercise practice on the operated limb one day or one week after surgery²⁰ (B).

Combining exercises with relaxation techniques, intended to providing patients with both physical and emotional improvements results in benefits in the treatment of lymphedema²¹ (B).

RECOMMENDATION

The patients submitted to breast surgery with axillary dissection must be encouraged to maintain the practice of unrestrained exercises, performing resisted training with less repetitions and light weight with the operated^{17,18} or lymphedema-afflicted limb¹⁹ (B). These exercises can be started on the following day after surgery or after one week, with no significant differences

in later evolution²⁰ (B). Combining exercises with relaxation techniques, intended to providing patients with both physical and emotional improvements results in benefits in the treatment of lymphedema²¹ (B).

6. DO EXERCISES IMPROVE QUALITY OF LIFE OF BREAST CANCER PATIENTS?

For women with stages I and II breast cancer, within the twenty-four-month period after diagnosis, having completed treatment, with the exception of hormonal therapy, with no evidence of recurrence or severe comorbidities, sedentary for at least six months previous to the study, a combined exercise program, aerobic and resisted, started early after the adjuvant breast cancer treatment, resulted in significant and reliable improvement in Quality of Life²² (B). As early aerobic exercises were considered the ones started within up to twelve weeks after the surgical procedure, and as late exercises were considered those started within twelve to twenty-four weeks. Starting aerobic exercises, early, increases the quality of life assessed by the *Functional Assessment of Cancer Therapy-Breast Scale*, with difference between groups of 26.1 with CI 95% 18.3-32.7, with $p < 0,001$)²² (B).

For women submitted to any established oncological treatment of breast cancer in any stage, the muscular strengthening training twice a week for recently treated patients, is capable of improving functional and psychological indices of the Quality of Life Assessment, partly due to changes in body composition and overall strength²³ (B).

RECOMMENDATION

Aerobic²² (B) and resisted¹⁷⁻¹⁹ (B) physical exercises must be started, in early fashion, because they are capable of improving the Quality of Life of patients recently submitted to breast cancer treatment^{22,23} (B).

7. DO PHYSICAL EXERCISES HELP IN THE PREVENTION OF BREAST CANCER?

Women, previously sedentary, overweight, menopausal, can attain and maintain aerobic exercises levels that, statistically, promote reduction in the estradiol and SHBG, *sex hormone-binding globulin* levels^{24,25} (B). To achieve that, they must perform at least 225 minutes of aerobic activities per week, such as forty-five minutes, five days a week²⁵ (B). The reduction of these indices is, consistently, associated with the reduction in the risk of developing breast cancer in the scientific literature^{24,25} (B).

Partial results of ongoing studies with predicted long term follow-up showed the promising perspective of studies such as "life style changes" versus "reduction of breast cancer risk factors", since it is already observed the association of exercises and established tumor markers reduction, which can reduce the incidence of breast cancer in the long term follow-up²⁶ (B).

RECOMMENDATION

Regular aerobic physical exercises^{24,25} (B), for at least 225 min/week, e.g. forty-five minutes, five times a week²⁵ (B), is associated with the reduction of plasmacyte values of tumor markers involved in the development of breast cancer. A long term follow-up is required for future corroboration of the role of physical activities in the prevention of breast cancer²⁶ (B).

8. DOES EARLY KINESIOTHERAPY PREVENT THE OCCURRENCE OF SHOULDER AMPLITUDE OF MOVEMENT LIMITATION IN POST-OPERATIVE OF BREAST CANCER?

The performance of a physical therapy care plan, starting before surgery, with orientations about the surgery, explanations regarding the importance of performing exercises immediately after surgery, and shoulder movement measurements taken with goniometer, and continuing in the early postoperative phase, improved the shoulder abduction amplitude of movement on the operated side. It was observed that, by the application of this care plan, there is a return of the shoulder abduction equal to the measurable degrees in the pre-operative phase after three months, maintained after two years from surgery²⁷ (B). From the second day after surgery on the shoulder movement progression is incorporated and during the course of two weeks the intervention is supervised by a physical therapist, with gradual increase in amplitude, always respecting pain or any other limiting factor for the achievement of the highest degree of required movements. The exercises must be oriented for performance up to six months after surgery and for women with associated adjuvant therapy, continuing the shoulder specific exercises is required to be performed for up to one year²⁷ (B). Two physical therapy sixty-minute sessions a week must be performed²⁸ (B). The benefits of physical therapy intervention were identified in clinical practice in less radical surgical procedures, complete local excision with axillary dissection or modified radical mastectomy, and in cases where axillary radiotherapy was avoided²⁷ (B). Irradiated patients have greater chance of presenting shoulder restriction, with (OR = 1.67, 95% CI 0.98-2.86) in comparison with non-irradiated patients⁷ (B).

