

Exercises Therapy and Quality of Life in Breast Cancer Patients "A Systematic Review"

AML HAMDY, M.Sc.*; SAMAH HOSNEY, Ph.D.*; NAGLAA ABD EL MONEIM, Ph.D.** and
ASMAA FAWZY, Ph.D.***

The Department of Physical Therapy for Surgery, Faculty of Physical Therapy, Cairo University,*** and
The Department of Applied Statistics & Econometrics, Institute of Statistical and Research**, Giza, Egypt*

Abstract

Purpose: The aim of this systematic review was to examine the effectiveness of the exercises therapy on quality of life in breast cancer patients.

Methods: Systematic Review of randomized controlled trials, Data bases searched were made in pubmed, Pedro, google scholar and Cochrane, all studies were post 1995 to 2015. Limits were English language.

Intervention: Eight relevant randomized controlled trials included the exercise and its effects on quality of life in patients with breast cancer.

Results: Eight studies were selected, included in Meta-analysis for the primary outcomes as quality of life and secondary outcomes as fatigue, physical activity, body composition, anxiety and depression.

Conclusions: There was strong evidence supporting that exercises therapy positively influences quality of life in patients with breast cancer. Exercise can be an effective strategy to improve quality of life in breast cancer patients.

Key Words: Exercises Therapy – Breast Cancer – Quality of life – Mesh terms.

Introduction

EVIDENCE-BASED practice is viewed as a mix of (a) Learning what treatments "work" based on the best available research (whether experiential or not), (b) Discussing client views about the treatment to consider cultural and other differences, and to honor client self determination and autonomy, (c) Considering the professionals "clinical wisdom" based on work with similar and dissimilar cases that may provide context for understanding the research evidence, and (d) Considering what the professional can and can not, provide fully and ethically [1,2].

Correspondence to: Dr. Aml Hamdy, The Department of Physical Therapy for Surgery, Faculty of Physical Therapy, Cairo University

Systematic review is a "study of studies". All relevant research is analyzed in an effort to determine the overall evidence for an intervention. systematic reviews are generated to answer specific, often narrow, clinical questions in depth [3].

Randomized controlled trial (RCT) is considered the gold standard of clinical research. It is the method of choice to compare and study therapeutic interventions and diagnostic tests. It generates the highest level of evidence especially in questions related to intervention and assessment [4].

The gold standard for testing theory-based interventions effectiveness is RCT. The systematic review or meta-analysis of RCT is considered to be the strongest evidence [5].

Breast cancer refers to a malignant tumor that has developed from cells in the breast tissues [6].

Adjuvant combination chemotherapy for early stage breast cancer improves survival, but it may also cause unfavorable changes in quality of life (QoL), fatigue, physical functioning, Body composition Few interventions have been shown to prevent these declines. Although exercise training has been considered, few studies have focused on breast cancer patients receiving chemotherapy and the quality of evidence is modest [7-12].

Lymphedema is one of the chronic, debilitating complications that occur in approximately 20.7% to 32% of women with breast cancer [13-15].

42% of women experiencing lymphedema, among which 80% of the cases had occurred in the first 2 years after treatment above all [16], lymphedema after breast cancer treatment is accompanied by upper body symptoms such as pain, numbness,

stiffness and weakness as well as impairment of arm and shoulder function) which eventually affect these women's overall quality of life [17-20,13].

Generally, exercise is regarded as aiding with improvement in physical functioning. However, existing review studies limited these focus on interventions for upper limb dysfunction [21] or for women receiving adjuvant therapy [22].

Exercise is an intervention that may improve a broad range of quality of life problems after diagnosis of cancer. Physical activity levels reduce significantly for many women after a diagnosis of breast cancer and remain low after treatment is completed [23].

A prospective observational study in survivors of breast cancer has indicated a 50% risk reduction in mortality among women who are regularly active compared with those who remained inactive post-diagnosis [24].

A systematic review of the effects of exercise on breast cancer patients and survivors concluded that exercise is an effective intervention to improve quality of life, cardiorespiratory fitness, physical functioning, and fatigue [11].

Material and Methods

The following items concerning the methodology of the systematic review were explained:

- I- Search Strategy.
- II- Study Selection.
- III- Data Extraction.
- IV- Assessment of methodological quality.
- V- Data Analysis (Synthesis).

Search of published studies was performed in the electronic database register from 1995 to 2015 systematically review published randomized controlled trials in English language which study the exercises therapy and quality of life in breast cancer patients.

