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Original article

Effects of a dance therapy programme on quality of life, sleep and blood pressure in middle-aged women: A randomised controlled trial☆

María Serrano-Guzmán[a], Carmen M. Valenza-Peña[a], Carmen Serrano-Guzmán[b], Encarnación Aguilar-Ferrándiz[a,c], Gerald Valenza-Demet[a], Carmen Villaverde-Gutiérrez[c,d,*]

[a] Departamento de Fisioterapia, Facultad de Ciencias de la Salud, Universidad de Granada, Granada, Spain
[b] Medicina Familiar y Comunitaria, Córdoba, Spain
[c] Instituto de Investigación Biosanitaria, Universidad de Granada, Granada, Spain
[d] Departamento de Fisiología, Facultad de Ciencias de la Salud, Universidad de Granada, Granada, Spain

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ABSTRACT

Background and objective: Evidence suggests that dance therapy may have positive effects in areas such as cardiovascular parameters and sleep. The aim of the present study is to explore whether a dance therapy programme improves sleep and blood pressure in a population of middle-aged pre-hypertensive and hypertensive women.
Methods: A randomised controlled trial was conducted, in which participants were assigned to one of 2 groups: standard care (with usual activities and medication) or dance therapy (in which the participants followed a dance therapy programme, in addition to their medication). The intervention was an 8-week, 3-times-per-week, progressive and specific group dance-training programme. The dance steps were specifically designed to improve balance by shifting the body and relocating the centre of gravity. The main measures obtained were blood pressure, sleep quality and quality of life, measured by the Pittsburgh Sleep Quality Index and the European Quality of Life Questionnaire.
Results: Sixty-seven pre-hypertensive and hypertensive middle-aged women were randomised to either an intervention group (n = 35) or a control group (n = 32) after baseline testing. The intervention group reported a significant improvement in blood pressure values ($p < 0.01$), as well as in sleep quality ($p < 0.05$) and quality of life ($p < 0.001$), compared to the control group.
Conclusion: The dance therapy programme improved blood pressure, sleep and quality of life in pre-hypertensive and hypertensive middle-aged women, and constitutes an interesting basis for larger-scale research.

Efectos de un programa de terapia de baile en la calidad de vida, el sueño y la presión arterial en mujeres de mediana edad: un ensayo controlado aleatorizado

Palabras clave:
Danzaterapia
Hipertensión
Calidad de vida
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RESUMEN

Fundamento y objetivo: Existe evidencia sobre los efectos positivos de la danza, como la mejora de los parámetros cardiovasculares y del sueño. El objetivo del presente estudio ha sido explorar si un programa de terapia de baile es capaz de mejorar el sueño y la presión arterial en mujeres de mediana edad, prehipertensas e hipertensas.
Métodos: Se diseñó un ensayo aleatorizado y controlado, donde las participantes fueron asignadas a uno de 2 grupos: grupo control (donde las participantes continuaron con sus actividades y medicación

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* Corresponding author.
E-mail address: carmenvg@ugr.es (C. Villaverde-Gutiérrez).

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habitual) o grupo de terapia de baile (donde las participantes siguieron un programa de terapia de baile, además de su medicación). La intervención consistió en un programa de baile-entrenamiento específico y progresivo durante 8 semanas, a razón de 3 sesiones semanales. Los pasos de baile fueron específicamente seleccionados para mejorar el equilibrio, desplazando el cuerpo y reubicando el centro de gravedad. Las medidas de resultado fueron la presión arterial, la calidad del sueño y la calidad de vida, estas 2 últimas medidas por el *Pittsburgh Sleep Quality Index* y el Cuestionario Europeo sobre Calidad de Vida, respectivamente.

Resultados: Se asignó al azar, a un total de 67 mujeres de mediana edad prehipertensas e hipertensas a un grupo de intervención (n = 35), o como controles (n = 32), después de las pruebas basales. El grupo de intervención informó de mejoras significativas en los valores de la presión arterial ($p < 0{,}01$), así como en la calidad del sueño ($p < 0{,}05$) y la calidad de vida ($p < 0{,}001$) en comparación con el grupo control.

