

## ORIGINAL RESEARCH

# Effect of circular dances on quality of life of intestinal ostomized persons: A randomized controlled trial

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## ABSTRACT

**Background and objective:** Circular dances have several benefits to the physical and mental health status of patients. few investigations analyze the effect of dances on the Quality of Life of intestinal ostomized patients. We assessed the effect of circular dances on quality of life of intestinal ostomized persons.

**Methods:** This is a randomized controlled trial conducted with 73 individuals were randomly clustered in two major groups: I) Controls to which the standard practices were applied and II) Cases to which all the standard procedures were applied but added the practices of circular dance. The Quality of life (QoL) score were assessed by the validated questionnaire COH-QOL-OQ.

**Results:** No significant differences between the domains' average scores before the intervention. The correlation between the average scores has decreased on the experimental group after the intervention suggesting that the circular dances managed to improve QoL scores.

**Conclusions:** Circular dance practices on ostomized individuals contributes to a better QoL and represents an improvement on nursing care quality. Furthermore, the permanent review of nursing practices contributes significantly to the integral health care and better nursing services delivery to the ostomized individuals. Findings confirm the efficacy of circular dances to improve de Quality of Life of intestinal ostomized persons.

**Key Words:** Comprehensive health care, Health policy, Nursing, Ostomy, Quality of life, Dance therapy

## 1. INTRODUCTION

The World Health Organization defines quality of life (QoL) as individual's perception of their position in life regarding: the culture and system of values in which they live; and their objectives, expectations, patterns and concerns.<sup>[1]</sup> From this point of view, QoL is a subjective concept that impacts aspects, essential to a person's life.

Keeping physical integrity is important for the individual's

well-being and social surrounding. The rupture of this integrity – what happens when an intestinal ostomy is made – may cause physical, psychological, spiritual and social problems.<sup>[2,3]</sup> In this context, patients with intestinal ostomy need specialized healthcare in order to promote autonomy and QoL for themselves, their familiars and caregivers.<sup>[4,5]</sup> Also, policies and nursing practices are required to increase the chances of rehabilitation and social reinsertion, what

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implies on these patients' QoL.

Nurses are responsible for identifying preventive actions, addressing patients' needs and establishing healthcare priorities based on theoretical approaches as well as planning and evaluating the patient progress through their recovery process. Additionally, the production, development and assessment of health technologies, education and ethics need to be considered to deliver an integral healthcare for intestinal ostomized patients and, consequently, improve their QoL.<sup>[6]</sup>

New actions that complement the traditional healthcare model for ostomized people may facilitate the physical adaptation and social insertion of these patients. One alternative is the circular dances that aims to stimulate the individuals' body in a harmonic way, considering all their emotions and physiological status. An additional benefit is the strengthening of motor skills and self-knowledge.<sup>[7-9]</sup> These dances are an artistic expression that has always been present in the history of humanity - birth, marriage, planting, harvesting, glove arrival, spring, death - and reflected in the need for communion, participation and unity among people.<sup>[7-9]</sup> Then, circular dances are a kind of physical activity that may have a positive effect for relieving pain-related symptoms.

Circular dances are capable of improving the mental and physical arrangement, flexibility, posture, strength and muscular resistance and body conscience, relieving pain and tensions and, so, producing well-being for individuals.<sup>[8-10]</sup> They also play an important role on mental and emotional components once dancing positively affect attention, memory, cognition, language, as well as the self-expression, socialization and relieving feelings of loneliness and social isolation.<sup>[9-12]</sup>

Although investigations on the benefits of dances in several populations are available, those about the effect of circular dances on the QoL are limited. After assessing the effect of circular dances among 35 mastectomized Brazilian women (11 in the experimental group; 24 in the control group), the QoL in the psychological domain significantly increased in the experimental group after the intervention.<sup>[13]</sup> Investigation conducted in Campinas (SP), Brazil with 10 women (Aged between 25-54 years) found an improvement in perceived body image, religiosity and QoL related to the circular dances.<sup>[14]</sup> In addition, research with 80 women diagnosed with fibromyalgia found significant effect of a 16 week belly dancing regime on pain relief, functional capacity, self-image and QoL in the experimental group compared with the control one.<sup>[15]</sup> Other research with 31 cancers survivor's women from Alabama (United States of America) verified that physical activity, mental component of QoL, vitality and trust were significantly affected for those who practiced ballroom

dances.<sup>[16]</sup>

The purpose of this study was to investigate the effect of circular dances on the quality of life of intestinal ostomized patients.