Search strategy for identification of studies:

Electronic searches:

- Pub Med (Medline):<http://www.ncbi.nlm.nih.gov/pubmed/and> Ovid <http://www.ovid.com/site/index.jsp>.
- Physiotherapy Evidence Database(Pedro):<http://www.pedro.org.au/>
- Google scholar website: <http://scholar.google.com/eg/>
- Cochrane Central Register of Controlled Trials :<http://www.thecochranelibrary.com/view/0/index.html>.

Other sources:

Search was performed through the library catalogue Faculty of physical therapy Cairo University.

Search strategy for identification of studies:

The following key words will be used in the search, "Exercise Therapy" "Physical activity", "Quality of life", "Breast cancer", "lymphedema" "aerobic and resistance exercise" which are known in pubmed as mesh terms and in other sites as search term, using Boolean operator (and/or).

Study selection criteria:

A comprehensive systematic literature search conducted to identify all relevant articles. The titles and abstracts were initially screened against the inclusion and exclusion criteria for identification of the relevant trials. When the title and abstract weren't clear, the complete article would be read to determine its suitability.

Types of studies:

Published English studies with full text articles of Randomized controlled trials (RCTs). Studies published from (1995-2015) were considered.

Types of participants:

The review included patients with breast cancer aged from 40 to 55 years. Participants in the included studies were randomly distributed. The control group didn't participate in any exercise program and the exercise group participated in different types of exercise such as aerobic and resistive exercises.

Types of intervention:

This review included Randomized controlled trials studies which demonstrate the effect of exercises therapy on quality of life in breast cancer patients with reported findings for analysis of its effectiveness.

Types of outcome measures:

Systematic review of exercise therapy on quality of life in breast cancer patients.

Primary outcomes:

- Quality of life.

Exclusion criteria:

- Unpublished studies.
- Study design other than randomized controlled trial (e.g case report, clinical controlled trial cohort study).
- Studies that measured outcomes not related to the scope of our study.

- Not related articles.
- Studies published in language other than English.

Data collection:

Study selection:

After employing the search strategy described above all the studies meeting the inclusion criteria were identified and full-text reports of all relevant trials were obtained and assessed. Excluded studies and reasons for exclusion were stated.

Data extraction:

Data from all the included studies will be summarize in the following format that includes: Participants' characteristics (number in each group, target population, diagnosis, numbers in each diagnostic subgroup, and ages), intervention used, research design and level of evidence for the study, and outcomes of interest. Data were extracted directly from the original articles.

Quality assessment of methodology:

Methodological quality for selected studies was assessed independently by two review authors using Physiotherapy Evidence Database (Pedro) scale. It was more specific scale used to measure the quality of RCTs related to physical therapy interventions, so it was also used to assess quality of studies included in this review. The 11 criteria of Pedro scale.

The first item on the PEDro scale (the item on eligibility criteria) is related to eternal validity, it does not reflect the dimensions of quality assessed by the PEDro scale. This item is not used to calculate the method score (which is why the 11 item scale gives a score out of 10). According to the PEDro guidelines, a positive answer to each of the criteria 2 to 11 will yield one point. Obtaining a between 0 to 10. The PEDro scale has been shown to have moderate interrater reliability [intraclass coefficient for the total score is 0.56, 95% confidence interval (CI) 0.47-0.65] [25].

Papers that had a PEDro score of seven or higher, would be considered 'high quality', those with a PEDro score of five or six would be considered 'moderate quality', and those with a PEDro score of four or less would be considered 'poor quality'. The more the number of scores of the aspects evaluating the quality of the study, the more quality of the study [26].

Data analysis: (It may be Meta analysis or descriptive analysis).

After extracting data from each study included in this systematic review data were compared and the findings were represented either quantitatively, qualitatively or both according to the homogeneity between studies. Meta analysis is a quantitative method employing statistical technique, to combine and summarized the results of studies that address the same question without major differences in its inclusion or exclusion criteria of the participants, mode of administration, doses, and duration of the intervention as well as the comparison intervention, and the outcomes assessed and the methods of their assessment. Studies should be clinically methodologically and statistically homogenous before combining its results. Confidence interval (CI) is defined as "the range of scores within which the true score for a variable is estimated to lie within a specified probability (e.g., 90 percent, 95 percent, 99 percent)" [27].

Results

Literature search results:

Only eight studies met the inclusion criteria (8 randomized controlled trials).

The main reason for exclusion of other studies were:

- The other studies don't meet the inclusion criteria.
- The other studies not randomized control trials.

Methodological quality results: The scoring of each study with the Physiotherapy Evidence Database (PEDro) scale. The scores of all studies included in the study ranges from five to eight. The more the number of scores of the aspects evaluating the quality of the study, the more the quality of the study.

