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Creative Dance Improves Physical Fitness and Life Satisfaction in Older Women

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Abstract

Objectives: The purpose of this study was to evaluate the effects of creative dance on physical fitness and life satisfaction in older women. **Methods:** A total of 57 women (65–80 years old) were randomized to either an experimental group or a control group. The experimental group participated in a supervised creative dance program for 24 weeks. Physical fitness (strength, aerobic endurance, flexibility, motor ability/dynamic balance, and body composition) and life satisfaction were assessed pre- and posttreatment (at 12 and 24 weeks) by the Senior Fitness Test and the Life Satisfaction scale, respectively. **Results:** After the intervention, the experimental group had better physical fitness and life satisfaction when compared with the

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control group. **Conclusion:** Creative dance has a positive effect in different dimensions of functioning and has the potential to contribute to healthy aging. This could be related to the integrated mobilization of physical, cognitive, and social skills promoted by creative dance.

Keywords

physical health, well-being, elderly

The progressive loss of physical fitness that occurs with age contributes to the occurrence of falls (De Rekeneire et al., 2003), which are a major cause of mechanical injuries and could lead to death, particularly in women (Alamgir, Muazzam, & Nasrullah, 2012). Women show a decrease in physical fitness sooner than men. Decreases in physical fitness parameters, such as strength, flexibility, agility, balance, aerobic endurance, and body mass index (BMI), are observed in women at approximately 60 years of age. The most significant losses occur in agility, balance, and aerobic endurance; additionally, strength and flexibility are more significantly decreased in the lower limbs versus the upper limbs (Pereira & Baptista, 2012).

In addition to changes in physical fitness, advancing age amplifies susceptibility to chronic conditions and disabilities, and it decreases the quality of life (Wanderley, Oliveira, Marques, Moreira, & Carvalho, 2013). Life satisfaction has been regarded as a central aspect of well-being (Fugl-Meyer, Meli, & Fugl-Meyer, 2002), is predictive of physical health and mortality (Dominick, Ahern, Gold, & Heller, 2002), and has gradually become more central in medicine and health care systems (Daig, Herschbach, Lehmann, Knoll, & Decker, 2009; Fugl-Meyer et al., 2002). This psychological construct (Daig et al., 2009) is defined as a cognitive judgment process, in which individuals assess the quality of their lives according to their own references (Pavot & Diener, 1993).

Many different types of exercise programs have been implemented in older adults (Hui, Chui, & Woo, 2009; McKinley et al., 2008; Sofianidis, Hatzitaki, Douka, & Grouios, 2009). The dance benefits have been reported in this population, namely, aerobic dance improves neurocognitive function (Kimura & Hozumi, 2012), physical function, health-related quality of life (Hui et al., 2009; Wanderley et al., 2013), balance, and locomotion/agility (Shigematsu et al., 2002); modern and contemporary dance increase functional performance and physical activity levels (Keogh, Kilding, Pidgeon, Ashley, & Gillis, 2012); Argentine tango dance improves physical function

and balance (McKinley et al., 2008); traditional Greek dance enhances static and dynamic balance (Sofianidis et al., 2009); Turkish folklore dance improves physical performance, balance, depression, and quality of life (Eyigor, Karapolat, Durmaz, Ibisoglu, & Cakir, 2009); dance movement therapy rises quality of life (Bräuninger, 2012a) and reduces the stress levels (Bräuninger, 2012b); and, finally, jazz dance improves balance, although no differences were observed in mood and cognition (Alpert et al., 2009).

In 2009, Keogh and his collaborators emphasized the potentialities of different types of dance on health in older adults, in their review of the literature. One of these programs is creative dance (CD), which can be used as a tool to address the challenges of aging successfully (Osgood, Meyers, & Orchowsky, 1990). There are two major reasons why older people should engage in a CD program. First, CD does not require a predetermined performance standard or years of strenuous workouts (Bergmann, 1992; Lewis & Scannell, 1995); and second, CD emphasizes the process of being active and promotes a positive relationship among the participants, stimulating positive feelings, joy, pleasure, and spontaneity in addition to increasing the quality of life (Rossberg-Gempton & Poole, 2008). CD is characterized by the interpretation of ideas, feelings, and sensory impressions expressed symbolically in movement (Dimondstein, 1971). The term CD will be utilized to illustrate dance movement created by the participants (Cone & Cone, 2012), where they are engaged physically, intellectually, and emotionally. If the participants wish, they may use techniques from other forms of dance (Mac Donald, 1991), such as social, traditional folk, and classic dance.

