



Effect of dance therapy on blood pressure and exercise capacity of individuals with hypertension: A systematic review and meta-analysis



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ABSTRACT

Background: Dance therapy is a less conventional modality of physical activity in cardiovascular rehabilitation. We performed a systematic review and meta-analysis to investigate the effects of dance therapy in hypertensive patients.

Methods: Pubmed, Scopus, LILACS, IBECs, MEDLINE and SciELO via Virtual Health Library (Bireme) (from the earliest data available to February 2016) for controlled trials that investigated the effects of dance therapy on exercise capacity, systolic (SBP) and diastolic (DBP) blood pressure in hypertensive patients. Weighted mean differences (WMD) and 95% confidence intervals (CIs) were calculated, and heterogeneity was assessed using the I^2 test.

Results: Four studies met the eligibility criteria. Dance therapy resulted in a significant reduction in systolic blood pressure (WMD -12.01 mm Hg; 95% CI: -16.08 , -7.94 mm Hg; $P < 0.0001$) when compared with control subjects. Significant reduction in diastolic blood pressure were also found (WMD -3.38 mm Hg; 95% CI: -4.81 , -1.94 mm Hg; $P < 0.0001$), compared with control group. Exercise capacity showed a significant improvement (WMD 1.31 ; 95% CI: 0.16 , 2.47 ; $P < 0.03$). A moderate to high heterogeneity was observed in our analysis: $I^2 = 92\%$ to SBP, $I^2 = 55\%$ to DBP, and $I^2 = 82\%$ to exercise capacity.

Conclusions: Our meta-analysis showed a positive effect of dance therapy on exercise capacity and reduction of SBP and DBP in individuals with hypertension. However, the moderate to high heterogeneity found in our analysis limits a pragmatic recommendation of dance therapy in individuals with hypertension.

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1. Background

Hypertension is a common condition that is associated with unhealthy lifestyle and represents an important risk factor for cardiovascular diseases [1]. To diagnose hypertension is necessary multiple measurements on, at least, two separate days, considering 1–4 weeks of interval [2]. Hypertension is classified as: stage 1, systolic blood pressure (SBP)/diastolic blood pressure (DBP) $\geq 140/90$ mm Hg, stage 2 $\geq 160/100$ mm Hg [2], and stage 3 hypertension $\geq 180/110$ mm Hg [1].

The current treatment of hypertension involves antihypertensive medications and lifestyle modification, such as sodium restriction, smoking cessation and physical activity [2]. A previous meta-analysis showed that increasing in physical activity level is very important to blood pressure control in individuals with hypertension [3]. It has also been shown that physical activity can decrease not just systolic (5 to 10 mm Hg), but also diastolic blood pressures (1 to 6 mm Hg) [3].

Dance therapy is a less conventional modality of physical activity in cardiovascular rehabilitation, which is positively linked to cognitive, emotional and social integration of the participants [4]. Some data involving individuals with cardiovascular diseases are now available in the literature. A previous meta-analysis showed that dance therapy improved exercise capacity and quality of life of individuals with chronic heart failure [5]. Despite some randomized controlled trials (RCTs) about dance therapy and hypertension [6–9], no meta-analysis has been performed to guide clinicians and

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researchers about the effects of dance therapy on blood pressure of individuals with hypertension.

This study aimed to perform a systematic review and meta-analysis of RCTs to investigate the effects of dance therapy on blood pressure and exercise capacity of individuals with hypertension.

2. Methods

This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [10].

2.1. Eligibility criteria

We used the following PICOT (population, intervention, comparison, outcome, and study type) elements to define eligibility criteria: (1) *population*: hypertensive patients independent of the stage receiving or not receiving antihypertensive treatment; (2) *intervention*: dance therapy, defined as rhythmic body movements with therapeutic purposes usually performed with music; (3) *comparison*: control group without dance therapy; (4) *predefined outcomes*: mean SBP and DBP in mmHg, exercise capacity (any test) and standard deviation or standard error; and (5) *study type*: RCTs. We excluded trials that enrolled individuals with other cardiac or respiratory diseases and/or tested the dance therapy in association with other intervention.

2.2. Search strategy

We performed a systematic search to identify RCTs from Pubmed, Scopus, LILACS, IBECs, MEDLINE and SciELO via Virtual Health Library (Bireme). In addition, we searched trials at ClinicalTrials.gov.

The search was performed in February 2016, with no language restriction, using the following terms: “dance”, “dance therapy”, and “hypertension”. We also conducted a manual search of cross-references to identify additional studies. Authors were contacted by e-mail for ongoing studies, confirmation of any data or additional information. If the authors do not respond within 14 days, the data was excluded from our meta-analysis.