It is noted that without supervised physical exercises, women undergoing treatment after breast cancer surgeries have greater potential for developing amplitude of movement limitations, AOM, on the ipsilateral shoulder and, therefore, the orientation and supervision provided by physical therapists in an early intervention by means of an exercise program seems to ensure the recovery of shoulder movement²⁷ (B).

RECOMMENDATION

The practice of specific exercises performed early, in the operated limb, supervised and oriented by physical therapists^{27,28} (B) must be performed, being effective the performance of two sixty-minute sessions a week²⁸ (B). Kinesiotherapy must be performed up to six months after surgery and extended for up to one year in patients that, in addition to surgery, require associated adjuvant therapy²⁷ (B). The prevention of shoulder amplitude of movement limitation will be greater after less radical surgical procedures and in cases in which axillary radiotherapy can be avoided^{27,28} (B).

9. DOES THE INTERDISCIPLINARY REHABILITATION PROGRAM IMPROVE THE QUALITY OF LIFE OF BREAST CANCER PATIENTS?

An interdisciplinary intervention program in breast cancer patients is effective in the evolution of improvement of quality of life in patients with early diagnosed breast cancer²⁹ (B).

The quality of sleep must be investigated, and faced with chronic insomnia the initial treatment must be done with non-pharmacological interventions, such as sleep education and hygiene³⁰ (B). Psychiatric comorbidities are common, such as major depression (10%) or depression (27%), as well as anxiety disorders (9%), must

be investigated and treated, whenever present³¹ (B). It is important to know the family and social support of the patient receiving interdisciplinary treatment³² (B).

There are no significant differences in the amount of physical activity whether the orientation is given by the oncologist, as a suggestion, or whether the patient is referred to an exercise expert, with average difference of 1.5 MET/h a week, CI 95% - 1.0 to 4.0, with $p = 0.244$ ³³ (B). It is important to stress that within three months there are already benefits from physical activity³⁴ (B).

The use of all instruments in the interdisciplinary program intended to improving quality of life, QL, of breast cancer patients, is important, because there is an association between QL and tumor recurrence. Women with scores in the upper tertile of QL show a 38% ($p = 0.002$) reduction in the relative risk of death and a 48% ($p < 0.001$)³⁵ (B) reduction in the risk of tumor recurrence.

RECOMMENDATION

A rehabilitation program based on psychological intervention, physical exercises and group assistance support during ten weeks, three times a week in combination with interdisciplinary team and physiatrist supervision provide QL improvement with also lessening of physical symptoms, adjustment in psychosocial alterations, and improvement in the shoulder joint movement in patients with early diagnosed cancer²⁹ (B). Everything must be done to improve QL in breast cancer patients, because this affects the disease's prognosis³⁵ (B).

10. DOES PSYCHOTHERAPY HELP IN THE TREATMENT OF BREAST CANCER?

Psychological interventions applied to recently diagnosed breast cancer patients for twelve months are effective in the reduction of emotional stress for cancer patients. However, it is not clear if the psychological improvements are, in their turn, accompanied by improvements in functional immunity, when are performed weekly sessions of psychotherapy with small groups of patients during the first four months and monthly on the last eight months of treatment. The treatment model showed that the reduction in anguish is pointed out as an important health-improvement mechanism ($p < 0.05$) at twelve months³⁶ (B). These psychological interventions must be done at an early time³⁷ (B).

Group cognitive-behavioral psychotherapy, which includes relaxation and cognitive and skills training, applied in ten weekly two-hour sessions in breast cancer patients one year after mastectomy, reduces intrusive thoughts, measured by the *Impact of Event Scale*, inclination ($z = 3.64$, $p < 0.001$; Cohen's $d = 1.22$), anxiety, measured by the *Hamilton anxiety symptom score*: $z = 2.71$, $p < 0.004$; Cohen's $d = 0.74$, and emotional distress, measured by the *Affects Balance Scale index of negative emotions*: $z = 2.63$, $p < 0.01$; Cohen's $d = 0.43$ ³⁸ (B).