The participants discover movements according to their personal preferences, thus enabling knowledge of their strengths and weaknesses (Joyce, 1994) and promoting the development of imagination, creativity, critical thinking, and decision making (Cone & Cone, 2012). Physical impulses, psychological states, and feelings are released in movement. The older individual goes into a magical world of symbols and images, which allows problems to be solved in creative and imaginative ways (Osgood et al., 1990). The older adults experience a sense of power and mastery that results from exercising the body and mind through CD, which prepares them to deal creatively with the real problems of later life. However, much of these knowledge about the benefits of CD come from unscientific reports (Osgood et al., 1990).

There are a limited number of studies in the older population on the physiological, psychological, and social benefits of CD, which included proprioception (Marmeleira et al., 2009), social skills (Von Rossberg-Gempton, Dickinson, & Poole, 1999), body image (Lewis & Scannell, 1995), life

satisfaction, psychological well-being (Osgood et al., 1990), and psychomotor and cognitive functioning (Rossberg-Gempton & Poole, 2008).

To our knowledge, only one exploratory study with a small sample size and without random assignment was performed to examine the impact of CD on the life satisfaction of older adults (Osgood et al., 1990), and no studies have investigated its effects on physical fitness outcomes, such as strength, aerobic endurance, flexibility, motor agility/dynamic balance, and body composition. These outcomes have been frequently claimed but not clearly demonstrated. Therefore, the aim of the present study was to analyze the effects of CD on physical fitness and life satisfaction in older females.

Method

Design

This study used a randomized controlled trial design to assess the effectiveness of CD sessions (three 50-min sessions per week) after 12 and 24 weeks on physical fitness parameters and life satisfaction. Two-arm design was undertaken with both experimental (EG) and a control group (CG).

Participants

The participants were recruited from a health center in Évora, Portugal. The inclusion criteria were as follows: female sex; age over 65 years; independent gait without an assistive device; independent or partially dependent in performing daily life activity as measured through the Physical Self-Maintenance scale (Lawton & Brody, 1969); nonexistence of cognitive impairment according to the Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975), with a cut-off point of >24 points (Pereira, Baptista, & Infante, 2013); absence of cardiovascular, neuromuscular, or neurological disorders that compromise participation in the CD program; not taking medication that might influence the psychological parameters of the study; not engaged in regular physical exercise during the previous 1 year; and availability to participate in at least 80% of all CD sessions. A nurse from the local health center who was blinded to the participant group determined the eligibility of participants for the study.

Of 112 women, 34 did not fulfill the eligibility criteria and were excluded from the study. Seventy-eight older females (65–80 years of age) were randomized into two groups comprising 39 individuals each. Randomization (random table method) was performed by an independent individual from the local health center. The allocation was concealed. Before the baseline

