



Effects of aerobic exercise and massage with yogic training on cardio respiratory endurance and flexibility among women breast cancer survivors

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Abstract

The purpose of the study was to ascertain the effects of aerobic exercise and massage with yogic training on cardio respiratory endurance and flexibility among women breast cancer survivors. To achieve the purpose, forty women breast cancer survivors were randomly selected as subjects. They were divided into two equal groups, namely experimental group and control group. The experimental group underwent aerobic exercise, massage and yogic training and a control group was not given any specific programme. They assessed before and after the training periods of twelve weeks. The following criterion variables were chosen, namely cardio respiratory endurance and flexibility. The 't' ratio statistical tool was used to analyze the data. The study revealed that the cardio respiratory endurance and flexibility were significantly improved due to the influence of the aerobic exercise, massage with yogic training. The exercise should be structured programme for cancer survivors.

Keywords : Aerobic exercise, yogic training, breast cancer, massage and women

Introduction

Human fitness and health are dependent upon an interaction of the host and environment factors. Though several health problems may be related to factors beyond an individual control; yet the clinical outcomes are significantly influenced by lifestyle. A Style generally denotes a distinctive manner of doing or presenting something. Lifestyle includes the way we live our lives interacting with the environment around us. Besides influencing our physical, mental and social health in relation to known causes of ill-health it has been related to several disorders that might afflict a person in his or her lifetime. Changes related to work pressure; dietary habits and social norms have lead to an increase in diseases like diabetes, hypertension, ischaemic heart disease, and cancer. Since lifestyle is something that can be altered or influenced, it is how

it can help in prevention of disease or mitigating the effects of a hostile environment or genetic factors. An excellent example of an eminently preventable serious lifestyle disease besides heart disease is cancer.

Physical fitness

Physical fitness is the ability to carry out daily tasks with vigour and alertness, without undue fatigue, and with ample energy to enjoy leisure-time pursuits and to meet unforeseen emergencies. Physical fitness thus includes cardio respiratory endurance, skeletal muscular endurance, skeletal muscular strength, skeletal muscular power, speed, flexibility, agility, balance, reaction time, and body composition Health-related fitness includes cardio respiratory endurance, muscular strength endurance, flexibility, body composition (United States Department of Health and Human Services, 1996).

Cardio-respiratory endurance

Cardio-respiratory endurance is the ability of the circulatory and respiratory systems to supply oxygen during sustained physical activity (United States Department of Health and Human Services, 1996).

Cardio-respiratory endurance of women after breast cancer

Cardio-respiratory endurance can be severely impaired as a consequence of breast cancer and its treatment through several pathological mechanisms. To begin with, chemotherapy can damage bone marrow and subsequently impair the production of erythrocytes, so that the resulting anaemia leads to a compromised oxygen saturation of blood. Then cardiotoxic chemotherapeutic agents such as anthracyclines and cyclophosphamide can cause a reduction of cardiac output. There are other functional and anatomic changes due to cancer treatment that may affect oxygen transport and utilisation, such as alterations of the bronchial tree, lung and plasma volume, alveolar surface, pulmonary perfusion, and concentration of oxidative enzymes (Dimeo, 2001).

Flexibility

Flexibility is the ability of an individual to move the body joints through a maximum range of motion without undue strain.

Flexibility of women after breast cancer

Chemotherapy significantly improved survival rate among breast cancer sufferer. However, post-therapy patient may exhibit depressed mood, poor balancing, and less flexibility (Welukar, 2012).

Aerobic Exercise

Aerobic exercise also known as cardio is physical exercise of relatively low intensity that depends primarily on the aerobic energy-generating process (Sharon *et al.*, 2007). Aerobic activities strengthen the heart and lungs, making

them more efficient and durable, improving quality and quantity of life. Exercise not only extends our life, but also gives us more energy to live it to the fullest.

Massage

Massage is a systematic therapeutic friction, stroking or kneading of the body. The application of diverse manual techniques of touch and stroking to muscles and soft tissue to achieve relaxation and to improve the client's well-being (Jonas, 2005). Breast cancer patients receiving massage therapy showed improved blood pressure, respiration, and heart rate measurements (Cassileth *et al.*, 2008). Massage therapy relaxes the patient, reducing pain, anxiety and gastrointestinal symptoms of chemotherapy and radiation side effects. For breast cancer patients undergoing radiation, massage therapy reduces side effects of the treatment itself and can help dissolve radiation-induced fibrosis months and years after treatment has ended (MacDonald *et al.*, 2001).

Yoga

The word yoga is derived from the Sanskrit root Yuj, which means to join or to yoke. In philosophical terms, yoga refers to the union of the individual self with the universal self (Iyengar, 1995).

Yoga interventions for cancer patients shown positive effects on a variety of outcomes, including sleep quality, mood, stress, cancer-related distress, cancer related symptoms, and overall quality of life, as well as functional and physiological measures (Julienne *et al.*, 2005). Yoga, which is designed to be a calming exercise, strengthens and tones the body without raising the heart rate (Betsy, 2008).

