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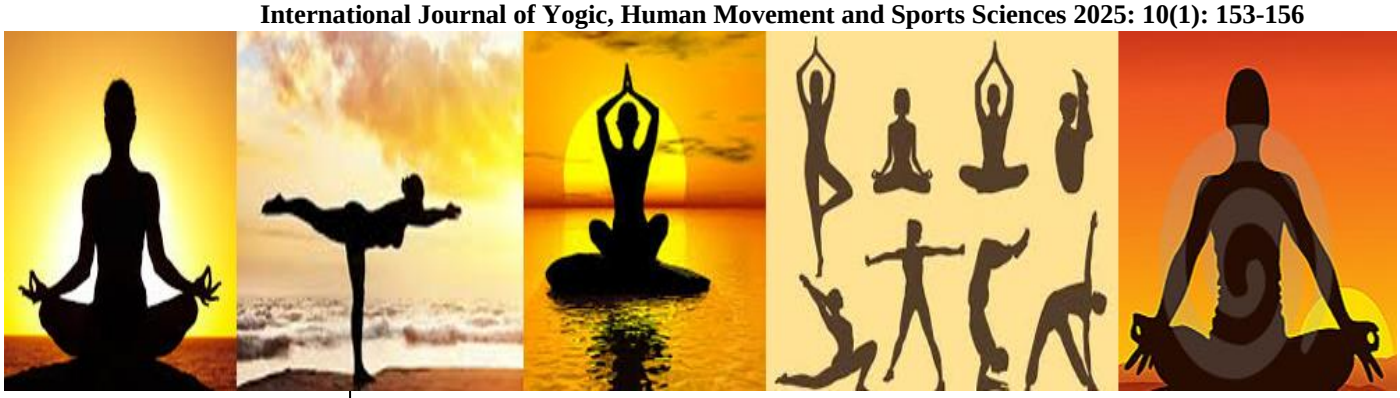

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The effect of yoga therapy on blood pressure in middle aged male subjects

Punitkumar Nayak and Prasanna BK

Abstract
This study explores the effect of yoga therapy on blood pressure in middle-aged male police officers. Hypertension, a prevalent condition in this demographic, is a significant risk factor for cardiovascular diseases. The aim of this research was to assess whether regular yoga practice could serve as an effective, non-pharmacological intervention to reduce blood pressure. A total of 60 middle-aged male participants, aged 40-60 years, employed at the KSRP 7th Battalion Assaigoli, Mangalore, were randomly assigned to a yoga therapy group (n=30) and a control group (n=30). The yoga group engaged in a structured 12-week program consisting of asanas (postures), pranayama (breathing exercises), and meditation and relaxation while the control group maintained their usual lifestyle without any intervention. Anthropological parameters and Blood pressure measurements were taken at baseline and at the conclusion of the study. Statistical analysis revealed a significant reduction in both systolic and diastolic blood pressure in the yoga therapy group compared to the control group. These findings suggest that yoga therapy may be an effective complementary approach for managing blood pressure in middle-aged male police officers, potentially reducing the need for medication and promoting overall cardiovascular health. Further research with larger and more diverse populations is recommended to validate these results and explore the underlying mechanisms.

Keywords: Yoga therapy, Anthropological parameters, blood pressure, middle-aged males, hypertension, police officers, cardiovascular health, non-pharmacological intervention

Introduction
Hypertension, or high blood pressure, is a prevalent health condition among middle-aged individuals and particularly in high-stress professions such as law enforcement. Middle-aged police officers often face occupational stressors that can contribute to an increased risk of hypertension, which in turn increases the likelihood of cardiovascular diseases. In fact, hypertension is a major risk factor for stroke, heart disease, and kidney failure, all of which are associated with elevated medical costs and reduced quality of life.

Yoga therapy, a holistic approach combining physical postures (asanas), controlled breathing exercises (pranayama), and meditation/relaxation techniques, has been suggested as an effective intervention for managing stress and improving cardiovascular health. Recent studies have indicated that yoga can reduce systolic and diastolic blood pressure, possibly due to its impact on the autonomic nervous system and the reduction of sympathetic nervous system activity. This study aims to assess the effect of yoga therapy on blood pressure in middle-aged male police officers, a demographic that may benefit from non-pharmacological approaches to managing hypertension.

The review of previous research papers on yoga therapy and hypertension highlights compelling evidence supporting yoga as an effective intervention for managing blood pressure, particularly for individuals at high risk, such as middle-aged adults and those in high-stress occupations like law enforcement.