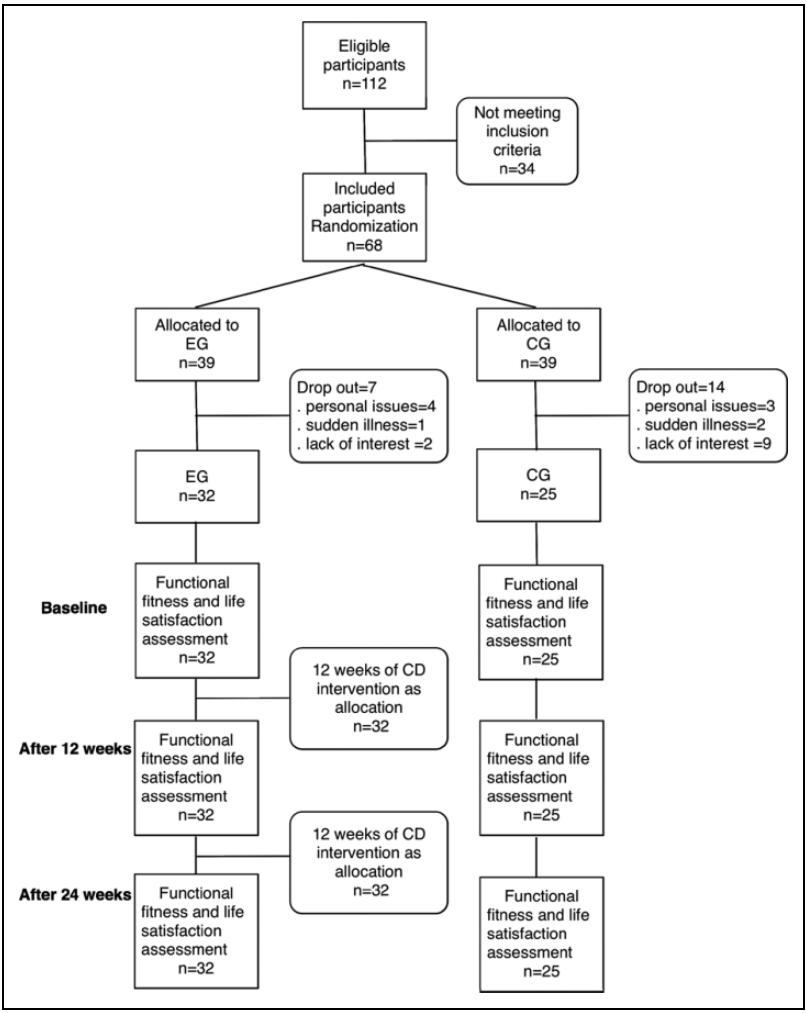

Figure 1. Flowchart of participants during the trial.

assessment, there were 21 dropouts due to sudden illness, personal issues, and lack of interest in participating in the study. A total of 57 women—32 in EG and 25 in the CG—completed the study (Figure 1). All participants of EG and CG were asked to maintain their normal lifestyles during the duration of the study, including physical activity patterns. Participants signed

informed consent forms upon entry into the trial, and their rights were protected. The institutional human research ethics committee approved this study.

Exercise Program

The EG took part in a 24-week series of 50-min CD classes, meeting 3 times per week. There are some main objectives in CD program, namely, to develop body awareness (e.g., to identify the body parts, to explore how different parts move in isolation and as the whole body, and to create body shapes), to develop space awareness (e.g., to explore personal and general space and to explore levels, directions, and pathways), to explore time (e.g., to create movement with different duration and speed), to explore dynamic (e.g., to create sequences with different quality movements—flow, bounced, staccato, etc), and to explore relationships (e.g., create a relationship through the movement with others and with objects, thus, five elements of movement were developed in CD program: body, space, time, dynamic, and relationship (Ruso, 1997) to achieve the objectives of the program. The CD classes were designed to develop a safe and progressive training schedule. The proposed tasks were conducted under greater difficulty. All sessions had specific themes, allowing body communication through movement. Thus, images were used in each exercise in accordance with the session's theme, and these images were age appropriate and of interest to the participants. For example, some of the themes included professions, daily home/life activities, the beach, the countryside, travel, dance with masks, and animals.

The CD sessions comprised three phases, namely, general mobilization (15 min), main phase (25 min), and cool down (10 min). During all phases, CD was always present as participants were required to create their own movements and to express ideas and feelings through body language. Thus, specific images and themes (e.g., walking on a floor with ice, glue or rain) were given by the dance teacher. In the general mobilization phase, CD intended to mobilize important physiological systems and incorporate walking, range of motion, and stretching movements. In the main part of the sessions, the themes and images given by the CD teacher emphasize the creation of movement phrases that assure the stimulation of several abilities (balance, agility, strength, flexibility, and coordination). Finally, in the last phase of the sessions, stretching, breathing, and relaxation movements were incorporated to assure an appropriate cool down. The music was an important element in all sessions, with variations in type, rhythm, beat, and volume. The music was carefully selected prior to the session, in accordance with the session's

theme and the participants' preferences. Different styles of music were used, such as classic, jazz, pop, ethnics, and Portuguese traditional and instrumental music, among others (Leão, 2006; Prokofiev, 1996; Rachmaninoff, 1986; Ronstadt, 1987; Sétima Legião, 1998). Several strategies were used for promoting a positive environment, which is indispensable for the exploration of movement and body communication, including referring to participants by name; giving mostly positive performance feedback; providing encouragement when tasks were not achieved; and providing frequent individual attention before, during, and after each session.

