

## Greek dances, aerobic dance and women's psychological health state

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### Abstract

The purpose of the present study is to examine the effects of one bout of Greek dances and aerobic dance on women's psychological health state. Fifty four healthy women, aged 21 to 55 years, were selected randomly and participated in the study voluntarily. The subjects were divided randomly in two groups: group A (n=27) participated in an afternoon aerobic dance bout and group B (n=27) participated in an afternoon Greek dances bout, both for 60 min. About 5 min before and after the end of aerobic dance bout and Greek dance bout the subjects completed the 37-item Profile of Mood States (McNair et al., 1971), proposed by Shacham (1983), while five additional items were included, measuring exhilaration. In addition, they completed the State-Trait Anxiety Inventory (Spielberger et al., 1970). For data analysis the statistic packet SPSS/PC ver. 18.0 for windows was used. In particular, descriptive analysis was used, as well as the student t-test to evaluate significant differences between measurements (before and after the dances bouts). The subjects had moderate trait anxiety, ranged to  $41.00 \pm 11.86$  and  $41.07 \pm 8.07$  degrees for Group A and B, respectively. After the dancing bouts recorded changes significant or relatively modest in magnitude in both groups. More specifically, there were observed an increase in vigor, exhilaration and fatigue, and a decrease in tension, depression, anger and confusion, total mood disturbance and state anxiety. Consequently, one bout of Greek dances, and aerobic dance affect, with the same way and on the same direction, women's psychological health state. It could be said that, the main etiology of the induced state anxiety decrease and mood improvements, is the aerobic mode of the two exercise forms. In addition, the absence of competition, as well as, the fact that Greek dances and aerobic dance are rhythmical and repetitive activities, also constitute important features resulting in positive affect. In conclusion, the participation in a Greek dances bout or in an aerobic dance bout could lead to significant improvements in women's psychological health state through the decrease in state anxiety and the enhancement of mood states.

**Key-word:** mood state, state anxiety, non-competitive, repetitive, and rhythmical exercise

### Introduction

The benefits of physical activity have been well documented. Regular physical activity has a variety of important consequences (Zullig et al., 2005). Results of the studies continue to support a growing literature suggesting that exercise, physical activity and physical-activity interventions have beneficial effects across several physical and mental-health outcomes (Penedo, & Dahn, 2005). They include reducing risk factors for cardiovascular diseases for people of all ages and decreasing psychological problems, such as depression, anxiety, and stress (Lollgen et al., 2009). Minhyun et al. (2015) suggest that doing regular physical activity is vital as it promotes physical and psychological well-being.

In addition to physical and psychological benefits, physical activity has a positive impact on developing social relationships (McAuley et al., 2006), as well as enhancing perceptions of self-mastery and self-efficacy (Stewart et al., 2007). Participants in physical activity show better health outcomes, including better general and health-related quality of life, better functional capacity and better mood states (Penedo, & Dahn, 2005).

Mood is an integral component of everyday life. Mood has been defined as a pervasive, global set of affective states that influences a broad range of thought processes and behaviour. Moods alter our affective, cognitive, and behavioural responses. They also inform us about our general state of being and reflect our appraisal of our life circumstances (Berger, 1996; Mayer, & Hanson, 1995). Mood is related to psychological well-being as evidenced by an individual's general level of enjoyment, self-concept, and subjective well-being,

can alter general behavior patterns, and influences physical health (Cohen, & Rodriguez, 1995; Thayer, 1996). Stress, from the other hand, occurs within the individual and results in both psychological and somatic undesirable symptoms (Berger, 1994).

Thus, the purpose of the present study is to address this issue to women's psychological health, by examining the mood states and anxiety after the intervention of two exercise modes: Greek dances and aerobic dance. Moreover, the present study examines whether the participation in one bout of Greek dances and aerobic dance affect with the same way and on the same direction women's psychological health.

## Method

**Subjects.** Fifty four (54) healthy women were selected randomly and participated in the study voluntarily. Subjects' age ranged from 21 to 55 years. The subjects were divided randomly in two groups: group A and group B. Before the study, the subjects of group A had participated in an aerobic dance program three times per week, while the subjects of group B had participated in a program for learning and performing Greek dances once per week. All the subjects underwent medical control so that it could be certified that they do not suffer from any cardiovascular or other disease, and additionally they answered a questionnaire about any other possible health problems.