The relationship between yoga and hypertension has been extensively studied, with numerous studies suggesting that yoga therapy can significantly reduce blood pressure, particularly in individuals with pre-existing hypertension. Systematic reviews and meta-analyses have consistently demonstrated that yoga, through a combination of physical postures (asanas), controlled breathing exercises (pranayama), and relaxation techniques, can lead to meaningful

reductions in both systolic and diastolic blood pressure. These studies underscore yoga as an effective non-pharmacological intervention, particularly beneficial for individuals at high risk, such as middle-aged adults or those with cardiovascular conditions. Yoga's ability to reduce blood pressure is thought to stem from its holistic approach, which helps to regulate autonomic nervous system activity, enhance parasympathetic dominance, and reduce sympathetic nervous system activity.

Further research has explored the role of yoga in improving heart rate variability (HRV), an indicator of the body's ability to manage stress. Gothe *et al*. (2013) [7] found that yoga practice improves HRV, which is closely linked to stress reduction and lower blood pressure. The ability of yoga to enhance parasympathetic activity, which counteracts the stress-induced sympathetic response, is particularly relevant for individuals in high-stress occupations, such as police officers, who often experience heightened physiological stress. This stress response can contribute to sustained hypertension, and yoga's effect on HRV suggests it may be an effective strategy for mitigating stress-related hypertension.

Yoga has also been shown to be particularly effective for middle-aged and older adults, a group that is at greater risk for hypertension and other cardiovascular risk factors. Studies have found that yoga can improve not only blood pressure but also other cardiovascular risk factors, such as cholesterol levels and body mass index (BMI). For middle-aged male police officers, who may face additional stressors in their profession, yoga offers a promising solution to mitigate hypertension and improve overall cardiovascular health.

The mechanisms by which yoga reduces blood pressure are multifaceted. The physical postures (asanas) improve circulation and flexibility, while pranayama (breathing exercises) help regulate the breath and promote relaxation, leading to a reduction in blood pressure. Meditation and other relaxation techniques further reduce cortisol levels, which are associated with stress and hypertension. Together, these elements work synergistically to lower blood pressure and enhance cardiovascular function.

Methods

This study employed a randomized controlled trial design conducted at the KSRP 7th Battalion Assaigoli, Mangalore. A total of 60 middle-aged male police officers, aged between 40-60 years, were recruited and randomly assigned to two groups the yoga therapy group (n=30) and the control group (n=30). The inclusion criteria for participation were male police officers aged 40-60 years, with no prior yoga experience, and baseline anthropological parameters and blood pressure indicating pre-hypertension (systolic BP: 130-159 mmHg, diastolic BP: 85-99 mmHg). Participants with known cardiovascular diseases, diabetes, severe mental health disorders, or significant physical disabilities were excluded from the study. Additionally, individuals who had engaged in any form of yoga therapy in the past 6 months were not eligible.

The Blood pressure measurements were taken at two key points during the study: before the intervention began and again after the 12-week yoga therapy program. To ensure accuracy, all blood pressure readings were taken using a standardized digital sphygmomanometer. Prior to each reading, participants were instructed to rest for 5 minutes in a seated position to minimize the effects of physical activity or stress on their blood pressure. This protocol helped obtain consistent and reliable measurements for both systolic and diastolic blood pressure, allowing for meaningful comparisons between baseline and post-intervention values.

Intervention

Integrating yoga therapy into the study requires careful attention to several key factors. It is essential to provide a detailed explanation of the intervention, including aspects like the frequency, duration, and structure of the yoga sessions. The methodology also emphasizes tracking and assessing the participant's involvement and adherence to the therapy.

The yoga therapy group followed a 12-week program consisting of asanas, pranayama, and meditation techniques to control blood pressure. Each 60-minute session was held three times a week with a trained therapist. The control group maintained their usual lifestyle. Practices included Swasthikasana, Vajrasana, Suptavajrasana, Tadasana, Trikonasana, Parshvakonasana, Paschimottanasana, Purvottanasana, Janushirshasana, Upavistakonasana, Baddakonasana, Vakrasana, Pavanamuktasana, Bhujangasana, Shalabhasana, Dhanurasana, Bharadhwajasana, Viparеetakarani, Matsyasasana, Uttanapadasana, Ujjayi, Anuloma Viloma, Bhastrika Pranayama with Bahya Kumbhaka, Pranva Japa, Soham Meditation relaxation along with Shavasana 1 & 2 The sequencing and choice of these practices were carefully planned to maximize their therapeutic benefits.

