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## The effect of isolated and combined asana pranayama with mudra practices on depression in hypertensive Indian paramilitary personnel

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### Abstract

Depression as a disorder has long been regarded as a risk factor for hypertension in paramilitary personnel. Yoga therapy helps with such disorders and has fewer modifications according to the situation. The purpose of this study is to determine the effect of asana pranayama with mudra on depression in hypertensive Indian paramilitary personnel. To achieve this purpose, forty five paramilitary personnel were randomly selected as subject from group center and headquarters of 2<sup>nd</sup> signal battalion, central reserve police force (CRPF), Hyderabad, Telangana State, India as subjects. The selected subjects age, height and weight range were  $39\pm 6$  years,  $171\pm 11$  cm and  $75\pm 14$  kg respectively. The average blood pressure of selected subjects observed  $136\pm 4$  as systolic blood pressure and  $85\pm 2$  as diastolic blood pressure; therefore the selected subjects were identified as hypertensive persons. They were randomly split into four equal groups known as group I asana with mudra group, group II pranayama with mudra group and group III asana pranayama with mudra group. The group IV would be considered as control group. The depression was selected as criterion variable and the same evaluate using Beck's Depression Inventory as referred by Beck. *et al*, 1961. The whole experimental program was implemented for six days per week for twelve weeks. In every day training session, the practice lasted approximately between forty-five minutes and an hour, which included warming up and relaxation. All the subjects of the four groups were tested on criterion variables at prior to and immediately after the training program for significance by applying independent 't' test to find the initial and final mean differences on each variables. The analysis of covariance was used to find the difference among the group if the difference on initial and final mean. In addition to this, Scheffe post-hoc test will be employed to find the paired mean differences. The level of confidence is fixed at 0.05, for significance. The result of present study observed that asana pranayama with mudra practice had significant contribution for reducing depression level. The present study concluded that the asana pranayama with mudra practice has highly positive impact in the management of depression.

**Keywords:** Asana, pranayama, mudra, depression, paramilitary personnel

### Introduction

Yoga is a fantastic exercise to physical and mental wellbeing. Many forms of yoga emphasize relaxation while others are quite physically demanding. The yoga can increase muscular tone by exercising in one of these styles. The body awareness will benefit from yoga as well. This makes it easier for you to recognize when your posture is sagging or slouching and correct it. Yoga typically requires you to focus on your breathing, which helps ease tension. It may also call for specific breathing techniques. Yoga has long been known to lower blood pressure and slow the heart rate. A slower heart rate can benefit people with high blood pressure or heart disease (Sarley, D, 1999) [11].

Depression is probably the most common psychiatric complaint and has been described by ancient Greek physician Hippocrates, who called it melancholia. The course of the disorder is extremely variable from person to person; it may be mild or severe, acute or chronic. Depression can have many causes. However, both psychosocial and biochemical mechanisms seem to be important causes (Claiborn, 2006) [6]. The workplace may be just one of these factors. Clinical depression has become one of the most common illnesses in workplaces. Depression tends to affect people in their prime working years and may last a lifetime if untreated.

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Yoga is a way of improving our self & understanding our internal state. Yoga improves attention and emotional control as well as affects the nervous system, making the parasympathetic nervous system more dominant and stabilizing the autonomic nervous system to enhance resistance to the effect of depression. Yoga practices including asanas, slow breathing, meditation, increases activation of pehriparal nervous system and lead to mental relaxation. The present study includes Yoga Mudra practice with the asana pranayama will be the new approach towards the reduction on depression.

India's paramilitary is the largest force in the world including various other armed force including such as Assam Rifles, Border Security Force, Central Industrial Security Force, Central Reserve Police Force, Indo-Tibetan Border Police, National Security Guard, Railway Protection Force, Sashastra Seema Bal, Special Frontier Force and Special Protection Group. These forces have given employment to whomever willingly to join serve for the nation. While young age they are very actively joined and completed their basic training. The service is bestowing but their lifestyle is slowly changing some time climatic changes, irregular food habits and family separation, some important issues not solving in exact occasion in their family, not presence essential functions or poignant situation in their family. They are therefore prone to depression. Because of depression they will not eat properly and will not sleep properly they will always think about family. As a result, they indirectly suffered high blood pressure and suddenly attacked them. Therefore, some yogasana, pranayama, mudra and mediation very helpful to control depression by regular practicing will get fruitful result.