## 2. METHOD

### 2.1 Design

A randomized and controlled clinical trial was conducted in the Outpatient Healthcare Program for ostomized persons, in Federal District, Brazil.

### 2.2 Participants and Sampling

Data were gathered from patients registered in the Outpatient Healthcare Program for ostomized persons - that pertains to the Health Department of the Federal District, Brazil. Men and women, aged 18 and over, with colostomies, non-practicing of any dances or physical activities and underwent to the colostomy procedure more than 12 months before the data collection were included in the sample. In addition, we only selected those patients able to understand the intervention and to attend all program meetings. Individuals under 18, pregnant women, infants, bedridden, physical deficient persons and those with medical constraint to physical activities or presenting any physiological condition that restricted to attend the Practices of Circular Dances (PCD) were excluded from the study.

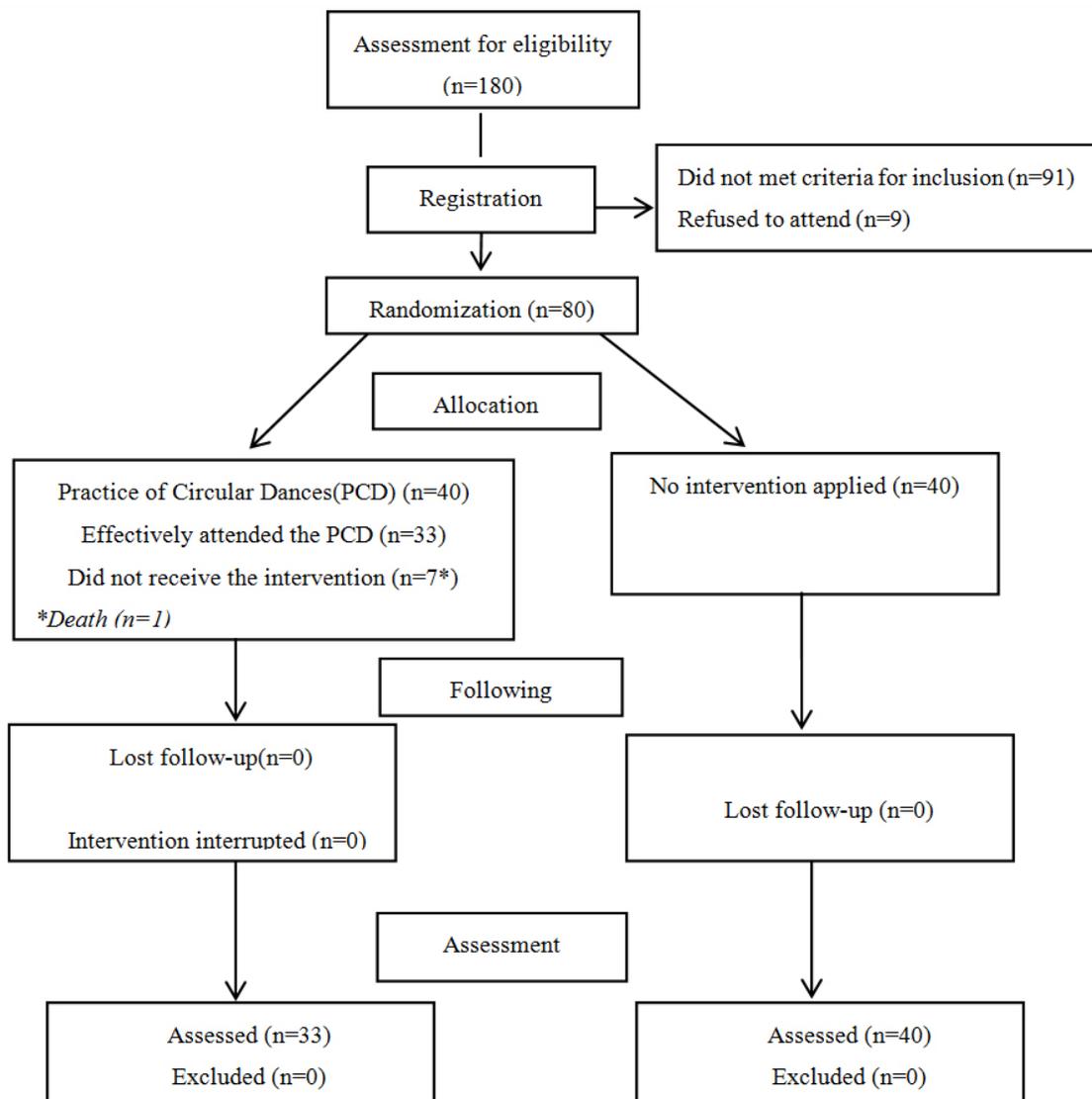
We considered four factors to determine the sample size: physical space of the health facilities; socioeconomic status; possible resistance to social interactions; and difficulties for public transportation. Even the transportation costs were covered for the researchers, the socioeconomic status of participants may impact on adherence to the intervention, specially due to the low income status. Besides, patients may avoid to be exposed to public transportation and social interactions due to the changes in self-image perception produced for the ostomy and the difficulties to handle with it in buses and trains. So, the analysis of health facilities allowed an amount of 100 individuals per session of PCD, but after considering the other factors, we stipulated 80 subjects for PDC sessions.

