



Effects of psychotherapy with ballet and dance on the quality of life of women with breast cancer

Efectos del psicoballet y la danza en la calidad de vida de mujeres con cáncer de mama

Efeitos do psicoballet e da dança na qualidade de vida de mulheres com câncer de mama

Amador Cernuda-Lago^{I*} , Lucía Sierra-Cano^{II} , Luis Felipe Mazadiego-Martínez^{III} 

^IUniversidad Rey Juan Carlos. Madrid, Spain.

^{II}Escuela Internacional de Doctorado de la Universidad Rey Juan Carlos. Madrid, Spain.

^{III}Universidad Politécnica de Madrid. Madrid, Spain.

*Corresponding author: amador.cernuda@urjc.es

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ABSTRACT

Introduction: cancer is one of the main causes of mortality in the world. The International Agency for Research on Cancer estimates 28 million new cases a year by 2040. The practice of physical activity in cancer patients and survivors is an area of interest due to the increase in this population and the need to adopt healthy lifestyle habits. Compliance with exercise recommendations improves the prognosis and reduces the risk of recurrence, while improving cardiovascular health, mood, and quality of life. **Objective:** to demonstrate the efficacy of a psychotherapy treatment with ballet in the anxiety variable of a group of women with breast cancer. **Method:** a study at the Hospital Universitario Marqués de Valdecilla, Santander, Cantabria (Spain) was carried out in 2022. Twenty-six women between the ages of 30 to 70 diagnosed with breast cancer and in the process of oncological treatment participated. A ballet program was applied to them for 9 months and their state anxiety was

evaluated before and after the sessions, for which the Spielberger, *et al.* State-Trait Anxiety Inventory (STAI) was used. **Results:** all state anxiety in the participants quasi-experimental design was carried out at was reduced after the ballet psychotherapy sessions. **Conclusions:** the results indicate that ballet psychotherapy treatment favors a beneficial recovery of the cancer patient, reducing anxiety, an important predictor variable of the patient's evolution.

Keywords: breast cancer; anxiety; psychoballet; ballet psychotherapy; dance; physical activity; quality of life

RESUMEN

Introducción: el cáncer constituye una de las principales causas de mortalidad del mundo. La International Agency for Research on Cancer pronostica 28 millones de casos nuevos al año para 2040. La práctica de actividad física en pacientes y supervivientes de cáncer es un área de interés por el incremento de esta población y la necesidad de adoptar hábitos de vida saludables. El cumplimiento de las recomendaciones de ejercicio permite mejorar el pronóstico y reducir el riesgo de recidiva, al tiempo que mejoran la salud cardiovascular, estado anímico y calidad de vida.

Objetivo: demostrar la eficacia de un tratamiento con psicoballet en la variable ansiedad de un grupo de mujeres con cáncer de mama. **Método:** se realizó un estudio con diseño cuasi-experimental en el Hospital Universitario Marqués de Valdecilla, de Santander, Cantabria (España) en 2022. Participaron 26 mujeres diagnosticadas, de 30 a 70 años, con cáncer de mama y en proceso de tratamiento oncológico. Se les aplicó un programa de psicoballet durante 9 meses y se les evaluó la ansiedad-estado antes y después de las sesiones, para ello se utilizó el cuestionario de Ansiedad Estado-Ansiedad Rasgo de Spielberger, *et al.* **Resultados:** todas las participantes después de las sesiones de Psicoballet redujeron su ansiedad estado.

Conclusiones: los resultados indican que tratamiento de psicoballet favorece una beneficiosa recuperación del enfermo de cáncer lo que incide en la reducción de su ansiedad, importante variable predictora de la evolución del paciente.

Palabras clave: cáncer de mama; ansiedad; psicoballet; danza; actividad física; calidad de vida

RESUMO

Introdução: o câncer é uma das principais causas de mortalidade no mundo. A International Agency for Research on Cancer prevê 28 milhões de novos casos por ano até 2040. A prática de atividade física em pacientes com câncer e sobreviventes é uma área de interesse devido ao aumento dessa população e à necessidade de adoção de hábitos de vida saudáveis. O cumprimento das recomendações de exercícios melhora o prognóstico e reduz o risco de recorrência, além de melhorar a saúde cardiovascular, o humor e a qualidade de vida.

Objetivo: demonstrar a eficácia de um tratamento com psicoballet na variável ansiedade de um grupo de mulheres com câncer de mama.

