Health effects derived from an annual course of Biodanza: an empirical study

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Introduction

In recent years there has been a developing interest in the role that physical activity plays in promoting people's wellbeing and in particular in the disciplines that recognize the body and expressive movement as their focus. In line with this interest, the present study intends to evaluate the effectiveness of Biodanza, a discipline that holds psychophysical integration as its aim (Toro, 2000) to promote health. In particular it intends to assess the possible specific effects of Biodanza on some dimensions of wellbeing such as: psychological wellbeing (Ryff, 1989), stress (Lemyre et al., 1990) and alexithymia (Bagby et al., 1994). It is noted in research how much these measures pertain to general wellbeing.
Various studies (Ryff et al., 2006) have, in fact, shown that low levels of psychological wellbeing make individuals more vulnerable in the face of stressful events and disease, while the presence of psychological wellbeing increases the action of the immune system and promotes the processes of coping. There are also papers in which the effects of stress are also widely demonstrated, both physically (e.g. decline in immune function, gastrointestinal problems, heart disorders) (Biondi and Pancheri, 1984; Buckingham, Gillies and Cowell, 1997) and on the level of psychological wellbeing (e.g. anxiety, depression, burnout) (Yoon and Joormann, 2012; Gandi et al., 2011).
Several studies (Ricci Bitti and Caterina, 2001; Taylor and Bagby, 2004) show how the failure of cognitive processing of emotions can lead individuals to deal with events through impulsive behaviours and/or intense physiological responses. It is for this reason that alexithymia is one of the factors that can cause the onset of somatic diseases (De Gucht and Heiser, 2003; Waller and Scheidt, 2004).
Other studies have shown that physical activity has effects in relieving symptoms of anxiety and depression, improving moods, subjective wellbeing and self-perception (Calfas and Taylor, 1994; McDonald and Hodgdon, 1991; Taylor, 2000).
The scientific and systematic studies on the beneficial effects of dance (Keogh et al., 2009) are recent. Dance with a recreative purpose presents positive effects in patients with depression, fibromyalgia and anxiety (Jeong et al., 2005; Bojner-Horwitz et al., 2003), but also the wellbeing of non-professional dancers and in particular on the social, physical and emotional dimensions (Murcia et al., 2010). In 1966 the American Dance Therapy Association defined dance with therapeutic objectives as "a form of psychotherapy that uses movement as a means of expression and communication within a process aimed at promoting the psychophysical integration of the individual" (Cavallo, 2007).
In order to consider dance from a health and personal development perspective it is useful to refer to what Lewis postulates (1986):
• The human body is a complex, open system, home to continuous and constantly changing processes, of exchanges, relationships and integrations along a mind-body continuum, in turn inserted into an individual-environment continuum.
• If the body movement reflects the internal emotional states of the individual, then significant changes in motor behaviour can bring about changes in the psyche.
• The body retains even those experiences which have not become a conscious part of the personality in the somatic memory. Movement, whose neurological origins precede other representative modes, can easily reach remote areas of the psyche.
• The individual has a mental representation of their physical being that develops gradually along with the

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neuromuscular coordination in interactions with the environment. This helps to develop the awareness of differentiation; it is linked to the sense of a bodily self, necessary for the development of the psychological self, capable of perceiving the affective dimensions of the experience.
Among the types of dance developed in recent years to improve the welfare of people, through a psycho-physical integration, we find Biodanza, created in the 60's by Prof. Toro, the Chilean psychologist and anthropologist, following his research on the effects of music and movement on wellbeing, and subsequently internationally diffused.
In 1965, Toro took part in an experimental medical program in which he had the possibility to develop free dance techniques with patients of the Psychiatric Hospital of Santiago de Chile. It was from there that the Biodanza system, which he defined as "a system of human integration" that allows each person to redeem their psycho-physical unity, to perceive another person as their own kind and to recognize themselves as part of the environment, was launched (Toro, 2000).
The method of Biodanza stimulates the healthy part of the person and is proposed as a path of personal growth, through expressive movements, combined with the music and conducted in groups. Biodanza aims to stimulate the joy of living, the pleasure of feeling intensely alive and to experience bonds with others in the "here and now" and progressively both in daily life and in the long term (Sudres, Villac and Brandibas, 2012).
At the base of its methodology is the concept of *vivencia,* namely << the experience lived with great intensity by an individual in the present moment (...) >> (Toro, 2000, p.25). Through experiences in the "here and now" the person has the opportunity to make contact with themselves and with their own emotions, to feel the body and to express their identity (Toro, 2000). The central objective of Biodanza is the expression of identity, a set of essential qualities, which give a person their uniqueness.
The elements that characterize the Biodanza method are music, movement, vivencia and the group. The theory on which it is based argues that the combined use of these elements allow giving expression to the five basic human potentials that develop in early childhood and then sediment over the years. They are: *vitality*, linked to early experience of action and rest; *sexuality*, associated with contact and with the first feelings of pleasure produced by being caressed during lactation; *creativity* which arises from exploratory impulses, from curiosity and from language; *affectivity*, associated with the sense of caring and nurturing; *transcendence*, that is, the sense of integration with the environment and of harmony with life. Biodanza, stimulating the right brain, the seat of the creative functions, would therefore have the effect of strengthening and re-balancing these human potentialities, favouring the natural recovery of health status (Olivieri and Zappi, 2007).
Biodanza is not practiced individually but in a non-judgmental group who offer affective containment due to an intense interpersonal exchange. The interpersonal experience has an important role in consolidating the body image, which represents a dimension that is significant for the welfare and development of the person (Fischer and Cleveland, 1968).
A Biodanza course takes place in weekly sessions. After the initial presentation of the system, each subsequent session, of approximately two and a half hours, is articulated into three phases conducted by a facilitator[2] who guides the practice and the course of the participants.
In the first phase there is a brief verbal exchange intended for the group to share the emotions and feelings both from the previous session and following on from it. The facilitator welcomes what each expresses without re-launching and/or interpreting.
Secondly the theme of the encounter is presented - contact, identity etc. - connected to the five "lines of vivencia": vitality, sexuality, creativity, affectivity and transcendence (Sudres, Villac and Brandibas, 2012).
In the third phase, the facilitator demonstrates the exercises chosen for the session and then they are danced. The exercises are drawn from a repertoire of about 250 sensory-motor, affective-motor and kinesthetic exercises, designed by Prof. Toro and arranged in a progressive sequence with guide-lines and clear goals. The musics used have been subjected to the study of their emotional content to evaluate the effects they produce and the type of *vivencia* that they evoke. During this stage not using words is suggested, as, according to the theoretical model, activating the cortical structures would limit the emergence of emotions that allow surrender to the experience.
Biodanza focuses on non-verbal communication by stimulating tactile sensitivity and musical perception, in