Conclusión: El programa de terapia de baile mejoró la presión arterial, el sueño y la calidad de vida en mujeres de mediana edad prehipertensas e hipertensas, proporcionando la base para continuar la investigación con estudios más amplios.

Introduction

Cardiovascular disease is the leading cause of morbidity and mortality in men and women.[1] However, the incidence of cardiovascular disease-related deaths is higher in women than men.[2]

The most frequent cardiovascular disease is hypertension, with a prevalence associated to prehypertension of one billion men and women worldwide.[3] The fact that its distribution differs by sex might be explained, in part, by the effect of endogenous sex steroid hormones.[4,5] Blood pressure (BP) increases with age, with high BP (HBP) affecting 50% of adults aged 60 years and over, and the lifetime prevalence is 90%.[6] BP increases progressively with age in both men and women, but the prevalence of hypertension and pre-hypertension is higher in women after the menopause.[1–3]

Although pharmacological treatments for HBP have been shown to effectively lower BP,[5] this outcome can also be achieved by lifestyle modifications, including diet and exercise.[7] Moreover, evidence from experimental sleep deprivation studies, population-based epidemiological studies and an interventional study indicates the potential efficacy of adequate sleep quality to prevent and treat hypertension.[8] There is also evidence that the pathophysiology of hypertension could contribute towards shortening sleep duration, which, in turn, could further raise BP.[9]

Regular physical exercise reduces BP and is broadly recommended by current US and European hypertension guidelines.[10] Hypertensives are encouraged to "engage in aerobic exercise on a regular basis, such as walking, jogging or swimming for 30–45 min daily". In normotensives, regular exercise reduces systolic blood pressure by 3–5 mm Hg and diastolic BP by 2–3 mm Hg. In hypertensives, this effect is even more pronounced: a recent meta-analysis indicated a mean reduction of 7 mm Hg systolic and 5 mm Hg diastolic.[11]

Dancing has been suggested as a beneficial type of physical exercise, as it allows variability in its performance, it can be practised in many different scenarios, it is not costly and does not provoke boredom, due to the various styles, steps and music involved.[12] Studies have reported positive effects gained from dancing, such as improved balance and a reduction in falls suffered by elderly people, together with beneficial effects on cardiovascular parameters and enhanced agility, flexibility and night rest and relief from depression.[13–15]

This paper describes a randomised controlled study conducted to investigate the hypothesis that a dance therapy programme could improve quality of life, sleep and blood pressure in middle-aged pre-hypertensive and hypertensive women.

Materials and methods

Design

This randomised controlled study was carried out from March 2013 to January 2014.

Participants

The participants were assigned by simple random allocation to one of two groups: either a standard care group (n = 32) (in which the participants continued their usual activities and medication) or a dance therapy group (n = 35) (in which the participants followed a dance therapy programme for 8 weeks in addition to their medication).

Sedentary female patients, aged 65–75 years, were recruited from our hypertension outpatient clinic. After the first interview, the women were examined at the laboratory of the Department of Physical Therapy and Department of Nursing in our University. In accordance with the American Heart Association scientific statement according to which the low-end threshold for prehypertension is lower than the previous designation of high-normal BP (i.e., SBP/DBP: 130/85), hypertension was defined as BP $\geq$140/90 mm Hg.[16]

Exclusion criteria included regular engagement in physical exercise training during the four weeks prior to inclusion in the study, a change of antihypertensive medication during the four weeks prior to inclusion in the study or during the follow-up period, associated comorbidities of any nature and co-medication, except for prescribed drugs for sleep.

Ethical considerations

To minimise compliance bias concerning participation in the dance programme during the study, the patients were asked to make all possible effort to attend all of the sessions during the study. The purpose of the study was explained to all of the patients, who each gave written informed consent for inclusion in the study, in the understanding that patient anonymity would be preserved. The study was carried out in accordance with the provisions of the Declaration of Helsinki and it was approved by the local ethics committee at the Faculty of Health Sciences of our university.

Procedure

The dance therapy group was asked to attend 24 dance sessions, 3 times weekly for 8 weeks. Each session lasted 50 min.