Statistical analysis:

The current study was analyzed by using meta analysis:

Due to the homogeneity among studies, meta-analysis was used as a method for combining the results of quality of life as primary outcome in breast cancer patients. Quality of life was measuring FACT-An, The Functional Assessment of Cancer Therapy- Anemia). FACT-G (The Functional assessment of Cancer Therapy-General), FACT-B: (The Functional assessment of Cancer Therapy-Breast scale), which contain subscales for physical, functional, emotional, social/family well-being and breast cancer subscale) and EORTC questionnaire of the European Organisation for Research and Treatment of Cancer (which contains physical, emotional, role, cognitive, social function, fatigue,

global QoL). Secondary outcomes were fatigue assessed by FACT-An, 20-item multidimensional questionnaire (Total fatigue, physical fatigue, Affective fatigue and cognitive fatigue), self-esteem, body composition as (body weight, body

mass index), Physical functioning and activity level assessed by (12min walk), overall performance by Trail-Making Test, anxiety and depression . Each outcome was based on results of two studied comparing the results of control and study groups.

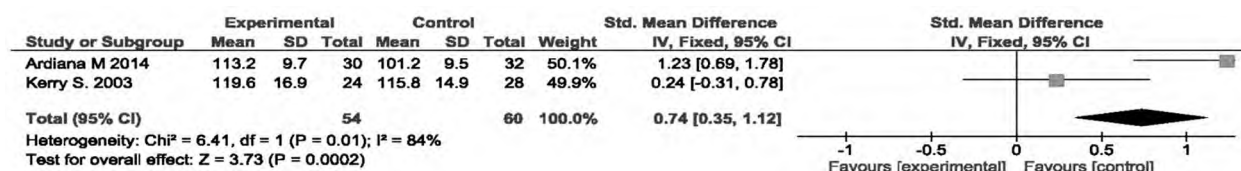
Table (1): Methodology assessment of the ten studies which met the inclusion criteria and scoring results according to the Physiotherapy Evidence Database (PEDro) scale.

Criteria	Kerry S. Courneya et al., (2007)	Kerry S. Courneya et al., (2007)	Nanette Mutrie, et al., (2007)	Kerry S. Courneya et al., (2003)
1- Specified eligibility criteria	Yes	Yes	Yes	Yes
2- Random allocation of participants	Yes	Yes	Yes	Yes
3- Concealed allocation	No	No	No	No
4- Similar prognosis at baseline	Yes	Yes	Yes	Yes
5- Blinded participants	No	No	No	Yes
6- Blinded therapists	No	No	No	No
7- Blinded assessors	No	No	Yes	Yes
8- More than 85% follow-up for at least one key outcome	Yes	No	Yes	Yes
9- 'Intention to treat' analysis	Yes	Yes	Yes	Yes
10- Between group statistical analysis for at least one key outcome	Yes	Yes	Yes	Yes
11- Points estimates of variability for at least one key outcome	Yes	Yes	Yes	Yes
PEDro score	6/10	5/10	7/10	8/10

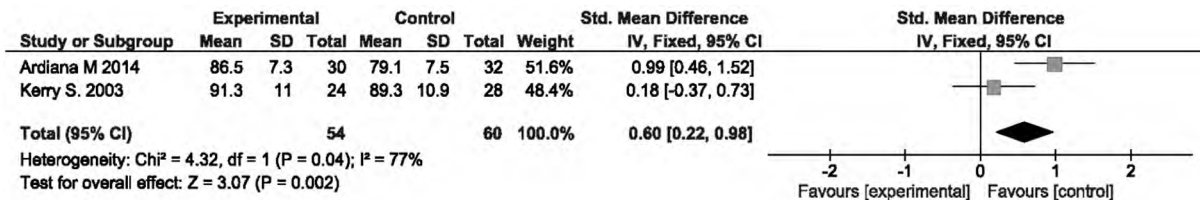
Criteria	K. Steindorf et al., (2014)	Murtezani A., et al., (2014)	Martina E. Schmidt et al., (2014)	Victoria Mock, et al., (2004)
1- Specified eligibility criteria	Yes	Yes	Yes	Yes
2- Random allocation of participants	Yes	Yes	Yes	Yes
3- Concealed allocation	No	No	Yes	No
4- Similar prognosis at baseline	Yes	Yes	Yes	Yes
5- Blinded participants	No	No	No	No
6- Blinded therapists	No	No	No	No
7- Blinded assessors	No	Yes	No	No
8- More than 85% follow-up for at least one key outcome	Yes	No	Yes	No
9- 'Intention to treat' analysis	Yes	No	Yes	Yes
10- Between group statistical analysis for at least one key outcome	Yes	Yes	Yes	Yes
11- Points estimates of variability for at least one key outcome	Yes	Yes	Yes	Yes
PEDro score	6/10	5/10	7/10	5/10

1- FACT-B (0-140): Forest plot postintervention:

Results of the meta-analysis showed significant effect of exercise on both FACT-B (0-140) and FACT-G (0-104).

