Complementary Therapies in Medicine

Volume 23, Issue 4, August 2015, Pages 562–569

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Effect of yoga on arterial stiffness in elderly subjects with increased pulse pressure: A randomized controlled study

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doi:10.1016/j.ctim.2015.06.002

Highlights

- Yoga can have a significant beneficial effect on age-associated arterial stiffness in elderly with mild hypertension.
- Yoga can induce significant beneficial modulation in cardiac autonomic nervous system, enhance bioavailability of NO and reduce BP in elderly individuals.
- The yoga program offered was better than a brisk walking program in inducing beneficial modulation in arterial stiffness, endothelial function and sympathovagal balance.

Abstract

Objective

We aimed to determine the effect of yoga on arterial function in elderly with increased pulse pressure (PP).

Design

Randomized controlled study with two parallel groups.

Participants

Elderly subjects with PP ≥ 60 mmHg (n = 60).

Interventions

Yoga group (n = 30) was assigned for yoga training and brisk-walking (BW) group (n = 30) for brisk-walk with stretching exercise for 1 h in the morning for 6 days in a week for 12 weeks.

Main outcome measures

Arterial stiffness measures: Brachial-ankle pulse wave velocity (baPWV), Carotid-
75), arterial
tric oxide
ility (HRV)
HFnu) and
LF/HF ratio.

Results

The mean between-group change (with 95% CI) in arterial stiffness: c–f PWV(m/s) [1.25(0.59–1.89); $p < 0.001$], baPWV(m/s) [1.96(0.76–3.16), $p < 0.01$], AIx@75 [3.07(0.24–5.89), $p = 0.066$], aASI [8.3(4.06–12.53), $p < 0.001$]; endothelial function index: NO(μmol/L) [−9.03(−14.57 to −3.47), $p < 0.001$]; SBP(mmHg) [14.23(12.03–16.44), $p < 0.001$], DBP(mmHg) [0.1(−1.95–2.15), $p = 0.38$], PP(mmHg) [14.07(11.2–16.92), $p < 0.001$], MAP(mmHg) [4.7(3.08–6.32), $p < 0.001$]; and cardiac autonomic function: LF(nu) [4.81(1.54–8.08), $p < 0.01$], HF(nu) [−4.13(−7.57 to −0.69), $p < 0.01$], LF/HF ratio [0.84(0.3–1.37), $p < 0.001$], indicate significant difference in effects of two intervention on arterial stiffness, endothelial function, BP and cardiac autonomic activity. There was significant change within-yoga group in vascular function, BP and autonomic function, while no significant change within-BW group was observed.

Conclusion

Our findings suggest that yoga program offered was more effective than brisk-walk in reducing arterial stiffness along with BP in elderly individuals with increased PP. Yoga can also significantly reduce sympathetic activity and improve endothelial function with enhancement in bioavailability of NO.

Keywords

Arterial stiffness; Blood pressure; Endothelial function; Cardiac autonomic activity; Yoga; Brisk-walk

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