**Scales of Measurement.** The abbreviated version of the Profile of Mood States (POMS; McNair et al., 1971), proposed by Shacham (1983), was used as a measure of Tension/Anxiety, Depression/Dejection, Anger/Hostility, Vigor/Activity, Fatigue/Inertia, Confusion/Bewilderment, and Total Mood Disturbance. The rigorous psychometric properties of the 65-item original questionnaire seem to be well preserved in this 37-item easier-to-administer form (Grove, & Prapavessis, 1992). Five additional items were included, measuring Exhilaration. POMS were completed about 5 min before and after the aerobic dance and Greek dances performance.

Moreover, State-Trait Anxiety Inventory, (SAI; Spielberger et al., 1970), was used, for the measurement of anxiety. All subjects completed the 20-item trait anxiety subscale, SAI-Y2, for trait anxiety measurement once, just about 5 min before the aerobic dance and Greek dances performance. The 20-item state anxiety subscale, SAI-Y1 was also completed about 5 min before and after the aerobic dance and Greek dances performance, for state anxiety measurement. In all cases, POMS and SAI were administered in a counterbalanced order, which was reversed at the posttest and translated in Greek following a standard procedure involving the discussion of multiple alternative wordings by a group of five bilingual experts.

**Procedures.** The subjects in the two treatment groups participated in the study in hours normally scheduled for the programs of aerobic dance and Greek dances, respectively. So, women of group A participated voluntarily in an afternoon aerobic dance bout, while women of group B participated voluntarily in an afternoon Greek dances bout. The format of the aerobic dance was the typical found in aerobics, without pauses and accompanied by disco music. As for the Greek dances the performed dances, accompanying by Greek music, were from Greek areas as: Ipeiros, Macedonia, Thessaly, Thrace, Pontos and some islands. Aerobic dance and Greek dances sessions were conducted by teachers of physical education with extensive practical experience both in aerobics and in Greek dances. Before the beginning of the research, a description of general requirements was given and, still, the aim of the research was described to the participants without any briefing relative to previous research findings. The psychological instruments were also presented and the instructions were explained for each one of them. The need for absolute honesty and precision was particularly emphasized. The session duration was 60 min in total both for aerobic dance and Greek dances session. Procedures were in agreement with ethical standards of the Declaration of Helsinki of the World Medical association (2000).

**Statistical Analysis.** For the statistical analysis the statistic packet SPSS/PC Version 18.0 for windows was used. The non-parametric test Kolmogorov-Smirnov was used to evaluate the normal distribution of the sample. Moreover, descriptive analysis and correlation were used. The student t-test was also used to evaluate significant differences between measurements that is before and after the aerobic dance session, as well as before and after the Greek dances session. The level of significance was set to  $p < 0.05$ .

## Results

In Table 1 age and trait anxiety score of the subjects in both groups are presented. From SAI-Y2 elaboration, it was found out that the subjects had moderate trait anxiety in both groups (Table 1).

**Table 1.** Sample's data

Variables	Group A Mean±SD	Group B Mean±SD
Age (years)	39.46±8.92	35.64±5.01
Trait anxiety (degrees)	41.00±11.86	41.07±8.07

As for Group A, descriptive statistics for each measure assessed prior to and following the aerobic dance bout and the significance of any demonstrated change are shown in Table 2.

**Table 2.** Descriptive data, and degree of change for SAI-Y1, and POMS for Aerobic dance Group

<i>Affect</i>	<i>Pretest</i>		<i>Posttest</i>		<i>Change</i>		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
measure								
<i>SAI- Y1</i>								
State anxiety	35.77	12.18	30.50	9.18	-5.58	10.93	2.50	< .05
<b>POMS</b>								
Tension	4.46	5.86	3.23	3.80	-1.23	5.62	1.12	NS
Depression	3.54	6.09	1.85	4.15	-1.69	3.13	2.75	< .01
Anger	1.88	3.74	0.81	1.36	-1.08	3.03	1.81	NS
Vigor	14.65	4.63	17.50	5.31	2.85	4.97	-2.92	< .01
Fatigue	3.96	5.11	5.69	5.27	1.73	5.39	-1.64	NS
Confusion	4.08	4.44	2.27	3.34	-1.81	2.38	-3.87	< .001
Total Disturbance	103.27	25.29	96.35	18.45	-6.92	18.46	1.91	NS
Exhilaration	10.61	6.26	15.04	5.74	4.42	4.93	-4.57	< .001

\* p<.05, \*\*p<.01, \*\*\*p<.001, NS: non-significant, one-tailed test

From paired t-tests it was found out that all the factors of POMS, as well as state anxiety score from the SAI-Y1, were influenced by aerobic dance bout (Table 2). In particular, there was an increase in the positive factors vigor and exhilaration, while there was a decrease in the negative factors and specifically tension, depression, anger and confusion. Furthermore, the total mood disturbance and the state anxiety score from the SAI-Y1 presented a decrease, after the performance of aerobic dance. In addition, the subjective indicators of fatigue showed an increase, which was expected after the participation in the 60 min aerobic dance bout. Some of the observed changes are statistically significant and some are relatively modest in magnitude (Table 2). As for Group B, descriptive statistics for each measure assessed prior to and following the Greek dances bout and the significance of any demonstrated change are shown in Table 3.

