FREE DANCE RANDOMIZED CLINICAL TRIAL FOR WOMEN UNDERGOING BREAST CANCER SURGERY

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ABSTRACT: Objective: to analyze the effect of a free dance protocol (pre and post 12-week intervention) on depressive symptoms, body image and sexual function in women undergoing breast cancer surgery. Methods: a randomized clinical trial, composed of 24 women undergoing surgery after the diagnosis of breast cancer, who were randomized into two groups: Free dance Intervention Group and Control Group. The free dance group received the intervention twice a week, 60 minutes per session, for 12 weeks. The control group maintained their routine activities during the 12 weeks. All participants were evaluated before and after the 12 weeks of intervention. Outcomes evaluated were depressive symptoms (Beck Depression Questionnaire - BDI), body image (Body Image after Breast Cancer questionnaire) and sexual function (Female Sexual Function Index questionnaire). Results: Body image showed a significant intragroup difference in free dance in the vulnerability domain (p=0.031), significant intergroup difference in the limitation domain (p=0.045) and concern with the body (p=0.035). Sexual function showed a significant intragroup difference in free dance in the desired domain (p=0.031) and a significant intragroup difference in the control group in the lubrication domain (p=0.021), however in a negative way. No differences were found for depressive symptoms. Conclusions: The practice of free dancing showed a positive effect, even if small, on body image and a negative effect on sexual function in women undergoing breast cancer surgery.
KEYWORDS: Sexual Activity; Dance; Corporate Identity; Breast Neoplasm; Depressive Symptoms.

ENSAIO CLÍNICO ALEATÓRIO DE DANÇA GRATUITA PARA MULHERES SUBMETIDAS A CIRURGIA DE CÂNCER DA MAMA

RESUMO: Objetivo: analisar o efeito de um protocolo de dança livre (pré e pós-intervenção de 12 semanas) sobre os sintomas depressivos, imagem corporal e função sexual em mulheres submetidas a cirurgia de câncer de mama. Métodos: um ensaio

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clínico randomizado, composto por 24 mulheres submetidas à cirurgia após o diagnóstico de câncer de mama, que foram randomizadas em dois grupos: Free dance Intervention Group e Control Group. O grupo de dança gratuita recebeu a intervenção duas vezes por semana, 60 minutos por sessão, por 12 semanas. O grupo de controle manteve suas atividades de rotina durante as 12 semanas. Todos os participantes foram avaliados antes e depois das 12 semanas de intervenção. Os resultados avaliados foram sintomas depressivos (Beck Depression Questionnaire - BDI), imagem corporal (Body Image após Breast Cancer Questionário) e função sexual (Feminino Sexual Function Index Questionnaire). Resultados: A imagem corporal mostrou diferença intragrupo significativa na dança livre no domínio de vulnerabilidade (p=0,031), diferença significativa no domínio de limitação (p=0,045) e preocupação com o corpo (p=0,035). A função sexual mostrou diferença intragrupo significativa na dança livre no domínio desejado (p=0,031) e diferença intragrupo significativa no grupo controle no domínio de lubrificação (p=0,021), porém de forma negativa. Não foram encontradas diferenças para os sintomas depressivos. Conclusões: A prática da dança livre mostrou um efeito positivo, ainda que pequeno, na imagem corporal e um efeito negativo na função sexual em mulheres submetidas à cirurgia de câncer de mama.
PALAVRAS-CHAVE: Atividade Sexual; Dança; Identidade Corporativa; Neoplasia da Mama; Sintomas Depressivos.