Before the intervention, the sociodemographic and clinical data were assessed in both groups (control and experimental). General QoL and its dimensions were evaluated in two time points - before and after the PDC sessions. Figure 1 shows the flow chart of participants' random allocation in control and experimental groups.

Participants were included in the study through the intentional non-probabilistic sampling, i.e., according to the availability of patients during the data gathering. After recruiting the

sample, we randomly allocated the patients in control (n = 40) and experimental (n = 40) groups, observing the placement rate of 1:1. The control group received the outpatient healthcare routinely delivered to ostomized persons. These procedures and the Practice of Circular Dances were applied to the experimental groups.

The randomization was done by an external health professional, unaware of the sample features and interventions performed. Then, patients were randomly assigned to the groups through a simple randomization procedure, performed in the Microsoft Excel (Office Package) with the function "Random". Thus, a list containing the subjects of each group was produced and sent to the researchers.



**Figure 1.** Flowchart of participants’ random allocation in control and experimental groups

**2.3 Procedure**

The PCD was applied from February to June 2016. This intervention is based on traditional procedures from tribal cultures who seek for collective harmonization through body movements guided by rhythmic songs. Also, participants are organized in a circle of 20 cm diameter, allowing in visualizing of each other throughout the dance. This interaction among participants integrates them each other, and provides

a dissociation of individuals from the pathologic reality in which they are inserted.

The PCD was conducted with the experimental group for 12 consecutive weeks, twice a week, and lasted 60 minutes each time. The dances’ steps- including gestures, movements and rhythms- were taught to the participants for a professional expert in PCD before starting the intervention in order to

ensure a syntonic execution of the dance. All sessions were observed and recorded for researchers with audiovisual devices. After finishing the PCD in the experimental group, this intervention was applied in the control group.

#### 2.4 Instruments

The following demographic variables were gathered: gender, marital status, familiar conviviality, religion, religious practice, education level, work status (working; retired; sick leaving), family income. The clinical data included cause of the intestinal ostomy, time of individuals live with the ostomy, type of ostomy, use of irrigation system and comorbidities. Additionally, we collected information about the follow-up of health services and the delivery of collector equipment by health professionals.

The COH-QOL-OQ was developed through the updating and expansion, in 1980, of the City of Hope - Quality of Life - Colostomy patients.<sup>[13]</sup> The COH-QOL-OQ aims to assess the QoL of ostomized patients and is complained for 43 items distributed in four domains, as follows: Physical Well-Being(PhWB)- items 1 to 11; Psychological Well-Being (PsWB)- items 12 to 24; Social Well-being(SoWB)- items 26 to 36; and Spiritual Well-being (SpWB)-items 37 to 43. The responses are described in 10-point Likert scale, ranging from 0 (bad QoL) to 10 (excellent QoL).<sup>[14, 15]</sup>

Patient scores were summed and divided for the number of items that comprise the referred domain, resulting in a mean score for each domain. The total score of QoL was obtained summing the values marked by individuals in all items of COH-QOL-OQ and dividing them for 43. Additionally, items 1 to 12; 15; 18 and 19; 22 to 30; 32 to 34; and 37 have reverse scale. So, the scores were reversed before the data analysis.

