

Older Adults and Flow through Music and Movement

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Abstract: The increment of the worldwide population of older adults encourages governments and private institutions to find non-pharmacological and ecological interventions with positive effects for this population. Research studies suggest positive effects of artistic activities. Considering music-making from the perspective of positive psychology, Dalcroze Eurhythmics (DE) focuses on the cognitive, affective, social, and physical domains. During sessions, the participants listen, feel, and express music through body movements. Activities are based on improvisation, coordination, auditory discrimination, and musical expression. The objective was to evaluate the efficacy of an eight-week DE-based intervention on the state of flow in a sample of older adults (N = 60) divided in three experimental groups and a control group, with measures pre-post through the Spanish versions of SDFS-2, and SFSS-2 ($\alpha = 0.82$) using SPSS 24. The results of the Wilcoxon test were significant in the factor autotelic experience in group 3. The results of Kruskal-Wallis test show significant differences in the measures post intervention among the three groups. Descriptive statistics show positive differences post intervention in the remaining factors in all groups except for the component related to control over the activity. Conclusion: DE was partially effective to induce a state of flow in this sample. Longer longitudinal studies are needed.

Keywords: older adults, flow, music, eurhythmics

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I. Introducción

According to the World Health Organization Report on Ageing and Health (World Health Organization, 2015) the population of older adults > 60 is expected to grow to two billion by year 2050. Considering these numbers, health care systems worldwide are challenged to find new actions to face ageing and health. The WHO report assumes that ageing is a valuable, dynamic, and challenging process which implies subtle changes in the physical, cognitive, affective, and social capacities of the individuals. Through these changes, resilience plays an important role. Healthy ageing is defined as the “process to develop and maintain the functional ability of the individual which enables him to experience wellbeing in the later stages of life” (pp.41). That means the individual maintains the necessary physical and cognitive capacities to interact independently with his environment both physically and socially. Moreover, the WHO report mentioned above encourages countries to implement non-pharmacological and ecological interventions to challenge the health problems associated to longevity.

Among the health problems associated to longevity are those related to the deterioration of musculoskeletal functions, movement, falls, vision, audition, among others. Furthermore, the cognitive decline is closely related to the years of education of the person, and comprises memory and attention. In the affective domain, older adults face the loss of significant others, besides their own loss of functional capacities. For these reasons, older adults experience higher states of depression, anxiety, and loneliness. The loss of functional capacities is associated to individual health and specific cultural codes (Rodríguez, 2016).

From the holistic standpoint of positive psychology, artistic activities constitute sustainable non-pharmacological interventions. Research studies suggest that art has positive effects in cognition and affectivity in general. The positive effects of art are relevant in the therapeutic context since artistic interventions are addressed to work on the physical, cognitive (Hanna-Pladdy & Gajewski, 2012), affective (Clift & Grenville, 2010; Seinfeld, Figueroa, Ortiz-Gil, & Sanchez-Vives, 2013), and social domains of the individual (Cohen, 2009).

When music-making is considered as a specific artistic activity, the following questions arise: Why do persons listen to music, sing, play instruments, conduct, or compose musical works?, what is there in music-making that makes it enjoyable and fun? The answer is that during music-making, the individual is highly concentrated on the action, feels control on his instrument and on the music itself, is immersed in the music, is transported to “music time”, and enjoys it a great deal. Through music-making the individual is actively related to his environment physically, cognitively, and affectively. For this reason, music-making has the elements to induce a state of flow in the individual (Csikszentmihalyi, 1988).

Among various theories of positive psychology, the theory of flow by Mihaly Csikszentmihalyi originated by the need to understand and explain the intrinsically motivated phenomenon called flow. The state of flow is self-gratifying and is obtained as a result of the realization of a specific activity, regardless of an absence of external benefit (Engeser & Schiepe-Tiska, 2012). The main areas of human activity which have been studied under the theory of flow are those related to creativity, learning, and sport. Similar results have been obtained in various contexts of play and work through different cultures, social groups, genre, and age (Kawabata & Mallet, 2011). Since flow experiences happen in positive contexts according to the original concept by Csikszentmihalyi, these experiences contribute to the self-perception of wellbeing (Keller & Bless, 2008). Moreover, flow experiences seem to occur only when the person is actively involved with his environment physically, emotionally, or intellectually (Csikszentmihalyi, 2014).