Cognitive-existential group therapy applied in twenty weekly sessions combined with three relaxation classes for patients in the initial stage of breast cancer undergoing chemotherapy treatment improves cancer-related mood and mental attitude, with reduction of anxiety ($p = 0.05$)³⁹ (B).

Amongst psychosocial interventions, psychoeducation is the most adequate for the rehabilitation of breast cancer patients⁴⁰ (B).

Short-term psychological interventions must focus on the coping required for treatment of early breast cancer patients; however, for advanced cases the support must be emphasized. There is moderate size of effect both for anxiety and for depression, SE = -0.40 with CI

95%, -0.72-0.08 and SE= -1.01 with CI 95%, -1.48-0.54, respectively⁴¹ (B). Behavioral techniques provide improvement in the cancer-related fatigue, SE = -0.158 with CI 95% -0.233-0.082⁴² (B).

RECOMMENDATION

Psychological interventions must be started early³⁷ (B), intended to improve coping in initial stage cancer patient and support in advanced cases⁴¹ (B). Those can be effected individually^{4,39,40} (B), or in group^{38,39} (B) and reduce anguish³⁶ (B), anxiety^{38,41,42} (B), depression^{40,41} (B), and fatigue⁴² (B).

11. DOES OCCUPATIONAL THERAPY HELP IN BREAST CANCER TREATMENT?

An occupational therapy program that includes daily home exercises combined with bi-weekly sessions for five consecutive weeks, followed by a three-month exercise and relaxation program applied in sixteen women with breast cancer, showed positive effects in the measurement of bioimpedance, upper limb flexibility, daily function, QL, mood and weight loss, when compared with patients that received only orientations from other health care professionals⁴³ (B).

Occupational therapy performed with sessions over the telephone in six weekly sessions with average duration of thirty-five minutes, started one week after assessment, applied in thirty-one patients with breast cancer with average age of 52.6 years, undergoing chemotherapy treatment, shows positive effects in function, QL, and emotional, due to the need of making adjustments in the participation in activities of daily life and instrumentals of daily life with the use of assistive technology, was shown to be more effective than the treatment performed without including these, mainly, due to the difficulty some patients have to go to the rehabilitation center, whenever they live far from it⁴⁴ (B).

RECOMMENDATION

A weekly occupational therapy program, three months long, applied to women with breast cancer, promotes positive effects in function, upper limb flexibility, QL, and emotional state, due to the need of making adjustments in activities of daily life and instrumentals of daily life with the use of assistive technology. Sessions over the telephone can be useful to strengthen these orientations when the patient has difficulty in being physically present^{43,44} (B).

12. DOES HYDROTHERAPY HELP IN THE TREATMENT OF BREAST CANCER?

Hydrotherapy performed in forty-five-minute weekly sessions, for three months, in forty-eight women aged fifty-six more or less ten years, with breast cancer and lymphedema, with 12.8% relative volume, in a pool 1.2 meter deep and with a 32-33°C temperature is a safe method, with good attendance by patients. There is significant immediate result and insignificant long-term effect in lymphedema reduction⁴⁵ (B).

RECOMMENDATION

Hydrotherapy has proven a safe method, with good attendance by breast cancer patients, in the treatment of moderate lymphedema. There is significant immediate effect and insignificant long-term effect in lymphedema reduction⁴⁵ (B).

13. DOES NUTRITIONAL ORIENTATION HELP IN THE TREATMENT OF BREAST CANCER?

After completing the specific treatment, adequate nutrition helps regaining muscular strength and corrects nutritional problems

that interfere in the body's good functioning. Adequate food ingestion is critical in the recovery phase⁴⁶ (D).

Women treated for breast cancer need weight-loss methods, because obesity may result in a poor prognosis^{47,48} (B) and weight loss improves QL⁴⁹ (B).

Nutritional orientation given to breast cancer survivors increases consumption of fruits, vegetables and fibers, and reduces the ingestion of saturated fats, in addition to increasing exercises in the follow-up of up to two years⁵⁰ (B).