**Table 3.** Descriptive data, and degree of change for SAI-Y1, and POMS for Greek dances Group

<i>Affect</i>	<i>Pretest</i>		<i>Posttest</i>		<i>Change</i>		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
measure								
<i>SAI- Y1</i>								
State anxiety	35.57	12.11	30.04	11.34	-5.53	8.97	3.27	< .01
<b>POMS</b>								
Tension	3.36	4.20	2.82	5.20	-0.54	3.48	.81	NS
Depression	3.29	5.73	2.29	5.06	-1.00	1.83	2.90	< .01
Anger	1.36	3.42	1.07	3.20	-0.29	0.94	1.61	NS
Vigor	17.75	4.17	19.00	4.46	1.25	2.69	-2.46	< .05
Fatigue	2.61	3.53	4.03	4.48	1.43	4.13	1.83	NS
Confusion	3.44	3.84	2.82	4.32	-0.32	2.37	.72	NS
Total Disturbance	96.00	21.92	94.03	22.97	-1.96	9.28	1.12	NS
Exhilaration	13.32	4.78	16.75	4.15	3.43	3.60	-5.03	< .001

\* p<.05, \*\*p<.01, \*\*\*p<.001, NS: non-significant, one-tailed test

From paired t-tests it was found out that all the factors of POMS, as well as state anxiety score from the SAI-Y1, were influenced by Greek dances bout (Table 3). Specifically, there was an increase in the positive factors vigor and exhilaration, while there was a decrease in the negative factors and specifically tension, depression, anger and confusion. Furthermore, the total mood disturbance and the state anxiety score from the SAI-Y1 presented a decrease, after the performance of Greek dances. In addition, the subjective indicators of fatigue showed an increase, which was expected after the participation in the 60 min Greek dances bout. Some of the observed changes are statistically significant and some are relatively modest in magnitude (Table 3).

In Figure 1 and 2 are presented the fluctuation of POMS subscales pretest and posttest. In both Figures is clearly shown that all the factors of POMS, as well as state anxiety score, were influenced by aerobic dance bout and Greek dances bout in the desirable direction. So, the changes generally reflect increases in positive responses and fatigue and decreases in negative responses and anxiety.

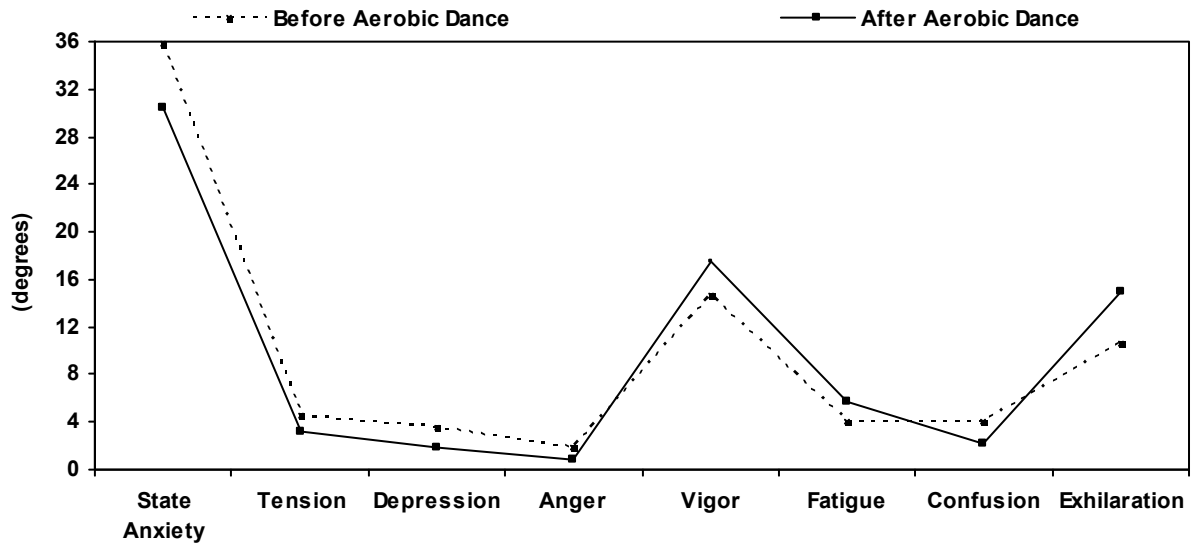


Figure 1. Mean scores of State Anxiety, POMS subscales and Exhilaration for Aerobic Dance Group.