ENSAYO CLÍNICO ALEATORIZADO DE DANZA GRATUITA PARA MUJERES SOMETIDAS A CIRUGÍA DE CÁNCER DE MAMA

RESUMEN: Objetivo: analizar el efecto de un protocolo de baile libre (pre y post intervención de 12 semanas) sobre la sintomatología depresiva, imagen corporal y función sexual en mujeres sometidas a cirugía por cáncer de mama. Métodos: ensayo clínico aleatorizado, compuesto por 24 mujeres sometidas a cirugía después del diagnóstico de cáncer de mama, que fueron aleatorizadas en dos grupos: Grupo de Intervención de Danza Libre y Grupo Control. El grupo de baile gratuito recibió la intervención dos veces por semana, 60 minutos por sesión, durante 12 semanas. El grupo control mantuvo sus actividades rutinarias durante las 12 semanas. Todos los participantes fueron evaluados antes y después de las 12 semanas de intervención. Los resultados evaluados fueron síntomas depresivos (cuestionario de depresión de Beck - BDI), imagen corporal (cuestionario de imagen corporal después de cáncer de mama) y función sexual (cuestionario de índice de función sexual femenina). Resultados: La imagen corporal mostró una diferencia intragrupo significativa en la danza libre en el dominio de vulnerabilidad (p=0,031), diferencia intergrupal significativa en el dominio de limitación (p=0,045) y preocupación por el cuerpo (p=0,035). La función sexual mostró una diferencia intragrupo significativa en la danza libre en el dominio deseado (p=0,031) y una diferencia intragrupo significativa en el grupo control en el dominio de lubricación (p=0,021), sin embargo de manera negativa. No se encontraron diferencias para la sintomatología depresiva. Conclusiones: La práctica del baile libre mostró un efecto positivo, aunque pequeño, sobre la imagen corporal y un efecto negativo sobre la función sexual en mujeres sometidas a cirugía por cáncer de mama.
PALABRAS CLAVE: Actividad Sexual; Danza; Identidad Corporativa; Neoplasia Mamaria; Síntomas Depresivos.

1. INTRODUCTION

Dance is an artistic manifestation, an expressive, communicative activity that contributes to the development of creativity, movement skills and possibilities of self-knowledge for the practitioner, which culminates in the learning of physical activity/exercise, so essential for people with câncer (REZENDE; CALDAS, 2003). Physical exercises, such as dance therapy, have been widely used as a non-pharmacological treatment for women with breast cancer, as this practice offers benefits that improve both physical and mental health (SILVA DA COSTA; ALVES DA SILVA; DE MELO-NETO, 2022). Regarding physical activity/exercise and the quality of life of women undergoing breast cancer surgery, Castro Filha et al. (2016), identified improvement in vigor, energy, fatigue and the social and emotional aspects of their participants after a concurrent training intervention.

In a systematic review, the authors discussed that dance is a viable alternative to adjuvant treatment for women who have had breast cancer, in which it can promote psychological benefits, in addition to improving strength and range of motion of the upper limbs (BOING et al., 2017). In this way, some types of dance provide such benefits as dance therapy (CRANE-OKADA et al., 2012; DIBBELL-HOPE, 2000; SANDEL et al., 2005), traditional dance techniques such as classical ballet and jazz (MOLINARO; KLEINFELD; LEBED, 1986), the practice of traditional Greek dance (KALTSATOU; MAMELETZI; DOUKA, 2011), circular dance (FRISON; SHIMO; GABRIEL, 2014), mixed dance (HIANSDT et al., 2021), ballroom dancing (HO et al., 2016) and belly dancing (BOING et al., 2017).

So far, no studies have been found in the literature specifically with the Free Dance terminology for this population, which is hypothesized to have a positive effect on depressive symptoms, sexual function and body image. Because it is a dance that encourages physical practice mixing different dance styles, such as funk, axé, pop, reggaeton, forró, samba and disco/80s, it is also considered an aerobic dance (COSTA; MOURA; LOPES, 2018); this being a style allows freedom of movement by the practitioner, being pleasurable and motivating, with easy movements and compatible with any age group (PAIVA et al., 2010). Dance as a form of non-pharmacological treatment can bring psychological benefits when combined with conventional treatments, as improvements are observed in responses to conventional treatments and thus a decrease in negative psychological effects (HIANSDT et al., 2021; KARKOU et al., 2021).

In view of the above, it is important to emphasize that this clinical trial is unprecedented due to the variables studied, since the practice of Free Dance is not addressed in scientific studies, and the possible correlations between the outcome variables, after the intervention, are still little studied. in this interlacing. Therefore, its strength consists of the significant increase in the incidence of women with breast cancer, who are increasingly younger, and the need for new non-pharmacological treatment alternatives, making it essential to address how one perceives the body, as well as the sexual function and depressive symptoms, facing problems in dealing with the disease and its consequences.

Thus, the study aims to analyze the effect of a Free dance protocol (pre and post 12-week intervention) on depressive symptoms, body image and sexual function of women undergoing breast cancer surgery.

2. METHOD

2.1 Study Design and Participants

Two-arm randomized controlled clinical trial, with a Free dance intervention group compared to a control group, with random allocation of participants. This study followed the CONSORT (Consolidated Standards of Reporting Trials) checklist for clinical trials (SCHULZ; ALTMAN; MOHER, 2010).