#### 2.5 Data analysis

Data were analyzed in the Statistical Package for Social Sciences(SPSS), version 20.0. Mean, standard-deviation, minimum and maximum were used for continuous variables. The *t* Test, for parametric data, and the Mann-Whitney test, for non-parametric data, was used to compare the score of QoL. The Tukey Test (for multiples comparisons) and the ANOVA model were applied to compare the scores of QoL (domains and general scores) between the experimental and control groups. *p* values < .05 were taken as statically significant.

#### 2.6 Ethical aspects

Participants signed the Term of Free and Informed Consent Which explained the study and their rights. The Ethical

Committee at Brasilia University and the Health Secretary approved the research project under the protocols number 46323815.2.0000.0030 and 46323815.2.3001.5553, respectively.

### 3. RESULTS

From the 180 persons eligible for study, 80 were included in the investigation (40 in the control group and 40 in the experimental group. The flowchart of participants selection in details is described in Figure 1. Although 180 patients were eligible, 100 were excluded during the registrations in the healthcare service, resting 80 patients for the randomization process. Then, 50% of this amount were allocated in each group, but seven patients were removed from the intervention group. So, as final sample, 33 patients get the intervention and 40 were recruited for the control group. Table 1 shows the Sociodemographic features of experimental e control groups.

We found, in both groups, a prevalence of females, married, aged between 51 and 60 years, with familiar conviviality and who completed elementary school. They are Catholic or evangelic, who actively practice their religion, are retired or on sick leave, and receive between one and three minimum wages. Table 2 describe the Clinical features of experimental e control groups.

As shown in the Table 2, most of patients from both groups: are non smokers, do not have type 2 diabetes; don't use the Irrigation System; have definitive ostomies; live with the ostomy for > 12 months and ≤ 60 months; received clinical following and the collector equipment. However, a positive diagnostic for Arterial Hypertension was only predominant in the experimental group. Table 3 shows the Distribution of patients according to the cause of ostomy in experimental and control groups.

As presented in the Table 3, the two groups reported the Colorectal Cancer (Experimental: 51.5%; Control: 60%) as the main cause of ostomy. Table 4 shows the Mean scores of QoL's domains according to the COH-QOL-OQ for experimental and control groups in the first time-point.

Results presented in Table 4 attested that the mean scores of QoL' domains did not differ between the groups before the intervention, what confirm that the samples used in each group are homogeneous (*p* > .05). Also, the two groups presented higher QoL in the Spiritual Well-being and Social Well-being domains. Table 5 shows the mean scores of QoL's domains according to the COH-QOL-OQ for experimental and control groups in the last time-point.