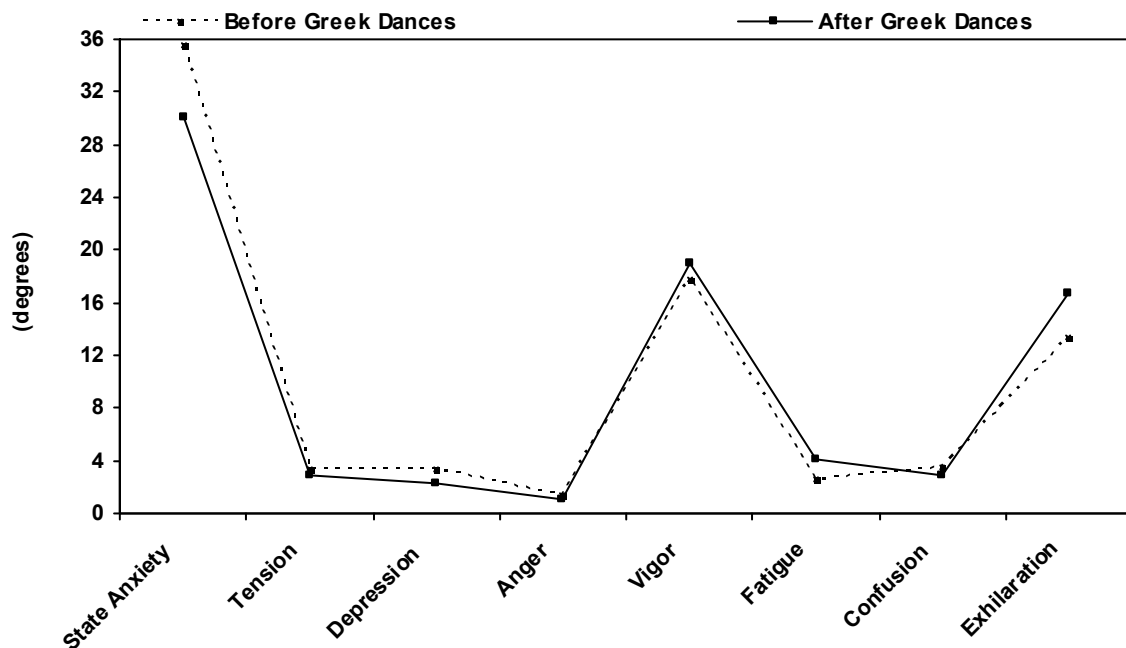


Figure 2. Mean scores of State Anxiety, POMS subscales and Exhilaration for Greek Dances Group.

From the results, it is evident that one bout of Greek dances and aerobic dance affect with the same way and on the same direction women's psychological health, decreasing state anxiety, and improving mood states that is decreasing tension, depression, anger, confusion and total mood disturbance and increasing vigor and exhilaration.

### Discussion

Physical activity, in general, is associated with desirable short-term changes in mood, especially decreases in anxiety, depression, anger, and fatigue as well as increased sense of mental well-being, alertness, vigor, clear thinking, and energy (Berger, & McInman, 1993; Berger, & Owen, 1983, 1988, 1992; ISSP, 1992; King et al., 1993; Morgan, & Goldston, 1987; Pierce et al., 1993; Steptoe, & Bolton, 1988). As for stress, the reducing benefits of exercise that include physiological and also psychological benefits, as mood alteration and especially the reduction of tension, depression, and anger, enable participants to cope with daily stressors more

effectively (Berger, 1996). It could be said that engaging in various regular physical activities can enhance individuals' quality of life (United States Department of Health and Human Services, 1998).

The primary objective of the present study was to examine whether exercising in physical activities such as Greek dances and aerobic dance result in anxiety reduction and in overall mood enhancement. The results indicate that Greek dances indeed possess properties of mood enhancing, which are comparable qualitatively to those of aerobic dance. More specifically, Greek dances and aerobic dance resulted in decreases in the negative affect measurements that are tension, depression, anger, confusion, and total mood disturbance, as well as state anxiety, and in increases in the positive affect measurements that are vigor and exhilaration.

