Multidisciplinary and biodanza intervention for the management of fibromyalgia

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ABSTRACT

Objective: To evaluate and compare the effectiveness of a 16-week multidisciplinary (exercise plus psychological therapy) and biodanza intervention in women with fibromyalgia.

Patients and Methods: Thirty-eight women with fibromyalgia were distributed to a 16-week multidisciplinary (3-times/week) intervention (n=21) or Biodanza (1-time/week) intervention (n=17). We assessed tender point, body composition, physical fitness and psychological outcomes (Fibromyalgia Impact Questionnaire, the Short-Form Health Survey 36 questionnaire (SF-36), the Hospital Anxiety and Depression Scale, Vanderbilt Pain Management Inventory (VPMI), Rosenberg Self-Esteem Scale and General Self-Efficacy Scale).

Results: We observed a significant group*time interaction effect for the scales of SF-36 physical role (P=0.038) and social functioning (P=0.030) and for the passive coping scale in VPMI (P=0.043). Post hoc analysis revealed a significant improvement on social functioning (P=0.030) in the multidisciplinary group whereas it did not change in the Biodanza group. Post hoc analysis revealed a reduction in the use of passive coping (positive) (P<0.001) in the multidisciplinary group. There was no significant interaction or time effect in body composition and physical fitness.

Conclusions: 16 weeks of multidisciplinary intervention induced greater benefits than a Biodanza intervention for social functioning and the use of passive coping strategies in women with fibromyalgia.

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INTRODUCTION

Patients with fibromyalgia have lower functional capacity[1-2] for daily activities and health-related quality of life than healthy age- and sex-matched people[3], and incur in a considerably high annual total cost in the primary care setting[4]. Fibromyalgia is a complex and heterogeneous condition in which there is abnormal pain processing that results in a wide range of symptoms[5-6]. The clinical manifestation of fibromyalgia appears between the 40s and 50s, and is more common in women (~4.2%) than in men (~0.2%)[3].

The European League Against Rheumatism (EULAR) recommendations for the management of fibromyalgia consider that optimal treatment requires a multidisciplinary approach with a combination of non-pharmacological and pharmacological treatment modalities[5]. Moreover, the recommendations deem that full understanding of fibromyalgia requires comprehensive assessment of pain, physical function and psychosocial context.

The two most common non-pharmacological treatments are physical exercise and educational or psychological programs[7]. Both treatments together seem to induce improvements in self-efficacy and physical function, as well as in general well-being[7]. In a previous study, we have observed that 3 months of multidisciplinary intervention improved lower body flexibility, FIQ total score and the subscales fatigue, stiffness anxiety and depression and the SF-36 dimensions physical role, bodily pain, vitality and social functioning in female fibromyalgia patients[8]. Despite these recommendations, many patients still prefer other treatments as complementary and alternative medicine therapies, which are increasing in popularity. Indeed, fibromyalgia patients have high rates of complementary and alternative me-

