



Application of an integrative yoga therapy programme in cases of essential arterial hypertension in public healthcare



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A B S T R A C T

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Objective: To examine the efficacy of an integrative yoga programme as adjuvant treatment of essential arterial hypertension.

Methods: An Integrative yoga programme was conducted during three months in 26 sessions with a group of ten essential arterial hypertension patients at a public health centre. The same number of patients acted as the control group without treatment. The patients were randomly selected and assigned to the groups. All patients filled in the Positive and Negative Affect Schedule (PANAS), the Hospital Anxiety and Depression Scale (HADS) and the Smith Relaxation States Inventory 3 (SRSI3) before and after the treatment.

Results: A statistically significant reduction of systolic and diastolic blood pressure, negative affect, symptoms of anxiety and degree of stress could be observed in the study group.

Conclusions: These positive and promising results confirm the effectiveness of these techniques in the treatment of essential arterial hypertension and suggest possible further investigations.

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1. Introduction

Arterial hypertension is a high-risk health disorder. It is responsible for roughly half of deaths due to cerebrovascular accident, thus constituting the leading cause of premature death and disability, increasing the risk of renal insufficiency, blindness, breakage of blood vessels and cognitive deterioration. It affects 40% of adults older than 25 worldwide and 36.7% in Spain [1].

The VII Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC VII) of the American National Institutes of Health (NIH), the European Society of Hypertension (ESH) and the European Society of Cardiology (ESC) agree that arterial hypertension is given with an average of two or three consecutive measurements of 140 mmHg or more systolic pressure and/or 90 mmHg or more of diastolic pressure in a seated position [2].

Essential (or primary) arterial hypertension, the cause of which cannot be determined organically, is a functional disorder which is strongly related to a person's life style. Among the risk factors which influence the development and occurrence of arterial

hypertension are excess weight, diabetes, excessive salt intake, high-fat diet, smoking, excessive alcohol intake and sedentariness; additionally, the influence of emotional risk factors such as anxiety, depression and negative affect has also been demonstrated [3–5].

A high cardiovascular response associated with stress is manifested in patients with anxiety disorders, while in relation with depressions some studies suggest deterioration in the recovery of the cardiovascular parameters of the patients, whose cardiovascular response is lower than that in healthy individuals [6].

In regard to protective factors, the beneficial action of positive affect on cardiovascular diseases [7] and the positive influence of states of relaxation on the reduction of the blood pressure in hypertension patients [8] can be highlighted.

Psychological programmes which have traditionally been applied in the treatment of essential arterial hypertension have been based on procedures of stress management built on relaxation practices, sometimes in combination with biofeedback or cognitive techniques [9].

India, which is the cradle of yoga, has an important role in research and therapeutic application of yoga in hospitals, clinics and research centres; among the most prominent of these research centres are the Vivekananda Yoga Research Institute in Bangalore (S-VYASA), the Morarji Desai National Institute of Yoga in New Delhi (MDNIY) and the Advanced Centre for Yoga Therapy, Education and Research in Pondicherry (ACYTER). The therapeutic

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application of yoga has been spreading on an international level, fundamentally concentrating on psychiatric pathologies, cardiovascular disease and respiratory disorders.

Existing studies on the role of yoga in the treatment of cardiovascular disorders suggest a favourable effect of yoga on cardiovascular response, which is reflected in the reduction of systolic and diastolic blood pressure and of the heart rate as well as in higher heart rate variability [10]. Studies have also been conducted to explore the influence of yoga practices on the above mentioned emotional risk factors such as negative affect, anxiety and depression [11–13] and on protective factors such as positive affect [14] and states of relaxation [15].

The practice of yoga includes positions (asanas) which are based on isometric exercises, stretching exercises and breathing exercises, deep relaxation techniques and meditation. Asanas strengthen, balance and relax the muscles, tone the articulations, improve habits of body position, improve breathing, reduce mental tension and favour the homeostasis of the cardiovascular, digestive and endocrine systems [16]. Respiratory techniques create a balance in sympathetic-parasympathetic activation, reduce stress and induce a state of relaxation. Yogic relaxation is a progressive relaxation technique which develops the consciousness of the body, reduces physical and mental tension and produces a state of mental calmness. Meditation is also an advanced state of contemplation which is attained through concentration over a prolonged period of time; the body and the senses relax while the mind remains alert and undistracted [17].