Statistical Analysis

For the statistical analysis, descriptive statistics were first used to summarize the baseline characteristics of the participants, such as age, weight, and initial blood pressure measurements. This helped to ensure that both the yoga therapy and control groups were comparable at the start of the study. To assess the impact of the intervention on blood pressure, paired t-tests were applied to compare the pre-and post-intervention blood pressure readings within each group. This test allowed for the evaluation of within-group changes over the 12-week period. To determine whether the changes in blood pressure differed significantly between the two groups, an independent t-test was conducted. This test compared the mean changes in blood pressure between the yoga therapy group and the control group. A p-value of less than 0.05 was considered statistically significant, indicating that any observed differences in blood pressure between the groups were unlikely to have occurred by chance. This approach ensured that the results were both reliable and meaningful in assessing the effectiveness of yoga therapy for lowering blood pressure.

Results

The anthropometric results show significant improvements after yoga practice. Weight decreased by an average of 1.60 kg, and height increased by 0.12 cm, likely due to improved posture. BMI reduced by 0.67 kg/m², reflecting better body weight management. Cardiovascular parameters also improved, with pulse rate dropping from 74.04±3.31 bpm to 67.78±2.95 bpm, and blood pressure decreasing: systolic from 123.2±5.86 mmHg to 114±6.38 mmHg, and diastolic from 80.4±4.50 mmHg to 77.2±4.96 mmHg. These changes are statistically significant (p<0.001), highlighting yoga's positive effects on body composition and cardiovascular health.

Table 1: Anthropological parameters

Variable	Before Yoga	After Yoga	Difference
Age (years)	36.42±8.67	36.42±8.67	0
Weight (kg)	59.28±7.948	57.68±7.89	-1.60
Height (cm)	155.58±5.834	155.7±6.73	+0.12
BMI (kg/m²)	24.45±2.551	23.78±2.57	-0.67

Table 2: Comparison of PR, SBP, and DBP

Variable	Before Yoga	After Yoga	t-test	P-value
PR (Pulse Rate)	74.04±3.307	67.78±2.950	17.4	<0.001
SBP (Systolic BP)	123.2±5.86	114±6.38	19.10	<0.001
DBP (Diastolic BP)	80.4±4.499	77.2±4.96	4.80	<0.001

These findings suggest that regular yoga practice leads to notable improvements in both body composition and Blood Pressure. The reduction in weight, and lower BMI reflect better body weight management. The significant decrease in pulse rate and blood pressure indicates enhanced cardiovascular function. These results underscore the positive impact of yoga on overall health and well-being.

Discussion

This study shows that yoga therapy can significantly improve anthropometric and blood pressure parameters in middle-aged male police officers with hypertension. These results align with existing research suggesting that yoga is an effective, non-pharmacological approach to managing hypertension and enhancing cardiovascular health, particularly for individuals experiencing chronic stress. The reduction in body weight and BMI, while modest, is important for cardiovascular health, as even small changes can lower the risk of heart disease and improve blood pressure regulation. Additionally, the significant decrease in pulse rate and both systolic and diastolic blood pressure indicates that yoga effectively reduces stress and improves cardiovascular function. These findings are especially relevant for police officers, who face high stress levels, making yoga a practical, low-cost alternative to medication for managing hypertension.

The study also shows that the improvements in blood pressure within the yoga group are consistent with other research, supporting yoga as a complementary or alternative therapy for hypertension. Importantly, the control group did not experience similar changes, confirming that the yoga intervention contributed to the observed benefits. However, the study has limitations, including a small sample size and lack of long-term follow-up. Future studies with larger sample sizes and extended follow-up are needed to determine the long-term effects of yoga on hypertension. Additionally, the study's focus on male police officers may limit generalizability to other populations.

In yoga therapy proves to be an effective and accessible intervention for managing blood pressure and improving cardiovascular health in middle-aged male police officers. Incorporating yoga into occupational health programs could help mitigate hypertension risks in high-stress professions. Further research is necessary to evaluate its long-term impact and applicability to other demographics.

Conclusion

This study shows that yoga therapy effectively manages hypertension and improves cardiovascular health in middle-aged male police officers by reducing body weight, BMI, pulse rate, and blood pressure. Yoga offers a low-cost, accessible way to manage stress and hypertension without medication. However, due to the small sample size and lack of long-term follow-up, more research is needed to confirm these results. Integrating yoga into occupational health programs could complement traditional treatments for high-stress professions.