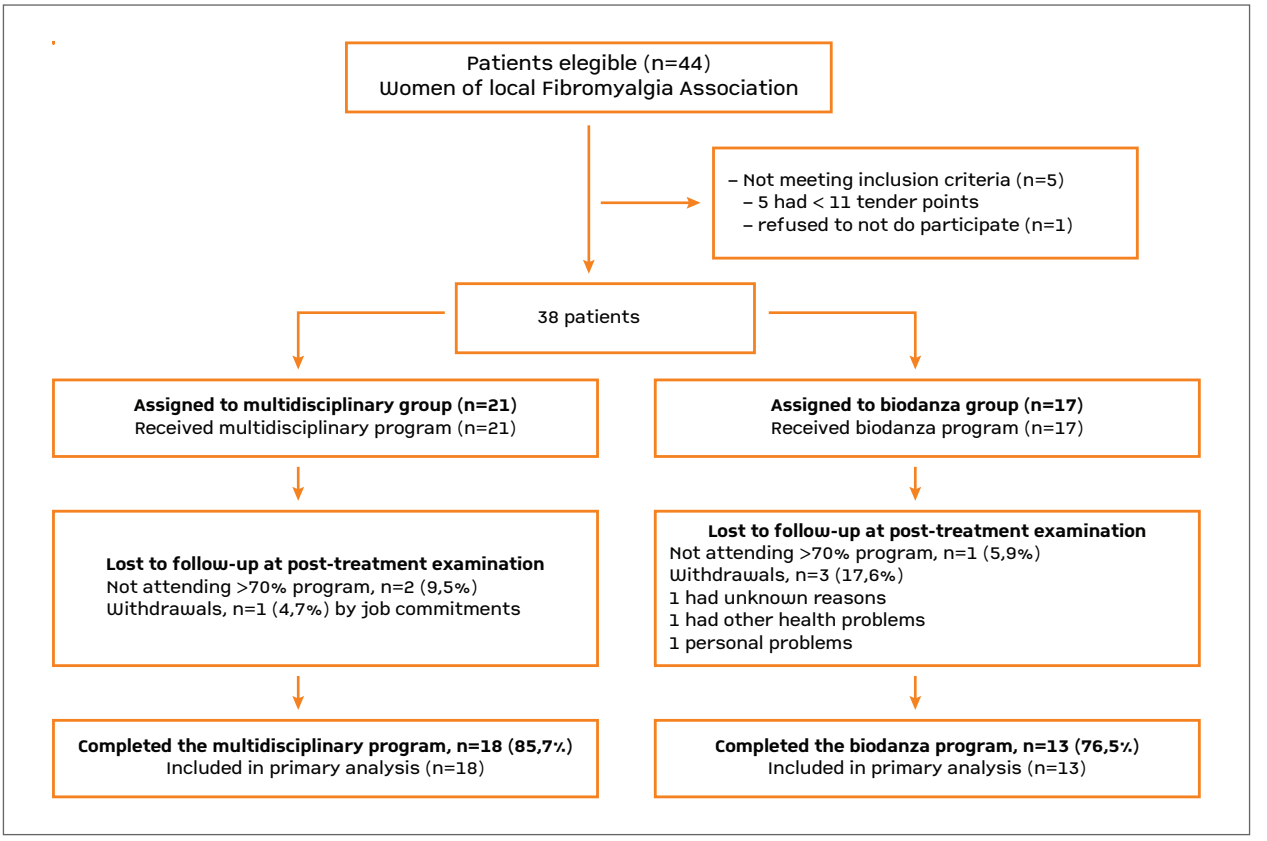

FIGURE 1. Flow of patients throughout the trial

dicine use[9]. However, complementary and alternative medicine therapies are still in the ongoing process of being evaluated by scientific trials[10]. It appears that several complementary and alternative medicine therapies show some preliminary treatment effect for fibromyalgia pain but larger trials are clearly needed[11]. Previously, we have observed that 3 month of Biodanza intervention improved tender point count and the fibromyalgia impact questionnaire total score in female fibromyalgia patients[12]. The aim of the present study was to evaluate and compare the effectiveness of a 16-week multidisciplinary (exercise plus psychological therapy) and an alternative-intervention (Biodanza) on pain, physical fitness and psychological outcomes in women with fibromyalgia.

PATIENTS AND METHODS

STUDY PARTICIPANTS

We contacted a local Association of Fibromyalgia Patients (Granada, Spain), and 44 potentially eligible patients responded. All gave their written informed consent after receiving detailed information about the aims and study procedures in an informative session carried out in the association. The inclusion criteria were: (i) meeting the American College of Rheumatology criteria: widespread pain for more than 3 months, and pain with 4 kg/cm of pressure reported for 11 or more of 18 tender points[13], (ii) not to have other severe somatic or psychiatric disorders, or other diseases that prevent physical loading. A total of 5 patients were not included in the study because they did not have 11 of the 18 tender points. After the baseline measurements, 1 patient refused to participate due to incompatibility with job schedule. Therefore, a final sample of 38 women with fibromyalgia participated in the study, and were distributed either to multidisciplinary (n=21) or Biodanza group (n=17). The study flow of participants is presented in Figure 1. Patients were not engaged in regular physical activity (>20 minutes on >3 days/ /week). Participants of both groups were asked not to change their medication for the whole duration of the intervention period and to refrain from starting any

new intervention for fibromyalgia.

The research protocol was reviewed and approved by the Ethics Committee of the Hospital Virgen de las Nieves (Granada, Spain). The study was developed between January 2009 and June 2009, following the ethical guidelines of the Declaration of Helsinki, last modified in 2000.

INTERVENTION

Multidisciplinary: The multidisciplinary program comprised 3 sessions per week for 16 weeks. The first two sessions of each week (Monday and Wednesday) were performed in a chest-high warm pool during 45 minutes, and the third session (Friday) included 45 minutes of activity in the exercise room and 90 minutes of psychological-educational therapy. The exercise sessions were carefully supervised by a fitness specialist and by a physical therapist. Each exercise session included a 10 minute warm-up period with slow walk, mobility and stretching exercises, followed by 25 minutes of exercise, and finished with a 10 minute cool--down period of stretching and relaxation exercises. Monday sessions involved strength exercises. Wednesday sessions included balance oriented activities and dancing aerobic exercises and Fridays included aerobic-type exercises and coordination using a circuit of different exercises. The psychological-educational sessions were conducted by a psychologist with experience in treating fibromyalgia patients. The psychological therapy was based on the acceptance and commitment therapy developed by Hayes *et al*[14].