The study consisted of 24 (59.3±8.7 years) women, diagnosed with breast cancer, after undergoing surgery for breast cancer. These women were recruited through dissemination in the media (radio, television, internet and print media) and in institutions that employ or provide services at the level of education, justice, religion, health and insurance in the cities of Florianópolis and São José (Santa Catarina)/Brasil), due to the proximity to the institution where the intervention was carried out, which would facilitate the access of the participants.

Eligible participants for this study were: (a) women diagnosed with breast cancer undergoing surgery undergoing hormone therapy or post-treatment; (b) residents of the cities of São José or Florianópolis, these two cities being in the south of Brazil; (c) aged 18 or over; (d) clinical staging from I to III of breast cancer; (e) with release from the oncologist responsible for the practice of physical activity. Excluded: (a) those with physical or neurological limitations, such as Parkinson's disease, Alzheimer's disease or use of a wheelchair that prevented the practice of the Free dance protocol (these criteria

were obtained by using a questionnaire for each participant); b) have practiced Free Dance in the last three months (requested during recruitment).

It is a simple, blind study, in which the researcher did not have access to information regarding the allocation of participants in the studied groups. Blinding the study participants as to the intervention received was not feasible in this type of study because it deals with physical activity.

Randomization was stratified by age (below and above 60.1 years), performed by researchers from the Laboratory for Research in Leisure and Physical Activity - LAPLAF/CNPq, who received a sealed envelope containing a nominal list of women recruited and were blinded to the allocation of groups (Free dance and Control Group). Among the participants, a secret drawing was carried out, using the Randomization.org computer program, which predicts the allocation of participants in the two intervention groups: A) Intervention Group with the practice of Free dance (n=12); and B) Control Group (n=12).

2.2 Intervention with Free Dance

The participants allocated in this group performed Free dance intervention, according to Lyra et al.(LYRA et al., 2023), through free sessions in the gym of a public institution of higher education in a city in the south of Brazil, lasting 60 minutes, twice a week (Tuesdays and Thursdays), in the afternoon period. The intervention was carried out over a period of 12 weeks, with the intensity of the classes increasing from light to vigorous according to the rhythm of the songs (beats per minute - bpms). The speed of the songs was chosen following the classification: up to 80 bpm (slow tempo), up to 120 bpm (moderate tempo), and up to 150 bpm (vigorous tempo). The verification of the rhythm of the songs was carried out according to the measurement in beats, according to the ballroom dancing protocol used by Braga et al. (2015).

The sessions were organized according to: a) Initial warm-up and stretching: using music with a slow rhythm, worked with up to 80 bpm, choreographed stretching (movements performed to the rhythm of the music), upper limb mobilization exercises), lower limbs (LL) and spinal support muscles; rhythmic displacements in different directions and integration in a circle, lasting 15 minutes. The objective was to increase the body temperature of the participants and the bond between them; b) Main Part: development of Free Dance movements, stimulating motor coordination, rhythm and

body awareness, stimulating to improve aspects of flexibility and range of motion of the upper limbs. Activity developed according to the rhythm of the music, respecting the body awareness of each participant and encouraging the expression of feelings. Songs considered from moderate to vigorous rhythm were used (between 120 bpm and 150 bpm) – 30 minutes; c) Relaxation: classes ended with slow movements, exploring the practice of static stretching and breathing relaxation techniques. Songs with a slow to moderate tempo (from 80 bpm to 120 bpm). The following were included at this time: stretching, upper and lower limb mobility, using the Swiss ball to decrease heart rate, stimulating relaxation (15 minutes).

To assess the intensity and/or effort during the Free dance intervention, the Subjective Perceived Effort Scale - Borg Scale 6-20 points (BORG, 1982) was used.

A minimum frequency of 75% of participation was projected during the intervention period for the intervention group, considering the importance of attendance to achieve the benefits arising from the regular practice of physical activity.

At the end of the 12-week intervention, all participants received an invitation to participate in the Ritmo e Movimento Extension Program of a public institution of higher education in a city in the south of Brazil, in a physical activity program for women with breast cancer, for free. In addition, they received a post with the main results of the survey.

During the project, T-shirts were made available to the intervention group in order to promote a sense of belonging to the project, in addition to identifying its participants.