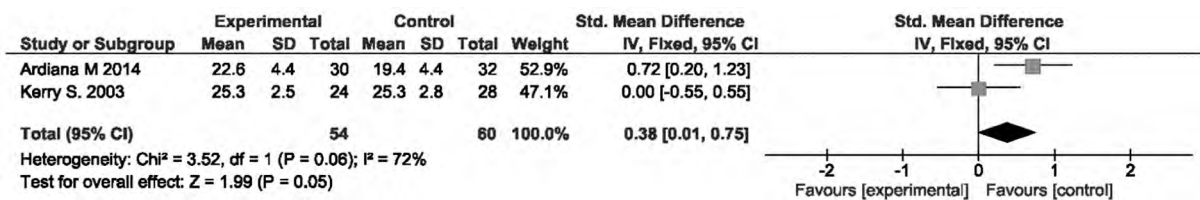


2- *FACT-G*, (0-104): Forest plot post intervention.



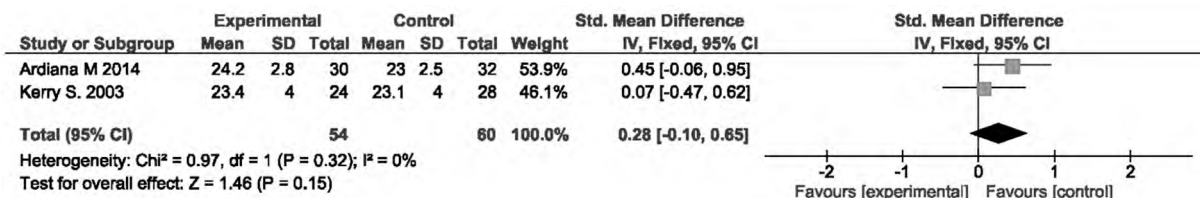
3- *Physical well-being* (0-28): Forest plot post intervention:

Results of the meta-analysis showed significant effect of exercise on physical well-being.



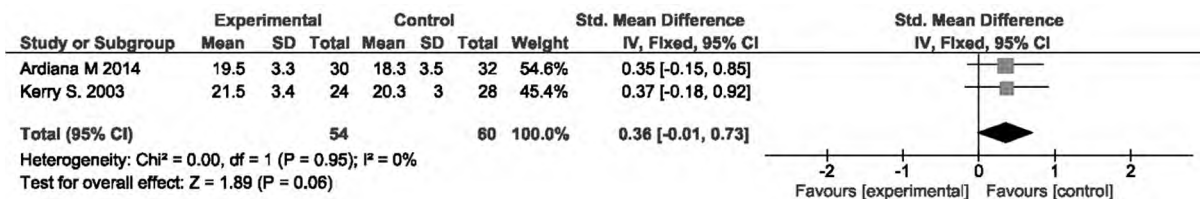
4- *Functional well-being* (0-28):

Forest plot postintervention: It showed insignificant effect on functional well-being.



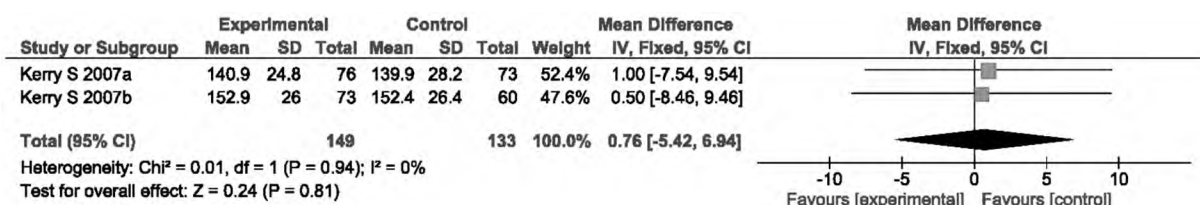
5- *Emotional well-being* (0-24): Forest plot postintervention:

Results of the meta-analysis showed significant effect of exercise on emotional well-being.

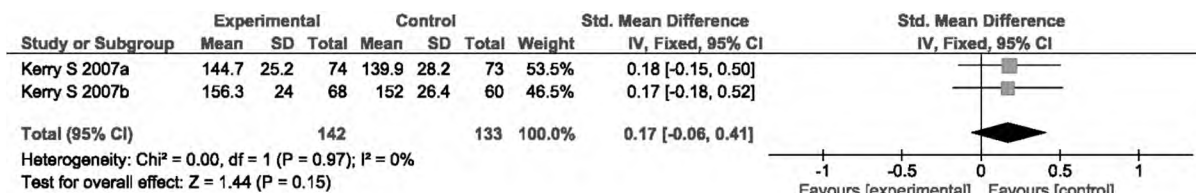


6- *FACT-An*: Results of the meta-analysis showed insignificant effect of exercise on both resistance exercise training and aerobic exercise training.