These sessions included: (i) General information of the disease from a bio-psycho-social perspective, enhancing the role of physical activity; (ii) Assessment of individual life goals and promotion of actions to develop these goals, while trying to cope with the thoughts and feelings related to pain that act as barriers to achieve these goals; (iii) Relaxation exercises aiming to improve body awareness. The pedagogical approach was based on the active participation of the patients through discussions, practical exercises and role-playing. Educational materials were provided to improve patients' understanding of fibromyalgia.

Intervention intensity was controlled by the rate of perceived exertion (RPE) based on Borg's conventional (6-20 point) scale. The medium values of RPE were 12 ± 2. These RPE values correspond to a subjective perceived exertion of 'fairly light exertion and somewhat hard exertion', that is, low-moderate intensity.

Biodanza: The program consisted of 16 sessions (one per week). Each session lasted 120 minutes and was divided into two parts: 1) a verbal phase of 35-45 minutes. In the first sessions, theoretical information about the program was provided, and from the 3rd session on, participants (seated in circle) were encouraged to express their feelings and to share with the group their experiences from the previous session; 2) the "vivencia" (living experience) itself (75-80 minutes), which involves moving/dancing according both to the suggestion given by the facilitator and the music played. The movements should express the emotions elicited by the songs (~12) as well as be a response to other peers' presence, proximity and feedback. Dances were performed in three different ways: (i) individually, (ii) in pairs, (iii) and with the whole group. The exercises proposed in each living experience were chosen according to the objective of the session and belong to 5 main groups: Vitality, sexuality, creativity, affectivity and transcendence. The Biodanza intervention took place once a week due to the fact that participants may feel these living experiences ("vivencias") so intensely that they need at least one week to assimilate/integrate these experiences. The medium values of RPE were 11 ± 1. These RPE values correspond to a subjective perceived exertion of 'fairly light exertion', that is, low intensity.

OUTCOMES

Pre and post-intervention assessment were carried out on two separate days with at least 48 hours between each session. This was done in order to prevent patients' fatigue and flare-ups (acute exacerbation of symptoms). The assessment of the tender-points, blind flamingo test, chair stand test and questionnaires was completed on the first visit. Body composition and the chair sit and reach, back scratch, 8 feet up & go, handgrip strength and 6-min walk tests on the second day.

We assessed 18 tender points according to the American College of Rheumatology criteria for classification of fibromyalgia using a standard pressure algometer (FPK 20; Effegi, Alfonsine, Italy)[13]. The algometer score was calculated as the sum of the minimum pain-pressure values obtained for each tender point. Tender point scored as positive when the patient noted pain at pressure of 4 kg/cm^2 or less. The total count of such positive tender points was recorded for each participant.

We performed a bioelectrical impedance analysis with an eight-polar tactile-electrode impedanciometer (InBody 720, Biospace)[15]. Weight (kg) and height (cm)

were measured, and body fat percentage and skeletal muscle mass (kg) were estimated. Body mass index (BMI) was calculated as weight (in kilograms) divided by height (in squared meters).

Physical fitness was assessed by the tests included in the Functional Senior Fitness Test Battery[16]: the 30-s chair stand, chair sit and reach, back scratch, 8 ft up and go and 6 min walk tests[16]. For the chair sit and reach and back scratch test we recorded the average of both limbs for the final analysis and not only the dominant side. Additionally, we also measured the handgrip strength and the blind flamingo test, which have been used in fibromyalgia patients[17]. The handgrip strength was measured using a digital dynamometer adjusted to the individual's hand size[18]. The patients maintained the standard bipedal position during the entire test with the arm in complete extension and did not touch any part of the body with the dynamometer except the hand being measured. The best value of 2 trials for each hand was chosen and the average of both hands was used in the analysis. The "blind flamingo test"[19] registered the number of trials needed to complete 30 s of the static position. One trial was accomplished for each leg and the average of both values was selected for the analysis.

The Fibromyalgia impact Questionnaire (FIQ) is a self-administered questionnaire, comprising 10 subscales of disabilities and symptoms, that has been validated for the Spanish fibromyalgia population[20]. The Short-Form Health Survey 36 (SF-36) is a generic instrument assessing health related quality of life that contains 36 items grouped into 8 scales: physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role, and mental health[21]. Furthermore, we also administered the following self-administered psychological questionnaires: (i) the Hospital Anxiety and Depression Scale (HADS)[22-23]; the (ii) Vanderbilt Pain Management Inventory (VPMI)[24-25] (assesses coping strategies); (iii) the Rosenberg Self-Esteem Scale (RSES)[26-27] to assess the concept of global self-esteem and (iv) the General Self-Efficacy Scale[28].

DATA ANALYSIS

Analyses of data included (i) a main analysis: per-protocol analysis, which included only those participants who complied with the study protocol (attendance at least 70% of the sessions), and (ii) secondary analysis: intention to treat (ITT), in which a patient was considered a study participant if she attended at least one treatment session. When post-test data were missing, baseline scores were considered post-test scores.