References

1. Cramer H, Lauche R, Haller H, Steckhan N, Michalsen A, Dobos G. Effects of yoga on cardiovascular disease risk factors: a systematic review and meta-analysis. Int J Cardiol. 2014;173(2):170-183. [PubMed]
2. Tyagi A, Cohen M. Yoga and heart rate variability: A comprehensive review of the literature. Int J Yoga. 2016 Jul-Dec;9(2):97-113. doi: 10.4103/0973-6131.183712. PMID: 27512317; PMCID: PMC4959333.
3. Hagins M, States R, Selfe T, Innes K. Effectiveness of yoga for hypertension: systematic review and meta-analysis. Evid Based Complement Alternat Med. 2013;2013:649836. doi: 10.1155/2013/649836. Epub 2013 May 28. PMID: 23781266; PMCID: PMC3679769.
4. Khandekar JS, Vasavi VL, Singh VP, *et al*. Effect of Yoga on Blood Pressure in Prehypertension: A Systematic Review and Meta-Analysis. The Scientific World Journal. 2021;2021:4039364. doi: 10.1155/2021/4039364. PMID: 34552393; PMCID: PMC8452415.
5. Sharma KK, *et al*. Effect of Yoga Therapy on Lung functions in Respiratory Disorder Subjects. Eur Sci J. 2014;4. ISSN: 1857-7881; Impact Factor: 5.09.
6. Midha T, Idris MZ, Saran RK, Srivastav AK, Singh SK. Prevalence and determinants of hypertension in the urban and rural populations of a district in northern India. East Afr J Public Health. 2009;6(3):268-273.
7. Gothe N, Pontifex MB, Hillman C, McAuley E. The acute effects of yoga on executive function. J Phys Act Health. 2013 May;10(4):488-495. doi: 10.1123/jpah.10.4.488. Epub 2012 Jul 9. PMID: 22820158.
8. Krantz DS, DeQuattro V, Blackburn HW, Eaker E, Haynes S, James SA, Manuck SB, Myers H, Shekelle RB, Syme SL, *et al*. Psychosocial factors in hypertension. Circulation. 1987 Jul;76(1 Pt 2):I84-88. PMID: 3297413.
9. Swami Digambaraji. Hathapradipika. 1998 ed. Lonavala: Kaivalyadhama Lonavla; 1998.
10. Khandekar JS, Vasavi VL, Singh VP, Samuel SR, Sudhan SG, Khandelwal B. Effect of Yoga on Blood Pressure in Prehypertension: A Systematic Review and Meta-Analysis. Sci World J. 2021 Sep 13;2021:4039364. doi: 10.1155/2021/4039364. PMID: 34552393; PMCID: PMC8452415.
11. Hadaye RS, Shastri S, Salagre S. Effect of Yoga Intervention in the Management of Hypertension: A Preventive Trial. Int J Prev Med. 2021 May 27;12:55. doi: 10.4103/ijpvm.IJPVM_378_19. PMID: 34447497; PMCID: PMC8356946.
12. Swami Vivekananda. Raja Yoga. Calcutta: Advaita Ashrama; 1982.
13. Parmhansa Swami Annat Bharati. Hatha Yoga Pradipika. Varanasi: Chaukhambha K37/117, Gopal Mandir Lane, Golghar, Maidagin Varanasi-221001; 2017.
14. Chandramouli S. Naikar. Ghatayoga. Delhi: Medha Publisher; 1997.
15. Jain AK. Human Physiology and Biochemistry for Physical Therapy and Occupational Therapy. 3rd ed. Delhi: Arya Publications; 2017.
16. Waugh A, Grant A. Ross and Wilson Anatomy and

Physiology in Health and Illness. 10th ed. London: Churchill Livingstone; 2006.
17. Loeffler AG, Hart MN. Introduction to Human Disease. Pathophysiology for Health Professionals. Jones & Bartlett Learning.
18. Centers for Disease Control and Prevention. High blood pressure facts. 2012. Available from: http://www.cdc.gov/bloodpressure/facts.htm.
19. Mizuno J, Monteiro HL. An assessment of a sequence of yoga exercises to patients with arterial hypertension. J Bodywork Mov Ther. 2013;17:35-41.
20. Park SH, Han KS. Blood pressure response to meditation and yoga: a systematic review and meta-analysis. J Altern Complement Med. 2017;23(9):685-695.
21. Wolff M, Sundquist K, Larsson Lönn S, Midlöv P. Impact of yoga on blood pressure and quality of life in patients with hypertension-a controlled trial in primary care, matched for systolic blood pressure. BMC Cardiovasc Disord. 2013;13:1-9.
22. Miles SC, Chun-Chung C, Hsin-Fu L, Hunter SD, Dhindsa M, Nualnim N, Tanaka H. Arterial blood pressure and cardiovascular responses to yoga practice. Altern Ther Health Med. 2013;19(1):38-45.