3.3 Group Control

Participants randomly allocated to the control group maintained their routine activities (no physical exercise/physical activity). With the intention of encouraging the maintenance of the practice of routine activities, since it would be unethical to ask the participants not to practice physical activity during the intervention period, three calls were made by the same LAPLAF/CNPq researcher during the 12 weeks. The purpose of the calls was to monitor the participants in this group, identifying whether there were changes in relation to the practice of physical activity and treatment (there were no changes).

At the end of the 12 weeks of intervention, the participants in the control group received an invitation to participate in the Ritmo e Movimento Extension Program of a public institution of higher education in a city in the south of Brazil, in a physical activity

program for women with breast câncer free of charge. In addition, they received a post with the main results of the survey.

3.4 Personal and Clinical Characteristics

Personal and clinical information such as age, marital status, education, occupation, body mass index (BMI) - identified in accordance with World Health Organization guidelines. Participants were grouped into normal weight (up to 24.9kg/m2) and overweight (above 25kg/m2), treatment modality: previous treatment, and surgery characteristics. The variables were collected through the application of a questionnaire in the form of an interview, read by two LAPLAF researchers in person on the premises of the Center for Health and Sports Sciences at the State University of Santa Catarina.

4. OUTCOME VARIABLES

4.1 Depressive Symptoms

The Beck Depression Questionnaire (BDI) aims to assess and measure the intensity of depression symptoms in 21 items, in which the participant chooses one of the statements to describe how she has been feeling in the last two weeks, including the current day (BECK et al., 1961). The statements refer to sadness, pessimism, feelings of failure, lack of satisfaction, feelings of guilt, punishment, self-deprecation, self-accusations, suicidal ideas, crying spells, irritability, social withdrawal, indecision, body image distortion, inhibition for work, sleep disturbance, fatigue, loss of appetite, weight loss, somatic preoccupation and decreased libido. The total score is given by the sum of the individual items, reaching a maximum of 63 points. The final score is classified into minimal depressive symptoms (<10); mild to moderate depressive symptoms (10-18); moderate to severe depressive symptoms (19-29); and severe depressive symptoms (30-63)(BECK et al., 1961).

4.2 Body Image

The Body Image after Breast Cancer (BIBCQ) questionnaire aims to assess the long-term impact of breast cancer on body image. It was constructed and validated with women over 18 years of age and with at least three months of diagnosis of the disease, in Canada, the United Kingdom and the United States. In Brazil, it was translated and validated by Gonçalves et al. (2012). It consists of 44 questions divided into six scales:

Vulnerability; Body Stigma; Limitation; Concerns with the Body; Transparency; and Worries about the arm (BAXTER et al., 2006). To calculate the final score of the scales, it is necessary to add the scores obtained in the corresponding questions. Some questions have a negative score, so the value six must be added before the score obtained in the question. The minimum and maximum score varies according to the scale and type of surgery (with and without breast reconstruction) and the higher the score, the more compromised the body image is (GONÇALVES et al., 2012).

4.3 Sexual Function

The Female Sexual Function Index (FSFI) questionnaire, constructed and validated in English by Rosen et al. (2000), validated and culturally adapted by Thiel et al. (2008) who evaluated the index of female sexual function in Brazilian women and also validated internationally for women with breast cancer by Bartula; Sherman (2015). The questionnaire contains 19 items, covering 6 domains of female sexual function (Desire; Arousal; Lubrication; Orgasm; Satisfaction, and Pain). The item scores are classified from 0 to 5 in ascending order according to the occurrence of the evaluated function. Only in items related to pain, the score is reversed. The FSFI indicates scores and the response options are classified from 0 to 5 in ascending order regarding the occurrence of the questioned function. When the scores of each domain are added, they must be multiplied by a factor that homogenizes the influence of each domain, and the total score is arrived at. The score values for each domain range from 0 to 6 (except desire: minimum 1.2 and satisfaction: minimum 0.8) and the total score ranges from 2 to 36. The higher the final score, the better the sexual function[23], this instrument also makes it possible to observe the risk for sexual dysfunction, when women have final scores lower than 26.

4.4 Borg Scale

The Borg Scale (6-20 points) is a non-invasive, easy-to-use, low-cost tool for monitoring the intensity of physical effort. It is considered one of the most used instruments for evaluating and quantifying self-perception of physical exertion intensity, also known as subjective perceived exertion (RPE)(KAERCHER et al., 2018). Through this scale, changes caused by physical exercise in the cardiorespiratory, metabolic and neuromuscular systems are monitored (STIES et al., 2014).