Independent t and chi-square tests were used to compare demographic variables between groups. We used a two-factor (group and time) analysis of covariance with repeated measures to assess the training effects on the outcome variables (pain, body composition, physical fitness and psychological outcomes) after adjusting for age. For each variable we reported the P value corresponding to the group (between-subjects), time (within-subjects) and interaction (group*time) effects. We calculated the P value for within-group differences by group when a significant interaction effect or time effect was present.

Analyses were performed using the Statistical Package for Social Sciences (SPSS, v. 16.0 for WINDOWS; SPSS Inc, Chicago).

RESULTS

The drop-out rates were 14.3% and 23.5% in the multidisciplinary and Biodanza interventions, respectively. One woman from the multidisciplinary and 3 women from the Biodanza group discontinued the program due to personal and health problems. Two women in the multidisciplinary group and one woman in the Biodanza group were not included in the analysis for attending less than 70% of the program sessions (attendance: 65.5, 45.2 and 58.3% respectively). Adherence to the multidisciplinary intervention was 85.3% (range 70 – 95%), and 85.4% (range 73 – 93%) for the Biodanza intervention. A total of 18 (85.7%) women from the multidisciplinary group and 13 (76.5%) from the Biodanza group completed the 4 month follow up and were included in the final (per-protocol) analysis.

During the study period, no participant reported an exacerbation of fibromyalgia symptoms beyond normal flares, and there were no serious adverse events. No women changed from the multidisciplinary group to the Biodanza group or vice versa, and there were no protocol deviations from the study as planned. Sociodemographic characteristics of women with fibromyalgia by group are shown in Table I. There were no statistically significant differences at baseline between groups except for the occiput L and anterior cervical L tender points.

PER-PROTOCOL ANALYSIS

We did not observe a significant interaction effect

TABLE I. SOCIODEMOGRAPHIC CHARACTERISTICS OF WOMEN WITH FIBROMYALGIA BY GROUP

	Multidisciplinary (n=18)	Biodanza (n=13)	P
Age, years	50.9 (7.7)	54.5 (7.5)	0.207
Menopause (yes/no), n (%)	12/6 (66.7/33.3)	9/4 (30.8/69.2)	0.880
Years since clinical diagnosis, n (%)			0.171
≤ 5 years	10 (55.6)	4 (30.8)	
> 5 years	8 (44.4)	9 (69.2)	
Marital status, n (%)			0.821
Married	13 (72.2)	8 (61.5)	
Unmarried	2 (11.1)	2 (15.4)	
Separated /Divorced/ Widowed	3 (16.7)	3 (23.1)	
Educational status, n (%)*			0.064
Unfinished studies	0 (0.0)	2 (18.2)	
Primary school	9 (50.0)	1 (9.1)	
Secondary school	5 (27.8)	5 (45.5)	
University degree	4 (22.2)	3 (27.3)	
Occupational status, n (%)^			0.500
Housewife	10 (55.6)	7 (77.8)	
Working	6 (33.3)	1 (11.1)	
Unemployed	1 (5.6)	0 (0.0)	
Retired	1 (5.6)	1 (11.1)	
Income, n (%)			0.643
< 1200,00 €	8 (44.4)	8 (61.5)	
1201,00 – 1800,00 €	4 (22.2)	2 (15.4)	
> 1800,00 €	6 (33.3)	3 (23.1)	

*Two missing data in biodanza group. ^ Four missing data in the biodanza group.

(group*time) in pain threshold, algometer score and tender points count. We observed a significant time effect for the pain threshold on the left side of supraespinatus and the right side of knee tender point (Table II). Post hoc analysis revealed that pain threshold on the left side of supraspinatus increased significantly in the multidisciplinary group and in the Biodanza group (P=0.003 and P=0.047, respectively) from pre-test to post-test. We observed no significant interaction or time effect in body composition or functional capacity (Table III).

There was a significant interaction effect for the scales of SF-36, physical role and social functioning (Table IV). Post hoc analysis revealed that there was a significant improvement on the social functioning scale (P=0.030) in the multidisciplinary group whereas did not change in the Biodanza group. The physical role scale improved in the multidisciplinary group and decreased in the Biodanza group but these changes were not significant (P=0.069 and P=0.341 respectively). A time effect was found for the FIQ total score, for the subscales of feel good, pain, fatigue and depression and for the vitality scale of SF-36 (Table IV). Post hoc analysis revealed that there was an improvement in the multidisciplinary and in the Biodanza group on FIQ total score (P=0.002 and P=0.032, respectively) and the subscale pain (P=0.001 and P=0.003, respectively) from pre-test to post-test. The multidisciplinary group also showed an improvement from pre-test to post-test in the subscales of FIQ fatigue (P=0.003) and depression (P=0.003). We observed a significant interaction effect for the passive coping scale of VPMI (Table V). Post hoc analysis revealed that there was a reduction in the use of passive coping (positive) (P<0.001) in the multidisciplinary group.