(A) Resistance exercise training: Forest plot postintervention:

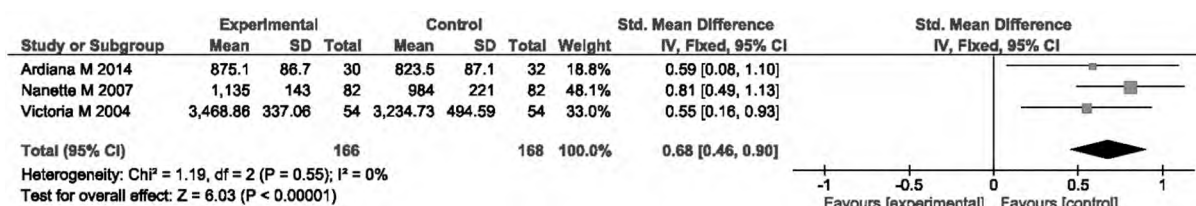


(B) Aerobic exercise training: Forest plot postintervention:



7- 12 Minute walk: Forest plot postintervention:

Results of the meta-analysis showed significant effect of exercise on 12 minute walk.



Discussion

The purpose of the current review was to evaluate the effectiveness of exercises therapy on quality of life in breast cancer patient, this review includes studies published from 1995 up to 2015 and searched on Medline data base through Pub Med, PEDro, Physiotherapy Evidence Database, Cochrane library also was searched and Google web site.

This systematic review analyzed eight randomized controlled trials, by applying strict selection criteria for inclusion, only full text articles of randomized controlled trials were included all trials met at least five criteria on the PEDro scale.

From all, five studies included all studies fulfill the criteria of high methodological quality which judged as strong ("yes" on 6-8 questions) according to PEDro scale.

In the study of (Effects of aerobic and resistance exercise in breast cancer patients receiving adjuvant chemotherapy: A multicenter randomized controlled trial), they used unadjusted and adjusted mixed-model analyses and indicated that aerobic exercise was superior to usual care for improving self-esteem ($p=0.015$), aerobic fitness ($p=0.006$) and percent body fat (adjusted $p=0.076$). Resistance exercise was superior to usual care for improving self-esteem ($p=0.018$), muscular strength ($p<0.001$), lean body mass ($p=0.015$) and chemotherapy completion rate ($p=0.033$). Changes in cancer-specific QoL, fatigue, depression and anxiety favored the exercise groups but did not reach statistical significance. They concluded that, neither aerobic nor

resistance exercise significantly improved cancer-specific quality of life in breast cancer patients receiving chemotherapy, but they did improve self-esteem, physical fitness, body composition and chemotherapy completion rate without causing lymphedema or significant adverse events.

In the study of (Six-month follow-up of patient-rated outcomes in a randomized controlled trial of exercise training during breast cancer chemotherapy), Comparing the participants reporting no regular exercise during the follow-up period with those reporting regular aerobic and resistance exercise also reported better patient-rated outcomes, including quality of life (adjusted mean difference, 9.5; 95% CI, 1.2-17.8; $p=0.025$). They concluded that improvements in self esteem observed with resistance exercise training during breast cancer chemotherapy were maintained at 6-month follow-up whereas reductions in anxiety not observed with aerobic exercise training during breast cancer chemotherapy emerged at 6-month follow-up. A combined aerobic and resistance exercise program after breast cancer chemotherapy was associated with further improvements in patient-rated outcomes.

In the study of (Benefits of supervised group exercise program for women being treated for early stage breast cancer: Pragmatic randomized controlled trial), Mixed effects models with adjustment for baseline values, study site, treatment at baseline and age gave intervention effect estimates (intervention minus control) at 12 weeks of 129 (95% confidence interval 83 to 176) for metres walked in 12 minute, 182 (75 to 289) for minutes of moderate intensity activity reported in a week, 2.6 (1.6

to 3.7) for shoulder mobility, 2.5 (1.0 to 3.9) for breast cancer specific subscale of quality of life, and 4.0 (1.8 to 6.3) for positive mood. No significant effect seen for general quality of life (FACT-G), which was the primary outcome. At the six month follow-up, most of these effects were maintained and an intervention effect for breast cancer quality of life emerged. Supervised group exercise provided functional and psychological benefit after 12 week intervention and six months later. Clinicians should encourage activity for their patients. Policy makers should consider the inclusion of exercise opportunities in cancer rehabilitation services.no adverse effects were noted.