Two reviewers independently screened potentially relevant studies based on titles and abstracts. Relevant studies were read in full and included in the meta-analysis according to the eligibility criteria. Disagreements were resolved by consensus or by a third reviewer.

2.3. Data extraction

Two independent reviewers extracted data from the reports using a predefined protocol. We checked information about study population, intervention, follow-up period and rates of missing data, outcome measures, and results. Disagreements were resolved by one of the authors.

2.4. Quality of studies

The quality of studies included in this systematic review was scored by two researchers using the PEDro scale which is based on important criteria, such as concealed allocation, intention-to-treat analysis, and the adequacy of follow-up. These

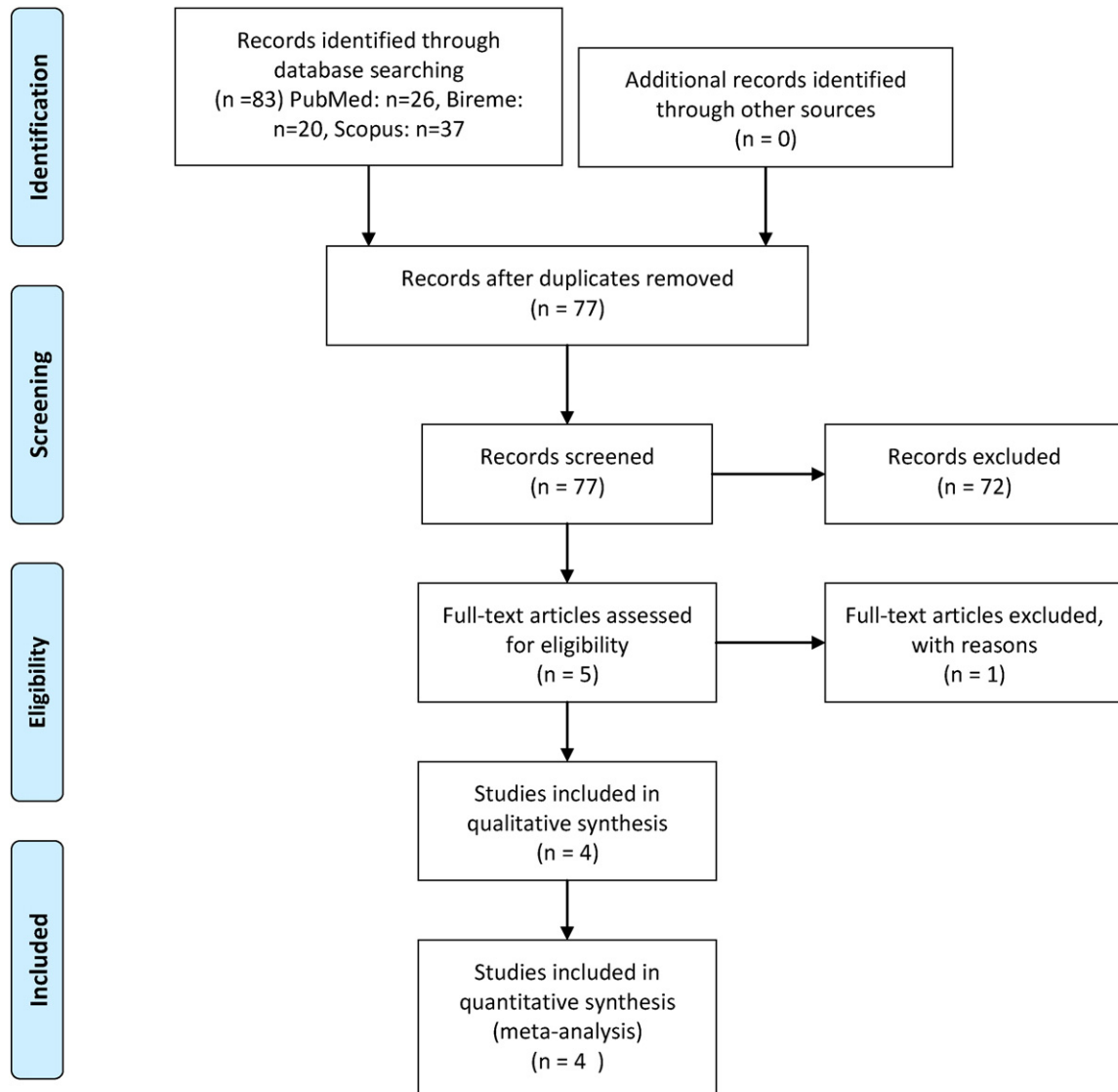


Fig. 1. Search and selection of studies for systematic review according to PRISMA statement.

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