INTENTION TO TREAT ANALYSIS

Thirty-eight patients were included in the ITT analy-

TABLE II. EFFECTS OF A 16-WEEK MULTIDISCIPLINARY AND BIODANZA INTERVENTION ON PAIN THRESHOLD (KG/CM²), ALGOMETER SCORE (KG/CM²) AND TENDER POINT COUNT IN WOMEN WITH FIBROMYALGIA

	Group	Pre	Post	*P* for Group effect	*P* for Time effect	*P* for Interaction effect
Occiput R	Multidisciplinary	2.37 (0.13)	2.27 (0.11)	0.110	0.483	0.950
	Biodanza	2.61 (0.18)	2.53 (0.15)			
Occiput L	Multidisciplinary	2.28 (0.14)	2.22 (0.14)	0.011	0.437	0.212
	Biodanza	2.57 (0.19)	2.92 (0.19)			
Anterior cervical R	Multidisciplinary	1.66 (0.13)	2.03 (0.17)	0.837	0.102	0.063
	Biodanza	1.98 (0.17)	2.58 (0.30)			
Anterior cervical L	Multidisciplinary	1.70 (0.13)	1.91 (0.14)	0.020	0.322	0.137
	Biodanza	1.99 (0.17)	2.57 (0.19)			
Trapezius R	Multidisciplinary	2.49 (0.17)	2.86 (0.18)	0.494	0.181	0.829
	Biodanza	2.70 (0.23)	3.02 (0.24)			
Trapezius L	Multidisciplinary	2.62 (0.14)	2.97 (0.19)	0.113	0.383	0.761
	Biodanza	2.99 (0.18)	3.41 (0.25)			
Supraspinatus R	Multidisciplinary	2.92 (0.18)	3.51 (0.20)	0.171	0.021	0.616
	Biodanza	3.24 (0.24)	3.98 (0.27)			
Supraspinatus L	Multidisciplinary	2.92 (0.18)	3.60 (0.22)	0.138	0.055	0.743
	Biodanza	3.42 (0.24)	3.99 (0.29)			
Second rib R	Multidisciplinary	1.90 (0.15)	2.33 (0.17)	0.141	0.682	0.918
	Biodanza	2.28 (0.21)	2.67 (0.23)			
Second rib L	Multidisciplinary	1.83 (0.15)	2.32 (0.18)	0.085	0.399	0.887
	Biodanza	2.26 (0.21)	2.79 (0.25)			
Lateral epicondyle R	Multidisciplinary	2.16 (0.17)	2.71 (0.21)	0.144	0.184	0.069
	Biodanza	2.85 (0.22)	2.89 (0.29)			
Lateral epicondyle L	Multidisciplinary	2.31 (0.17)	2.70 (0.19)	0.096	0.188	0.818
	Biodanza	2.81 (0.23)	3.14 (0.26)			
Gluteal R	Multidisciplinary	3.03 (0.25)	3.60 (0.26)	0.882	0.276	0.318
	Biodanza	3.20 (0.33)	3.33 (0.35)			
Gluteal L	Multidisciplinary	3.17 (0.25)	3.71 (0.24)	0.549	0.658	0.750
	Biodanza	3.45 (0.33)	3.86 (0.32)			
Great trochanter R	Multidisciplinary	2.89 (0.20)	3.24 (0.26)	0.694	0.262	0.699
	Biodanza	3.09 (0.27)	3.32 (0.34)			
Great trochanter L	Multidisciplinary	3.04 (0.21)	3.39 (0.20)	0.537	0.364	0.703
	Biodanza	3.17 (0.29)	3.64 (0.27)			
Knee R	Multidisciplinary	2.61 (0.22)	2.43 (0.19)	0.535	0.157	0.185
	Biodanza	2.61 (0.29)	2.83 (0.25)			
Knee L	Multidisciplinary	2.63 (0.21)	2.47 (0.18)	0.943	0.024	0.565
	Biodanza	2.58 (0.28)	2.57 (0.25)			
Algometer score	Multidisciplinary	44.55 (2.30)	50.26 (2.76)	0.163	0.093	0.885
	Biodanza	48.80 (3.09)	56.05 (3.71)			
Tender points count	Multidisciplinary	17.02 (0.43)	15.83 (0.82)	0.176	0.272	0.210
	Biodanza	16.36 (0.58)	13.80 (1.10)			

Data are means (standard error of the mean). R, right; L, left.