Fat and carbohydrate-restricting diets in overweight breast cancer survivors, using 24 g/d fats and 76 g/d carbohydrates for six months, provide an average 6.1 ± 4.8 Kg weight loss within twenty-four weeks and improvement in the metabolic profile of glucose, insulin, glycated hemoglobin, and lipids, in addition to the blood pressure⁵¹ (A). The orientation for reduction of at least 50% of fats ingestion for secondary breast cancer prevention is viable, because such orientation is followed in 37% of the cases, CI 95% 21-54%, in the first three months and in 35%, CI 95% 17-53%, in up to twenty-four months⁵² (A).

To assess the influence of the diet rich in fruits, vegetables, and fibers, and reduced saturated fats in the mortality risk related to breast cancer, its recurrence, or appearance of a new breast cancer, over 3000 women were studied over in average 7.3 years, six to eleven years. There were no significant differences in mortality, 10.1% on the intervention group and 10.3% on the comparison group, with Hz = 0.91 with CI 95% 0.72-1.15, with $p = 0.43$, and also there were no differences in the recurrence or appearance of new breast cancer, 16.7% on the intervention group and 16.9% in the comparison group, with Hz = 0.96 with CI 95% 0.80-1.14, with $p = 0.63$ ^{53,54} (B).

RECOMMENDATION

Nutritional orientation increases the consumption of fruits, vegetables and fibers, and reduces ingestion of saturated fats⁵⁰ (B). Fats and carbohydrates-restrictive diets improve the metabolic profile⁵¹ (A), and weight loss improves QL⁴⁸ (B). Nutritional orientation increases attendance to exercises in up to two years follow-up⁵⁰ (B). As of this moment dietary changes did not modify mortality or recurrence of breast cancer^{53,54} (B).

14. DOES MEDITATION HELP IN THE TREATMENT OF BREAST CANCER?

The practice of fifteen to forty-five minutes a day of sitting meditation, walking meditation, and light yoga, performed with orientations in two hours weekly for six weeks, with audio tapes for home support, promoted improvement in the psychological state and QL of breast cancer women patients within eighteen months after completing treatment, and lowered adjusted average indices for depression, 6.3 vs 9.6, anxiety, 28.3 vs 33.0 and fear of recurrence, 9.3 vs 11.6, in six weeks, in addition to higher energy levels, 53.5 vs 49.2, physical function, 50.1 vs 47.0 and functionality, 49.1 vs 42.8⁵⁵ (B).

An eight-week program of daily meditation training provides improvement in anxiety, quality of sleep, energy levels, reduces physical pain, and improves wellness. According to data collected in semi-structured interviews of eighteen participants, seventeen with breast cancer and one with lymphatic cancer, which also refer the particular importance regarding the experience of being in the program, such as the fact of being able to make approaches to life without judgment, accept orientations from the program and from the instructors, the influence of group process and experience

sharing with patients who are undergoing similar experiences and the emphasis in the conscientization of the present moment⁵⁶ (B).

RECOMMENDATION

Meditation is a safe method, which promotes good attendance by breast cancer patients, improvement in the psychological state and QL, reduction in anxiety, improvement in quality of sleep, reduction of fatigue and pains, and improves wellness^{55,56} (B).

