

EFFECT OF YOGA INTERVENTION ON SELECTED PHYSIOLOGICAL VARIABLES AMONG GERIATRICS MEN

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ABSTRACT

This study aim was to find out whether there would be any significant changes on selected physiological variables due to yogic practices among selected Geriatrics men. To achieve the aim of this study forty Geriatric men were selected, in which 20 subjects were, underwent yoga training and the remaining 20 subjects were control. The selected participants were the inhabitance of Pondicherry state and their age ranged from 60-70 years. The participants were restricted to perform only selected yogasanas. The duration of experimental period was restricted to 12 weeks and frequency of training was five days in a week. Random group design was used, as it was most appropriate technique. The data obtained from the experimental and control groups on selected physiological parameters was statistically examined using the paired 't' test. Additionally, percentage changes were calculated to determine the change on selected dependent variable as a result of experimental treatment. The data gathered from the two groups before and after the experiment on chosen dependent variables was statistically evaluated to determine the significant difference, if any, by using the Analysis of Covariance (ANCOVA). The level of confidence for significance was set at 0.05. After participating in a yoga intervention for 12 weeks, the respiratory rate and mean arterial pressure were significantly altered.

Key words: *Yoga intervention, Respiratory rate, Mean arterial pressure, Geriatrics men*

INTRODUCTION

Geriatric refers to medical care for older adults, an age group that is not easy to define precisely. “Older” is preferred over “elderly”. The term geriatric is derived from two greek words, Ger means Old and Iatric means Physician or medicine. In India, there are almost 120 million older individuals with different physical, psychosocial, financial and profound issues. While the practical and psychologically fit old can have normal medical care offices, accessible, these individuals need a matured functioning system to keep them autonomous. This is the place where Geriatric consideration becomes an integral factor. Geriatrics or Geriatric medications is a strength that depends on improving the medical care for older individuals.

Aging is a complicated process and extremely individualized, with the onset or absence of illness representing only one element in quality of life in middle age. While aerobic fitness is partly determined by genetics, and to that extent, the luck of the universe, much of a person's fitness, especially by middle age, depends on physical activity. So, exercising during midlife,

especially if we haven't been, can pay enormous later-life benefits. Someone in midlife who moves from the least fit to the second-to-the-least-fit category of fitness gets more benefit," in terms of staving off chronic diseases, than someone who moves to the highest fitness grouping from the second-highest. It's good to stay active throughout life but adopting healthy choices in adulthood has significant benefits, based on a recent study that links increased physical activity in middle age to reduced risk of death.

Exercise has countless benefits for those of all ages, including a healthier heart, stronger bones and improved flexibility. For seniors, there are additional benefits, like the fact that regular exercise reduces the risk of chronic diseases, lowers the chance of injury and can even improve one's mood. As we age, our muscle mass begins to decrease. When we enter our forties, adults can lose 3-5% of muscle mass with each subsequent decade of life. Muscle is an essential contributor to our balance and bone strength; it keeps us strong. Without it, our mobility and independence become compromised.

Yoga is an antiquated discipline intended to carry equilibrium and health to the physical, mental, enthusiastic, and Spiritual components of the person. Yoga is frequently portrayed figuratively as a tree and contains eight perspectives, or "appendages:" Yama (all inclusive morals), niyama (individual morals), asana (actual stances), pranayama (breath control), pratyahara (control of the faculties), dharana (fixation), Dyana (reflection), and Samadhi (bliss). Yoga as a reciprocal therapy is believed to be more remedial than conventional exercise since it includes dynamic commitment among psyche and body. Yoga therapy plans to advance health and mindfulness with the end goal of illumination. Yoga has different effects on health, its most noteworthy disposition is that it is open for people from all age gatherings and of various actual levels. Yoga is especially helpful to the old individual since it upgrades strength and adaptability and forestalls agony and wounds.

As man is a physical, mental and spiritual being, Yoga helps to promote a balanced development of all the three stated above. Personal power is enhanced by the practice of Yoga. One learns to identify their own inner resources and draw upon the energy needed from their own inner sources. It helps one to increase his or her awareness, i.e. self-awareness. It helps in attention focus and concentration.

Yoga shares the mentality of the ancient holistic philosophy of yoga, in which Discipline and satisfaction are the most powerful elements. Separately, discipline and Satisfaction grant us

motivation and acceptance, but only together do they help us maintain our balance in life, bringing happiness, clarity and inner freedom. Smooth cooperation between different parts of a building's soul is also how Yoga manages to offer the highest comfort and balance in your life.

Yoga is an intelligent building system based on a new concept of essential entirety, where every component of the whole is originally designed in, instead of being integrated by simply being bolted on. This concept takes building automation to a higher level, providing additional efficiency and comfort through self-learning capabilities and continuous improvement that lasts through the life cycle of the building. Yoga can equally easily be installed in residential, business and special purpose buildings, where it can adapt to everyone's individual needs. Yoga perceives its environment and adjusts its actions to optimize the achievement of goals defined by the user.