The CD program and testing sessions were performed at the local health center. The CD sessions were planned and conducted by a nurse with a specific knowledge of CD. A university dance teacher with a degree in dance also supervised the CD program.

Outcome Measures

Physical fitness is a set of attributes that are either health related or skill related (Caspersen, Powell, & Christenson, 1985). Physical fitness (strength, aerobic endurance, flexibility, motor agility/dynamic balance, and body composition) and life satisfaction were evaluated at the local health center at baseline, 12 weeks, and 24 weeks by an assessor who was blinded to group allocation.

The physical fitness parameters were evaluated using the Senior Fitness Test (Rikli & Jones, 1999). This test has been shown to be a reliable and valid measure of physical fitness (Rikli & Jones, 1999), and it comprises the major physical fitness parameters required for independent daily living. In addition, it is easy and reasonably quick to administer and score, requires a minimal amount of equipment and space, is safe to perform, and can be used to identify physical changes resulting from exercise (Rikli & Jones, 1999). An assessor with specific knowledge of the Senior Fitness Test conducted the evaluations. As recommended by the authors of the test, before the assessment, all participants performed a 10-min warm-up routine that was supervised by the assessor. Intraclass correlation coefficients between measurements by the same rater ranged from .777 to .998.

Physical Fitness Outcomes

Strength. Lower body strength was assessed using the 30-s chair stand test. The participants completed two practice repetitions and one test trial. The score was the number of times (repetitions) the participant could sit down on and stand up from a chair in 30 s.

Aerobic endurance. The 6-min walk test was used to evaluate aerobic endurance. Before the test trial, each participant completed one practice trial on a prior day. The score was the distance walked (m) in 6 min. The total route length was 50 m, which was marked every 5 m.

Flexibility. The chair sit-and-reach test was used to assess lower body flexibility, and two practice tests preceded two test trials. The outcome was the best distance achieved (in centimeter) between the tip of the toe of the dominant leg and the extended fingers in the two trials.

Motor agility/dynamic balance. The 8-ft up-and-go test was used to assess motor agility and dynamic balance. Each participant performed one practice trial and two test trials. The score was the shortest time required to stand up from a chair, walk 8 feet, and return to the initial position.

Body composition. Weight (kilogram) and waist circumference (centimeter) were measured using an electronic scale (Secca Bella 840, Hamburg, Germany) and a measuring tape (Secca 201, Hamburg, Germany), respectively. The BMI was calculated as weight in kilograms divided by height in meters square (kg/m^2). The height was measured (using a stadiometer; Secca 770, Hamburg, Germany) only for calculating BMI. Standardized procedures were used in all measurements (Lohman, Roche, & Martorell, 1988).

Life satisfaction outcome. The Satisfaction with Life scale (Diener, Emmons, Larsen, & Griffin, 1985) was used to measure life satisfaction. This scale is a valid and reliable measure of life satisfaction (Pavot, Diener, Colvin, & Sandvik, 1991). An assessor instructed the participants regarding the self-administered questionnaire, which was answered in a single session. In cases where the participants requested assistance, the assessor helped them by clarifying the meaning of the questions. The Satisfaction with Life Scale consisted of five statements and there were seven response options from *strongly disagree* to *strongly agree*. The scores ranged from 5 to 35, and an increase in the score corresponded with a positive improvement. For the present sample, the internal consistency, as evaluated by Cronbach's α reliability coefficient, was .769.

Data Analysis

All data were analyzed using SPSS software, Version 17.0 (SPSS Inc., Chicago, IL). For all analyses, p value less than .05 were considered significant. Descriptive statistics (mean and standard error) were computed for each

Table 1. Participant Characteristics.