In study of (Randomized controlled trial of exercise training in postmenopausal breast cancer survivors; Cardiopulmonary and quality of life outcomes), Peak oxygen consumption increased by 0.24 L/min in the exercise group, whereas it decreased by 0.05L/min in the control group [mean difference, 0.29L/min; 95% confidence interval (CI), 0.18 to 0.40; $p < .001$]. Overall quality of life increased by 9.1 points in the exercise group compared with 0.3 points in the control group (mean difference, 8.8 points; 95% CI, 3.6 to 14.0; $p = .001$). Pearson correlation indicated that change in peak oxygen consumption correlated with change in overall quality of life ($r = 0.45$; $p < .01$). they concluded that exercise training had beneficial effects on cardiopulmonary function and quality of life in postmenopausal breast cancer survivors. Baseline values for peak oxygen consumption ($p = .254$) and overall quality of life ($p = .286$) did not differ between groups.

In the study of (The effects of aerobic exercise on quality of life among breast cancer survivors a randomized controlled trial), There were no significant differences amongst the two groups at baseline for any variable. In the exercise group significant improvements were demonstrated for the FACT-B (13.4 points, $p < 0.003$), functional assessment of cancer therapy-general (FACT-G) (9.16 points, $p < 0.008$), the functional well-being subscale ($p < 0.010$), and the emotional well-being subscale ($p < 0.035$) compared to the control group. No significant changes in body weight or BMI were observed. Exercise group showed a significant increase in 12 MWT ($p < 0.009$). They concluded that 10 week of moderate-intensity aerobic exercise program significantly improves QOL and physical functioning in breast cancer survivors.

In the study of (Randomized controlled trial of resistance training in breast cancer patients receiving adjuvant radiotherapy: Results on cancer-related

fatigue and quality of life), intention-to-treat analyses for the N=155 patients, significant between-group mean differences (MD) favoring the exercise group (EX) were observed for general fatigue ($p = 0.044$), especially for the subscale physical fatigue [MD = -0.8; 95% confidence interval -1.5 to -0.2, $p = 0.013$], but not for affective ($p = 0.91$) or cognitive fatigue ($p = 0.65$). For Qol, significantly larger improvements regarding the role function ($p = 0.035$) and pain ($p = 0.040$) were noted among exercisers compared with control group. Future perspective improved significantly stronger in the control group compared with the exercise group ($p = 0.047$). They conclude that 12-week resistance training program was a safe, feasible and efficacious strategy to improve cancer-related fatigue and components of Qol in breast cancer patients adjuvant radiotherapy. As exercise was compared with another group-based intervention, results indicate that resistance training effects on fatigue and Qol go beyond psycho-social benefits, and that clinically relevant overall benefit of resistance exercise compared with usual care can be assumed to be higher.

In the study of (Effects of resistance exercise on fatigue and quality of life in breast cancer patients undergoing adjuvant chemotherapy: A randomized controlled trial), Analyses of covariance for individual changes from baseline to week 13 were calculated. In control group, total and physical fatigue worsened during chemotherapy, whereas exercise group showed no such impairments (between-group $p = 0.098$ and 0.052 overall, and $p = 0.038$ and 0.034 among patients without severe baseline depression). Differences regarding affective or cognitive fatigue were not significant. Benefits of exercise group were also seen to affect role and social function. Effect sizes were between 0.43 and 0.48. The exploratory analyses suggest benefits of exercise regarding role function ($p = 0.035$, ES=0.48) as well as a beneficial tendency regarding physical function ($p = 0.087$, ES = 0.55). Effects did not differ substantially when including patients with baseline depression. Among the 17 patients with baseline depression, all functional scores were at a substantially lower level compared to patients without baseline depression and there were no statistically significant intervention effects. They concluded that resistance exercise appeared to mitigate physical fatigue and maintain Qol during chemotherapy beyond psychosocial effects inherent to supervised group-based setting. Thus, resistance exercise could be an integral part of supportive care for breast cancer patients undergoing chemotherapy.