REFERENCES

- World Health Organization. Globocan Project [homepage on the Internet]. Lyon: Globocan; c2008 [cited 2011 Aug 31]. Available from: <http://globocan.iarc.fr/>
- Early Breast Cancer Trialists' Collaborative Group (EBCTCG). Effects of chemotherapy and hormonal therapy for early breast cancer on recurrence and 15-year survival: an overview of the randomised trials. *Lancet*. 2005;365(9472):1687-717.
- Clarke M, Collins R, Darby S, Davies C, Elphinstone P, Evans E, et al. Effects of radiotherapy and of differences in the extent of surgery for early breast cancer on local recurrence and 15-year survival: an overview of the randomised trials. *Lancet*. 2005;366(9503):2087-106.
- Gerber L, Lampert M, Wood C, Duncan M, D'Angelo T, Schain W, et al. Comparison of pain, motion, and edema after modified radical mastectomy vs. local excision with axillary dissection and radiation. *Breast Cancer Res Treat*. 1992;21(2):139-45.
- Surveillance epidemiology and end results. Cancer Statistics [homepage on the Internet]. Bethesda: National Cancer Institute; c2010 [cited 2010 October 8]. Available from: <http://seer.cancer.gov/statistics/>
- Ewertz M, Jensen AB. Late effects of breast cancer treatment and potentials for rehabilitation. *Acta Oncol*. 2011;50(2):187-93.
- Lee TS, Kilbreath SL, Refshauge KM, Herbert RD, Beith JM. Prognosis of the upper limb following surgery and radiation for breast cancer. *Breast Cancer Res Treat*. 2008;110(1):19-37.
- Højris I, Andersen J, Overgaard M, Overgaard J. Late treatment-related morbidity in breast cancer patients randomized to postmastectomy radiotherapy and systemic treatment versus systemic treatment alone. *Acta Oncol*. 2000;39(3):355-72.
- Vignes S, Porcher R, Arrault M, Dupuy A. Long-term management of breast cancer-related lymphedema after intensive decongestive physiotherapy. *Breast Cancer Res Treat*. 2007;101(3):285-90.
- Andersen L, Højris I, Erlandsen M, Andersen J. Treatment of breast-cancer-related lymphedema with or without manual lymphatic drainage - a randomized study. *Acta Oncol*. 2000;39(3):399-405.
- Martín ML, Hernández MA, Avendaño C, Rodríguez F, Martínez H. Manual lymphatic drainage therapy in patients with breast cancer related lymphoedema. *BMC Cancer*. 2011;11:94.
- Kasseroller RG, Brenner E. A prospective randomised study of alginate-drenched low stretch bandages as an alternative to conventional lymphologic compression bandaging. *Support Care Cancer*. 2010;18:343-50.
- Damstra RJ, Partsch H. Compression therapy in breast cancer-related lymphedema: a randomized, controlled comparative study of relation between volume and interface pressure changes. *J Vasc Surg*. 2009;49:1256-63.
- Dini D, Del Mastro L, Gozza A, Lionetto R, Garrone O, Forno G, et al. The role pneumatic compression in the treatment of postmastectomy lymphedema. A randomized phase III study. *Ann Oncol*. 1998;9(2):187-90.
- Szuba A, Achalu R, Rockson SG. Decongestive lymphatic therapy for patients with breast carcinoma-associated lymphedema. *Cancer*. 2002;95(11):2260-7.
- Torres Lacomba M, Yuste Sánchez MJ, Zapico Goñi A, Prieto Merino D, Mayoral del Moral O, Cerezo Téllez E, et al. Effectiveness of early physiotherapy to prevent lymphoedema after surgery for breast cancer: randomised, single blinded, clinical trial. *BMJ*. 2010;340:b5396.
- Sagen A, Resen RK, Risberg RA. Physical activity for the affected limb and arm lymphedema after breast cancer surgery. A prospective, randomized controlled trial with two years follow-up. *Acta Oncol*. 2009;48:1102-10.
- Schmitz KH, Ahmed RL, Troxel AB, Cheville A, Lewis-Grant L, Smith R, et al. Weight lifting for women at risk for breast cancer-related lymphedema: a randomized trial. *JAMA*. 2010;304(24):2699-705.
- Schmitz KH, Ahmed RL, Troxel AB, Cheville A, Lewis-Grant L, Smith R, et al. Weight lifting in women with breast cancer-related lymphedema. *N Engl J Med*. 2009;361:664-73.
- Jansen RF, van Geel AN, de Groot HG, Rottier AB, Olthuis GA, van Putten WL. Immediate versus delayed shoulder exercises after axillary lymph node dissection. *Am J Surg*. 1990;160(5):481-4.
- McClure MK, McClure RJ, Day R, Brufsky AM. Randomized controlled trial of the Breast Cancer Recovery Program for women with breast cancer-related lymphedema. *Am J Occup Ther*. 2010;64(1):59-72.
- Milne HM, Wallman KE, Gordon S, Courneya KS. Effects of a combined aerobic and resistance exercise program in breast cancer survivors: a randomized controlled trial. *Breast Cancer Res Treat*. 2008;108(2):279-88.