[2] Operator of Bio-natural Disciplines who has a qualification in Biodanza

order to compensate for the imbalance caused by a culture that privileges cognitive functional, rational and analytical functions, to the detriment of the unconscious and integrating functions.

In recent years research has been conducted to evaluate the efficacy of Biodanza in improving health. In particular, a group coordinated by Markus Stück has conducted several studies showing that participants in Biodanza courses have a drop in blood pressure (Stück et al., 2007), cortisol (Stück and Villegas, 2012), the levels of alexithymia (Sudres et al., 2012), better functioning of the immune system (Stück et al., 2004) and an increase in wellbeing (Stück and Villegas, 2012).

Villegas et al., (2012) conducted a study with a sample of 46 students: 31 participated in a Biodanza course and 20 in an aerobics class. At the end of the courses the Biodanza group, compared to the aerobics, showed an increase in optimism, self-efficacy and stress management skills and a reduction in levels of impatience.

Carbonell-Baeza et al. (2010) evaluated the effects of Biodanza in 59 women with fibromyalgia: with 27 in the experimental and 32 in the control group. The experimental group participated in Biodanza encounters once a week for 3 months. At the end of the course the experimental group, compared to the control group, had a lower perception of cervical pain and supraspinatus and the syndrome had less influence on the quality of life.

Given the limited number of subjects these studies are not sufficient to demonstrate the effectiveness of Biodanza, so more research is needed.

For Toro (2000), the specific effectiveness of Biodanza would depend mainly on the combined action of free movement and *vivencia* intended as a state of deep integration of the individual with themself and with the moment that they are living. It then becomes important that the effectiveness of Biodanza is evaluated by comparing it with activities that have the same non-specific characteristics, which are, the group, the music and dance. The abovementioned research made use of control groups with activities that are not characterized by such non-specific aspects, such as aerobics.

Objectives and hypotheses

This study aims to evaluate the effectiveness of Biodanza specific to promoting wellbeing, by comparing a group that has no clinical pathologies and who practice this activity for approximately a year, with a group that participates in other physical activities (which have the same non-specific aspects) and with an additional group of sedentary people who do not participate in any physical activity.

It hypothesizes that the group who participated in the annual course of Biodanza, unlike the group that participated in other activities and the sedentary group, at the end of the course will present:

• an increase in psychological well-being (Stück and Villegas, 2012) intended as a dynamic and multidimensional phenomenon which includes a wide range of psychological and social potential (Ryff, 1989);

• a decrease in stress (Villegas et al., 2012) conceived as an activation of the organism in relation to events perceived and interpreted as threats to their mental and physical well-being (Lazarus, 1991);

• a decrease of emotional dysregulation (Sudres et al., 2012) to define that to which we refer regarding the construct of alexithymia, understood as a cognitive deficit in the ability for emotional processing (Taylor, Bagby and Parker, 1997).

A further objective of the present study is to investigate if people participating in Biodanza courses, as compared to those who enrolled in other dance classes and the sedentary group, present different initial characteristics in the dimensions of psychological wellbeing, stress and emotional dysregulation.

Participants

The research participants are divided into three groups: one experimental and two control.

1) Experimental Biodanza Group, composed of 96 people who started a *Biodanza* course for the first time; 2) Control Group *Physical Activity*[3] composed of 71 people who began, in most cases (> 86.76%) tango courses or Latin American dances that have the non-specific characteristics of Biodanza 3) *Sedentary* control group, consisting of 68 people who did not carry out any physical activity with a minimum weekly frequency.

[3] The Physical activity group was composed of people enrolled in the following courses: Dance 86,76% (Tango, Latin American dance) other physical activities 13,24% Gym.

We have tried to balance gender and age within the three groups, as shown in table 1.

Tab. 1 - Descriptive statistics of the three groups

		Groups		
		Biodanza	*Physical Activity*	*Sedentary*
N°		96	71	68
Gender				
	Men	18 (18,75%)	22 (30,99%)	13 (19,12%)
	Women	78 (81,25%)	49 (69,01%)	55 (80,88%)
Age				
	average±ds	44,92±9,82	38,14±9,91	43,10±10,07
	minimum & maximum	25-68	19-63	24-67
Body Mass Index				
	average±ds	23,15±3,65	22,27±3,23	22,80±3,27
	minimum & maximum	17,72-38,06	15,73-34,19	16,53-36,14
Years of Schooling		13,96±3,51	13,76±3,24	13,63±3,22

Instruments

The research participants were asked to fill in a registration card and a battery of three questionnaires.
-The Registration card collected information on age, gender, education level and body weight.
-The Psychological wellbeing was measured with the Italian version of the *Psychological Wellbeing Scale* 84 items (Ruini et al., 2003; Ryff, 1989) that assesses, on the Likert scale of 6 steps, the indicators of good mental functioning: *self-acceptance, positive relations with others, autonomy, environmental control, purpose in life, personal growth*, measures linked both to the quality of life and to the state of physical health.
-The Stress was measured with the Italian version of *Measure du Stress Psychologique* (MSP) assessing on a Likert scale of 4 steps, the state of stress is understood as a total of the individual's response to the environment system (Di Nuovo et al. , 2000; Lemyre et al., 1990). In addition to the total score of the stress level you can determine the following sub-dimensions*: loss of control, irritability; psychophysiological sensations; sense of effort and confusion; depressive anxiety; pain and physical problems; hyperactivity, acceleration behaviour.*
- The alexithymia was evaluated with the Italian version of the *Toronto Alexithymia Scale* of 20 items (TAS-20; Bressi et al., 1996; Bagby et al., 1994). The tool allows the assessment on a Likert scale of 5 steps, of levels of emotional dysregulation and measures three dimensions: *the difficulty in identifying emotions and distinguishing them from bodily sensations; difficulty in describing emotions and then communicating them to others; externally oriented and then hyper-realistic thinking,* with limited emotional involvement and a lack of imagination. The sum of the three dimensions gives us a total score for alexithymia.