4.5 Sample Calculation

The sample calculation was produced using the G*Power 3.1.9.228 software, based on the primary outcome of the study, depressive symptoms. Assuming a moderate effect based on similar dance interventions (DUIJTS et al., 2012). According to Cohen with 0.39 effect size, it had a significance level of 5%, test power of 95% and 20% sample loss. Thus, 12 participants were assigned to each of the two groups (Intervention Group in Free Dance and Control Group), assuming a total of 24 participants.

4.6 Adherence

The calculation of adherence of participants in the intervention group was defined from the number of sessions of supervised classes that the participant attended, divided by the number of sessions available (24 sessions). Thus, there was a final mean adherence of 82%.

4.7 Procedures

Data collection was carried out in two moments, in the baseline period (T0) from January to March 2022 and in the period after the 12 weeks of intervention (T2) from June to August 2022. All sessions of intervention (T1) were carried out in the gymnasium of a higher education institution in a city in the south of Brazil, starting in March 2022 and ending in June 2022. From the same institution, where the questions were read to each participant. The study was approved by the Research Ethics Committee (CEPSH) of the UDESC, nº 3.985.052 and registered in the Brazilian Registry of Clinical Trials (ReBec) - RBR-7QT9SP and carried out in accordance with the Declaration of Helsinki.