- Ohira T, Schmitz KH, Ahmed RL, Yee D. Effects of weight training on quality of life in recent breast cancer survivors: the weight training for breast cancer survivors (WTBS) study. *Cancer*. 2006;106(9):2076-83.
- Friedenreich CM, Woolcott CG, McTiernan A, Ballard-Barbash R, Brant RF, Stanczyk FZ, et al. Alberta physical activity and breast cancer prevention trial: sex hormone changes in a year-long exercise intervention among postmenopausal women. *J Clin Oncol*. 2010;28(9):1458-66.
- Chan MF, Dowsett M, Folkert E, Bingham S, Wareham N, Luben R, et al. Usual physical activity and endogenous sex hormones in postmenopausal women: the European prospective investigation into cancer-norfolk population study. *Cancer Epidemiol Biomarkers Prev*. 2007;16(5):900-5.
- Campbell KL, McTiernan A. Exercise and biomarkers for cancer prevention studies. *J Nutr*. 2007;137(1 Suppl):1615-1695.
- Box RC, Reul-Hirche HM, Bullock-Saxton JE, Furnival CM. Shoulder movement after breast cancer surgery: results of a randomised controlled study of postoperative physiotherapy. *Breast Cancer Res Treat*. 2002;75(1):35-50.
- Lauridsen MC, Christiansen P, Hessov I. The effect of physiotherapy on shoulder function in patients surgically treated for breast cancer: a randomized study. *Acta Oncol*. 2005;44(5):449-57.
- Cho OH, Yoo YS, Kim NC. Efficacy of comprehensive group rehabilitation for women with early breast cancer in South Korea. *Nurs Health Sci*. 2006;8(3):140-6.
- Epstein DR, Dirksen SR. Randomized trial of a cognitive-behavioral intervention for insomnia in breast cancer survivors. *Oncol Nurs Forum*. 2007;34(5):E51-9.
- Kissane DW, Bloch S, Smith GC, Miach P, Clarke DM, Ikin J, et al. Cognitive-existential group psychotherapy for women with primary breast cancer: a randomised controlled trial. *Psychooncology*. 2003;12(6):532-46.
- Sherman DW, Haber J, Hoskins CN, Budin WC, Maislin G, Cater J, et al. Differences in physical, emotional, and social adjustment of intimate, family, and nonfamily patient-partner dyads based on a breast cancer intervention study. *Oncol Nurs Forum*. 2009;36(4):E185-97.
- Jones LW, Courneya KS, Fairey AS, Mackey JR. Effects of an oncologist's recommendation to exercise on self-reported exercise behavior in newly diagnosed breast cancer survivors: a single-blind, randomized controlled trial. *Ann Behav Med*. 2004;28(2):105-13.
- Rogers LQ, Hopkins-Price P, Vicari S, Markwell S, Pamerter R, Courneya KS, et al. Physical activity and health outcomes three months after completing a physical activity behavior change intervention: persistent and delayed effects. *Cancer Epidemiol Biomarkers Prev*. 2009;18(5):1410-8.
- Epplein M, Zheng Y, Zheng W, Chen Z, Gu K, Penson D, et al. Quality of life after breast cancer diagnosis and survival. *J Clin Oncol*. 2011;29(4):406-12.
- Andersen BL, Farrar WB, Golden-Kreutz D, Emery CF, Glaser R, Crespin T, et al. Distress reduction from a psychological intervention contributes to improved health for cancer patients. *Brain Behav Immun*. 2007;21(7):953-61.
- Vos PJ, Visser AP, Garssen B, Duivenvoorden HJ, de Haes HC. Effects of delayed psychosocial interventions versus early psychosocial interventions for women with early stage breast cancer. *Patient Educ Couns*. 2006;60(2):212-9.
- Antoni MH, Wimberly SR, Lechner SC, Kazi A, Sifre T, Urcuyo KR, et al. Reduction of cancer-specific thought intrusions and anxiety symptoms with a stress management intervention among women undergoing treatment for breast cancer. *Am J Psychiatry*. 2006;163(10):1791-7.
- Kissane DW, Bloch S, Smith GC, Miach P, Clarke DM, Ikin J, et al. Cognitive-existential group psychotherapy for women with primary breast cancer: a randomised controlled trial. *Psychooncology*. 2003;12(6):532-46.
- Zimmermann T, Heinrichs N, Baumoc DH. "Does one size fit all?" moderators in psychosocial interventions for breast cancer patients: a meta-analysis. *Ann Behav Med*. 2007;34(3):225-39.
- Naaman SC, Radwan K, Fergusson D, Johnson S. Status of psychological trials in breast cancer patients: a report of three meta-analyses. *Psychiatry*. 2009;72(1):50-69.
- Duijts SF, Faber MM, Oldenburg HS, van Beurden M, Aaronson NK. Effectiveness of behavioral techniques and physical exercise on psychosocial functioning and health-related quality of life in breast cancer patients and survivors - a meta-analysis. *Psychooncology*. 2011;20(2):115-26.