TABLE III. EFFECTS OF A 16-WEEK MULTIDISCIPLINARY AND BIODANZA INTERVENTION ON BODY COMPOSITION AND PHYSICAL FITNESS IN WOMEN WITH FIBROMYALGIA

	Group	Pre	Post	*P* for Group effect	*P* for Time effect	*P* for Interaction effect
Weight (kg)	Multidisciplinary	68.3 (2.4)	68.3 (2.5)	0.958	0.469	0.337
	Biodanza	69.0 (3.1)	68.0 (3.3)			
Waist circumference (cm)	Multidisciplinary	86.9 (2.7)	88.1 (2.8)	0.788	0.068	0.100
	Biodanza	87.2 (3.4)	85.5 (3.5)			
BMI (kg/m^2)	Multidisciplinary	27.9 (1.1)	28.0 (1.2)	0.932	0.908	0.743
	Biodanza	27.8 (1.4)	27.8 (1.5)			
Body fat percentage	Multidisciplinary	38.4 (1.7)	37.8 (1.9)	0.491	0.790	0.968
	Biodanza	36.5 (1.9)	35.9 (2.2)			
Muscle mass (kg)	Multidisciplinary	22.3 (0.7)	27.4 (3.3)	0.559	0.296	0.225
	Biodanza	23.9 (0.8)	22.6 (3.9)			
Chair sit and reach (cm)	Multidisciplinary	-17.6 (4.5)	-7.7 (2.9)	0.813	0.793	0.823
	Biodanza	-15.7 (5.8)	-6.9 (3.7)			
Back scratch test (cm)	Multidisciplinary	-7.3 (2.4)	-9.3 (2.4)	0.699	0.921	0.973
	Biodanza	-6.5 (2.4)	-5.8 (2.5)			
Handgrip strength (kg)	Multidisciplinary	14.8 (1.6)	16.1 (1.3)	0.097	0.857	0.445
	Biodanza	17.9 (1.9)	20.4 (1.6)			
Chair stand test (n)	Multidisciplinary	8.0 (0.6)	8.2 (0.6)	0.864	0.101	0.643
	Biodanza	7.7 (0.8)	8.2 (0.7)			
8 feet up & go (s)	Multidisciplinary	8.1 (0.4)	7.9 (0.4)	0.133	0.525	0.080
	Biodanza	7.8 (0.5)	6.6 (0.5)			
30-s blind flamingo (failures)	Multidisciplinary	12.2 (1.1)	10.6 (1.3)	0.170	0.101	0.127
	Biodanza	9.6 (1.5)	9.6 (1.7)			
6 minute walk (metres)	Multidisciplinary	449.6 (16.3)	445.8 (14.6)	0.838	0.349	0.248
	Biodanza	443.9 (20.3)	461.0 (18.1)			

BMI, body mass index. Data are means (standard error of the mean).

sis (multidisciplinary group, n=21 and Biodanza group, n=17). We observed interaction (group*time) effects in the following outcomes: Pain threshold of lateral epicondyle (R) (P=0.027), subscale of FIQ anxiety (P=0.014), the scales of SF-36 physical role (P=0.009) and social functioning (P=0.011), the passive coping (P=0.030) and active coping scales from the VPMI (P=0.036) and anxiety of HAD (P=0.033). Significant time effects were found for pain threshold of supraespinatus R (P=0.009) and knee R (P=0.012) and for the subscales of FIQ feel good (P=0.011) and depression (P=0.011) and for the vitality scale of SF-36 (P=0.042).

DISCUSSION

The main finding of the present study is that 16-weeks of a multidisciplinary intervention obtained greater benefits on social functioning and the use of passive coping strategies than a Biodanza intervention. The multidisciplinary group also improved the FIQ subscales of fatigue and depression. The FIQ total score and the subscale of pain improved in both intervention groups in a similar manner. Due to the lack of control group we cannot know whether these improvements are attributed to the treatments or to other causes. Nevertheless, in previous studies in which we have analyzed the effect of 3 months of these types of interventions compared with control groups we observed no improvement in the control group and even worsening in some outcome variables[8, 12]. Both interventions were well tolerated and did not have any deleterious effects on patients' health.

The greater benefits in the multidisciplinary group on social functioning and coping strategies could be attributed to the psychological program included in this in-

TABLE IV. EFFECTS OF A 16-WEEK MULTIDISCIPLINARY AND BIODANZA INTERVENTION ON TENDER POINT COUNT, FIBROMYALGIA IMPACT QUESTIONNAIRE (FIQ) AND SHORT FORM 36 (SF-36), (PRIMARY OUTCOMES) IN WOMEN WITH FIBROMYALGIA