Procedure

Thanks to the collaboration of the Biodanza Italy Association 26 teachers were identified, and those who were available, distributed throughout the country, received material to be delivered to participants electronically and on paper (a letter of presentation of the research, a form for informed consent, a registration card and questionnaires).
The teachers took steps to complete the questionnaires with the newcomers to their course, participants who thus became members of the experimental group. To construct the two control groups (*Physical Activity and*

Sedentary) people were identified, in the same territories, having the equivalent sex and age to that of the participants of the *Biodanza* group.
The questionnaires were filled in over two phases: early (*pre-test*) and at the end of the courses, which lasted about 9 months (*post-test*). The questionnaires filled in on paper were delivered to teachers in a sealed envelope, signed on the flap, while those compiled in electronic format, were sent by the participants directly to the researchers.
All questionnaires were treated with the utmost confidentiality, in accordance with law no. 196/2003 on the protection of privacy and personal data.

Data analysis

In order to test the hypotheses multivariate analysis of covariance (MANCOVA) and univariate analysis (ANCOVA) were conducted, which considered as independent variables, the Group (*Biodanza, Physical Activity, Sedentary*) and the measures investigated by questionnaires as dependent variables.
Two blocks of analysis were conducted:[4]
• The first block evaluated any initial differences (the first period) among the three groups in relation to the investigated measures;
• The second block was aimed at evaluating the effectiveness of Biodanza and considered the **Phase** (*pre-course and post-course*) as a variable of repeated measure.
In the analytical diagrams, age was considered as a covariate because, following a prior check, it emerged that the *Physical Activity* group was significantly younger than the other two ($F_{2.232} = 9.80$; $p = 0.00008$; partial $\eta^2 = 0.078$; Biodanza 44.92, Physical Activity 38.14, Sedentary 43.1).
The Body Mass Index ($F_{2.231} = 1:33$; $p = 0.3$; partial $\eta^2 = 0.011$) and Years of Schooling ($F_{2.222} = 0:23$; $p = 0.8$; partial $\eta^2 = 0.002$), not having evidenced significant differences among the three groups, were not considered in the analysis of designs, such as different proportions of men and women being not significant in the chi-square test (χ^2) (Biodanza vs. Physical Activity $\chi^2 = 3.35$, $p = .07$; Biodanza vs. Sedentary $\chi 2 < 1$, $p = .9$; Physical Activity Sedentary vs. $\chi 2 = 2.60$, $p = .1$). For comparison of the different levels of the independent variables in the post hoc test "Tukey's Honestly Significant Difference" was used.

Results

1st Block - Comparison between the three groups in the first administration

The following will discuss the results of the comparison between the groups in the dimensions investigated pre-course.

Psychological Wellbeing

The MANCOVA on the dimensions of *Psychological Wellbeing* presents a significant effect (Rao's$_{12.448}$ = 4.63; $p = 0.000001$; partial $\eta^2 = 0.110$): there are lower levels of wellbeing present in the Biodanza group with respect to the other two groups. The ANCOVA shows that this effect is contributed to by *self-acceptance, positive relationships, autonomy, environmental control and purpose in life*. (Table 2).

[4] On the basis of the data that emerged in the first two blocks, an ulterior analysis was decided upon.

Tab. 2 - Medium and Standard Deviations and the results of the ANCOVA in the Psychological Wellbeing measures.

	Groups			*ANCOVA*	
	Biodanza	*Physical Activity*	*Sedentary*	$F_{2.229}$	*P*
Self-acceptance	53.36±12.15[ab]	59.67±11.39	59.16±9.39	8.98	.0002
Positive relationships	61.94±11.31[ab]	67.51±10.10	67.00±10.95	6.67	.002
Autonomy	55.26±13.39[ab]	63.34±10.16	62.07±10.87	13.81	.000002
Environmental Control	54.56±10.96[ab]	62.39±10.19	60.07±10.22	13.48	.000003
Purpose in life	58.21±9.40[a]	63.21±8.70	61.57±8.75	5.94	.003
Personal growth	65.89±9.68	66.91±8.83	64.61±7.64	0.92	.4

Significant Differences in post hoc test:
[a] = Biodanza group different from the Physical Activity group
[b] = Biodanza group different from the Sedentary group

Stress

The ANCOVA on the total stress score presents a significant effect ($F_{2.231} = 14.96$; $p = 0.000001$; partial $\eta^2 = 0.115$): The Biodanza group presents higher levels of stress with respect to the other two groups (Biodanza group vs. the other two groups: Post hoc Tukey's Honestly Significant Difference <.008).
The MANCOVA on the individual measures of stress is significant (Rao's$_{12.452} = 5.13$; $p = 0.000001$; partial $\eta^2 = 0.120$). The ANCOVA indicates that this effect is contributed to by the *loss of control, psychophysiological sensations, effort and confusion, depressive anxiety* and *hyperactivity*: there are higher levels in this field present in the Biodanza group than in the other two groups (Table. 3).