Csikszentmihalyi divided the optimal experience called flow in six components in order to explain it more clearly (Csikszentmihalyi, 1990). Later Jackson and Marsh (1996) expanded the components of the state of flow to nine. Each one of these nine components may vary in intensity in a specific context and together constitute the state of flow. These components are (1) total immersion in the task (2) balance between the challenges of the task and self-abilities (3) clear goals, (4) immediate and clear feedback, (5) total concentration, (6) sense of control, (7) loss of self-consciousness, (8) transformation of the sense of time (9) autotelic or gratifying experience (Jackson & Marsh, 1996).

Among the intervention programs of artistic activities in Gerontology, are those related to the interaction of the subject with the environment through music-making and its positive effects in four areas: (a) physical (Krauss & White-Schwoch, 2013), (b) affective, (Creech, Hallam, Varvarigou, & McQueen, 2013; Sung, Lee, Lee, & Watson, 2012), (c) cognitive (Särkämö, y otros, 2013); and (d) social (Weinberg & Joseph, 2017); nevertheless, these studies do not measure specifically the presence of the state of flow during music-making in samples of older adults.

The music teaching approach named Dalcroze Eurhythmics (DE) created by the Swiss composer and pedagogue Emile Jaques-Dalcroze (1865-1950) is widely used in Gerontology. From a holistic standpoint, Dalcroze Eurhythmics is based on the musical training through body movements (Jaques-Dalcroze, 1921; Nedelcut, 2009) and is divided into four areas of study: Eurhythmics, Solfège, Improvisation, and *Plastique Animée* (which works on the body representations of music works).

The concept of flow by Emile Jaques-Dalcroze is similar to that of Mihaly Csikszentmihalyi. During the DE sessions, the goal is to develop a state of focused attention through music, thus inducing optimal experiences. Once the subject has absolute control over his movements, his focus of attention is directed to the music, rather than to the movement itself. Once the focus of attention is re-directed to an external stimulus, in this case the music, the execution or movement improves (Duke, Davis Cash, & Allen, 2011). Alongside, during DE sessions, subjects lose consciousness of real time since they are immersed in the joy of music making; their attention is focused on the melodic contour, harmonic structure, instrumental color, or any other musical element. According to the theory of flow, the mastery on a specific task is achieved as a consequence of a state of focused attention while the subject transforms his awareness of real time (Csikszentmihalyi, 1990).

During the sessions of DE the participants listen, feel, and express the music (recorded or improvised at the piano by the practitioner) with their body. The human body is conceived as a musical instrument and constitutes a natural instrument for musical expression (Bachmann, 1991). Through motor responses the negative affectivity which is activated through the learning process during the sessions is transformed into positive affectivity (Adrián, Páez, & Álvarez, 1996). Furthermore, through a more cognitive complexity activated through music and movement, the subject experiences an emotional catharsis (Igartua, Álvarez, Adrián, & Páez, 1994; Habron, 2014).

The integration of body movements into music education induces an increment in sensory perception through music listening. Once the person receives the musical stimuli, the mind organizes it through reflection and analysis (Anderson, 2012; Jaques-Dalcroze, 1921) The practitioner selects a theme for each session which is worked through a carefully sequenced set of activities which involve the development of abilities of coordination, auditory discrimination, and musical expression (Thomsen, 2011) Through a process of reflection in action, the mind is in a state of permanent alert by the interaction of musical elements (Schnebly-Black & Moore, 1997); this process happens within seconds while the subjects attempt to improve their performance according to the demands of the music and the instructions given by the practitioner (Greenhead, Habron, & Mathieu, 2016).

Nowadays the therapeutic aspect of Dalcroze Eurhythmics in Gerontology is practiced widely through Europe, the United States (Joviala, Butler, & Rose, 2015), Australia (Dalcroze Australia, 2016), and Canada (Université Laval, 2016); however, Switzerland is the only country in the world where a program for older adults is well established. The Institut Jaques-Dalcroze in Geneva administers DE session to close to one thousand older adults through its three programs around the area (Whali-Delbos & Del Bianco, 2010).