43. McClure MK, McClure RJ, Day R, Brufsky AM. Randomized controlled trial of the breast cancer recovery program for women with breast cancer-related lymphedema. *Am J Occup Ther.* 2010;64(1):59-72.
44. Hegel MT, Lyons KD, Hull JG, Kaufman P, Urquhart L, Li Z, et al. Feasibility study of a randomized controlled trial of a telephone-delivered problem-solving-occupational therapy intervention to reduce participation restrictions in rural breast cancer survivors undergoing chemotherapy. *Psychooncology.* 2011;20(10):1092-101.
45. Tidhar D, Katz-Leurer M. Aqua lymphatic therapy in women who suffer from breast cancer treatment-related lymphedema: a randomized controlled study. *Support Care Cancer.* 2010;18(3):383-92.
46. Brown J, Byers T, Thompson K, Eldridge B, Doyle C, Williams AM. Nutrition during and after cancer treatment: a guide for informed choices by cancer survivors. *Cancer J Clin.* 2001;51:153-181.
47. Djuric Z, DiLaura NM, Jenkins I, Darga L, Jen CK, Mood D, et al. Combining weight-loss counseling with the weight watchers plan for obese breast cancer survivors. *Obes Res.* 2002;10(7):657-65.
48. Martin LJ, Li Q, Melnichouk O, Greenberg C, Minkin S, Hislop G, et al. A randomized trial of dietary intervention for breast cancer prevention. *Cancer Res.* 2011;71(1):123-33.
49. Darga LL, Magnan M, Mood D, Hryniuk WM, DiLaura NM, Djuric Z. Quality of life as a predictor of weight loss in obese, early-stage breast cancer survivors. *Oncol Nurs Forum.* 2007;34(1):86-92.
50. Christy SM, Mosher CE, Sloane R, Snyder DC, Lobach DF, Demark-Wahnefried W. Long-term dietary outcomes of the FRESH START intervention for breast and prostate cancer survivors. *J Am Diet Assoc.* 2011;111(12):1844-51.
51. Thomson CA, Stopeck AT, Bea JW, Cussler E, Nardi E, Frey G, et al. Changes in body weight and metabolic indexes in overweight breast cancer survivors enrolled in a randomized trial of low-fat vs. reduced carbohydrate diets. *Nutr Cancer.* 2010;62(8):1142-52.
52. Parry BM, Milne JM, Yadegarfar G, Rainsbury RM. Dramatic dietary fat reduction is feasible for breast cancer patients: Results of the randomised study, WINS (UK) - stage 1. *Eur J Surg Oncol.* 2011;37(10):848-55.
53. Pierce JP, Natarajan L, Caan BJ, Parker BA, Greenberg ER, Flatt SW, et al. Influence of a diet very high in vegetables, fruit, and fiber and low in fat on prognosis following treatment for breast cancer: the Women's Healthy Eating and Living (WHEL) randomized trial. *JAMA.* 2007;298(3):289-98.
54. Pierce JP. Diet and breast cancer prognosis: making sense of the women's healthy eating and living and women's intervention nutrition study trials. *Curr Opin Obstet Gynecol.* 2009;21(1):86-91.
55. Lengacher CA, Johnson-Mallard V, Post-White J, Moscoso MS, Jacobsen PB, Klein TW, et al. Randomized controlled trial of mindfulness-based stress reduction (MBSR) for survivors of breast cancer. *Psychooncology.* 2009;18:1261-72.
56. Kvillemo P, Bränström R. Experiences of a mindfulness-based stress-reduction intervention among patients with cancer. *Cancer Nurs.* 2011;34(1): 24-31.