Table 3 - Mean and Standard Deviations of the Stress measures and results of the ANCOVA
Groups ANCOVA

	Groups			*ANCOVA*	
	Biodanza	*Physical Activity*	*Sedentary*	$F_{2.231}$	*P*
Loss of control	2.01±0.52[a]	1.73±0.49	1.82±0.48	7.69	.0006
Psychophysiological sensations	1.74±0.63[ab]	1.34±0.38	1.43±0.47	14.21	.000002
Effort and confusion	2.06±0.58[ab]	1.46±0.49	1.72±0.63	27.35	.000001
Depressive anxiety	2.08±0.63[ab]	1.62±0.51	1.79±0.63	13.16	.000004
Pains	2.00±0.71	1.79±0.62	1.85±0.62	2.69	.07
Hyperactivity	2.37±0.73	2.18±0.60	2.15±0.66	3.68	.03

Significant Differences to post hoc test:
[a] = Biodanza group different from the group Physical Activity
[b] = Biodanza group different from Sedentary group

Alexithymia

The ANCOVA on the total score of Alexithymia is significant ($F_{2.231} = 5.15$; $p = 0.006$, partial $\eta^2 = 0.043$): participants in Biodanza courses present higher levels than the other two groups, in particular with respect to the Physical activity Group (Biodanza group vs. Physical activity group: Post hoc Tukey's Honestly Significant Difference = 0.01).
The MANCOVA on individual measures of alexithymia is significant (Rao's$_{6.458} = 5.82$; $p = 0.000007$; partial $\eta^2 = 0.071$). The ANCOVA indicate that this effect is contributed to mainly by *the difficulty in identifying feelings*: the participants in the Biodanza course present greater difficulties with respect to the other two groups (table 4).

Tab. 4 - Mean and Standard Deviations in Alexithymia measures and results of the ANCOVA

	Groups			*ANCOVA*	
	Biodanza	*Physical Activity*	*Sedentary*	$F_{2.231}$	*P*
Difficulty in identifying feelings	17.55±5.96[ab]	12.90±4.48	14.51±5.69	15.59	0.000001
Difficulty in communicating feelings	12.84±4.92	11.49±4.33	11.74±4.48	1.85	0.2
Externally oriented thinking	15.83±4.42	16.28±4.77	16.09±5.15	0.196	0.8

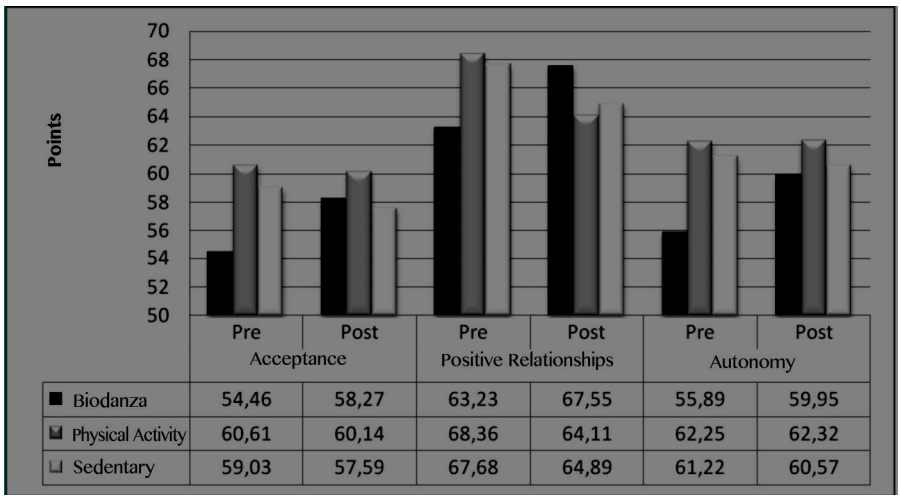
2nd Block - Effectiveness of Biodanza at the end of the courses

The following will discuss the results of the comparison between the pre and post tests in the three groups. 122 participants completed the research, 56 *Biodanza*, 29 *Physical Activity*, 37 *Sedentary*, with personal characteristics equivalent to those of the initial groups.

Psychological Well-being

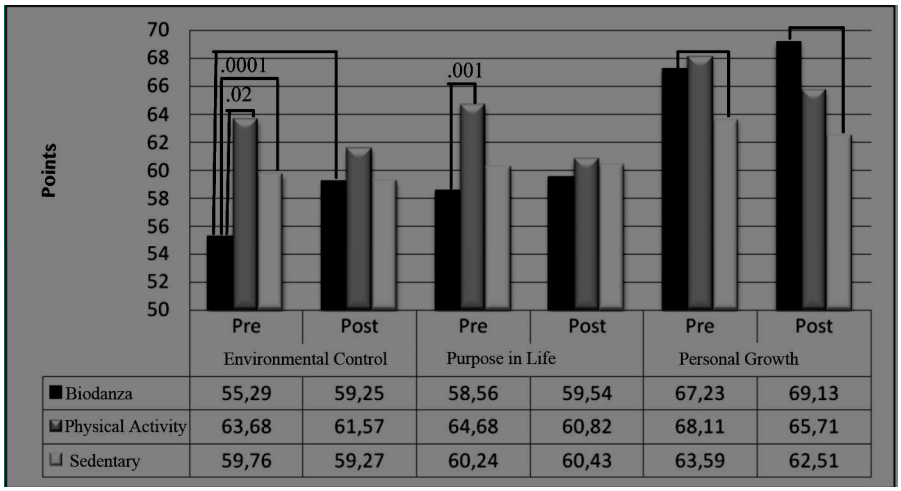
The MANCOVA presents an interaction *Group x Phase* on the measures of *Psychological wellbeing* (Rao's$_{12.226} = 3.69$; $p = 0.00004$; partial $\eta^2 = 0.157$).
The ANCOVA evidenced that this effect is contributed to by all the measures of wellbeing, specifically *self-acceptance* ($F_{2.118} = 5.63$; $p = 0.005$, partial $\eta^2 = 0.083$), *positive relationships* ($F_{2.118} = 14.81$; $p = 0.000002$; partial $\eta^2 = .187$), *autonomy* ($F_{2.118} = 4.85$; $p = 0.009$; partial $\eta^2 = .076$), *environmental control* ($F_{2.118} = 5.84$; $p = 0.004$; $\eta^2 =$ Partial .092), *purpose in life* ($F_{2.118} = 3.69$; $p = 0.03$, partial $\eta^2 = 0.040$) and *personal development* ($F_{2.118} = 4.24$; $p = 0.02$, partial $\eta^2 = 0.056$). This means that the participants in Biodanza, after the first year, improve their levels of wellbeing, particularly in the first four aspects. The other two groups did not present significant changes (Fig. 1, 2).