**Methodology**

To achieve this purpose, forty-five paramilitary Personnel were selected with the purposive sampling method as subjects from group center and headquarters of 2<sup>nd</sup> signal battalion, central reserve police force (CRPF), Hyderabad, Telangana State, India as subjects. The selected subjects age, height and weight range were 39±6 years, 171±11 cm and 75±14 kg respectively. The average blood pressure of selected subjects observed 136±4 as systolic blood pressure and 85±2 as diastolic blood pressure; therefore the selected subjects were identified as hypertensive persons. They were randomly split into four equal groups, and all groups contains of fifteen (n=15) subjects in each, in which they known as group I asana

with mudra group, group II pranayama with mudra group and group III asana pranayama with mudra group. The group IV would be considered as control group, which did not undergo any specific training program except their regular activities. The depression was selected as criterion variable and the same evaluate using Beck's Depression Inventory as referred by Beck., *et al*, 1961. The validity and the reliability of the selected questionnaire already measured followed by standardized procedure. The whole experimental program was implemented for six days per week for twelve weeks. In every day training session, the practice lasted approximately between forty-five minutes and an hour, which included warning up and relaxation. Under yogasana practice, a batch of twelve asanas, which are commonly called of Suryanamaskar was given to the subjects, followed by setu bandhasana, vajrasana, balasana, janu sirsasana, baddha konasanam, halasana, bhujangasana and shavasana. The pranayama practices such as sukha pranayama, chandrabhedan pranayama, sheetali pranayama, sheetali pranayama, bhramari pranayama and anulom vilom were practice with 2 to 5 sets of 5 to 15 repetitions increased every 3 weeks respectively. shanmuki mudra, aswini mudra, brahma mudra, bhujangini mudra, viparitakarani followed as mudra practice. The mudra practices performed by all the subjects combined with asana and pranayama. All the subjects of the four groups were tested on criterion variables at prior to and immediately after the training program for significance by applying independent 't' test to find the initial and final mean differences on each variables. The analysis of variance (ANOVA) was used to find the difference among the group if the difference on initial and final mean. After eliminating the influence of pre-test, posttest and the adjusted post-test means of experimental groups were tested for significance by using ANCOVA. In addition to this, Scheffe post-hoc test will be employed, when the F-ratio of the adjusted post-test means is significant, to find out the paired mean difference if any among the groups for each variable, separately. Further the magnitude of improvement between pre and post data of experimental groups and control group assess by using percentage calculation on selected criterion variables. The level of confidence is fixed at 0.05, for significance. The data on selected criterion variables were analyses using IBM SPSS software version 21.0.

**Results**

**Table 1:** Independent 't' test among experimental and control group on depression

	Pre Test		Post Test		df	't' Ratio	Sig.
	Mean	Sd	Mean	Sd			
Asana with Mudra Group	21.40	0.632	15.00	0.755	28	25.15*	0.000
Pranayama with Mudra Group	21.73	0.703	15.00	0.755	28	25.25*	0.000
Asana Pranayama with Mudra Group	21.80	0.560	13.73	0.883	28	29.85*	0.000
Control Group	21.86	0.639	21.66	0.723	28	0.802	0.429

\*Significant at 0.05 level

**Table 2:** Analysis of covariance and magnitude of improvement among experimental and control group on depression

Test	Asana with Mudra	Pranayama with Mudra	Asana Pranayama with mudra	Control Group	SOV	SS	df	MS	F
Pretest		21.40	21.73	21.80	21.86	B	1.933	3	0.644
	SD	0.632	0.703	0.560	0.639	W	22.667	56	0.405
Post Test	Mean	15.00	15.00	13.73	21.66	B	581.38	3	193.7
	SD	0.755	0.755	0.883	0.723	W	34.267	56	0.612
Adjusted Post Test	Mean	15.02	14.99	13.72	21.65	B	570.68	3	190.22
					W	34.163	55	0.621	
Magnitude of Improvement (%)	42.48%	44.96%	58.89%	0.97%					

\*Significant (The table values of df 3 and 56 & 3 and 55 was 2.769, 2.773 respectively)

The results on above table indicate that the experimental group's shows significant reduction on depression due to respective asana pranayama with mudra practice protocol,

whereas, control group had in-significant on depression reduction among paramilitary personnel.