Método: estudo de desenho quase experimental realizado no Hospital Universitario Marqués de Valdecilla, de Santander, Cantabria (España) en 2022. Vinte e seis mulheres entre 30 e 70 anos com diagnóstico de câncer de mama e em processo de oncologia tratamento participou. Foi-lhes aplicado um programa de psicoballet durante 9 meses e foi avaliada a sua ansiedade-estado antes e depois das sessões, para as quais foi utilizado o teste Spielberger, *et al.* de Ansiedade-Estado Traço de Ansiedade.

Resultados: todos os participantes após as sessões de Psicoballet reduziram o estado de ansiedade. **Conclusões:** os resultados indicam que o tratamento com psicoballet favorece uma recuperação benéfica do paciente com câncer, o que afeta a redução de sua ansiedade, uma importante variável preditora da evolução do paciente.

Palavras-chave: câncer de mama; ansiedade; psicoballet; dança; atividade física; qualidade de vida

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INTRODUCTION

Cancer constitutes one of the leading causes of mortality in the world. The International Agency for Research on Cancer (IARC) estimated that approximately 18.1 million new cases of cancer were diagnosed worldwide in 2020 and that the number will increase over the next two decades to 28 million new cases per year by 2040.⁽¹⁾

In addition to the well-known causes: tobacco, alcohol and poor lifestyle habits, data is available through the Global Cancer Observatory (GCO) on the causal relationship between obesity and at least 9 types of cancer, with a total incidence of about 450,000 cancer cases annually. Globally, there were an estimated 110,000 cases of postmenopausal breast and endometrial cancer directly related to obesity, 85,000 cases of colon cancer and 65,000 cases of kidney cancer, among others. It is estimated that, if the average population body mass index (BMI) had not increased globally over the last 30 years, more than 160,000 cases of cancer could have been prevented worldwide in 2012.⁽¹⁾

The practice of physical activity in cancer patients and survivors is an area of interest due to the increase in this population and the need for them to adopt healthy lifestyle habits.⁽¹⁾ Compliance with exercise recommendations can improve their prognosis, reduce the risk of recurrence, and improve their cardiovascular health, mood and quality of life.⁽²⁾

International physical activity recommendations state that cancer survivors should perform at least 150 min of moderate-intensity exercise on 3-5 days/week or 70 min of vigorous-intensity exercise on 3 days/week, both of which should combine aerobic and strength training.

The experience and review of numerous researchs show that physical-sports exercise programs reveal different problems in terms of motivation and adherence to the activities on the part of the patients.

In recent years, numerous experiences with dance and ballet therapy have been carried out in different countries and environments. Cuba constitutes the epicenter and origin of the application and extension of this therapeutic innovation, being the place where this experience of using the arts in clinical settings emerged.

The creation of psychoballet by the director of the National Ballet of Cuba, the mythical Alicia Alonso, the renown Dr. Eduardo Bernabé Ordaz, director of the Psychiatric Hospital of Havana, and the prestigious psychologist Georgina Fariñas, has provided a tool recognized by UNESCO and has generated an international dynamism that can be reviewed in the international scientific bibliography.

With the creation of the Alicia Alonso Foundation and the Alicia Alonso University Institute at the Spanish university in the 1980s, the application of ballet therapy in clinical settings began, and the first experience in the cancer population was undertaken in 2014.

Exercise oncology is a new field of cancer care, aiming at the appropriate and rational introduction of exercise programs into the overall treatment of cancer patients to take advantage of the numerous benefits associated with physical activity. Several major comprehensive cancer centers have created



exercise oncology units to implement these programs in a timely and organized manner. These units involve collaborative work between rehabilitation specialists, physical therapists and exercise physiologists, as well as oncologists and radiation oncology specialists.

Exercise has demonstrated numerous benefits in the quality of life of cancer patients throughout the history of the disease, improves the negative impact of cancer on physical and psychological health, and has a positive impact on patient survival.^(3,4,5)

Based on all of the above, the present study aims to demonstrate the efficacy of a psychoballet treatment on the anxiety variable in a group of women with breast cancer.

METHOD

A quasi-experimental research was carried out with the participation of 26 women, between 30 and 70 years of age (Mean = 50.692; Standard Deviation = 9.251), all of them diagnosed with breast cancer and undergoing oncological treatment at the Marqués de Valdecilla University Hospital, Santander, Cantabria (Spain) in 2022, a prestigious public hospital in the treatment of cancer in this country.