	EG	CG	
Participant characteristics	$n = 32$	$n = 25$	p
Age (years)	71.1 ± 3.9	72.8 ± 4.5	.13[c]
Autonomy in daily life activities[a]	9.1 ± 0.3	9.3 ± 0.9	.38[d]
Cognitive state[b]	25.2 ± 3.9	26.6 ± 3.0	.18[d]

Note. EG = experimental group; CG = control group. Values are mean ± standard deviation (*SD*).
[a]Measured by physical self-maintenance scale. [b]Measured by Mini-Mental State Examination. [c]Independent *t* test. [d]Independent Mann–Whitney test.

outcome. Because parametric assumptions were not met, Mann–Whitney nonparametric tests were used to determine significant differences in outcomes between the EG and CG at three measurement points (intergroup analysis). Additionally, the nonparametric Friedman's test was used to verify the differences between baseline and each assessment time point (after 12 weeks and after 24 weeks) for all study variables (intragroup analysis). Because this test only allows the analysis of one factor, the hypothesis was used separately for each group, and Bonferroni correction was applied to ensure that a Type I error was not made. In this case, to ensure that the experiment-wise Type I error rate did not exceed .05, the level of significance was $05/k$, with k being the number of simultaneous tests of the hypothesis.

The treatment effect was set up as the average of the estimated difference between the EG and CG for all variables and was calculated separately for each variable. For each participant, the proportional change between post- and premeasurements for each outcome was established using the following formula: (post-pre)/pre. In addition, for the intragroup analysis of outcomes in EG, the effect size was calculated using the following formula: (post-mean—pre-mean)/pre-standard deviation, with the following cut-off values: <0.50; (0.50, 1.25); (1.25, 1.9); and ≥ 2.0 for trivial, small, moderate, and large, respectively (Rhea, 2004).

Results

The groups were similar in age, autonomy in daily life activities, and cognitive state (Table 1). EG attended more than 85% of CD sessions. Verbal confirmation was received from CG, assuring they did not change physical activity. In the end of study, CG were offered 6 months of CD classes and all participants enrolled.

Physical Fitness

At baseline, the statistical analysis showed no significant differences between the EG and CG in all physical fitness outcomes. At the end of the study, there were significant differences between the two groups in strength, aerobic endurance, flexibility, and motor agility/dynamic balance. Specifically, the EG had better physical fitness compared with the CG. Table 2 shows the descriptive statistics and intergroup analysis of the outcome measures.

Within the EG, the results of the Friedman test indicated significant differences in all physical fitness variables after 24 weeks of the CD program. Thus, its treatment effects were the following: 21% strength of lower limbs ($p = .02$), 10% aerobic endurance ($p = .01$), 13% flexibility of lower limbs ($p = .00$), 13% motor agility/dynamic balance ($p = .02$), 4% weight ($p = .00$), 8% waist circumference ($p = .00$), and 5% BMI ($p = .00$). The effects sizes for strength (0.51), aerobic endurance (0.51), flexibility (0.66), motor agility/dynamic balance (−0.57), and waist circumference (−0.74) from baseline to 24 weeks were small. However, in weight (−0.22) and BMI (−0.32), the effect size was trivial. Conversely, during this time, the CG showed no significant improvement in any of the physical fitness variables studied ($p > .11$). Table 3 presents the intragroup analysis, that is, the main effect of time on the outcome measures among the three measurement periods.

Life Satisfaction

At onset, there were no differences between EG and CG with respect to life satisfaction. At Weeks 12 and 24, the life satisfaction was significantly better for the EG than for the CG ($p = .02$ and $p = .00$, respectively; Table 2).

The results of the Friedman test indicated significant differences for the EG between baseline and 12 weeks ($p = .01$) and between baseline and 24 weeks ($p = .00$; Table 3). The EG had a treatment effect of 34% and was small (0.51). For the CG, there were no significant differences in life satisfaction between baseline and the two time point measurements ($p > .31$).

Discussion

The main findings of the current randomized controlled trial were that three 50-min CD classes/week over a 24-week period enhanced physical fitness (strength and flexibility of lower limbs, aerobic endurance, motor agility/dynamic balance, and body composition) and life satisfaction of older females. A 12-week duration was effective for improving aerobic endurance,

Table 2. Descriptive Statistical and Intergroup Analysis of Outcome Measures.