Scientific research studies have been developed to measure the effects of DE interventions in the physical, cognitive, affective, and social domains in the lives of older adults. In Switzerland in the study of Kressig, Allai, & Beauchet (2005) the variability of gait was the main parameter associated to falls. The experimental group which participated in DE sessions during forty years did not register a significant variability during the execution of dual tasks in comparison to the control group. Similar studies have been developed in the later years (Trombetti, Hars, Herrmann, & Kressig, 2011; Hars, et al, 2014). Moreover Dalcroze Eurhythmics has been effective in inducing a state of flow (Treviño & Álvarez, 2016; Treviño, Elizondo, & Álvarez-Bermúdez, 2017), positive affectivity, and self-perception of wellbeing in samples of older adults in Mexico (Treviño & Álvarez-Bermúdez, In print) and the United States (Treviño & Álvarez-Bermúdez, 2018). In order to continue further research in this area, the purpose of the present study was to evaluate the efficacy of a Dalcroze Eurhythmics based intervention to induce a state of flow in a sample of older adults

II. Method

This study has a quasi-experimental design and was undertaken in Monterrey, Nuevo León, Mexico metropolitan area. The population of this city is diverse and its sociodemographic characteristics vary depending on the geographical zone. For this reason the sample was divided into three experimental groups and a control group. Each experimental group was formed by subjects from contrasting sociodemographic zones in order to have a sample as diverse as possible. The sample was recruited through the national system for the integral development of the family in its Nuevo León chapter (DIF) which is a governmental agency, and a private independent organization for active older adults. The subjects from the sample voluntarily responded to a call to participate in the study after meeting the inclusion criteria. Measurement instruments were administered pre and post intervention. The participants who completed the entire study ($N = 60$; $M = 73.03$) were divided as follows according to the geographical zone where the intervention was administered: 1 ($N = 15$) formed by subjects from middle to low-middle socioeconomic class; group 2 ($N = 16$) formed by subjects from low socioeconomic class, 3 ($N = 13$), formed by subjects from upper middle class, and a control group ($N = 16$) formed by subjects from various socioeconomic sectors. The sample consisted of women ($N = 49$) and men ($N = 11$) The inclusion criteria of the participants were: (a) ability to walk with no external aid, (b) average cognitive decline according to their age, (c) willingness to participate in the study.

2.1 Materials and measures

During the intervention phase the following materials were used: a digital piano used by the practitioner; each participant had a chair, a pair of wooden sticks, one bean bag a plastic ball, and a hand drum. The music used was live improvised vocal and piano music, traditional Mexican folk songs sung by the participants, recorded music such as waltzes, ballades, and boleros. The measurement instruments used were the Spanish version of the Short Dispositional Flow State Scale-2, and the Short Flow State Scale-2 (Treviño, Elizondo, & Álvarez-Bermúdez, 2018). This scale is composed by nine positively keyed items which are evaluated along a five-point Likert-type scale (1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, 5 = always). Each item represents one of the nine components of the state of flow mentioned previously. The sum of these items yields a total score where higher scores represent a greater degree of the presence of flow. The SDFSS-2 directs thoughts to a specific context experienced previously by the subject and measures his disposition to experience flow. On the contrary, the SFSS-2 refers to a specific activity being studied. In this case, the activity was Dalcroze Eurhythmics (DE). The items of the scale read as follows: (1) I feel I am competent enough to meet the demands of the situation, (2) I do things spontaneously and automatically without having to think, (3) I have a strong sense of what I want to do, (4) I have a good idea about how well I am doing while I am involved in the task/activity, (5) I am completely focused on the task at hand, (6) I have a feeling of total control over what I am doing, (7) I am not worried about what others may be thinking of me, (8) The experience is extremely rewarding. After the reliability test, item seven was eliminated.

2.2 Procedure and statistical analysis

The same intervention was administered to the three experimental groups. It consisted of eight weekly sessions of DE. Each session of Dalcroze Eurhythmics lasted one hour. Consent forms were provided according to the ethical and privacy standards of the Universidad Autónoma de Nuevo León. The SDFSS-2 was administered before the intervention and the SFSS-2 was administered afterwards. The structure of each intervention was as follows:

The intervention consisted of ten sessions of DE. Each session lasted one hour and had six stages: (1) free stretching exercises with and without music; (2) movement sequences with a given pulse and tempo (speed) variations: in this activity the subjects listened to different beat groupings (2, 3 or 4) and touched different parts of their bodies while they imitated and proposed new movement sequences; (3) walking patterns in groups of three and four beats; (4) walking at different tempi and changing direction along with musical phrase beginnings

(5) auditory discrimination through the realization of a specific body movement after listening to a precise aural stimulus, and (6) one of the following: free movement improvisation, group dance, hand games, or song singing.

The following statistical analysis were performed using the program SPSS 24: (a) fiability test for the SDFSS-2, ($\alpha = 0.82$) after the elimination of the item related to loss of self-consciousness; (b) Kolmogorov-Smirnov test which rejects the null hypothesis of normally distributed data ($p = .000$), (c) descriptive statistics, (d) Kruskal-Wallis test, and (d) Wilcoxon test.