Due to ageing populations worldwide, the burden of disability is increasing. It is therefore important to develop interventions that improve healthy ageing, reduce disability onset and enhance life quality. Physical activity can promote healthy ageing and help maintain independence, yet many older adults are inactive. Yoga is a form of physical activity that aims to improve health and may be particularly suitable for older adults. Research indicates positive effects of yoga on several health-related outcomes; however, empirical studies examining the benefits of yoga on well-being among the elderly remain scarce. This study protocol reports the methodology for a 12-week yoga programme aimed to improve selected physiological variables among Geriatrics.

METHODOLOGY

Subjects and Variables

To achieve the aim of this study forty Geriatric men were selected, in which 20 subjects were, underwent yoga training and the remaining 20 subjects were control. The selected participants were the inhabitance of Pondicherry state, and their age ranged from 60-70 years. The participants were restricted to perform only selected yogasanas. Random group design was used, as it was most appropriate technique. The respiratory rate and mean arterial pressure was selected as dependent variable and was assessed by using standard testing procedures.

Training Schedule

In this study, training was done under close supervision with frequent adjustments in training load to maintain the desired training stimulus. The training protocol was scheduled for one session a day, each session lasted between forty-five to one hour approximately including

preparation and relaxation. During the training period, the experimental groups underwent for yoga training 5 days a week for 12 weeks. The yogasana exercise included in this training programme were Sugasana, Vajrasana, Viparitakarani, Sarvangasana, Bhujangasana, Matsyasana, Ardha matsyendrasana, Trikonasana, Vrksasana, and Savasana respectively. The training protocol was conducted in the morning sessions from 6`O`clock onwards.

Statistical Technique

The experimental design used for this study was pre and post test random group design. The data was collected prior and after the completion of the yoga training. The application of dependent 't' test was computed separately. In order to nullify the initial mean differences the data collected from the two groups prior to and post experimentation on chosen dependent variables were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). In all cases the level of confidence was fixed at 0.05 level for significance. Data were calculated with the help of SPSS package.

Results

The obtained results on respiratory rate and mean arterial pressure through the application of paired 't' test are presented in table-I.

Table – I: Descriptive Analysis and 't' Test Results on Respiratory Rate and Mean Arterial Pressure of Geriatrics men Belongs to Yoga Intervention and Control Groups

	Group	Test	Mean	Standard Deviation	Mean Differences	't' ratio	Percentage of Changes
Respirator rate	Yoga	Pre	22.400	1.907	3.08	4.36*	13.75%
		Post	19.320	1.973			
	Control (CG)	Pre	21.820	2.274	0.300	1.42	1.37%
		Post	22.120	1.395			
MAP	Yoga	Pre	95.812	3.325	5.728	7.41*	5.98%
		Post	90.084	2.625			
	Control (CG)	Pre	96.376	4.269	0.168	0.63	0.17%
		Post	96.544	2.757			

Table t-ratio at 0.05 level of confidence for 19 (df) =1.73

*Significant

The yoga intervention groups (YIG) pre and post test data on respiratory rate vary to a great extent since the derived 't' value (YIG=4.36) is better than table value (df 19 =1.73).

Whereas the derived 't' value of control group (CG =1.42) is lesser than table value. In response to yoga intervention (YIG) 13.75% decrease in respiratory rate was found among Geriatrics.

The yoga intervention group (YIG) two different testing period (pre & post) data on mean arterial pressure vary to a great extent since the derived 't' value (YIG=7.41) is better than table value (df 19 =1.73). Whereas the derived 't' value of control group (CG =0.63) is lesser than table value. In response to yoga intervention (YIG) 5.98% decrease in mean arterial pressure was found among Geriatrics.

By using ANCOVA statistics, the Yoga Intervention group (YIG) and Control group (CG) Geriatrics men's respiratory rate and mean arterial pressure was analyzed and given in table –II.

Table-II: ANCOVA Results on Respiratory Rate and Mean Arterial Pressure of Geriatrics men Belongs to Yoga Intervention and Control Groups

Variables	Yoga Intervention Group	Control (CG)	SoV	SS	Df	MS	'F' ratio
Respirator rate	19.11	21.33	B	412.834	1	412.834	13.83*
			W	1104.113	37	29.840	
MAP	90.20	96.43	B	478.781	1	478.781	57.46*
			W	308.273	37	8.332	