Fig. 1 - Differences between the groups according to the phase in self-acceptance scale, Positive Relations, Autonomy



	Pre	Post	Pre	Post	Pre	Post
	Acceptance		Positive Relationships		Autonomy	
Biodanza	54,46	58,27	63,23	67,55	55,89	59,95
Physical Activity	60,61	60,14	68,36	64,11	62,25	62,32
Sedentary	59,03	57,59	67,68	64,89	61,22	60,57

Fig. 2 - Differences between the groups in relation to the phase in Environmental Control, Purpose in Life, Personal Growth measures

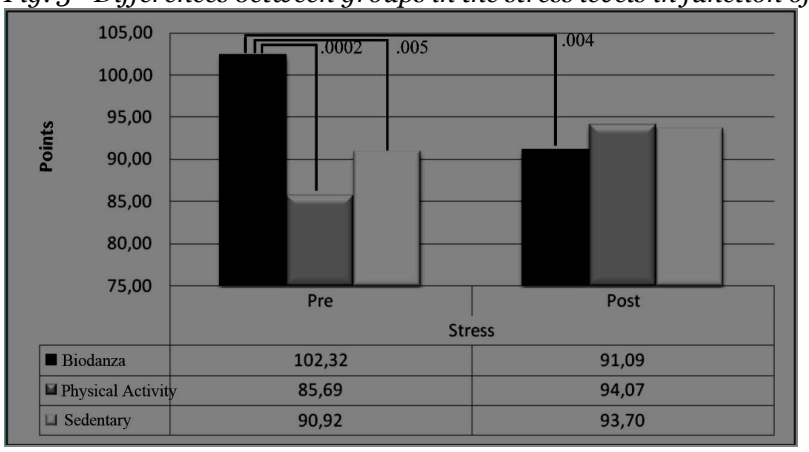


	Pre	Post	Pre	Post	Pre	Post
	Environmental Control		Purpose in Life		Personal Growth	
Biodanza	55,29	59,25	58,56	59,54	67,23	69,13
Physical Activity	63,68	61,57	64,68	60,82	68,11	65,71
Sedentary	59,76	59,27	60,24	60,43	63,59	62,51

Stress

The ANCOVA presents an interaction *Group x Phase* on the total stress score ($F_{2.119}$ = 12:40; p = 0.00001; partial η^2 = 0.162) in Biodanza participants after the first year of the course the stress levels are reduced, the other two groups did not show significant changes (Fig. 3).

Fig. 3 - Differences between groups in the stress levels in function of the Phase



The MANCOVA presents an interaction *Group x Phase* on the stress scale (Rao's$_{12.228}$ = 2.29; p = 0.009, partial η^2 = 0.100). The ANCOVA evidence that this effect is contributed to by all the measures, in particular the *loss of control*, the *psychophysical sensations*, *effort and confusion*, *depressive anxiety, pain* and *hyperactivity*: participants, after the first year of the course, have decreased stress levels, in particular the *loss of control*, *stress* and *confusion*, *depressive anxiety* and *pain*; the other two groups did not present significant variations (Fig. 4, 5).

Fig. 4 - Differences between the groups according to the phase in aspects of Loss of Control, Psychophysical Sensation, Effort and confusion

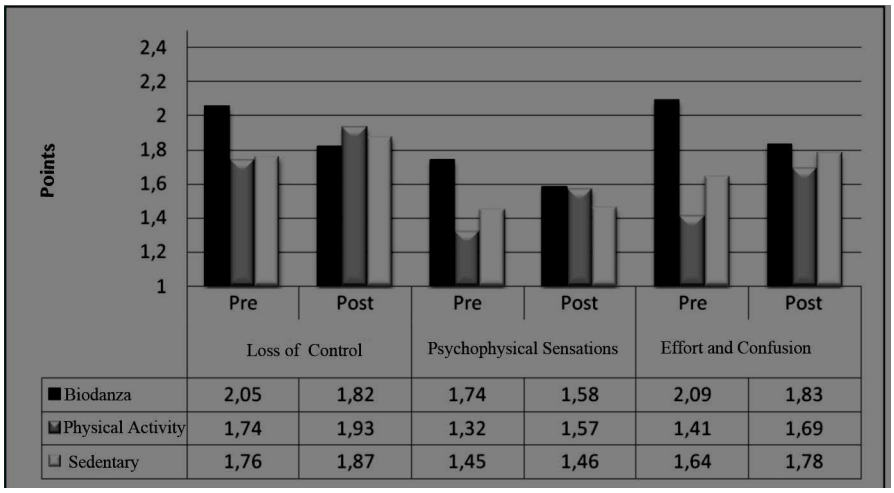
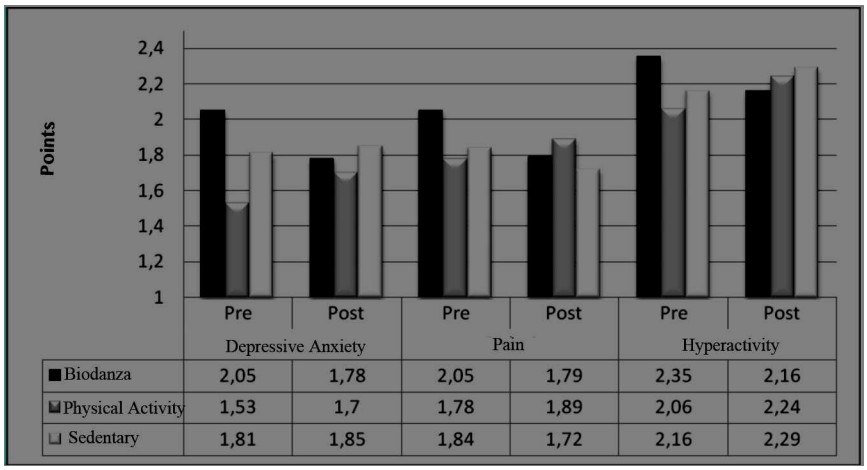