	Baseline			3 Months			6 Months		
Outcomes	EG	CG	*p*	EG	CG	*p*	EG	CG	*p*
Strength (rep)	13.33 (0.62)	12.04 (0.59)	.093	14.59 (0.67)	12.82 (1.08)	.178	15.10 (0.58)	12.17 (0.95)	.010*
Aerobic endurance (m)	401.49 (12.59)	355.88 (13.31)	.051	439.41 (12.28)	353.51 (17.17)	.000*	438.10 (13.74)	330.12 (20.50)	.000*
Flexibility (cm)	−3.15 (1.70)	−1.23 (1.74)	.198	1.47 (1.17)	−3.43 (2.40)	.121	3.17 (1.36)	−4.08 (2.50)	.029*
Motor agility/dynamic balance (s)	7.98 (0.44)	8.41 (0.53)	.446	7.19 (0.39)	8.42 (0.48)	.006*	6.57 (0.20)	9.01 (0.76)	.000*
Weight (kg)	75.39 (2.22)	74.37 (3.64)	.451	74.95 (2.16)	73.21 (3.62)	.320	72.61 (2.03)	72.81 (3.53)	.667
Waist circumference (cm)	105.51 (2.06)	102,74 (2.94)	.403	102.39 (1.69)	101.82 (3.13)	.585	96.87 (1.66)	98.07 (2.97)	.974
BMI (kg/m^2)	32.43 (0.98)	32.92 (1.70)	.766	31.55 (0.92)	32.56 (1.72)	.849	30.64 (0.84)	32.22 (1.61)	.691
Life satisfaction [a]	24.03 (1.36)	23.50 (1.42)	.765	26.59 (1.23)	22.54 (1.53)	.020*	27.94 (1.15)	22.71 (1.44)	.002*

Note. EG = experimental group; CG = control group; BMI = body mass index. Values expressed as mean (standard error).
[a]Possible range scores: 5–35.
*$p < .05$.

Table 3. Intragroup Analysis of Outcomes in EG.

Outcomes	Measures points	Mean differences (*SD*)	*p*	Effect size
Strength	B to P1	1.26 (3.74)	0.782	—
	B to P2	1.76 (3.59)	0.015*	0.51
	P1 to P2	0.50 (3.28)	0.275	—
Aerobic endurance	B to P1	37.92 (50.46)	0.007*	0.53
	B to P2	36.61 (60.47)	0.010*	0.51
	P1 to P2	−1.31 (39.01)	1.000	—
Flexibility	B to P1	4.61 (5.93)	0.001*	0.48
	B to P2	6.31 (8.27)	0.000*	0.66
	P1 to P2	1.70 (4.71)	1.000	—
Motor agility/dynamic balance	B to P1	−7.88 (2.24)	0.507	—
	B to P2	−1.40 (2.08)	0.018*	−0.57
	P1 to P2	−0.62 (1.67)	0.507	—
Weight	B to P1	−0.43 (1.98)	1.000	—
	B to P2	−2.77 (2.72)	0.000*	−0.22
	P1 to P2	−2.34 (1.89)	0.000*	−0.19
Waist circumference	B to P1	−3.12 (6.74)	0.312	—
	B to P2	−8.63 (5.74)	0.000*	−0.74
	P1 to P2	−5.51 (5.08)	0.001*	−0.58
BMI	B to P1	−0.88 (1.05)	0.037*	−0.16
	B to P2	−1.80 (1.34)	0.000*	−0.32
	P1 to P2	−0.91 (0.87)	0.000*	−0.18
Life satisfaction	B to P1	2.56 (6.03)	0.012*	0.33
	B to P2	3.91 (6.31)	0.000*	0.51
	P1 to P2	1.34 (3.90)	0.952	—

Note. EG = experimental group; BMI = body mass index; B = baseline; P1 = 12 weeks; P2 = 24 weeks.
*$p < .005$.

flexibility, BMI, and life satisfaction, and the remaining variables improved after 24 weeks. Moreover, no statistically significant differences were observed in the CG.