The variables which were measured with the short Spanish versions of SDFSS-2 and SFSS-2 (Treviño, Elizondo, & Álvarez, 2018) were: (1) the disposition to experience a state of flow at pre-intervention, and (2) the state of flow post-intervention, each one with eight indicators: (1) balance between the challenge of the task and the abilities of the person, (2) total immersion in the task, (3) clear goals (4) clear and immediate feedback, (5) concentration, (6) total control over the task, (7) loss of time consciousness (8) autotelic experience.

III. Resultados

The results of the descriptive statistics registered that the lowest mean value was that for the indicator related to loss of consciousness of time in group 3 ($M = 3.23$, $Mdn = 3.00$, $DE = 1.16$) and the maximum value ($M = 5.00$, $Mdn = 5.00$, $DE = .00$) was registered in group 2 in the factor related to clear and immediate feedback. The value of the factor balance between challenge and abilities had a positive difference post-intervention in group 1 ($M = 4.47$, $Mdn = 5.00$, $DE = .83$; $M = 4.53$, $Mdn = 5.00$, $DE = .83$); The value of group 3 did not register any difference ($M = 4.31$, $Mdn = 4.00$, $DE = .48$; $M = 4.31$, $Mdn = 4.00$, $DE = .75$) whereas the values of group 2 ($M = 4.50$, $Mdn = 5.00$, $DE = .96$; $M = 4.19$, $Mdn = 5.00$, $DE = 1.16$) and that of control group ($M = 4.75$, $Mdn = 5.00$, $DE = .44$; $M = 4.56$, $Mdn = 4.56$, $DE = .72$) registered a negative difference post-intervention

Group 1 was the only group which had a positive difference in its mean value post intervention in the indicator related to total immersion with the task ($M = 4.13$, $Mdn = 4.00$, $DE = .91$; $M = 4.47$, $Mdn = 5.00$, $DE = .91$) in contrast with the other groups which registered negative differences in their mean values post-intervention: group 3 ($M = 3.92$, $Mdn = 4.00$, $DE = .64$; $M = 3.77$, $Mdn = 4.00$, $DE = .83$), group 2 ($M = 4.69$, $Mdn = 5.00$, $DE = .79$; $M = 4.56$, $Mdn = 5.00$, $DE = .96$), and control group ($M = 4.50$, $Mdn = 5.00$, $DE = .73$; $M = 4.44$, $Mdn = 5.00$, $DE = .81$). The mean value of the factor related to clear and definite goals registered a negative difference post intervention in group 3 ($M = 4.69$, $Mdn = 5.00$, $DE = .48$; $M = 4.54$, $Mdn = 5.00$, $DE = .51$) and control group ($M = 4.75$, $Mdn = 5.00$, $DE = .44$; $M = 4.69$, $Mdn = 5.00$, $DE = .47$). In contrast, the value of this factor registered a positive difference post-intervention in group 1 ($M = 4.73$, $Mdn = 5.00$, $DE = .45$; $M = 4.80$, $Mdn = 5.00$, $DE = .41$) whereas the value of group 2 registered no difference at the measure post ($M = 4.81$, $Mdn = 5.00$, $DE = .84$).

The indicator clear and immediate feedback in group 2 registered no difference in the measure post; however, its initial value was the highest ($M = 5.00$, $Mdn = 5.00$, $DE = .00$). In contrast, the value of group 1 had a positive difference post-test in its mean ($M = 4.60$, $Mdn = 5.00$, $DE = .63$; $M = 4.80$, $Mdn = 5.00$, $DE = .41$) whereas group 3 ($M = 4.69$, $Mdn = 5.00$, $DE = .48$; $M = 4.46$, $Mdn = 4.00$, $DE = .51$) and control group ($M = 4.81$, $Mdn = 5.00$, $DE = .54$; $M = 4.75$, $Mdn = 5.00$, $DE = .57$) registered a negative difference in their mean values post-test. The values of the factor total concentration in group 3 ($M = 4.54$, $Mdn = 5.00$, $DE = .51$) and control group ($M = 4.75$, $Mdn = 5.00$, $DE = .68$) registered no difference at post-test in contrast with two experimental groups which did register positive differences at post-test: group 1 ($M = 4.60$, $Mdn = 5.00$, $DE = .63$; $M = 4.80$, $Mdn = 5.00$, $DE = .41$), and group 2 ($M = 4.88$, $Mdn = 5.00$, $DE = .50$; $M = 5.00$, $Mdn = 5.00$, $DE = .00$)