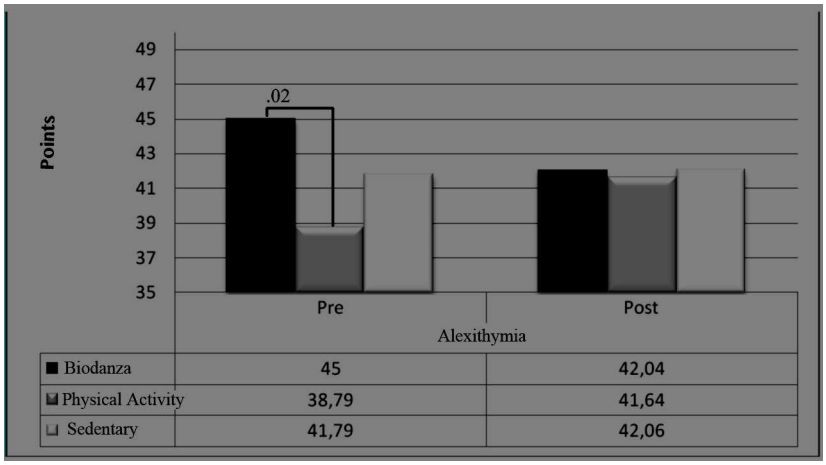
Fig. 5 - Differences between the groups according to phase in Depressive Anxiety, Pain, Hyperactivity measures.



Alexithymia

The ANCOVA on the total score of Alexithymia presents an interaction *Group x Phase* ($F_{2.118} = 3.12$; $p = 0.05$, partial $\eta^2 = 0.039$): after the course, in the Biodanza participants, the levels of alexithymia decrease until they do not present any difference with the other groups. The other two groups show no significant changes (Fig. 6).

Fig. 6 - Differences between groups in the levels of total Alexithymia according to phase



The MANCOVA on the three alexithymic aspects does not present a significant effect in the *interaction Group x Phase*. The ANCOVA *Group x Stage* tends to significance in the measures of *difficulties in identifying feelings* ($F_{2.118} = 2.54$; $p = 0.08$, partial $\eta^2 = .029$) and *difficulty in communicating feelings* ($F_{2.118} = 2.87$; $p = 0.06$; partial $\eta^2 = 0.039$): the Biodanza participants showed a decrease of difficulty, after the year of the course, in both factors (*difficulty in identifying feelings* pre 16.79 vs. post 15:36, *difficulty in communicating feelings* pre 12:57 vs. 11:51 post), the other two groups maintain stable levels.

3rd Block - Control Analysis

From the previous analysis it emerged that the Biodanza group presents lower levels of wellbeing and higher

levels of stress and Alexithymia in the *pre-course* phase, especially compared to the group that performs Physical activities. Therefore, to exclude that those initial differences would affect the comparison between groups, separate MANCOVA and ANCOVA were conducted for investigating suspected psychological constructs (Wellbeing, Stress, Alexithymia) which considered the *Group* (*Biodanza, Physics, Sedentary Activities*) as an independent variable, the aspects investigated *post-course* as dependent variables and as covariates in addition to age, the *pre-course* measures.
The MANCOVA on the aspects of Wellbeing confirm the highlighted effect in the 2nd block of analysis (Rao's$_{12.212}$ = 2.77; p = 0.002, partial η^2 = 0.135): the Biodanza group improves its levels with respect to the other two groups regardless of the baseline. The ANCOVA indicate that what contributes to this effect specifically are *self-acceptance* ($F_{2.111}$ = 3.17; p = 0.05, partial η^2 = 0.054), *positive relationships* ($F_{2.111}$ = 9.67; p = 0.0001; partial η^2 = 0.148) and *personal development* (F2.111 = 6.51; p = .002, partial η2 = .105). *Autonomy* tends towards being significant ($F_{2.111}$ = 2.57; p = 0.08, partial η^2 = 0.044).
The ANCOVA on the total Stress score confirms the effect evidenced in the 2nd block of analysis ($F_{2.117}$ = 6.22; p = 0.003, partial η^2 = .096): in the Biodanza group the level decreases, with respect to the other two groups, regardless of the baseline. The MANCOVA on single aspects of Stress tends towards significance (Rao's$_{12.214}$ = 1.64; p = 0.08, partial η^2 = 0.084). Thus only some aspects of Stress are reduced in the Biodanza group with respect to the other two groups: *loss of control* ($F_{2.112}$ = 5.12; p = 0.007; partial η^2 = 0.084), *effort and confusion* ($F_{2.112}$ = 3.20; p = 0.04, partial η2 = 0.054) and *hyperactivity* ($F_{2.112}$ = 3.82; p = 0.02, partial η^2 = 0.064). Tending towards significant measures are *depressive anxiety* ($F_{2.112}$ = 2.63; p = 0.08, partial η^2 = 0.045) and *pain* ($F_{2.112}$ = 2.59; p = 0.08, partial η^2 = 0.044).
The ANCOVA on the total score of Alexithymia is not significant ($F_{2.116}$ = 1.18; p = 0.3; partial η^2 = 0.020): there is no difference in the post-test levels among the three groups, so the effect evidenced in the 2nd block of analysis is due to decrease in the higher levels present in the baseline of the Biodanza group (also evident from the post hoc, Fig. 6). Also the MANCOVA and the ANCOVA on Alexithymia aspects do not indicate significant effects.