The paper at hand explores the possible benefits of the application of an integrative yoga programme in the treatment of essential arterial hypertension; it analyses its effects on systolic and diastolic blood pressure and on the heart rate in a group of patients with this pathology. The action of this programme on some of the most important protective factors and risk factors that have been mentioned (positive and negative affect, anxiety and depression) were also studied. Finally, an analysis was made to determinate, first, the effectiveness of yoga, as a combination of stress coping techniques, to reduce the degree of stress of the participants, and second, the ability of yoga to induce different states of relaxation.

2. Methods

2.1. Participants

The participants ($n = 50$), aged 40 to 71, were diagnosed essential arterial hypertension patients of San José health centre in Las Palmas de Gran Canaria. They were randomly selected from a list which had been created, also randomly, by the team of physicians of the health centre. 25 patients were assigned to each group (study group and control group) by systematic random sampling. After appointments with each of these initial participants, they were randomly selected from the list until the consent of participation in the study was obtained from 20 patients in each group. In the study group 10 participants completed the study and in the control group, even though 14 completed the study, four had to be excluded due to changes in diagnosis and medication, leaving a total of 10 participants. The mean age in the study group was 57.70 (SD 7.82). 70% of these were female and 30% were male; 30% suffered from anxiety disorder and 20% suffered from depression. The mean age in the control group was 57.90 (SD 8.67). 40% of these were female and 60% were male. 50% suffered from anxiety disorder and 30% suffered from depression. All of the patients were taking medication for hypertension and for the diagnosed disorder.

Table 1
Descriptive statistics of the physiological variables studied in both groups.

		MD(SD)	MD(SD)
		PRE	POST
Systolic blood pressure	Study	149.50(24.10)	137.10(11.57)
	Control	131.50(12.21)	134.50(15.40)
Diastolic blood pressure	Study	89.20(11.50)	80.60(8.36)
	Control	75.60(12.98)	78.30(12.75)
Heart rate	Study	81.20(15.65)	78.10(11.46)
	Control	77.80(10.52)	79.40(11.66)

2.2. Instruments

Omron sphygmomanometers were used to measure the systolic and diastolic blood pressure and the heart rate.

To assess the emotional state, the Spanish version of the Positive And Negative Affect Schedule (PANAS) questionnaire was used, which has been shown to have a strong construct validity and reliability (Cronbach's alpha between 0.87 and 0.91) [18]. This is a self-report questionnaire with two subscales, positive affect and negative affect, with 10 items each.

Anxiety and depression were evaluated using the Spanish version of the Hospital Anxiety and Depression Scale (HADS) [19]. This scale contains 14 items, 7 for depression symptoms and 7 for anxiety symptoms. Internal consistency coefficients of 0.84 for anxiety and 0.83 for depression were detected [20].

The state of relaxation was appraised using the Smith Relaxation State Inventory 3 (SRSI3) [21]. It contains 38 items evaluating 19 states associated with relaxation in four categories: basic relaxation, mindfulness, positive energy and transcendence. It also contains a scale for measuring the degree of stress. The reliability of previous versions of this inventory, measured by means of Cronbach's alpha, was between 0.60 and 0.88 [22].

2.3. Procedure

Systolic and diastolic blood pressure and heart rate were measured in the participants in both groups (study group and control group) by qualified nursing staff and the corresponding psychological scales were completed (pre-test measurements).

The study group participants followed a yoga practice programme two days each week over the course of three months,

Table 2
Descriptive statistics of the psychological variables studied in both groups.

		MD(SD)	MD(SD)
		PRE	POST
HAD anxiety	Study	5.60(3.84)	3.30(2.63)
	Control	10.00(3.16)	8.30(5.01)
HAD depression	Study	3.80(2.61)	2.20(1.62)
	Control	7.70(4.50)	6.30(4.14)
PANAS positive affect	Study	37.70(6.41)	32.40(6.19)
	Control	30.00(7.83)	31.60(10.79)
PANAS negative affect	Study	24.20(10.18)	14.20(2.15)
	Control	24.40(7.32)	22.40(8.33)
SRSI3 relaxation	Study	30.70(8.49)	36.00(7.04)
	Control	29.40(7.92)	36.80(9.20)
SRSI3 mindfulness	Study	31.80(7.07)	33.60(9.01)
	Control	28.10(6.72)	33.50(5.42)
SRSI3 energy	Study	24.00(5.73)	27.10(3.78)
	Control	22.40(7.71)	25.10(6.01)
SRSI3 transcendence	Study	12.30(3.86)	11.30(3.97)
	Control	12.60(4.95)	13.50(4.38)
SRSI3 stress	Study	18.80(10.91)	12.80(4.64)
	Control	24.90(5.47)	25.30(7.77)

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