	Group	Pre	Post	*P* for Group effect	*P* for Time effect	*P* for Interaction effect
FIQ						
Total score	Multidisciplinary	74.6 (3.1)	62.9 (3.7)	0.597	0.021	0.833
	Biodanza*	77.7 (3.9)	64.9 (4.7)			
Physical function	Multidisciplinary	5.4 (0.5)	4.0 (0.5)	0.758	0.144	0.156
	Biodanza	4.4 (0.6)	4.3 (0.7)			
Feel good	Multidisciplinary	8.7 (0.5)	7.8 (0.7)	0.482	0.043	0.322
	Biodanza	8.6 (0.6)	6.7 (0.8)			
Pain	Multidisciplinary	7.9 (0.4)	6.3 (0.4)	0.788	0.003	0.787
	Biodanza	8.2 (0.6)	6.4 (0.5)			
Fatigue	Multidisciplinary	8.5 (0.4)	7.6 (0.5)	0.951	0.028	0.816
	Biodanza	8.4 (0.6)	7.7 (0.6)			
Sleep	Multidisciplinary	8.3 (0.4)	8.1 (0.4)	0.489	0.269	0.589
	Biodanza	8.9 (0.6)	8.3 (0.6)			
Stiffness	Multidisciplinary	7.6 (0.5)	6.1 (0.6)	0.357	0.159	0.883
	Biodanza	8.3 (0.7)	7.0 (0.8)			
Anxiety	Multidisciplinary	8.5 (0.4)	5.9 (0.6)	0.827	0.135	0.056
	Biodanza	7.7 (0.5)	6.9 (0.8)			
Depression	Multidisciplinary	7.0 (0.7)	4.9 (0.7)	0.331	0.009	0.614
	Biodanza	7.8 (0.9)	6.3 (0.9)			
SF-36						
Physical function	Multidisciplinary	35.8 (4.7)	42.4 (4.8)	0.733	0.717	0.600
	Biodanza	35.0 (6.0)	38.3 (6.2)			
Physical role	Multidisciplinary	0.0 (0.0)	9.7 (4.6)	0.742	0.205	0.038
	Biodanza	9.1 (5.6)	4.5 (5.9)			
Bodily pain	Multidisciplinary	18.6 (3.0)	32.7 (4.8)	0.835	0.456	0.205
	Biodanza	23.7 (3.8)	30.0 (6.1)			
General health	Multidisciplinary	27.7 (3.2)	31.9 (3.3)	0.859	0.126	0.655
	Biodanza	26.0 (4.0)	31.9 (4.2)			
Vitality	Multidisciplinary	20.4 (4.0)	23.5 (3.5)	0.831	0.007	0.231
	Biodanza	16.2 (5.1)	25.2 (4.5)			
Social functioning	Multidisciplinary	31.7 (6.1)	51.6 (5.8)	0.784	0.531	0.030
	Biodanza	44.3 (7.8)	43.9 (7.5)			
Emotional role	Multidisciplinary	25.5 (8.5)	42.7 (10.3)	0.127	0.748	0.230
	Biodanza	15.8 (10.8)	12.0 (13.2)			
Mental health	Multidisciplinary	41.7 (4.5)	53.3 (4.6)	0.331	0.159	0.400
	Biodanza	37.3 (5.8)	44.0 (5.9)			

Data are means (standard error of the mean).

tervention. In the psychological program, the psychologist played an active role and encouraged patients to improve their communication with their social environment, to accept pain as well as to adopt active coping. In contrast, although there was a verbal part of the Biodanza session in which participants were encouraged to express their feelings and experience related to the previous session, neither the facilitator nor the rest of the group intervened in the participants' comments.

We found that a multidisciplinary intervention re-

TABLE V. EFFECTS OF A 16-WEEK MULTIDISCIPLINARY AND BIODANZA INTERVENTION ON COPING STRATEGIES, ANXIETY AND DEPRESSION, SELF-EFFICACY AND SELF-ESTEEM IN WOMEN WITH FIBROMYALGIA

	Group	Pre	Post	*P* for Group effect	*P* for Time effect	*P* for Interaction effect
VPMI						
Passive coping	Multidisciplinary	25.6 (0.7)	21.4 (0.9)	0.665	0.124	0.043
	Biodanza	23.7 (0.9)	22.2 (1.2)			
Active Coping	Multidisciplinary	15.6 (0.9)	17.0 (0.9)	0.282	0.890	0.079
	Biodanza	15.9 (1.1)	14.2 (1.1)			
HADS						
Anxiety	Multidisciplinary	11.9 (1.0)	10.4 (1.0)	0.582	0.942	0.112
	Biodanza	12.1 (1.3)	11.9 (1.3)			
Depression	Multidisciplinary	9.6 (1.1)	8.5 (1.0)	0.891	0.212	0.668
	Biodanza	9.1 (1.4)	8.5 (1.3)			
SELF-EFFICACY	Multidisciplinary	26.1 (1.9)	27.1 (1.5)	0.240	0.753	0.422
	Biodanza	24.1 (2.4)	23.1 (1.9)			
RSES	Multidisciplinary	29.1 (1.4)	29.2 (1.3)	0.277	0.838	0.621
	Biodanza	26.4 (1.2)	27.1 (1.7)			