Discussion

The first block of analysis has detected initial differences between the three groups concerning the measures investigated. It emerged, in fact, that people who start Biodanza courses compared to those of the other two groups, present lower levels of Psychological Wellbeing (especially in S*elf-acceptance, Positive Relations, Autonomy and Environmental Control*, Tab. 2), higher levels of Stress (particularly in *Sensations, Effort and confusion, Depressive anxiety*, tab. 3) and Alexithymia (in particular *Difficulties in identifying feelings*, table 4). These differences are more pronounced with the Physical Activity group than with the Sedentary group. From these results it can be assumed that those who choose a Biodanza course have motivations other than those who choose a different type of course. Participation in a Biodanza course, in fact, would seem motivated by a question of health, while choosing to do other Physical activities is probably influenced by a desire for entertainment.
It can be assumed that Biodanza attracts people who perceive themselves as more stressed and with an unsatisfactory level of wellbeing and, that they probably choose it exactly because of the health objectives it pursues. A choice that takes place independently of the forms of marketing used to promote it, namely flyers, internet or word of mouth, equivalent to those advertising for Physical Activities.
The evaluation of the efficiency of Biodanza, through the second block of analysis, showed that the people of the Biodanza group, with respect to those of the other two groups, have, after 9 months of the course, an increase of Psychological Wellbeing (especially in *Self-acceptance, Positive Relations, Autonomy* and *Environmental Control*, and a trend toward improvement in *Personal Growth* and *Life Purpose* fig. 1 and 2), a decrease in stress levels (in particular in *Loss of control, Effort and Confusion, Depressive Anxiety, Pain,* fig. 3,4,5) and lower levels of Alexithymia, from the moment that there is evidence of a decrease in *Difficulty in identifying feelings* and *Communicating feelings* (fig. 6). As evidenced by the third block of the analysis of the measures of Wellbeing and Stress, these effects are independent from the levels that the Biodanza participants present before the course, while for Alexithymia the effect is attributable to the high levels that the Biodanza participants have in the initial phase. In the two control groups, Physical Activity and Sedentary, there are not present, however, significant variations between the pre and post-course probably

because the two groups, have high levels of well-being right from the beginning, (*ceiling effect*) and low scores in Alexithymia and stress.
Biodanza seems to respond successfully to the demand for health that it caters for so much so, that after about a year of the course, between the three groups there is no longer any difference registered in any of the considered measurements. An exception is the measure of *Personal growth* (fig. 2), for which higher levels, which remain even at the end of the course, emerged from the outset in the Biodanza participants with respect to the sedentary.
What may explain the effectiveness of Biodanza is the combined action of free movement and *vivencia* that integrates the emotions with movement to harmonizes the kinesthetic, emotional and rational functions.
Movement is considered an important means of expression and communication that fosters the psychophysical integration of the individual (Ricci Bitti, 1998). << (...) The mind is intrinsically *incorporated* or closely connected to the sensory motor activity of the person >> (Stern, 2004, p.79) and therefore to movement.
In Biodanza expressive movement, associated with specific music and solicited by certain sequences of exercises, initiates a psychophysical integration process that strengthens the development and expression of identity.
This hypothesis is also supported by L. and R. Grinberg (1975), who assert that movement associated with music, in a group who dance freely, facilitates the integration of personal identity that is actualized *in space, in time and in social relations*.
Consistently with L. and R. Grinberg's model (1975) these processes of integration could explain the effects that Biodanza evidenced on Psychological Wellbeing and in particular *Self-acceptance, Positive relationships, Autonomy* and *Environmental Control*.
Another specific factor of Biodanza which contributes to explain the results obtained is the *vivencia*, understood as a subjective experience of the "here and now." The experience is similar to that which is accomplished in *mindfulness*, which Zambianchi and Ricci Bitti (2014), citing Hanh (1976), define as << a state of conscious attention to one's own experience at the moment in which it is lived >> (Zambianchi and Ricci Bitti, 2014, p.128).
Even in psychotherapy different schools attribute << to therapeutic work in the "here and now" a unparalleled transformative power >> (Stern, 2004, p. 3). The premise from which we start is that it is not sufficient to understand, explain or narrate an event to produce a change. << There must also be a real experience, an event *lived* subjectively, with feelings expressed and actions performed in real time, in the real world, with real people, in a moment experienced as the present >> (Stern, 2004, p. XIII).
Putting one's attention in the present moment, strengthens the sense of self as in as much as: << when I'm living in a present moment, I am the only one having the experience of my subjective experiences (...) It is not simply something that belongs to me, it *is* me >> (Stern, 2004, p.33).
Self development in Biodanza would also take place through living emotions such as contact, fear and anger, intensely in the "here and now", prompted by specific exercises and music. This could facilitate a more adequate perception of one's own feelings and refine the discrimination of emotions from the physical sensations, reducing the levels of alexithymia and stress.
In Biodanza it is possible to focus on the specificity of the kinesthetic perceptions experienced during the expressive movement. And it is the attention to bodily sensations that may launch the integration of parts experienced as separate, favouring the experience of oneself as an integrated person. Such a process would act on stress permitting its reduction. High levels of stress, in fact, act by causing disconnections which condition the normal mind-body dynamics (Lazzari, 2007).
Moreover, focusing on one's own sensations would also allow the refinement of the discrimination of emotions, a deficiency of which is an aspect of alexithymia. It is as if a larger space, with respect to the daily situations, to interact and communicate was offered.
The exercises of Biodanza can become privileged locations where the unconscious is revealed through the emergence of memories buried in the body, a process that would lead to a better integration between conscious and unconscious aspects, fostering personal growth.
Biodanza is practised in a welcoming group, reassuring and devoid of critical judgment, which, connecting the members affectively, could also explain the improvement shown in emotional regulation. It is assumed that the Biodanza group performs that important function defined by Corrao (1981) as the *Gamma Function*. This function corresponds to the capacity of the group, being an affective container, to accept all those emotions and sensory experiences that one is not able to process alone, and to process them and return them to the members as affections endowed with significance and imaginable experiences. The group's ability to