In agreement, other authors suggest that dancing causes anxiety and neuromuscular tension reduction, and, also, causes psychological and physical calm (Garnet, 1974; Leste, & Rust, 1984; Payne, 1992; Stanton-Jones, 1992; Steiner, 1992). More specifically, aerobic dance is associated with significant mood benefits (Berger, & Motl, 2000; Berger et al., 1995; Gondola, 1987; McInman, & Berger, 1993; Serbezis et al., 2007). Moreover it was, also, found that Greek dances may induce mood states improvements, in young adults (Argiriadou & Mavrovouniotis, 2001; 2002), in middle aged people (Argiriadou et al., 2013; Serbezis et al., 2007), in older people (Mavrovouniotis et al., 2010), and in elderly women (Konstantinidou et al., 2002; Papaioannou et al., 2010). Furthermore, in similar results were concluded authors examining the effects of other traditional dances in elderly women, such as Turkish traditional dance (Sibel et al., 2009) or social/traditional dances (Palo-Bengtsson et al., 1998).

One etiology for the mood improvements after the Greek dances session and the aerobic dance session is that the executed dancing sessions are an aerobic form of exercise. In agreement, significant mood benefits support previous research on mood benefits of participating in aerobic physical activity, such as jogging, running, or swimming (Berger et al., 1988; Berger, & Owen, 1983; Dyer, & Crouch, 1987; McGowan et al., 1991). Definitely, the most common view in the literature for psychological benefits promotion is the aerobic requirement (Petruzzello et al., 1991). Nevertheless, on the question which exercise is aerobic, it considered that aerobic exercise is performed in a HR training zone of approximately 60% to 90% of  $HR_{max}$  (American College of Sports Medicine, 1995).

As for aerobic dance it is obvious that it concerns an aerobic exercise mode. As for the Greek dances, researchers who measured heart rate (HR) during Greek dances performance found that Greek dances were performed in a HR training zone of approximately 78-79% of  $HR_{max}$ , of the middle aged and elderly participants (Argiriadou, 2013), while, similarly, other researchers found that they were performed in a HR training zone of approximately 63% of  $HR_{max}$  of the old participants (Mavrovouniotis et al., 2010), proving that it, also, concerns an aerobic exercise mode.

Another important feature of physical activities explaining the mood improvement is the absence of competition. Thus, dancing is a recreational activity, where dominates the absence of competition, a significant element in maximizing the mood benefits associated with exercise (Berger, & Motl, 2000). In agreement, Berger et al. (1995) found that individuals who participated in aerobic dance reported significant mood benefits, while participants in competitive sport activities such as basketball and volleyball reported overall mood disturbances. In addition, instead of competition, participants in Greek dances, while they dance, are coming close one to another, as they are holding each other from the hands, creating a hemi-cycle. With this way all the participants in the cycle are sharing the activity, the music and the rhythm, and their feelings, and they are having not only contact by the touch, but visual contact, as well (Argiriadou et al., 2013). Thus, it could be said that the absence of competition leading on a winning or a losing, is a key-element of Greek dances as well as of aerobic dance, which resulted in mood improvement of the women in the present study.

In addition to the aforementioned exercise mode requirements for mood enhancement and stress reduction, is the performed physical activity to be repetitive and rhythmical. Repetitive movements seem to encourage introspective thinking during participation. Since the activity does not require much attention, the participant's mind is free to wander (Berger, & Owen, 1988). In Greek dances and aerobic dance, the participants follow the "leader" rhythm, let themselves free and perform a number of well-known steps/movements that are repeated. So, it could be said that Greek dances and aerobic dance constitute repetitive and rhythmical physical activities which result to the improvement of women's psychological state.

Consequently, dancing is an effective factor of mood state, as it contributes to the creation of a special stream state of consciousness which is related to various ecstasy levels, or, in other words, to a state of enthusiasm. Therefore, it appears that dancing is not simply and only the means of body-spirit reconnection. It is a kinetic activity that can, as the primitive, ritual dances, use brain properties in order to connect, via the conceiving rhythm, the internal and the external, that is the individual and the world, a fundamental element in psychotherapy (Schott-Billmann, 1997).

From the results of the present study was confirmed that one bout of Greek dances and aerobic dance affect with the same way and on the same direction women's psychological health, decreasing state anxiety and improving mood states. It could be said that the main etiology of the induced state anxiety decrease and mood improvements is the aerobic mode of the two exercise forms. In addition, the absence of competition as well as the fact that Greek dances and aerobic dance are rhythmical and repetitive activities are, also, important features

resulting in positive affect. In conclusion, the participation in a Greek dances bout, or in an aerobic dance bout could lead to significant improvements in women's psychological health state through the decrease in state anxiety and the enhancement of mood states.

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