The State-Trait Anxiety Questionnaire (STAI) by C.D. Spielberger, R.L. Gorsuch and R.E. Lushene, adapted to Spanish by G. Buela-Casal, A. Guillén-Riquelme and N. Seisdedos Cubero (Hogrefe TEA Ediciones R&D Dept.) 8th Edition was used.⁽⁶⁾

Using the STAI, two independent concepts of anxiety were evaluated:

- a) Anxiety as a state (AS): assess a transitory emotional state, characterized by subjective, consciously perceived feelings of attention and apprehension and by hyperactivity of the autonomous nervous system.
- b) Anxiety as a trait (AT): indicated a relatively stable anxious propensity that characterized individuals with a tendency to perceive situations as threatening.

A psychoballet program of 3 weekly sessions of 90 minutes each was applied for 9 months. Anxiety-State was measured before and after each session. Once all the data were collected, different statistical analyses were performed. Data processing was developed with the help of Minitab® statistical software.

RESULTS

Factor analysis is a statistical method whose main objective is to identify underlying or latent, unobservable variables, called factors, which can interpret the correlations existing in a set of observed variables; moreover, the number of factors extracted is substantially smaller than the number of variables.



The first step is to analyze the correlation matrix, the purpose of which is to check whether its characteristics are suitable for factor analysis. The purpose of analyzing the matrix of sample correlations is to check whether its characteristics are suitable for factor analysis. One of the requirements that must be met is that the variables are highly inter-correlated. It is also expected that the variables that have a very high correlation with each other, have a very high correlation with the same factor or factors.

When considering the variables measured (age, Anxiety-Trait, Anxiety-State before treatment and Anxiety-State after treatment) and analyzing the correlation matrix, it was deduced that three factors explained 91.3% of the variance (Table 1).

Table 1. Variance with three factors - Varimax Rotation

Variable	Factor 1	Factor 2	Factor 3	Communality
Age	0,205	-0,956	-0,151	0,979
AT*	0,738	-0,388	-0,294	0,782
AS** before treatment	0,922	-0,101	-0,185	0,894
AS after treatment	0,263	-0,161	-0,949	0,997
Variance	1,5054	1,1008	1,0450	3,6512
% Variance	0,376	0,275	0,261	0,913

Reference: *AT: Anxiety-Trait; **AS: Anxiety-State

If three factors are extracted, it is observed that the variable Age remains in one factor, while the variable Anxiety-State after cancer treatment is in another.

The other two variables (Anxiety-Trait and Anxiety-State before cancer treatment) are placed in the same factor. In all cases, the values are high; if anything, somewhat lower for the Anxiety-Trait variable (0.738). This ranking could be interpreted by the fact that one factor simply describes age, which does not appear to be related to anxiety values, neither Trait nor State type.

Likewise, the variable Anxiety-State after the oncological treatment to which the patient has been subjected is placed in another factor separately from the rest of the variables. This may mean that the values of this type of anxiety are not related to the Trait anxiety of each individual, or even to the value of the State anxiety prior to treatment. Rather, it means that its value will depend on the treatment process itself in the fight against cancer. Other variables that may have an influence (accompaniment by family members, the patient's state of mind, other comorbidities, etc.) should be introduced in future studies.

However, as they are integrated in the same group, they do seem to be related to Anxiety-Trait and Anxiety-State before treatment. As a relevant result, it can be observed that all the participants after the psicoballet sessions have reduced their anxiety-state, which implies the beneficial effect that the psicoballet treatment has had on this important predictor variable of the patient's evolution, so relevant in the recovery process of cancer patients.

DISCUSSION

Studies such as the one carried out by Tórtola-Navarro, *et al.*⁽⁷⁾ in the Department of Education and Sport of the Andalusian Regional Government, show as main findings that at present it cannot be affirmed that Spanish breast cancer survivors comply with the physical activity recommendations aimed at the oncological population, and the relationship between BMI, level of physical activity and level of quality of life was observed, suggesting the possibility of orienting the prescription of physical activity, with the evaluation of the anthropometric characteristics and quality of life of the survivors.