VPMI = Vanderbilt Pain Management Inventory; HADS = Hospital Anxiety and Depression Scale; RSES = Rosenberg Self-Esteem Scale. Data are means (standard error of the mean).

duced the use of passive coping more than the Biodanza intervention. The multidisciplinary intervention also increased the use of active coping but it was not statistically significant. Patients use active or adaptive pain coping strategies when they attempt to control their pain or to function despite their pain[24]. Alternatively, patients may use passive or maladaptive pain coping strategies when relinquishing control of their pain to others or when allowing other areas of their life to be adversely affected by pain[24]. A high use of passive coping is a psychological predictor of pain and depression and is associated with lower levels of functioning and higher levels of pain intensity and impairment[29-31]. In contrast, high use of active coping is associated with high levels of daily functioning[29]. More attention should be given to community based strategies for improving the use of active self-management for chronic pain[32].

Both interventions improved pain rating (FIQ), which is something to highlight considering that pain is the main symptom of fibromyalgia[13,33]. However, only the multidisciplinary intervention obtained improvements in fatigue and depression. Overall, chronic pain had been associated with higher level of anxiety and depression[34] and specifically in fibromyalgia[3,35]. In fact, fibromyalgia patients reported higher scores of depression and anxiety than other chronic pain patients[34], and depression is the most common mental comorbidity condition (~38.6% of patients)[36]. Hence, we believe this improvement could be considered as clinically relevant. Jentoff *et al.*[37] compared 20-weeks (twice a week) of two types of physical interventions, one based on pool exercise and the other one on land-based exercise. They concluded that exercise in a warm-water pool may have additional positive effects on self-reported physical impairment and symptoms such as self-reported pain, depression, and anxiety compared with exercise performed in a gymnasium, which concurs with our results.

We did not obtain significant statistical change in tender points count and algometer score, albeit there was a reduction of ~1.2 points in the multidisciplinary group and ~ 2.6 points in the Biodanza group. Likewise, the algometer score increased 5.7 and 7.25 kg/$/cm^2$ in the multidisciplinary and in the Biodanza intervention respectively. The fact that these improvements were slightly better in the Biodanza than in the multidisciplinary intervention is somehow unexpected considering that the multidisciplinary intervention was carried out 3 times a week (versus once a week in the Biodanza intervention) and the exercise was performed in warm water. Hydrotherapy (with or without exercise) has been recommended for the management of fibromyalgia because of the water buoyancy and warm temperature[38]. Despite this, there is no clear evi-

dence regarding the effect of pool exercise on tender points count, and whereas several studies[39-40] reported improvement in tender points count, others did not[41-44]. Discrepancy among studies could be due to the fact that pain relief is related to a higher length and frequency of warm-water exercise sessions per week[43].

We did not observe any benefit in body composition nor in physical fitness, which might be expected due to the low intensity and frequency of the interventions. These findings do not concur with other studies that observed improvements after multidisciplinary interventions in the 6-min walk test[42,45-47]. To note is that we used a relatively small swimming pool (4 x 7 meters), and a relatively low intensity program, which may explain why we did not obtain any significant change in physical fitness. Likewise, we did not observe improvements in muscular strength in the upper or lower extremities, which is in accordance with other pool exercise interventions[17,39].

Multidisciplinary treatment showed greater benefits in social functioning and coping strategies and additional gains in fatigue and depression than Biodanza. These results are in agreement with a recent review which concludes that physical exercise and multimodal cognitive behavioural therapy are the most widely accepted and beneficial forms of non-pharmacological therapy[48]. However, considering the observed improvements in fibromyalgia impact and pain after the Biodanza intervention, this alternative therapy could be recommended for (i) those patients who are sedentary and want to initiate a more active lifestyle, (ii) patients who have a low physical function or (iii) those with lack of free time. Further studies are needed to better understand the effectiveness of alternative and complementary therapies such as Biodanza[10,46].

A limitation of our study was not to randomize the participants into the multidisciplinary and Biodanza intervention, yet, there was no difference between groups in all the variables studied. Most of the effects reported in this study would become statistically non-significant after correction for multiple testing. However, we believe that to conclude negatively from a purely statistical point of view would be too stringent. We believe that most of the observed changes are informative and clinically relevant. It is unclear whether more positive results than those reported in this study could be found if the sample sizes were bigger than the current size. Strengths include the comprehensive assessment of body composition and physical fitness measures, which are limited in other studies.

In summary, 16 weeks of multidisciplinary intervention induced greater benefits than a Biodanza intervention for social functioning and the use of passive coping strategies in women with fibromyalgia. The multidisciplinary group also obtained additional benefits on fatigue and depression. Both groups improved the FIQ total score and the subscale of pain but due to the lack of control group we can not assure that this was a result of the interventions.

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