


## Effects of Suryanamaskar on Depression and Trunk Flexibility among Older Men

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### Abstract

The purpose of the present study was to find out the efficacy of Suryanamaskar on depression and trunk flexibility among older men. For this purpose, thirty older men residing at Anbagam Old Age Home, Chidambaram, Cuddalore District, Tamilnadu, were selected as subjects. The age of the subjects ranged from 50 to 60 years. They were classified into two groups equally. Both groups consisted of fifteen subjects, in which group - I underwent Suryanamaskar and group - II acted as a control that did not involve any special training apart from their daily activities. The training period for the study was six days (Monday to Saturday) a week (twice a day) for twelve weeks. Prior to and after the experimental period, the subjects were tested on depression and trunk flexibility. The Hamilton depression scale assessed depression and trunk flexibility by administering sit and reach test. Levene's test was used for the paired sample t-test to measure the equality of error variances. The Analysis of Covariance (ANCOVA) was also applied to find any significant difference between the experimental and control groups on selected criterion variables. The result of the study shows that the Suryanamaskar practice group decreased depression and improved trunk flexibility significantly. It was accomplished from The present study result showed that significant differences exhibited between the experimental group and control group on depression and trunk flexibility.

**Keywords:** Suryanamaskar, depression, trunk flexibility

### Introduction

In India, age-old people are suffering from twin medical problems, i.e., both communicable and non-communicable diseases. Reduction in dispensation and age-related physiologic transposition leads to an increased saddle of communicable diseases in the age-old population. Research conducted in Himachal Pradesh among 100 old age people found that almost all the patients came from rural areas and were also smokers and alcoholics (Arora & Bedi, 1989). It is understood that the population over 60 has suffered 10% from impaired physical mobility and 10% admitted to hospital at any time, these two proportions rising with increasing age (Reddy, 1996). Government of India statistics shows that cardiorespiratory disorders added 1/3 of older mortality and respiratory infection added 10% of deaths. In comparison, tuberculosis mortality for another 10%, Neoplasm added 6% and more or less similar rates for metabolic disorders, malnutrition, genitor-urinary infections and gastrointestinal (Guha, 1994). Various types of mortality occurred because of diarrhea (12%), skin diseases (12%), chronic cough (12%), hypertension (14%), heart disease (9%), asthma (6%), diabetes (8.1%), and urinary complaints (5.6%) (Purty et al., 2006).

An active lifestyle leads to maintaining and improving health and well-being, which helps prevent various diseases among aging people (American College of Sports Medicine et al. 2009). In particular, physical jerk reduces the risk of cardiovascular disease (O'Donovan et al., 2010), osteoporosis (Langsetmo et al., 2012), improves cognitive functioning (Colcombe et al., 2003), subjective well-being (Withall et al., 2014), some cancer (World Health

Organization [WHO], 2018), and delay in the onset of dementia (Livingston et al., 2014). Many benefits are gained through the physical jerks, including various types of scheduled exercise, walking, working in a physically demanding job, and working at home. Particularly, the workouts like walking, which is very particularly available to older people (Morris & Hardman, 1997), allow them to meet the WHO's recommendation to fulfill at least 150 minutes of moderate-intensity of physical jerks per week (Marshall et al., 2009; WHO, 2010).

A person's mobility and dexterity will naturally decline as they age, making completing everyday tasks more difficult. This can gradually cause people to care for themselves and prevent them from being social, pursuing interests, or participating in activities they enjoy. Therefore, more help is needed to empower older people to live independently through products and programs that focus on security, balance, fitness, and mobility and to guarantee they can continue to help as individuals (Smithlife Home Care, 2022).

The older people do feel dejected and downhearted several times, but when these feelings continue within them for a prolonged period, it is raised to depression (Kapur, 2018). There is a noteworthy agreement that old people with late-onset of depression have unique risk factors and presentations. Those with early inception depression are more likely than those with late inception depression to have a depression in family history (Heun et al., 2001), possibly implying that the incidence of turmoil was genetically prejudiced. Those with a premature beginning of depression may also have a maximum ordinariness disorder of personality or high scores on personality traits such as neuroticism (Brodsky et al., 2001).