However, in the numerous experiences that have been carried out in the last decade with the implementation of the Cuban ballet psychotherapy in Spain in the cancer population, it has been found that in these programs, adherence and motivation for the activity increase, because the intensity of physical exercise and effort can be adapted to the needs and possibilities of the patients. This produces a positive effect of communication, recreational feeling and social reinforcement thanks to the characteristics of the activity, which facilitates the meeting, social relations, contact and the reduction of fears and anxiety by being able to share them with peers who are going through the same process.

In Greece, the experience "Dancing with health" shows the important benefits of dance for women after finishing oncological treatments; a complicated period with high levels of concern because of the side effects of the treatments and patients facing the physical changes they have undergone. Positive changes were observed in weight loss, especially important for patients in the recovery period, as well as changes in cardiorespiratory fitness, overall flexibility and strength.⁽⁸⁾

The increase in quality of life is positively highlighted after intervention in other experiences with Greek dance. In recent research by Karathanou, *et al.*⁽⁹⁾ focused on demonstrating the usefulness of traditional Greek dance as a practice for stress and anxiety management in patients diagnosed with cancer of any type, both during and after treatment, the authors noted that cancer patients felt stressed and anxious, in many cases had sleeping disorders, lack of focus, loss of energy and fear of cancer recurrence. These symptoms persist up to 5 years after the cancer diagnosis.

This aspect is increasingly being taken into account by medical decision-makers, as the mortality rate from cancer tends to decrease. This decline in mortality is prompting an emergency to develop strategies to promote health improvement. The authors of this recent study report that stress and anxiety are especially persistent for patients undergoing or following treatment. These emotional disturbances directly and significantly affect patients' psychology. This finding indicates unmet psychosocial needs among cancer survivors and demonstrates the importance of incorporating specific interventions throughout the survivorship process.

Also in Greece, a very recent study exploring the efficacy of a dance intervention on the psychological challenges faced by breast cancer patients after surgery and around radiotherapy treatment can be found, called the "Throwing the ball to the Olympus" study.⁽¹⁰⁾ Its authors document that women diagnosed with breast cancer in early stages show high rates of psychological disorders or psychiatric problems, about 50% of them experiencing depression or anxiety, or both, in the first year after diagnosis.



The previous authors⁽¹⁰⁾ describe that patients are especially concerned about existential issues, changes in daily activities and social impact, as well as physical body changes and changes in their feminine identity; they also show the important role that culture plays in how the patient and her environment perceive the disease, they refer that in Greek society having cancer is considered "sordid" or something like a "punishment", often as a "self-punishment", besides that talking about cancer is a taboo. These cultural beliefs make cancer much more difficult to cope with, assimilate and accept, experiencing feelings of conflict and non-understanding.

An interesting research on the effect of dance on fatigue and quality of life related to cancer was conducted in Germany.⁽¹¹⁾ This research highlights fatigue as a multidimensional symptom with prevalence and severity in cancer patients, providing the alarming figure of a high prevalence: 40% to 90% of cancer patients live with episodes of fatigue leading to pain, sleep disorders, anemia, malnutrition, emotional distress and drug abuse. The aim of this study was to evaluate the effect of dance as a holistic physical activity in cancer patients under active treatment, with fatigue as a target.

The authors of the aforementioned German study⁽¹¹⁾ applied dance in an aerobic exercise program with multidimensional psychosocial aspects, i.e., beyond mere exercise, it encompassed emotional, cognitive and physical competencies, with dance coming to work with the person as a whole, with their limitations and aspirations, allowing them to express their concerns through their body and serve as a means to channel and share with the people in the group. Patients undergoing cancer treatment were divided into two groups, an experimental group that received the intervention, 10 dance sessions and counseling, and a control group that did not receive dance intervention, but did receive counseling; achieving significant improvements in fatigue reduction of a 36 % in the experimental group, while no changes were observed in the control group. Improvements in social and emotional functioning and physical performance were also observed.

On the issue of fatigue, another study was found in Germany in which they researched the influence of ballroom dancing on fatigue, body image, self-efficacy and endurance of cancer patients and their partners.⁽¹²⁾ In this research, the findings of their colleagues are highlighted, associating low quality of life with physical well-being affected by fatigue. Fatigue is one of the most frequent characteristics reported in cancer patients (90%), this characteristic demonstrates that it is a consequence of active treatment and that, in addition, it can be persistent over time, even after treatment has ended.