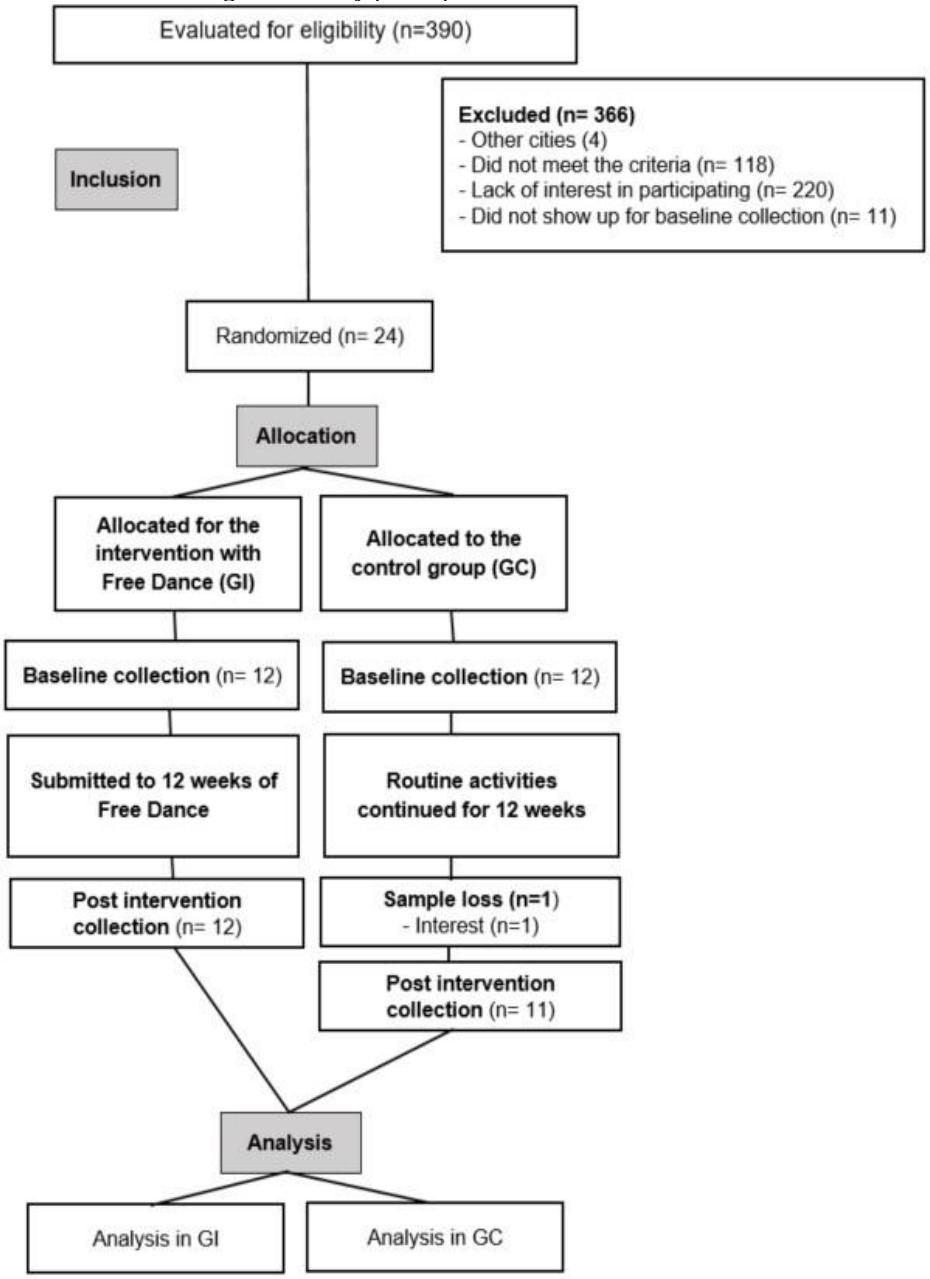
5. STATISTICAL ANALYSIS

For the statistical analysis, the SPSS - IBM statistical package, version 20.0, was used, in which descriptive and inferential statistics were performed. The comparison of the results in the groups (Free Dance and control) in the baseline period was performed using the Chi-Square or Fisher's Exact test, and after performing the Shapiro-Wilk normality test, the comparison of the age of the groups was used One-way ANOVA. The two-way ANOVA test with repeated measures and the Sydak comparison test were also used to perform comparisons between groups, in the baseline and post-intervention periods. A significance level of $p< 0.05$ was adopted.

6. RESULTS

Figure 1 shows the participant selection flowchart in which 390 were evaluated for eligibility, of which 366 were excluded and 24 were selected for meeting the inclusion criteria. The selected participants were separated by randomization and allocated into two groups (Free dance and Control). After baseline collection, the Free Dance group underwent 12 weeks of intervention and the control group continued normal routine activities. Post-intervention collection was performed, in which, during the process, there was a sample loss in the control group.

Figure 1- Study participant selection flowchart



Source: Elaborated by the author.

Table 1 presents the sociodemographic and clinical characteristics of the study participants, in the baseline period and when the groups are compared, the sample is homogeneous, with no statistical differences between them.

Table 1: Sociodemographic and clinical characteristics of participants at baseline, according to groups (n=23).

	Total (n= 23) n (%)	**Free dance (n=12)** n (%)	**Group Control (n=11)** n (%)	**p Value**
Education[b]				0.983
Elementary School	8 (34,8)	4 (33,3)	4 (33,3)	
High School	13 (56,5)	7 (58,3)	6 (54,5)	
University Education	2 (8,7)	1 (8,3)	1 (9,1)	
Marital Status[a]				0.579
With partner	12 (52,2)	6 (50)	6 (54,5)	
No partner	11(47,8)	6 (50)	5 (45,5)	
Profession[b]				0.300
Retired	9 (39,1)	5 (41,7)	4 (36,4)	
From Home	2 (8,7)	2 (16,7)	0 (0,0)	
With Bond	12 (52,2)	5 (41,7)	7 (63,6)	
Have some disease[a]				0.579
Yes	11 (47,8)	6 (50)	5 (45,5)	
No	12 (52,2)	6 (50)	6 (54,5)	
BMI[a]				0.273
Normal weight	10 (43,5)	4 (33,3)	6 (54,5)	
Overweight	13 (56,5)	8 (66,7)	5(45,5)	
Current treatment[a]				0.579
Hormone therapy	12 (52,2)	6 (50)	6 (54,5)	
After treatment	11 (47,8)	6 (50)	5 (45,5)	
Previous treatment[b]				0.739
Surgery only	2 (8,7)	1 (8,3)	1 (9,1)	
Hormone therapy, Chemotherapy, Radiotherapy	21 (91,3)	11 (91,7)	11 (91,7)	
Surgery[b]				0.071
Conservative	8 (34,8)	2 (16,7)	6 (54,5)	
Mastectomy	15 (65,2)	10 (83,3)	5 (45,5)	
Physical therapy treatment[b]				0.278
Yes	15 (65,2)	9 (75)	6 (54,5)	
No	8 (34,8)	3 (25)	5 (45,5)	

[a]Chi-Square. [b]Fischer's Exact. BMI. Body mass index.
Source: Elaborated by the author.

Table 2 represents the main effects and interaction between the Free Dance group and the control, evaluated in the baseline and post-intervention period.

In terms of depressive symptoms, there were no significant differences between the groups. However, the intragroup score change for Free Dance showed a decrease of -1.92 in this variable.