**Table 1.** Sociodemographic features of experimental e control groups. Brasília, DF, Brazil, 2016

Variables	Experimental Group		Control Group	
	N	%	N	%
<b>Gender</b>				
Female	20	61	24	60
Male	13	39	16	40
<i>Total</i>	33	100	40	100
<b>Age range</b>				
20-----30	3	9.1	4	10
31-----40	1	3.0	3	7.5
41-----50	5	15.2	5	12.5
51-----60	13	39.4	13	32.5
61-----70	10	30.3	10	25
71-----80	1	3.0	5	12.5
81-----90	0	0	0	0
<i>Total</i>	33	100	40	100
<b>Religion</b>				
Catholic	21	63.7	26	65
Evangelic	10	30.3	11	27.5
Spiritist	1	3.0	3	7.5
Others	1	3.0	0	0
<i>Total</i>	33	100	40	100
<b>Religious Practice</b>				
Yes	28	84.8	31	77.5
No	5	15.2	9	22.5
<i>Total</i>	33	100	40	100
<b>Marital Status</b>				
Married	16	48.5	21	52.5
Stable Union	3	9.1	10	25
Divorced	3	9.1	2	5
Widowed	4	12.1	2	5
Single	7	21.2	5	12.5
<i>Total</i>	33	100	40	100
<b>Familiar Conviviality</b>				
With familiar conviviality	29	87.8	38	95
Without familiar conviviality	4	12.2	2	5
<i>Total</i>	33	100	40	100
<b>Education Level</b>				
No formal education to Basic School	24	72.7	31	77.5
High School	9	27.3	8	20
College	0	0	1	2.5
<i>Total</i>	33	100	40	100
<b>Work Status</b>				
Retired	12	36.4	21	52.5
Sick leaved	12	36.4	11	27.5
Working	4	12.1	1	2.5
Unemployed	5	15.1	7	17.5
<i>Total</i>	33	100	40	100
<b>Familiar Income (MW*)</b>				
<1 a 3 MW	29	87.9	32	80
4 a 5 MW	3	9	5	12.5
≥ 6 MW	1	3.1	3	7.5
<i>Total</i>	33	100	40	100

\*Brazilian Minimum Wage in 2016: R\$ 880.00 (About USD 271.6).

**Table 2.** Clinical features of experimental e control groups. Brasília, DF, Brazil, 2016

Variable	Experimental Group		Control Group	
	N	%	N	%
<b>Time of Ostomized (in months)</b>				
> 12 months and ≤ 60 months	27	81.9	30	75
> 60 months	6	18.1	10	25
<i>Total</i>	<i>33</i>	<i>100</i>	<i>40</i>	<i>100</i>
<b>Type of Ostomy</b>				
Definitive	20	60.6	22	55
Temporary	13	39.4	18	45
<i>Total</i>	<i>33</i>	<i>100</i>	<i>40</i>	<i>100</i>
<b>Use of Irrigation System</b>				
Yes	0	0	1	2.5
No	33	100	39	97.5
<i>Total</i>	<i>33</i>	<i>100</i>	<i>40</i>	<i>100</i>
<b>Comorbidities - Diabetes Mellitus</b>				
Yes	10	30.3	8	20
No	23	69.7	32	80
<i>Total</i>	<i>33</i>	<i>100</i>	<i>40</i>	<i>100</i>
<b>Comorbidities – Arterial Hypertension</b>				
Yes	18	54.6	16	40
No	15	45.4	24	60
<i>Total</i>	<i>33</i>	<i>100</i>	<i>40</i>	<i>100</i>
<b>Smoking</b>				
Yes	11	33.3	17	51.5
No	22	66.7	23	48.5
<i>Total</i>	<i>33</i>	<i>100</i>	<i>40</i>	<i>100</i>
<b>Clinical Following</b>				
Yes	31	94	36	90
No	2	6	4	10
<i>Total</i>	<i>33</i>	<i>100</i>	<i>40</i>	<i>100</i>
<b>Collector equipment receipt</b>				
Yes	32	96.9	39	97.5
No	1	3.1	1	2.5
<i>Total</i>	<i>33</i>	<i>100</i>	<i>40</i>	<i>100</i>

**Table 3.** Distribution of patients according to the cause of ostomy in experimental and control groups, Brasília, DF, Brazil, 2016

Cause of Ostomy	Experimental Group		Control Group	
	N	%	N	%
Colorectal Cancer	17	51.5	24	60
Abdominal and perineal traumas	5	15.1	6	15
Intestinal Inflammatory Disease	3	9	5	12.5
Chagas Disease	4	12.2	1	2.5
Diverticular Disease	4	12.2	4	10
Fournier Syndrome	0	0	0	0
<i>Total</i>	<i>33</i>	<i>100</i>	<i>40</i>	<i>100</i>

**Table 4.** Mean scores of QoL’s domains according to the COH-QOL-OQ for experimental and control groups in the first time-point. Brasília, DF, Brazil, 2016

Groups	Experimental Group (First time point)					Control Group ( First time point)					p
	Domain	N	Mean	SD*	CI 95%	N	Mean	SD	CI 95%		
PhWB	33	5.5	1.8	4.88	6.11	40	4.78	2.24	4.08	6.11	.60
PsWB	33	5.6	1.7	5.01	6.18	40	5.18	1.64	4.67	6.18	.75
SoWB	33	5.4	1.5	4.88	5.91	40	4.55	1.72	4.01	5.91	.24
SpW	33	7.1	1.8	6.48	7.71	40	7.35	1.70	6.82	7.71	.42

\*Standard-deviation; PhWB: Physical Well-Being; PsWB: Psychological Well-Being; SoWB: Social Well-being; SpWB: Spiritual Well-being.