The intervention of this study on fatigue consisted of a once-a-week training, which was structured in 3 different groups, according to learning progress and dance experience. The course contents were standard and Latin dances taught by a professional dance instructor. The intervention lasted 7 weeks. The results showed no significant changes in the fatigue dimension, but did show improvements in self-efficacy scores. The sample was similar in age, but heterogeneous in terms of cancer type and stage of treatment. These differences make it impossible to arrive at findings regarding specific needs according to the type of tumor and the stage of treatment, but substantiate that ballroom dancing may improve functional exercise capacity and may contribute to generating an active lifestyle and high self-efficacy in the long term.



In Hawaii, Loo, *et al.*⁽¹³⁾ developed a cultural dance program in sedentary breast cancer survivors, aiming to increase and maintain physical activity through their cultural Hula Dance. This study followed the recommendations of the American College of Sports Medicine (ACSM), which state that breast cancer survivors should engage in at least 150 min/week of physical activity, although they note that only 35% of people with cancer achieve this level of physical activity after diagnosis. This lack of physical activity is compounded by obesity and inflammation, key players in the biology of cancer.

To increase the physical activity of sedentary breast cancer survivors in the aforementioned study, they performed an aerobic dance intervention with a group Hula Dance program. The researchers point out that breast cancer survivors are a population more prone to develop obesity; some of the causes could be attributed to the side effects of cancer treatments and also to the lack of supply of activities adaptable to their new physical condition, which makes this population less likely to meet the physical activity recommendations.

Numerous studies insist on how about one third of breast cancer patients experience moderate to severe fatigue symptoms, and in view of this finding Oei, *et al.*⁽¹⁴⁾ tested a treatment program to make up for these symptoms, which would not be too elaborate or strenuous and which could be carried out even with physical limitations. Based on the positive contributions revealed by the literature, they decided to use tango as a form of movement therapy based on music. Tango as a form of dance has advantages: it attends to conduction and balance, which develops cognitive and motor skills in a natural way in the process of learning to dance, which helps to find balance and exercises self-perception and spatial perception, so it can influence physical, psychological and cognitive skills, and also helps with fatigue and insomnia levels.

The authors raised the situation of the challenges to be faced when caring for people with breast cancer who suffer from moderate to severe fatigue, as they have low self-confidence, low fitness levels and often do not have the right partner for dance exercises.

In Korea, promising experiences have also been found in the use of physical activity, dance and even psychoballet, which is very popular in this Asian country, as even Korean television has broadcasted a series of programs on psychoballet recorded in Cuba. There are novel projects by researchers at the University of Seoul on clinical applications of psychoballet with traditional Korean dances.⁽¹⁵⁾

Despite the benefits described in the document development provided and the positive results of this project, many questions remain about physical activity and exercise in cancer patients, as it is particularly difficult to determine how much exercise is needed to achieve improvements in the patient, how physicians should recommend and monitor exercise for different kinds of cancer, and how the individual characteristics of each patient should be addressed; but it is clear that the physical-artistic activity provided by dance and psychoballet should be given prioritized consideration, and researching the relevance of this process should continue.



The positive results substantiating the benefits of psychoballet in the breast cancer recovery process must be taken with caution due to the small number of participants, and more studies with larger samples are needed to ensure the promising results that ballet psychotherapy offers.

Participants have reported a high degree of satisfaction with their experience, the quality of their lives has increased, and all have requested that the experience be continued. Their relatives have shown a very favorable position to the experience, and the health and medical managers of the program have shown their interest in the results, with the support in the incorporation of this artistic methodology as an adjuvant to the usual clinical treatment.

CONCLUSIONS

The ballet psychotherapy favors a beneficial evolution of the breast cancer patient, which has an impact on the reduction of anxiety.

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Authors' contribution:

Conceptualization: Amador Cernuda-Lago, Lucía Sierra-Cano.

Data curation: Amador Cernuda-Lago, Lucía Sierra-Cano.

Formal analysis: Amador Cernuda-Lago.

Investigation: Lucía Sierra-Cano.

Methodology: Amador Cernuda-Lago, Lucía Sierra-Cano, Luis Felipe Mazadiego-Martínez.

Supervision: Lucía Sierra-Cano.

Validation: Amador Cernuda-Lago, Lucía Sierra-Cano.

Visualization: Luis Felipe Mazadiego-Martínez.



Writing-original draft: Lucía Sierra-Cano, Luis Felipe Mazadiego-Martínez.

Writing-review and editing: Amador Cernuda-Lago, Lucía Sierra-Cano, Luis Felipe Mazadiego-Martínez.

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