As for body image and its domains, it can be seen that there was a statistically significant difference within the Free Dance group in the vulnerability domain (p=0.031).

There was also a statistically significant difference between groups, in the domains limitation (p=0.045) and body concerns (p=0.035).

Table 2: Main effects and interaction between Free Dance group and control group (baseline and post-intervention) on depressive symptoms and body image, expressed as mean (standard error) and change in score (n=23).

Variables	**Free Dance (n=12)**				**Group Control (n=11)**				
	Pre Ẋ (dp)	Post Ẋ (dp)	CE	p*	Pre Ẋ (dp)	Post Ẋ (dp)	CE	p*	p#
Depressive Symptoms	7.33(1.7)	5.41(1.4)	-1.92	0.140	7.63(1.8)	6.36(1.5)	-1,27	0.340	0.662
Body Image									
Vulnerability	14.4 (1.9)	10 (1.5)	-4.4	**0.031**	18 (1.9)	14.4 (1.5)	-3.6	0.085	0.052
Body Stigma	33.6 (4.1)	31.7 (2.8)	-1.9	0.526	32.7 (4.3)	29.2 (3.0)	-3.5	0.278	0.567
Limitation	10.3 (1.3)	9.1 (1.2)	-1.2	0.331	12.7 (1.4)	13.0 (10.2)	0.3	0.826	**0.045**
Concerns about the body	9.3 (1.4)	8.0 (1.2)	-1.3	0.293	12.8 (1.4)	12.0 (1.2)	-0.8	0.533	**0.035**
Transparency	8.7 (1.3)	7.1 (0.9)	-1.6	0.288	9.5 (1.3)	7.9 (0.9)	-1.6	0.293	0.586
Worries about the arm	5.6 (0.8)	4.8 (0.8)	-0.8	0.328	5.7 (0.9)	5.8 (1.0)	0.1	0.918	0.448

Two Way Anova with repeated measures and Sydak Comparison Test. p* value for intragroup comparison between baseline and post-intervention. p# value for intergroup comparison between baseline and post intervention. EC Change score.
Source: Elaborated by the author.

Table 3 presents the main effects and interaction on sexual function between Free Dance and control groups, evaluated at baseline and post-intervention.

The sexual function showed a statistically significant difference within the Free Dance group in the desire domain (p=0.031), and in the lubrication domain (p=0.021) within the control group. There was no statistically significant intergroup difference.

Table 3: Main effects and interaction between Free Dance group and control group (baseline and post-intervention) on sexual function, expressed as mean (standard error) and change in score. Florianopolis, 2022.

Variables	**Free Dance (n=12)**				**Group Control (n=11)**				
	Pre Ẋ (dp)	Post Ẋ (dp)	CE	p*	Pre Ẋ (dp)	Post Ẋ (dp)	CE	p*	p#
Sexual Function									
Desire	2.75 (0.4)	2.05 (0.4)	-0.7	**0.031**	2.89 (0.5)	3.05 (0.4)	0.16	0.609	0.113
Excitement	2.25 (0.7)	1.85 (0.6)	-0.4	0.443	2.89 (0.7)	2.12 (0.6)	-0,77	0.168	0.769
Lubrication	2.47 (0.7)	1.50 (0.5)	-0.9	0.061	2.80 (0.8)	1.52 (0.5)	-1.28	**0.021**	0.972

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Orgasm	2.33 (0.70	2.16 (0.7)	- 0.17	0.754	2.72 (0.8)	2.07 (0.8)	- 0.65	0.549	0.963
Satisfaction	1.96 (0.7)	2.20 (0.7)	0.2	0.331	2.80 (0.7)	2.07 (0.7)	- 0.73	0.346	0.907
Discomfort	0.80 (0.4)	0.63 (0.2)	- 0.17	0.525	0.98 (0.4)	0.65 (0.4)	- 0.33	0.237	0.954
Total scores	12.5 (3.4)	10.4 (3.0)	-2.1	0.247	15.1 (3.5)	11.5 (3.2)	-3.6	0.074	0.805

Two Way Anova with repeated measures and Sydak Comparison Test. p* value for intragroup comparison between baseline and post-intervention. p# value for intergroup comparison between baseline and post intervention. EC Change score.
Source: Elaborated by the author.