**Table 5.** Mean scores of QoL’s domains according to the COH-QOL-OQ for experimental and control groups in the last time-point. Brasília, DF, Brazil, 2016

Groups	Experimental Group (Last time point )					Control Group ( Last time point )					p
	Domain	N	Mean	SD*	CI 95%	N	Mean	SD	CI 95%		
PhWB	33	6.7	1.6	6.18	7.29	40	4.88	2.34	4.06	5.52	< .001
PsWB	33	6.4	1.0	6.11	6.79	40	5.06	1.52	4.61	5.81	< .001
SoWB	33	5.6	1.3	4.92	5.77	40	4.35	1.72	4.13	5.16	< .031
SpW	33	8.2	1.8	7.81	8.63	40	7.41	1.70	6.87	7.79	< .001

\*Standard-deviation; PhWB: Physical Well-Being; PsWB: Psychological Well-Being; SoWB: Social Well-being; SpWB: Spiritual Well-being.

#### 4. DISCUSSION

Sociodemographic and clinical characteristics of control and experimental groups The mean age was about 50 years in both groups with colorectal cancer rates higher in those patients over the age of 50. These results are similar to those described in the scientific literature where researchers found more than 90% of colorectal cancer in individuals over 50 years old.<sup>[2,3,16]</sup>

In the experimental group, we found that 48.5% of patients were married and 9.1% had a stable union. In the control group, the results are similar: 52.5% of patients were married and 25% had a stable union. Also, in both groups, we found that ostomized persons who declare themselves as divorced, widowed or single show a lower quality of life for Physical well-being and Psychological well-being domains. Independently of the relationship quality, the condition of not being married is a risk factor for health. Thus, the divorced, widowed or single individuals may present a worse physical and mental health than the married patients.<sup>[4,17-20]</sup> The familiar conviviality was prevalent in both groups, being a key factor for improving the quality of life once that family is perceived as a source of support, from where patients obtain help to deal with the ostomy and with their physical and emotional needs, being all connected for the affectivity bound.<sup>[2,5,18,19]</sup>

Investigations highlight the relation between education level and QoL, being that persons with higher level of education present a better QoL. They also state that economic issues may affect the ostomized patients’ QoL.<sup>[2,6,18-20]</sup> In this re-

search, however, a small part of the sample with a better level of education and higher income showed a higher QoL. For the variable work, in both groups, there was prevalence of retired patients who has a definitive ostomy. The ostomized person is considered a carrier of special need according to the Decree n° 5.296 of 2 December 2004.<sup>[2,4,5]</sup>

Only one patient, from the control group, reported using the irrigation system. It arises the need of health professionals spread the irrigation technique and its related-knowledge for other health professionals and community.<sup>[2,6]</sup> The use of irrigation is a method free of side effects that allows the intestinal control and benefit the social and parental relationships, increasing the ostomized persons’ QoL.<sup>[2,6,20,21]</sup>

##### 4.1 Comparison of quality of life between the control and experimental groups

In the pre-intervention assessment, we did not find significant differences between the control and experimental groups, being that both groups showed higher scores of QoL in Spiritual and Social well-being domains. When the QoL were assessed after the intervention, we observed a significant difference between the groups, being that the QoL was higher in the Experimental group when compared to the control. Finally, the comparison the groups before and after the intervention demonstrated a significant change in all QoL’s domains after the intervention in the experimental group. It confirms the effectivity of the PCD for improving the QoL of intestinal ostomized patients.