References

- 1- GAMBRILL E.: Evidence-based practice: Implications for knowledge development and use in social work. In A. Rosen & E. Proctor (Eds.), *Developing practice guidelines for social work intervention* (pp. 37-58). New York: Columbia University Press, 2003.
- 2- GILGUN J.: The four cornerstones of qualitative research. *Qualitative Health Research*, 16 (3): 436-443, 2005.
- 3- GARG A.X., HACKAM D. and TONELLI M.: Systematic Review and Meta-analysis: When One Study Is Just Not Enough. *Clin. J. Am. Soc. Nephrol.*, 3: 253-260, 2008.
- 4- ATTIA A. and ABDEL-RAOUF E.: "Essentials of Evidence-Based Medicine". 1 st Ed., Higher Education Enhancement Project" Fund, Cairo, pp.5-6, 2007.
- 5- COTRELL R.R. and McKENZIE J.F.: *Health Promotion & Education Research Methods using the five-chapter Thesis/Dissertation Model*, 2005.
- 6- BENOIT B., TRETBAR L.M., CHERYL E.M. and SIMON J.: "Lymphedema diagnosis and treatment. Springer" 1st Edition, ISBN-10: 184628548, 2007.
- 7- KAYL A.E. and MEYERS C.A.: Side effects of chemotherapy and quality of life in ovarian and breast cancer patients. *Curr. Opin. Obstet. Gynecol.*, 18: 24-28, 2006.
- 8- KURT G., BREITBART W., CELLA D., et al.: Impact of cancer-related fatigue on the lives of patients: New findings from the fatigue coalition. *Oncologist*, 5: 353-360, 2000.
- 9- PEREZ E.A., SUMAN V.J., DAVIDSON N.E., et al.: Effect of doxorubicin plus cyclophosphamide on left ventricular ejection fraction in patients with breast cancer in the north central cancer treatment group N9831 Intergroup Adjuvant Trial. *J. Clin. Oncol.*, 22: 3700-3704, 2004.
- 10- FREEDMAN R.J., AZIZ N., ALBANES D., et al.: Weight and body composition changes during and after adjuvant chemotherapy in women with breast cancer. *J. Clin. Endocrinol. Metab.*, 89: 2248-2253, 2004.
- 11- McNEELY M.L., CAMPBELL K.L., ROWE B.H., KLASSEN T.P., MACKAY J.R. and COUMEYA K.S.: Effects of exercise on breast cancer patients and survivors: A systematic review and meta-analysis. *CMAJ*, 175: 34-41, 2006.
- 12- SCHMITZ K.H., HOLTZMAN J. and COURNEYA K.S.: Controlled physical activity trials in cancer survivors: A systematic review and meta-analysis. *Cancer Epidemiol. Biomarkers Prev.*, 14: 1588-1595, 2005.
- 13- ARMER J.M. and STEWART B.R.: Post breast cancer lymphedema: Incidence increases from 12 to 30 to 60 months. *Lymphology*, 43 (3): 118-127, 2010.
- 14- CLARK B., STTZIA J. and HARLOW W.: "Incidence and risk of arm edema following treatment for breast Cancer: A three year follow-up Study" *Q. J. Med.*, 98: 343-348, 2005.
- 15- PASKETT E.D., NAUGHTON M.J., McCOY T.P., CASE L.D. and ABBOTT J.M.: The epidemiology of arm and hand swelling in premenopausal breast cancer survivors. *Cancer Epidemiology, Biomarkers and Prevention*, 16 (4): 775-782, 2007.
- 16- NORMAN S.A., LOCALIO A.R., POTASHNIK S.L., SIMOESTORPEY H.A., KALLAN M.J., WEBER A.L., et al.: Lymphedema in breast cancer survivors: Incidence degree, time course, treatment, and symptoms. *Journal of Clinical Oncology*, 27 (3): 390-397, 2009.
- 17- BOSOMPRA K., ASHIKAGA T., OBRIEN P.J., NELSON L. and SKELLY J.: Swelling, Numbness, Pain and their relationship to arm function among breast cancer survivors: Disablement process model perspective. *The Breast Journal*, 8 (6): 338-348, 2002.
- 18- HAYES S.C., JOHANSSON K., STOUT N.L., PROSNITZ R., ARMER J.M., GABRAM S., et al.: Upper body morbidity after breast cancer: Incidence and evidence for evaluation, prevention and management with a prospective surveillance model of care. *Cancer*, 15 (118): 2237-2249, 2012.
- 19- AHMED R.L., PRIZMENT A., LAZOVICH D., SCHMITZ K.H. and FOLSOM A.R.: Lymphedema and quality of life in breast cancer survivors: The Iowa Women's health study. *Journal of Clinical Oncology*, 26 (35): 5689-5696, 2008.
- 20- FU M.R., CHEN C.M., HABER J., GUTH A.A. and AXELROD D.: The effect of providing information about lymphedema on the cognitive and symptom outcomes of breast cancer survivors. *Annals of Surgical Oncology*, 17 (7): 1847-1853, 2010.
- 21- McNEELY M.L., CAMPBELL K., OSPINA M., ROWE B.H., DABBS K., KLASSEN T., et al.: Exercise interventions for upper limb dysfunction due to breast cancer treatment. *Cochrane Database of Systemic Reviews* 6. CD005211, 2010.
- 22- MARKES M., BROCKOW T. and RESCH K.L.: Exercise for women receiving adjuvant therapy for breast cancer. *Cochrane Database of Systematic Reviews*. 4, CD005001, 2006.
- 23- IRWIN M., McTIERNAN A., BEMSTEIN L., GILLILAND F., BAUMGARTNER R., BAUMGARTNER K., et al.: Physical activity levels among breast cancer survivors. *Med. Sci. Sport Exerc.*, 36: 1484-91, 2004.
- 24- HOLMES M.D., CHEN W.Y., FESKANICH D., KROENKE C.H. and COLDITZ G.A.: Physical activity and survival after breast cancer diagnosis. *Journal of the American Medical Association JAMA*, 293: 2479-2486, 2005.
- 25- MAHER C.G., SHERRINGTON C., HERBERT R.D., MOSELEY A.M. and ELKINS M.: Reliability of the PEDro scale for rating of randomized controlled trials. *Phys. Ther.*, 83: 713-721, 2003.
- 26- MOSELEY A.M., HERBERT R.D., SHERRINGTON C. and MAHER C.G.: Evidence for physiotherapy practice: A survey of the Physiotherapy Evidence Database (PEDro). *Australian Journal of Physiotherapy*, 48: 43-49, 2002.
- 27- JEWELL D.: *Evidence-Based Physical Therapy Practice In Guide To Evidence-Based Physical Therapy Practice* 1st Ed., Jones and Bartlett Publishers, USA, 2008.