provide understanding without judgment connected to containment, enables the structuring of the *gamma function* in the person, who will become increasingly competent in recognizing and processing emotions. The reduction of the levels of alexithymia, evidenced in Biodanza participants, shows an increase of emotional competence. The recognition of emotions avoids that these remain unspoken threatening their manifestation through psychosomatic disorders.
In addition, the recognition of one's own emotions promotes a deeper and more authentic communication with others because, as a person comes into contact with their emotions, they become more proficient in reading the moods of others as well and effectively relating to them (Giannelli, 2006).
The Biodanza group acts positively on self acceptance for its being characterized by mutual acceptance and the absence of critical judgement, due to the fact that there are no correct or incorrect movements, like for example in the tango, but each can express themselves in their own style. The gaze of the other, devoid of critical judgment, helps to establish the coordinates of ones own identity and to reach an authentic self. In the sessions of Biodanza an unusual social experience is achieved, where identities in contact also exert a reciprocal beneficial influence on the recognition that each has of themselves.
Observing the expressions, posture, movements, and the gaze of the other, it is possible to experience something similar to what they are experiencing. The relationship to the other which is established in a Biodanza session, allows for inter-subjective contact, that is *feeling that the other feels what I feel*, which performs a central role in the regeneration of the self.
<< Intersubjectivity plays a fundamental role in the appearance of reflective consciousness >> (Stern, 2004, p.87) which permits the enhancement of adaptability creating new possibilities that transcend models of behaviour, habits and past experiences. The concept of intersubjectivity << refers to the innate attitude in the human being to understand and share the interpersonal experience in prosocial sense. Several researchers intend this attitude as the potential function for contact and interchange between the self and the other >> (Ridolfi et al., 2014, p.101). It is the intersubjective contact created in a Biodanza session that could act in improving the measure of *Positive relationships* with others.

Conclusions

The results of the research support the hypothesis that Biodanza is actually a practice for the promotion of health, in as much as those who participate on a regular basis for about a year, demonstrate an increase of Psychological Wellbeing and a decrease in Stress and Alexithymia.
We reiterate that these measures demonstrate negative differences before the course, between the experimental group and the control groups, differences that are no longer significant at the end of the course. Thus we believe we can say that Biodanza acts as a preventive function in that - in the absence of overt disease – it manages to intercept a question of health and to respond effectively. It is a space in which the body is valued for its expressive characteristics rather than for performance as is the case in other forms of dance. It is a place where "voice" can be given to the body and its expressiveness, in contrast to what happens in our society where the emphasis is on physicality with functional purposes (Willems and Kautt, 1999). It is a place, moreover, in which people can live and/or re-live central aspects of their lives in the "here and now" and in the relation to the other. This process represents an opportunity to improve the contact with themselves and to integrate the different parts of the self (Scilligo, 2004).
The research presented has amongst its strengths the fact of having been conducted with larger groups with respect to other studies in this field, permitting the reaching of more reliable conclusions with respect to its effectiveness. Another strong point is having flanked the experimental group of Biodanza, with two control groups, the sedentary and people who performed a physical activity with the non-specific characteristics of Biodanza. It is precisely with the latter control group that we have garnered the most important result, in as much as the two groups begin the courses with different levels in the investigated measure and end with superimposable levels. Another strong point of the research is constituted by the net intrinsic consistency of the results which all go in the direction of a reduction of the initial discomfort detected in the participants of the Biodanza group. In fact, the measure of the effect (*effect size*), in the second block of analysis, demonstrates an average result in Psychological Wellbeing (partial $\eta^2 = 0.157$) and in Stress (partial $\eta^2 = 0.162$). This consistency is also demonstrated by the reduction of the high levels of alexithymia evidenced from baseline in the experimental group. All this indicates that the practice of Biodanza can constitute a valuable resource for the quality of people's lives.

In future research it would be interesting to investigate the motives that guide people to choose a Biodanza course compared to other activities and explore what personal aspects favour the completion of a year-long course of Biodanza. Please note that in this study 58,33% of those who started completed the course.
The current study certainly has the advantage of presenting a picture of the initial situation, but at the same time suggests, in the light of the differences emerged between the three groups, the need to compare, in future research, groups that have overlapping starting levels in the considered health dimensions.
Another aspect auspicious to future investigation is the verifying of whether the improvements observed in the health persist even a long time after the end of the course.
Moreover, as evidenced by Carbonell-Baeza et al. (2010), Biodanza is also able to reduce the perception of pain in the cervical and supraspinatus levels in women with fibromyalgia. It is hoped therefore, that future research on the effectiveness of Biodanza also takes into account specific populations, such as those with heart and circulatory problems, where the influence of psychological factors is already noted (Tolmunem et al., 2010; Brydon et al., 2005) or those with Parkinson's disease (Hackney et al. 2007) who could benefit from Biodanza. There could also be studies on the effects of this practice on children, adolescents and the elderly.
In conclusion, Biodanza demonstrates being a viable activity to develop psychophysical integration and promote physical and mental health in line with a vision of salutogenesis that aims at the development of personal skills to improve the quality of life (Antonovsky, 1979).

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Key words: Biodanza, wellbeing, stress, alexithymia

Summary

Biodanza is a discipline / dance that is proposed as a path of growth and personal development in order to promote the well-being of people. The study evaluated the specific effects of Biodanza on some dimensions of well-being such as: Psychological Well-being, Stress and Alexithymia. It involved 235 people divided into an experimental group and two control groups: the experimental group named Biodanza consisted of 96 people who were starting a course of Biodanza for the first time; the control group named Physical Activity consisted of 71 people who were starting a latin-american type dance class for the first time,and thirdly a Sedentary control group consisting of 68 people who did not practice any physical activity. Data were collected through three questionnaires completed in two phases, at the beginning (pretest) and at the end (post-test) of the courses, which lasted about 9 months. The following tests/scales were used: the Psychological Well-Being Scale to evaluate the Psychological Well-being; The Measure du Stress Psychologique to measure the Stress; the Toronto Alexithymia Scale to evaluate the Alexithymia. The results showed that the people in the Biodanza group exhibit, after about a year of study, an improvement in Psychological Well-being, a decrease in stress levels and lower levels of Alexithymia. Whereas in the two control groups, Physical Activity and Sedentary, there are not significant variations between the pre- and post-test levels. The results show, therefore, that Biodanza works, as an effective practice for promoting the well-being and development of the person.

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