The indicator related to total control registered no difference in its mean values post-test in every group: group 1 ($M = 4.60$, $Mdn = 5.00$, $DE = .63$), group 2 ($M = 4.88$, $Mdn = 5.00$, $DE = .50$), group 3 ($M = 4.38$, $Mdn = 4.00$, $DE = .65$), control group ($M = 4.63$, $Mdn = 5.00$, $DE = .50$). The mean value of the indicator transformation of time perception in group 2 registered a negative difference post-test ($M = 4.50$, $Mdn = 5.00$, $DE = .81$; $M = 4.31$, $Mdn = 5.00$, $DE = .54$) in comparison with that of group 1 ($M = 4.27$, $Mdn = 5.00$, $DE = 1.10$; $M = 4.53$, $Mdn = 5.00$, $DE = .83$), group 3 ($M = 3.23$, $Mdn = 3.00$, $DE = 1.16$; $M = 4.08$, $Mdn = 4.00$, $DE = .86$) and control group ($M = 4.00$, $Mdn = 4.50$, $DE = 1.09$; $M = 4.06$, $Mdn = 5.00$, $DE = 1.18$) which registered a positive difference on its values post-test.

The indicator autotelic experience registered a positive difference in its mean value post-test in 1 ($M = 4.60$, $Mdn = 5.00$, $DE = 1.05$; $M = 5.00$, $Mdn = 5.00$, $DE = .00$) y grupo 3 ($M = 4.46$, $Mdn = 4.00$, $DE = .51$; $M = 4.77$, $Mdn = 5.00$, $DE = .43$) whereas that of group 2 ($M = 5.00$, $Mdn = 5.00$, $DE = .00$; $M = 4.94$, $Mdn = 5.00$, $DE = .25$) and control group ($M = 4.81$, $Mdn = 5.00$, $DE = .40$; $M = 4.75$, $Mdn = 5.00$, $DE = .57$) registered negative differences after the intervention.

The results of the Wilcoxon test registered a significant difference in the indicator related to gratifying experience in group 3 ($p = .064$).

Table 1. Descriptive statistics. Variable state of flow.

Indicator	Group 1 (n = 16)			Group 2 (n = 15)			Group 3 (n = 13)			Control (n = 16)		
	M	Mdn	SD	M	Mdn	SD	M	Mdn	SD	M	Mdn	SD
CHA Pre	4.47	5.00	.83	4.50	5.00	.96	4.31	4.00	.48	4.75	5.00	.44
Post	4.53	5.00	.83	4.19	5.00	1.16	4.31	4.00	.75	4.56	5.00	.72
TI Pre	4.13	4.00	.91	4.69	5.00	.79	3.92	4.00	.64	4.50	5.00	.73
Post	4.47	5.00	.91	4.56	5.00	.96	3.77	4.00	.83	4.44	5.00	.81
CDG Pre	4.73	5.00	.45	4.81	5.00	.54	4.69	5.00	.48	4.75	5.00	.44
Post	4.80	5.00	.41	4.81	5.00	.54	4.54	5.00	.51	4.69	5.00	.47
CIF Pre	4.60	5.00	.63	5.00	5.00	.00	4.69	5.00	.48	4.81	5.00	.54
Post	4.80	5.00	.41	5.00	5.00	.00	4.46	4.0	.51	4.75	5.00	.57
TC Pre	4.60	5.00	.63	4.88	5.00	.50	4.54	5.00	.51	4.75	5.00	.68
Post	4.80	5.00	.41	5.00	5.00	.00	4.54	5.00	.66	4.75	5.00	.68
COA Pre	4.60	5.00	.63	4.88	5.00	.50	4.38	4.00	.65	4.63	5.00	.50
Post	4.60	5.00	.50	4.88	5.00	.50	4.38	4.00	.65	4.63	5.00	.61
TT Pre	4.27	5.00	1.10	4.50	5.00	.81	3.23	3.00	1.1	4.00	4.50	1.09
Post	4.53	5.00	.83	4.31	5.00	.94	4.08	4.00	.86	4.06	5.00	1.18
GE Pre	4.60	5.00	1.05	5.00	5.00	.00	4.46	4.00	.51	4.81	5.00	.40
Post	5.00	5.00	.00	4.94	5.00	.25	4.77	5.00	.43	4.75	5.00	.57

Note:CHA (balance of challenge and ability). TI (total immersion with the activity), CDG (clear and definite goals), CIF (clear and immediate feedback), TC (total concentration), COA (control over the activity), TT (transformation of time), GE (gratifying experience).