7. DISCUSSION

The main objective of this study was to analyze the effect of a Free Dance protocol (pre and post 12-week intervention) on depressive symptoms, body image and sexual function of women undergoing breast cancer surgery. There was a positive effect on body image (on the scales of vulnerability, limitations and concerns about the body) and on sexual function (on the scales of desire and lubrication).

When comparing the depressive symptoms between the studied groups, no statistically significant difference was found. However, as it is a group intervention, it favors interaction between women, thus promoting the feeling of social and emotional support. As well as relationships with one's own body, since when relating to other women who have gone through the same experience (breast cancer), the limitations that their body presents after the disease and treatment are normalized. Thus, it can be seen that there was an improvement, even if discreet, in the change in the intragroup score of Free Dance when compared to the control group. This factor may be associated with the practice of dance, in which it may have helped to reduce loneliness, improving socialization among practitioners, animation of classes. In addition, happy songs that refer to youth, bringing positive and pleasant memories(HIANSDT et al., 2021). In a systematic review carried out by Boing et al.(BOING et al., 2017), a 35% reduction in depressive symptoms was found after the dance intervention, indicating that this practice is beneficial for some psychological aspects of women with breast cancer.

When observing the body image, there was a significant effect in the intragroup vulnerability domain of Free Dance, which can demonstrate that the intervention was effective in matters of feelings of susceptibility of the body to diseases and cancer. After the mastectomy, women may undergo physical changes, such as hair loss and breast asymmetry, causing feelings of discomfort and estrangement with their bodies, where the “camouflage” of bodies and less social interactions occur(BRITO et al., 2022). This issue

can also be perceived for limitations and concerns with the body, domains where there was statistically intergroup change. Even though there was a small improvement in score changes for the Free Dance group, the control group had a slight worsening in limitations, a factor that may have been influenced by non-participation in the intervention.

Furthermore, regarding sexual function, many women participating in the research reported not having sexual activity, making this a limiting point of the study, since they could only respond to questions about sexual desire. With this, statistically significant changes were observed within the Free Dance group, resulting in a worsening of the participants' desire. This factor may be related to the fact that, even though most participants report having a partner, they do not have sexual intercourse with them or alone (sexual activity), since the use of medication and the negative effect of the treatment of the disease, may lead to a decrease in libido, a decline in the production of estrogen and progesterone(DENIG et al., 2022). The control group showed a statistically significant difference regarding the lubrication domain, in which they reported loss of lubrication during intercourse or sexual activities, which can be explained by the decline in libido and hormone production, since the treatment induces the precocity of menopause(SILVA, 2022). However, evaluating the score change (0.2), it was noticed that the women in the intervention group felt more sexually satisfied than the control group. A small change, but for a group of women fighting a disease that affects effective, sexual and emotional issues, a discovery becomes relevant and important.

As with any scientific research, limitations may occur throughout the process, making it difficult to interpret some results. However, it is these limitations that make it possible to identify new windows of knowledge, have a critical look at the work and suggest improvements for future research.

Therefore, it is important to highlight that the cancer disease process would be a limiting factor of the study. Even though they were not undergoing treatment at the time of the intervention, many still feel the side effects, such as fatigue, pain, discomfort, which corroborates with participation and daily demotivation. This condition affects apathy, depressive feelings, anxiety and sadness, in which the participants choose to be absent from classes, staying at home for a few days. Another limiting factor that we can highlight is the assessment of the Female Sexual Function Index (FSFI) questionnaire by Rosen et al.[22-23], where there may have been difficulties in answering intimate questions. However,

a strong point of this study was the final average adherence of the participants of 82% during the intervention, and the non-sample loss throughout the research.

8. LIMITATIONS AND STRENGTHS OF THE STUDY

Due to the applied intervention being a type of physical exercise, it was not possible to blind the participants, as well as the researchers, since both knew which modality was being performed.

However, the design of the study as a randomized clinical trial, focusing on women who underwent breast cancer surgery, with a 12-week free dance intervention, compared to a control group and a healthy reference group, is a strong point, in addition to the use of validated instruments.

9. CONCLUSION

The study indicates that a free dance intervention proved to be efficient for the body image of women undergoing breast cancer surgery, in addition to improving the scores of depressive symptoms. In this way, free dancing can be a possibility to complement the conventional treatment of breast cancer. Still, this study can help in new perspectives and new projects regarding complementary therapies for the oncology area, encouraging the practice of physical exercise for the population with breast cancer, since they are low-cost possibilities that help in motor improvements, but above all in psychological improvements.

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