الملخص العربي

هذه المراجعة المنهجية التي تهدف إلى دراسة تأثير التمرينات العلاجية على جودة الحياة لمرضى سرطان الثدي، وتم البحث بمساعدة الحاسوب من Cochrane و Med Pub، وقاعدة بيانات العلاج الطبيعي من دليل PEDro، وباحث، Google باستخدام الكلمات: "التمرينات العلاجية"، "جودة الحياة"، "سرطان الثدي"، "الورم الليمفي"، "التعب"، "ما بعد استئصال الثدي"، "التمرينات العلاجية المقاومة"، وقد أجرى Cochrane قواعد معلومات المتجهات خلال الفترة من يناير ١٩٩٥م وحتى أكتوبر ٢٠١٥ لعشوائية التجارب ذات الشواهد من العلاج بالتمرينات العلاجية وجودة الحياة عند مرضى سرطان الثدي ومن خلال البحث في قاعدة بيانات محوسبة تشمل الطب والعلاج الطبيعي والصحية المصاحبة.

وقد تم البحث من خلال Cochrane في باحث Google لجميع التجارب العشوائية التي تتبع معايير المراجعة (والذين تتراوح أعمارهم بين ٤٠-٥٥ عاماً، مكتوبة باللغة الإنجليزية)، وتستخدم التمارين كوسيلة للتدخل. وكانت مقاييس النتائج أنه قد تم فحص جودة الحياة، والورم الليمفي، والتعب النفسي والاجتماعي وتكوين الجسم أو على كل مراجع تحسين المواد ومحاكمات الاستعراض ذات الصلة.

الأهداف: كان الهدف من هذه المراجعة المنهجية دراسة التمرينات العلاجية على جودة الحياة عند مرضى سرطان الثدي.

الطرق: مراجعة منهجية للتجارب العشوائية المنظمة، أدلت دراسات معلومات في Pedro Cochrane وفي باحث Google، كانت جميع هذه الدراسات بعد عام ٢٠٠٠م مكتوبة باللغة الإنجليزية، ومحتويات الدراسة كانت عبارة عن مراجعة مستقلة للجودة المنهجية (van Tulder وآخرون) وتعيين مستوى الأدلة (مركز الطب المبني على البراهين).

التدخل: ويشمل ثمانية تجارب عشوائية منظمة ذات الصلة وهي التمرينات الهوائية وممارسة التمرينات المقاومة وتأثيرها على جودة الحياة عند المرضى الذين يعانون من سرطان الثدي.

النتائج: تم اختيار ثمانين دراسة، مدرجة في تحليل ميتا "Meta analysis" للنتائج الأولية، جودة الحياة والنتائج الثانوية والتعب، والنشاط البدني، وشكل الجسم والقلق والاكتئاب.

الخلاصة: هناك أدلة قوية تدعم تأثير التمرينات العلاجية على جودة الحياة عند مرضى سرطان الثدي، ويمكن أن تكون إستراتيجية فعالة للمرضى.