IV. Discusión and Conclusiones

As it was mentioned before, the lowest initial mean value among all the groups was that related to the factor transformation of time perception in group 3 ($M = 3.23$). In contrast, the highest initial mean value was that of the factor clear and immediate feedback in group 2 ($M = 5.00$) with no difference post-test. Moreover, the next highest value ($M = 3.92$) corresponds to the indicator total immersion with the action in group 3. The initial values of the remaining factors were $M > 4$, which gave a small margin for increases. This result is a possible explanation to justify the absence of statistically significant differences in every indicator post-test with the exception of that related to gratifying experience in group 3 only.

It is important to note that the initial values of all the factors in group two were the highest among those of the other groups with the exception of the indicator related to balance between challenge and ability which registered the highest initial value in control group ($M = 4.75$); however, the value of group 2 was ($M = 4.50$). The subjects of this group belong to a vulnerable sociodemographic sector of Monterrey metropolitan area where only 12.5% of the total subjects of this group finished elementary school. The rest are illiterate. Regardless of their situation, they have the capacity to enjoy the activity and concentrate.

In group 2 the factor balance between challenge and abilities and those of total immersion with the task and total concentration registered the highest negative difference post-test. A possible explanation for these results is that even though the subjects were completely concentrated during the session they became aware of their need to practice the exercises for longer periods of time. Nevertheless, they still perceived a clear and immediate feedback, control over the task and a gratifying experience. The self-awareness for the need to practice more could be an explanation for the negative difference post-test in this group in the values of the factor related to transformation of time ($M = 4.50$; $M = 4.31$) and a minimum negative difference in the factor related to gratifying experience ($M = 4.81$; $M = 4.75$); however, group 2 was the only one which obtained the maximum value pre-post ($M = 5$) in the factor related to clear and immediate feedback.

Contrary to group 2, group 1 belongs to a medium-low sociodemographic sector of the city with an illiteracy ratio of 26.7%; its mean values post-test of every factor with the exception of that related to total control, which had no difference post-test, registered a positive difference after the intervention. The mean value of the factor total control ($M = 4.88$) in group 2 was the highest among all groups, though. Furthermore, group 1 is the only experimental group which had the highest mean value at post-test ($M = 5$) in the indicator related to gratifying experience; this means that even though there was not a statistically significant difference for this indicator, group 1 always had a gratifying experience during the intervention and frequently had a state of flow since all its mean values were $M > 4$.

The subjects of group 3 belong to a high socioeconomic sector of the city with a ratio of 30.8% of subjects with graduate studies. It is important to note that the lowest initial mean value among the eight factors ($M = 3.23$) was obtained from the measures of this group corresponding to the factor related to distortion of time perception. Similarly the initial mean value of the indicator total immersion with the task was lower than those of the other groups ($M = 3.92$). Both in this factor as well and those related to clear goals and immediate feedback, the mean values of group 3 registered a negative difference post-intervention. A possible explanation about these results is that as the intervention progressed, the difficulty of the exercises increased. For this reason, the

subjects did not have a clear idea about how to perform them. Since this group came from a well-educated sector of society, it is not surprising that subjects were more aware about the challenges of an activity in relation to their abilities to perform it. In this case the mean value of the indicator related to balance between challenge and abilities, registered no difference post-test ($M = 4.31$); however, the subjects of group 3 always had control over the activity even though sometimes they did not feel in complete control over it. Regardless of the negative difference post-test in these indicators, subjects frequently perceived a transformation of real time ($M = 4.08$) and had a gratifying experience. It is precisely in group 3 that the factor gratifying experience where a statistically significant difference was registered after the intervention ($p = .064$). On the other hand, it is interesting to notice that control group which did not receive the intervention registered negative differences in the mean values of every indicator post-test with the exception of that related to control over the action which had no difference post-test ($M = 4.63$) and transformation of time which registered a positive difference after the intervention ($M = 4.00$; $M = 4.06$).

After the analysis of the results of this study the conclusion is that Dalcroze Eurhythmics was partially effective to induce a state of flow in the sample of older adults which received the intervention since only in one indicator the difference was statistically significant; however, the initial and end mean values were high in every group and positive differences were registered in every indicator. For this reason it is necessary to develop further longitudinal research on this area to have more conclusive results.

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