A structured group exercises programme during adjuvant treatment is a safe, well tolerated and effective way of providing physical, physiological and psychological health benefits to people

during treatment and also appropriately powered analyses of some variables of exercise create interest and favoured relatively economical for people after breast cancer (Campbell *et al.*, 2005). A Structured exercise intervention undertaken by breast cancer patients undergoing chemotherapy can lead to reduction in treatment-related symptoms (Andersen *et al.*, 2006).

Objective

To find out the effects of aerobic exercise and massage with yogic training on cardio respiratory endurance and flexibility among women breast cancer survivors.

Hypotheses

1. It was hypothesized that the aerobic exercise and massage with yogic training would have significant effects on cardio respiratory endurance and flexibility among women breast cancer survivors in Experimental group.
2. It was hypothesized that there is no significant difference between pre-test and post-test of women breast cancer survivor in the Control group in cardio respiratory endurance and flexibility.

Methodology

Experimental design adopted for the study was :

Samples

Forty women mastectomies (who have undergone surgical removal of the breast) were randomly selected as Breast club from G.Kuppuswamy Naidu Memorial Hospital, Coimbatore, Tamilnadu. Their age ranged between thirty five to forty five years. They were divided into two equal groups, namely experimental group and control group each consist of twenty women mastectomies.

Procedure of the study

Pre-test was conducted for Experimental group and Control group to measure cardio

respiratory endurance and flexibility. After conducting pre-test, Experimental group underwent aerobic exercise and massage with yogic training for six days per week for twelve weeks and control group was not given any specific programme. After the treatment period, Post-test was conducted for both the groups.

Variables

Cardio respiratory endurance and flexibility were selected as criterion variables.

Tools

- 12 Minutes Cooper Test by Cooper (1967) was used to measure cardio respiratory endurance and
- Sit and Reach Test by Johnson and Nelson, (1982) was used to measure flexibility.

Statistics

't' test was used to find out the effectiveness of aerobic exercise and massage with yogic training.

Results and Discussion

The table -1 shows that the obtained 't'-ratio values of pre-test and post-test mean values of cardio respiratory endurance and flexibility of experimental group and control group among women breast cancer survivors. The obtained 't' ratios were 7.40 for cardio respiratory endurance, 8.29 for flexibility for the experimental group and 1.50 for cardio respiratory endurance, 0.34 for flexibility for the Control group (Table - 2).

The obtained 't' - ratios on selected treatment related symptoms were greater than the critical value of 2.09 it was found to be statistically significant at 0.05 level of confidence for df 19 for the experimental group. Hence it was observed that the twelve weeks practice of aerobic exercise and massage with yogic training showed significant improvement in cardio respiratory endurance and flexibility of the experimental group.

Table - 1. Difference between pre-test and post-test of Experimental group in Cardio -respiratory endurance and flexibility

Variables	Pre-test	Post-test	Diff	SE	t-ratio
Cancer related pain	660.50 ± 31.70	728.30 ± 43.33	67.8	9.16	7.40*
Cancer related fatigue	4.95 ± 0.77	5.81 ± 0.55	0.86	0.10	8.29*

*Significant at 0.05 level of confidence

Table - 2. Difference between pre-test and post-test of control group in Cardio-respiratory endurance and flexibility

Variables	Pre-test	Post-test	Diff	SE	t-ratio
Cancer related pain	662.50 ± 30.10	658.00 ± 30.01	4.00	2.65	1.50*
Cancer related fatigue	5.08 ± 0.56	5.04 ± 0.50	0.10	0.10	0.34*

*Significant at 0.05 level of confidence

The obtained 't' – ratios on cardio respiratory endurance and flexibility were lesser than the critical value of 2.09 it was found to be statistically insignificant at 0.05 level of confidence for degrees of freedom 19 for Control group. It was observed that the control group did not show any significant improvement in cardio respiratory endurance and flexibility.

The aerobic exercise and massage with yogic training programme has produced a significant improvement on cardio respiratory endurance and flexibility. The control group has not produced a significant improvement in cardio respiratory endurance and flexibility among the women breast cancer survivors. Therefore, it is concluded that after attending aerobic exercise and massage with yoga training programme there was a significant improvement in their cardio respiratory endurance and flexibility. It was observed that the aerobic exercise and massage with yogic training group produced a significant development effect on cardio respiratory endurance and flexibility variables used in the study, whereas in the case of control group it was found to be insignificant.

In testing the significance of mean difference on pre-test between the two groups

namely, Aerobic exercise and massage with yogic training group and Control group the result indicates that the mean differences in cardio respiratory endurance and flexibility variables used in the study before the respective treatment was insignificant. Thus, this analysis confirms that the random assignment of subjects into two groups were successful.

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