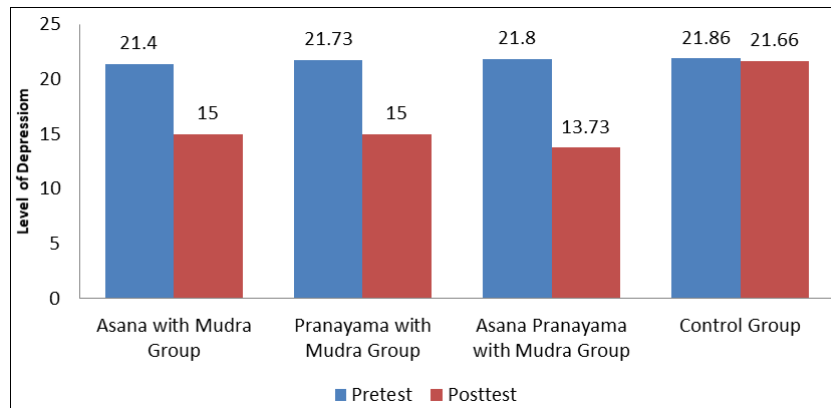


Fig 1: The pre test and post mean values on depression

The result of above table shows that, there was a significant difference among asana with mudra group, pranayama with mudra group, asana pranayama with mudra group and control group on depression among paramilitary personnel. Since, the

obtained 'F' value found significant, the scheffe post hoc test was applied to find out the paired mean difference presented in table III.

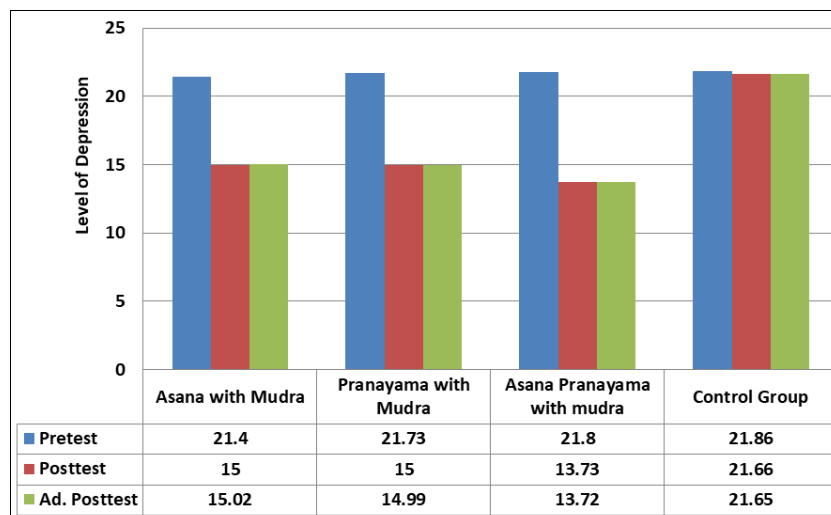


Fig 2: The bar diagram shows the pretest post test and adjusted post test mean values on depression

Table 4.3: Scheffe post hoc test on paired mean among experimental and control group on depression

Test/Group	Asana Mudra Vs Pranayama Mudra	Asana Mudra Vs Asana Pranayama Mudra	Asana Mudra Vs Control Group	Pranayama Mudra Vs Asana Pranayama Mudra	Pranayama Mudra Vs Control Group	Asana Pranayama Mudra Vs Control Group
Mean Difference	0.023	1.29*	6.64*	1.27*	6.66*	7.92*
P Value	0.939	0.000	0.000	0.000	0.000	0.000

\*Significance at 0.05

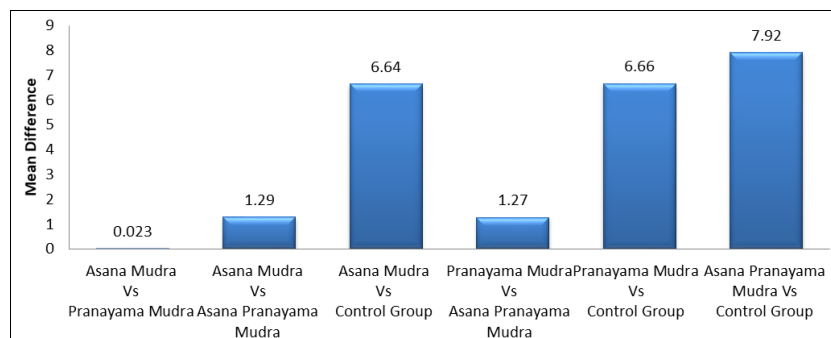
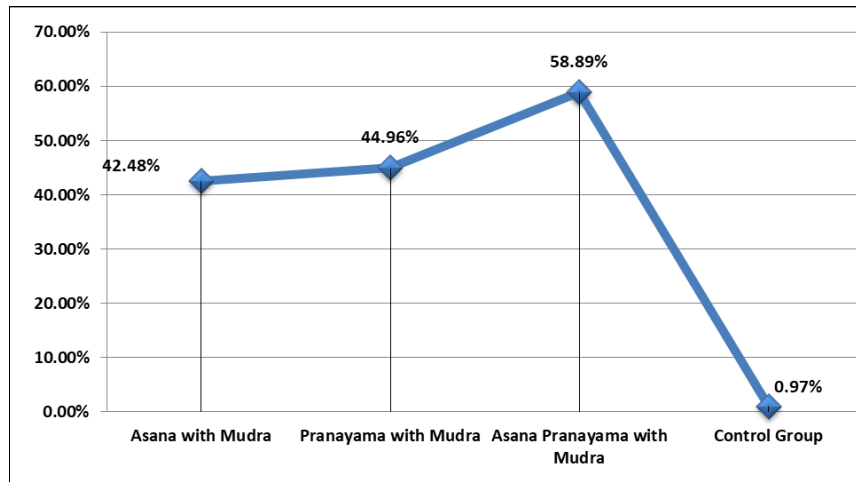