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Depression is the customary psychiatric disorder in older people; it is generally misdiagnosed and undertreated. This may happen to the misconception that depression is the division of aging rather than a treatable state (Barua et al., 2010). Worldwide interest in geriatric people depression has raised in modern years, and several studies related to population across the world have tested its prevalence, with results stretching from 1 to 20%; however, the methodological variance may be taken for this variability (Barua & Kar, 2010), but research to evaluate the depression among the older population has barely been done in this part of the nation and very little in the rural community. Singh et al. (2004) found that older population showed that 48.07% of the section were affliction mainly from major mood disorders and in that, 89.6% were suffering from depression and in that women were very less than men and preponderance were in the age group 60 to 65 years and moreover stated that 39.78% were housewives, 17.23% were divorcee, and 33.7% are retired persons.

The trunk flexibility in the joints may decline across the age span (Nonaka et al., 2002; Shields et al., 2010; Roach & Miles, 1991), which can influence the regular daily execution of various work. For example, upper limb flexibility is very important for multiple activities, such as reaching for objects and getting dressed, while lower limb trunk flexibility is significant for keeping normal walking patterns and for activities linking bending and reaching (Spiriduso et al., 2005).

Suryanamaskar or Sun Salutation, is a combination of 12 powerful yoga poses. As well as being an extraordinary cardiovascular exercise, Suryanamaskar is also known to have a vastly optimistic effect on the body and mind. Surya' signifies the sun and namaskar implies bending down in with appropriate structures. Also, its advantages have been acclaimed as the best exercise for all the present-day ills of the assumptive way of life (Adhavan, 2014). Suryanamaskar comprised various asanas like Pranamasan, Hasta Utthanasan, Padahastasan, Ashwasanchalanasan, Ashtanga Namaskar, Bhujangasan, and Parvatasan (Saraswati, 1983). Suryanamaskar is an ancient method of practice or a type of yogic exercise. There is little data-based research on its impacts on physiological changes (Bhavanani et al., 2011; Sinha et al., 2002). For older human beings, the recommended exercise that should be done frequently during the fitness program is the Suryanamaskar (Mittal, 2020). The series of movements stretch the spinal section and upper and lower body through the older people's full range of movement, massaging, conditioning and invigorating vital organs by alternately flexing the body forward and in reverse (Saraswati, 1999). The replicated push-up progress and upper body weight-bearing positions in the Suryanamaskar may help improve the muscular strength and endurance in the triceps, pectoral, and trunk muscles (Kaminoff, 2007; Saraswati, 2004). The series gives such a profound stretch to the body that it is considered a complete yoga practice (Saraswati, 2004).

### Objectives

Accepting that everyone is experiencing depression is the first step in treating it since it is a silent killer. Although people may have heard about many coping mechanisms, yoga can help them. Anxiety could take the shape of depression. Sadness and a lack of capacity to make logical judgments are the symptoms. Depression is characterized by emotional anguish, restlessness, and loneliness. An individual with a sad state of mind would be passive and unmotivated. The two age groups who experience agitated depression the most are middle-aged and older. Depressive episodes make individuals exhausted, depressed, and hopeless, which has a significant impact on the quality of their life. Consistent progress would result from regular yoga practice. Monitoring the development is necessary, however. Flexibility often declines with age, and a sedentary lifestyle hastens this decline. By alternating stretching the body forward and backward, the set of 12 movement exercises stretches the spinal column, upper body, and lower body over their complete range of motion. The study's objective was to determine how the Suryanamaskar has reduced older men's depression and increased flexibility.

## Methodology

### Participants

Sixty-six men were contacted at Anbagam Old Age Home, Chidambaram, and were selected as subjects. They were informed of possible risks and discomforts at the time of the experiment and design of the study, and the subjects signed informed consent. Subjects with alcohol and smoking habits were excluded from the study. A physician from Cuddalore District Medical College and Hospital, Annamalai University, examined the subjects and declared that forty-nine were eligible for the present study. The subjects' ages ranged from 50 to 60 years, with a mean age of  $56.3 \pm 1.3$  years. From forty-nine subjects, only thirty sedentary older men were selected as subjects. They were divided into two equal groups, each comprising fifteen subjects. In that group, - I ( $n = 15$ ) underwent Suryanamaskar and group - II ( $n = 15$ ) acted as a control and did not participate in any special activities apart from their regular day-to-day activities. During the earlier weeks of the practice sessions, the subjects were asked to practice during evening hours to learn the poses properly, because various joints are flexible and body muscles are active. The subjects can perform the movement easily. After practicing the Suryanamaskar poses during evening hours, the subjects were asked to perform regularly during morning and evening sessions (twice a day). Suryanamaskar was practiced six days (Monday to Saturday) per week for twelve weeks. A yoga expert from the Center for Yoga Studies, Annamalai University, Annamalainagar, was assigned for the present study.

