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Yoga for hypertension: A systematic review of randomized clinical trials

Paul Posadzki^{a,b,c,d,*}, Holger Cramer^e, Adrian Kuzdzal^c,
Myeong Soo Lee^{d,f}, Edzard Ernst^f

^a University of Plymouth, Plymouth, UK

^b Liverpool John Moores University, UK

^c Rzeszow University, Rzeszow, Poland

^d Korea Institute of Oriental Medicine, Daejeon, South Korea

^e University of Duisburg-Essen, Essen, Germany

^f University of Exeter, Exeter, UK

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Hypertension;
Complementary and
alternative medicine;
Yoga;
Systematic review;
Effectiveness

Summary

Objectives: To critically evaluate the effectiveness of yoga as a treatment of hypertension.

Methods: Seventeen databases were searched from their inceptions to January 2014. Randomized clinical trials (RCTs) were included, if they evaluated yoga against any type of control in patients with any form of arterial hypertension. Risk of bias was estimated using the Cochrane criteria. Three independent reviewers performed the selection of studies, data extraction, and quality assessments.

Results: Seventeen trials met the inclusion criteria. Only two RCTs were of acceptable methodological quality. Eleven RCTs suggested that yoga leads to a significantly greater reduction in systolic blood pressure (SBP) compared to various forms of pharmacotherapy, breath awareness or reading, health education, no treatment (NT), or usual care (UC). Eight RCTs suggested that yoga leads to a significantly greater reduction in diastolic blood pressure (DBP) or night-time DBP compared to pharmacotherapy, NT, or UC. Five RCTs indicated that yoga had no effect on SBP compared to dietary modification (DIM), enhanced UC, passive relaxation (PR), or physical exercises (PE). Eight RCTs indicated that yoga had no effect on DBP compared to DIM, enhanced UC, pharmacotherapy, NT, PE, PR, or breath awareness or reading. One RCT did not report between-group comparisons.

Conclusion: The evidence for the effectiveness of yoga as a treatment of hypertension is encouraging but inconclusive. Further, more rigorous trials seem warranted.

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* Corresponding author at: Honorary University Fellow, University of Plymouth, UK. Tel.: +44 07 950 441367.
E-mail addresses: paul.posadzki@plymouth.ac.uk, pawel.posadzki@hotmail.com (P. Posadzki).

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Introduction

High blood pressure (BP) is responsible for 7.6 million deaths per annum worldwide.¹ The WHO has identified high BP as one of the most important causes of premature morbidity and mortality in both developed and developing countries.² It is a major risk factor for myocardial infarction (MI), stroke, chronic heart failure (CHF), peripheral arterial disease or chronic kidney disease.³ In addition, the AHA has estimated the direct and indirect annual costs of high BP in 2010 to amount to \$76.6 billion in the US.⁴ Treatment of high BP most commonly involve the use of alpha-blockers, angiotensin converting enzyme inhibitors, angiotensin II receptor blockers, beta-blockers, calcium channel blockers or diuretics.⁵

Some patients object to drug treatments or experience adverse effects (AEs). Consequently, they might try non-pharmacological treatments such as yoga.^{6–8} Yoga can be defined as ‘‘a practice of gentle stretching, exercises for breath control and meditation as a mind-body intervention’’.⁹ In Western societies, yoga is regarded as a form of mind-body medicine and often considered to be part of Complementary and Alternative Medicine (CAM).¹⁰ An estimated 6.6% of US adults practice yoga, and these numbers continue to rise.¹¹

Several reviews regarding the potential benefits of yoga for reducing BP have recently been published.^{12–17} These reviews reached overtly positive conclusions which, in our view, are not fully justified.

The objective of this systematic review (SR) is to systematically and critically evaluate the effectiveness of yoga as a treatment option for hypertension, using data from all randomized clinical trials (RCTs) currently available.

Methods

We adhered to the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) guidelines while reporting the results of this SR.

Data sources

First reviewer (PP) searched the following electronic databases (from their inception to January 2014): AMED (EBSCO), CINAHL (EBSCO), EMBASE (OVID), MEDLINE (OVID), PsycINFO, The Cochrane Library, ISI Web of Knowledge, two Indian databases (Indian Council of Medical Research and INDMED), one Chinese database (China National Knowledge Infrastructure), three Japanese databases (J stage, Journal archive, and Science Links Japan), and four Korean databases (DBpia, Korea National Assembly Library, Research Information Sharing Service and Oriental Medicine Advanced Searching Integrated System). Details of the MEDLINE search strategy are presented in [Appendix 1](#). Additionally, the reference lists of the located articles and key SRs of yoga and hypertension were manually searched for further relevant literature. Hard copies of all retrieved articles were read in full.

Study selection

Titles and abstracts of papers identified in the electronic database search were screened for relevance. Potentially relevant articles were retrieved in full for further evaluation and validation according to predefined criteria. The data screening and selection process was conducted independently by three reviewers (PP, HC and MSL) and subsequently validated by the fourth reviewer (EE) and the fifth (AK). Disagreements about whether a study should be included or excluded were resolved through discussions.

Eligibility criteria

The present SR included all RCTs investigating the effect of yoga on adult patients [≥ 18 of age] with pre-hypertension [120–139/80–89 mm Hg] or hypertension [$\geq 140/90$ mm Hg] (as defined by AHA) with or without existing co-morbidities. In line with our previous review,¹⁸ a practice that was based on traditional yoga philosophy or yoga practice and

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