In this context, few investigations have shown positive results regarding the variables assessed in this study, with a good adherence of participants to the PCD. The arrangement in circle promotes the attention to the rhythm of the group as a whole; well as the improvement of subjective and positive states that help to deal with the ostomy, contributing to the therapy adherence.<sup>[7,22]</sup>

Researchers described the existence of values and feelings associated with the circular dance. They stand out that the practice of dancing in circle allows different ways of communication among the dancers; and represents an important rescue of traditions and movement, linking song and movement.<sup>[23,24]</sup> Also, the circular dances stimulate the expression of individuals according to their needs, i.e., nobody is obligated to do something that don't desire. In addition, the fear of failing or incorrectly execute the dance steps are replaced for the feeling of satisfaction, associated with the overcoming and mutual support given for peers into the group. This kind of dance allows that people connect to themselves, making them respecting the body limitations and exploring potentialities.<sup>[22,25]</sup>

Among the global benefits of circular dances is the favoring of the equilibrium center. The person starts to feel simultaneously their both hemi bodies, what improves their ability of perception, laterality and proprioception. Besides, other benefits include the gain of strength and muscular resistance; and the enhancement of motor control, contributing to the global motor coordination, balance and body conscience.<sup>[25,26]</sup>

The dance- trough the body movement and the change of self-perception- provides a relaxing that may relieve the pain, improves the physical well-being and reduces the number of sensible points and muscular contractures.<sup>[10,26]</sup> Additionally, dancing may significantly contribute to improve sleep pattern; and relieve anxiety, muscular tension, and fatigue.<sup>[10,27,28]</sup> In an investigation approaching the circular dances, the participants of PDCs became more willing to daily activities and work; and showed a better sleep quality. The same study also demonstrated that the physical activity provided for PDCs stimulate the body functions and, so, improve the locomotor system, what helps in the day-to-day demands.<sup>[22]</sup> Thus, we confirm the effect of PDCs to improve the QoL of intestinal ostomized persons, with findings that are in consonance with the national and international scientific literatures.

#### 4.2 Limitations

One of the limitation refers to the sample size that may restrict the inferences about the findings of study. Also, changes in the eligibility criteria, such as: minimum period

of intestinal ostomy smaller than one year; and the inclusion of younger persons to the sample may limit generalized findings from this study. Given the small sample size the isolated effects of PCD may be better understood with a higher sample size, what was not possible in this study due to the costs, time and magnitude of the trial.

#### 4.3 Interpretation

In general, results show the importance of adopting of integrative practices, such as the PCD for intestinal ostomized persons. This intervention had a significant effect on improving the general QoL and its domains: Physical Well-Being; Psychological Well-Being; Social Well-being; e Spiritual Well-being. No intervention-related damage was reported for patients.

#### 4.4 Generalization

The findings suggest that PCD is an essential tool to assist patients improve their own health status. Findings from this study suggest that PCDs improve interpersonal relationships tallow for addressing problems/issues as they develop, and allow for the empowerment of the personal networks and the possibilities of solving adverse situations in partnership with the local community.

### 5. CONCLUSION

We verified that the PCDs may be considered an important method to promote and maintain a good health status in intestinal ostomized persons. Also, PCDs allows stimulating the integral body and mind perception trough the self-knowledge of competences that happens due to the socialization promoted for PCDs. The possibility of go hand in hand, and feel the harmony into de group trough the movement and rhythm solve boundaries.

The permanent training of health professionals, especially nurses, about issues related to the process of living with intestinal ostomies contribute significantly for an integral and qualified healthcare to these individuals. These trainings may also include the PCD's intervention in order to improve the patients' QoL in its all domains: Physical, Psychological, Social and Spiritual Well-being. In this perspective, the permanent education turned to the National Politics of Integrative and Complementary Practices (PNPIC) for health workers that deal with ostomized persons is essential to improve the quality of healthcare provided and the QoL of these people.

#### CONFLICTS OF INTEREST DISCLOSURE

This investigation is registered in the Clinical Trials Brazilian Registry (ReBEC) under the identifier RBR-7VXCXM. The full trial protocol may be found in

www.ensaiosclinicos.gov.br/rg/ with the title “Effects of circular dances on quality of life of intestinal ostomized persons: a randomized controlled trial”. This project was granted for the Technological Center of Education Sena Aires and the

recommendations of the Consolidated Standards of Reporting Trials (CONSORT) were followed to conduct the study and its reporting.

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