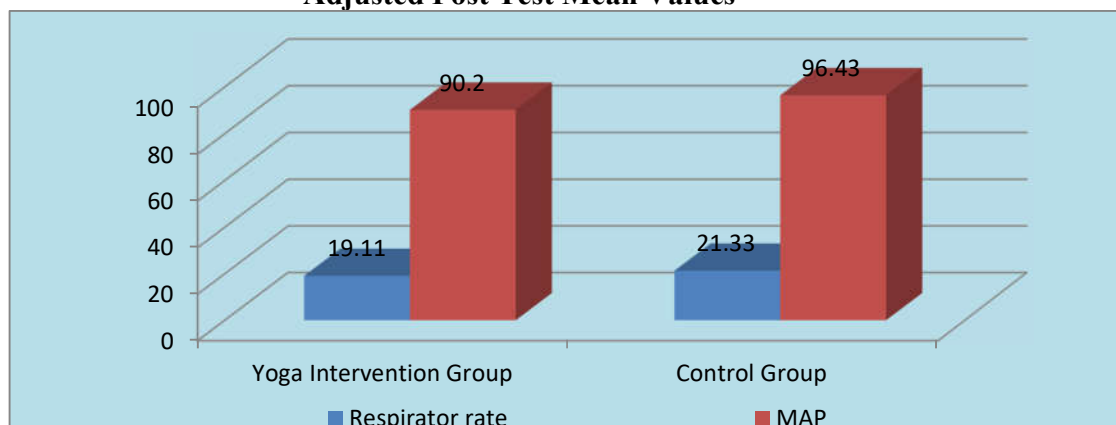
(Table value for df 1 & 37 is 4.12)*Significant (.05 level)

The derived ANCOVA statistics results established that the Yoga Intervention Group (YIG) and Control Group (CG) adjusted (post-test) mean (19.11 & 21.33) data on respiratory rate vary to a great extent because the found 'F' value [F=13.83 (df 1&37 =4.12)] is higher. The Geriatrics men's respiratory rate was decreased greatly due to regular practices (12 weeks) of yoga intervention (YIG).

The derived ANCOVA statistics results established that the Yoga Intervention Group (YIG) and Control Group (CG) adjusted (post-test) mean (90.20&96.43) data on mean arterial pressure vary to a great extent because the found 'F' value [F=57.46 (df 1&37 =4.12)] is higher. The Geriatrics men's mean arterial pressure was decreased greatly due to regular practices (12 weeks) of yoga intervention (YIG).

The displayed figure-I shows the yoga intervention group (YIG) and control group (CG) Geriatrics men's respiratory rate and mean arterial pressure.

Figure-I: Graph Showing the Yoga Intervention Group (YIG) and Control Group (CG) Geriatrics Men's Respiratory Rate And Mean Arterial Pressure Adjusted Post Test Mean Values



Discussion

The significant decrease in respiratory rate observed in geriatric men following a 12-week yoga intervention aligns with previous research demonstrating the beneficial effects of yoga on autonomic function and respiratory efficiency. Regular practice of yoga, particularly pranayama (yogic breathing exercises), has been shown to enhance parasympathetic activity and reduce sympathetic arousal, resulting in a slower and more efficient breathing pattern (Sengupta, 2012). This is especially important in older adults, where respiratory efficiency typically declines with age due to decreased lung compliance and weakened respiratory muscles. By promoting mindful breathing, yoga can help counteract these age-related changes. A study by Raghuraj and Telles (2008) found that participants practicing yoga demonstrated significantly lower respiratory rates compared to controls, suggesting improved respiratory control and relaxation response. Moreover, the practice of yoga may contribute to improved oxygen uptake and energy efficiency, which is critical for maintaining physical and cognitive health in older populations (Tran et al., 2001).

The observed reduction in mean arterial pressure (MAP) among geriatric men after 12 weeks of regular yoga practice is consistent with previous research highlighting the antihypertensive effects of yoga. Yoga, particularly when it includes breathing techniques (pranayama), relaxation, and meditation, has been shown to decrease sympathetic nervous system activity while enhancing parasympathetic tone, which collectively contribute to a reduction in blood pressure (Innes et al., 2005). In older adults, elevated MAP is a key risk factor for cardiovascular disease, and interventions that lower it can substantially reduce morbidity.

Studies have shown that regular yoga practice leads to improved vascular function, reduced arterial stiffness, and better baroreceptor sensitivity, all of which help in maintaining optimal blood pressure levels (Cohen et al., 2017). A meta-analysis by Cramer et al. (2014) also reported that yoga interventions significantly lowered both systolic and diastolic blood pressure in hypertensive patients. These physiological adaptations are particularly beneficial in the elderly, as they help reduce the risk of stroke, myocardial infarction, and other cardiovascular complications. Thus, yoga serves as a safe, low-cost, and accessible intervention to manage mean arterial pressure and support cardiovascular health in aging populations.

Conclusion

The Geriatrics men's respiratory rate and mean arterial pressure were decreased greatly due to regular practices (12 weeks) of yoga intervention (YIG). In response to yoga intervention (YIG) 13.75% decrease in respiratory rate was found among Geriatrics. In response to yoga intervention (YIG) 5.98% decrease in mean arterial pressure was found among Geriatrics. Overall, these findings suggest that a structured yoga program may be a valuable, non-pharmacological intervention to support respiratory health in the elderly.

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