The physiological findings corroborate those from anecdotal evidence, indicating the role of CD in improving strength, balance, flexibility, and range of motion (Osgood et al., 1990). It has been previously reported that other dance styles are also effective in enhancing some physical fitness parameters in older adults. For example, aerobic dance during a 12-week intervention period improved lower limb endurance, mobility, and dynamic balance (Hui et al., 2009). Furthermore, Greek traditional dance appeared

to be effective for enhancing static and dynamic balance in a 10-week intervention (Sofianidis et al., 2009), and tango dance for 10 weeks led to greater improvements in balance skills and walking speed than walking for exercise (McKinley et al., 2008). It is important to note that there are some differences between these studies and the present study, which makes it difficult to compare the results. These differences include the dance styles; intensity, duration, and frequency of intervention; functional tests used; and baseline scores.

The lack of scientific investigation of CD, more precisely with respect to its physiological outcomes, restricts our discussion, although the analysis of the intervention program implemented in this study can help to clarify the positive results observed in physical fitness programs. The older females attended 6 months of 50-min CD sessions, which occurred 3 times a week on nonconsecutive days. Furthermore, creation of movement phrases was performed for half of the session. During this phase, balance, agility, strength, flexibility, and coordination exercises were simultaneously requested. Furthermore, walking, range of motion, and stretching exercises were performed during the general mobilization phase. The activities/exercises, duration, and frequency of our intervention were designed according to the recommendations of the American College of Sports Medicine and American Heart Association. In these recommendations, regular physical activities, which are considered essential for healthy aging, including flexibility, balance, and aerobic, and muscle-strengthening activities (Nelson et al., 2007).

The positive results observed with respect to life satisfaction are in accordance with the findings of Osgood, Meyers, and Orchowsky (1990) who demonstrated that the practice of CD once a week over an 8-month period enhanced the life satisfaction of females over 65 years of age. It is important to note that in the study of Osgood et al., measurements were taken at the beginning and at the end of the CD program, making it impossible to determine whether the benefits in life satisfaction occurred before 8 months. This precludes meaningful comparisons with the findings of the present study, which showed improvements in life satisfaction after 3 months. Osgood et al. suggested that CD contributes to the improvement in psychological health, namely life satisfaction, in older adults by encouraging participants' expression of feelings, ideas, and needs as well as by stimulating their creativity (Osgood et al., 1990). It is also believed that the therapeutic potential of CD becomes evident when it is viewed as a means to help the participants to develop positive self-concepts and self-acceptance (Bergmann, 1992).

Physical exercise that includes cognitive strategies is more effective in promoting psychological benefits compared with exercise that does not

include this component (Fabre, Chamari, Mucci, Masse-Biron, & Prefaut, 2002). In our intervention, cognitive stimulation was constant, including, for example, the use of tactile sensation, the magical world of symbols and images, descriptions of everyday situations, and mental representation of gestures. Furthermore, the observed benefit in life satisfaction might also be related to the social network and friendship developed during the dance classes (Hui et al., 2009). A previous study has reported that, compared to a bland leadership style, a socially enriched leadership style network might positively influence some psychological parameters via the use of specific strategies, for example, using the participants' names; providing frequent individual attention; encouragement before and after exercise and mistakes; rewarding effort and ability after activities; and giving performance feedback (Turner, Rejeski, & Brawley, 1997). Our intervention included all of these features because the stimulation of creativity is only possible due to the friendly, informal, and open environment created (Gilbert, 1992).

This study had several limitations. First, the sample size was small, the dropout was high before the baseline assessment, the exercise intensity was not evaluated, and the nutrition of the participants was not controlled. Second, a three-arm design was not used with a CG, CD group, and other exercise group. Thus, it is not clear whether similar results would be obtained in a different exercise group. Additionally, the results cannot be generalized due the nonrepresentative nature of the study sample.

Conclusions

Considering the chronic medical conditions, low fitness levels, and/or functional limitations associated with advancing age (Nelson et al., 2007), CD could have beneficial effects on physical fitness and life satisfaction in older females and, consequently, might play an important role in the prevention of falls. Due to its positive effects, the practice of CD should be promoted among older female adults.

Since there are no differences in dance confidence between men and women aged over 60 years (Lovatt, 2011), further investigations in this area should also be implement in male, with the necessary adjustments, especially in the theme of the sessions, stimuli, images, and music used.

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Authors' Note

I declare that the research materials related to my paper can be accessed.

Declaration of Conflicting Interests

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