Fig 3: The bar diagram shows the paired mean difference among experimental and control group on depression



**Fig 4:** The line diagram shows the magnitude of improvement among experimental and control group on depression

The result on paired mean difference shows that the experimental groups show better reduction on depression when compared with control group. The results of study show that the asana with mudra group, pranayama with mudra group, asana pranayama with mudra group had better reduction on depression among paramilitary personnel. The table also shows that there was an insignificant difference on depression between pranayama with mudra group and asana with mudra group. However, the improvement was in favor of asana pranayama with mudra group when compare with rest of the experimental groups.

### Discussion

The result on present study reveals that the depression among paramilitary personnel managed with asana pranayama with mudra practices. Therefore, the result was discussed with previous research results to identify the correlation with the same on logical manner as follows. Morale, motivation, job satisfaction, depression, leadership behavior, organizational climate, beliefs, attitudes, value systems, training, communication, conflict, and negotiation are all issues and problems that the Indian paramilitary faces. Various principles have been developed for the enhancement of motivation and morale of the troops including yogic practices too.

Yoga combines physical activity with mindful practices and breathe control. Meditation is typically performed regularly with the aim of achieving homeostasis via regulation of various neuroendocrine and regulatory mechanisms (Albracht, 2014) [1]. Yoga is also known to improve sleep, which is one of the related risk factors for depression (Mathersul, Rosenbaum, 2016) [8]. It has been found that yoga practice through regulation of sympathetic nervous system reduces the conditions of depression and anxiety (Ramanathan, 2017). Yoga is effective in ameliorating symptoms of depression across a range of different clinical disorders, including mild dementia (Büssing, *et al*, 2012) [5].

A study, the yoga group reported less depressive symptoms during the early pregnancy and postpartum periods and significant effects on depression were observed in the yoga compared to the control group (Bridges and Sharma, 2017) [3]. Depressive symptoms were reduced among yoga group participants. Hatha yoga, on the other hand, has been identified as one of the most widely practiced types of yoga (Burley, 2000) [4]. Most of the studies examined the effect of yoga on depressed patients with medical and mental health conditions. Two studies examined the impact of yoga on

reducing depression among caregivers (Lavretsky, Epel and Siddarth, 2013) [7].

These findings provide support for mind-body interventions such as yoga for improving depression symptoms while mind-body interventions may not be more effective than current evidence-based depression treatments. Yoga can serve as alternative to many individuals who may not participate in psychotherapy or antidepressants due to factors such as side effects, unmet needs, lack of resource, and personnel choice (Ubelacker, Broughton, 2016) [12]. The effect of yoga on depression within youth and among various ethnicity groups, cultures, sex, and occupation (Mehta, Sharma, 2010) [9].

The results of various sources are in line with those of prior systematic study on yoga for depression. Most of the studies revealed that the effectiveness of yoga for reducing depression another more recent review article reported that yoga was better than usual care, relaxation techniques, or aerobic exercises in reducing depressive symptoms. Thus, it was observed that asana pranayama with mudra practice had significant contribution for reducing depression level. Moreover, the subjective feelings of participant were also supportive the result.

### Conclusion

Based on the findings and discussions, the current study concluded that asana pranayama with mudra practice has a significant impact on the control depression. There is a strong need for various aspects of yogic practices to be incorporated into regular training, particularly among Indian paramilitary personnel. This finding also suggests that there is room for additional research in this area.

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