### Procedure

The researcher consulted with the yoga experts and doctors to select the following variables as criterion variables: 1. depression and 2. trunk flexibility. Depression was assessed by Hamilton Rating Scale for Depression (Hamilton, 1967) and trunk flexibility was assessed by administering sit and reach test. For data collection, the subjects were asked to report in the early morning, one day prior and one day after the experimental period.

### Data Analysis

The paired sample *t*-test, Levene's test, was used to measure the equality of error variances. Next, the covariance (ANCOVA) analysis was applied to determine the significant difference among the experimental and control groups on selected criterion variables separately. In all the cases, a .05 level of confidence was fixed to test the significance, which was considered appropriate. Finally, the data were compiled and analyzed using the computer with statistical software.

## Results

The data collected on depression and flexibility among the Suryanamaskar practice group and control group were analyzed and presented in Table 1.

**Table 1**  
*Independent Sample t-Test of Suryanamaskar Practice Group and Control Group on Selected Criterion Variables*

Variable name	Group name	Practice group		Control group	
		M	t-ratio	M	t-ratio
Depression (in Points)	Pre-test	19.53	4.58*	19.73	1.05
	Post-test	14.80		20.13	
Flexibility (inches)	Pre-test	3.98	3.72*	4.03	.12
	Post-test	4.25		4.04	

*Note.* \* Significant at .05 level of confidence. The table value required for significance at a .05 confidence level with  $df_{28}$  is 1.701.

Table 1 shows that the paired sample *t*-test on depression and flexibility shows that the Suryanamaskar practice group significantly decreased depression and improved flexibility. A preliminary analysis was conducted to determine whether the prerequisite assumptions of ANCOVA were met before preceding

the Univariate analysis. Thus, the assumption of equality of variance (Levene's test homogeneity), the linear regression relationship between the covariates and the dependent variables and the homogeneity of regression slopes were examined and the result was presented in Table 2.

**Table 2**

Levene's Test for Equality of Error Variances of Selected Variables among Groups

Levene's test on depression				
<i>F</i>	<i>df1</i>	<i>df2</i>	<i>P</i>	
.56	1	28	.46	
Levene's test on flexibility				
<i>F</i>	<i>df1</i>	<i>df2</i>	<i>p</i>	
2.96	1	28	.096	

Note. The table values required for significance at a .05 confidence level with *df* 2 and 42 was 3.22.

The term homogeneity of variances is used to specify that groups have similar variances. Thus, in Leven's test of equality of the error variance table, the obtained *F*-values of the selected dependent variables were less than the confidence interval value of .05, which specifies that the variance of each group was not significantly different from one another. Therefore, the

homogeneity of variance differentiates the two groups; nevertheless, the ability level for each dependent variable indicated that homogeneity of variance had been met for two dependent variables at a significant .05 level of confidence. Hence it was concluded that the assumption of homogeneity of variance had been met for computing univariate ANCOVA.

**Table 3**

Analysis of Covariance on selected Criterion Variables of Suryanamaskar Group and Control Group

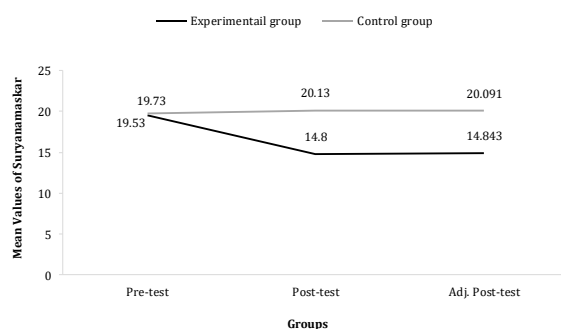
Variable name	Group name	Practice group	Control group	<i>F</i> - ratio
Depression (in points)	Pre-test	19.53 ± .83 <sup>a</sup>	19.73 ± .70 <sup>a</sup>	.504
	Post-test	14.80 ± .94 <sup>a</sup>	20.13 ± 1.30 <sup>a</sup>	165.31*
	Adj. Post-test	14.84 <sup>b</sup>	20.091 <sup>b</sup>	165.597*
Trunk flexibility (Inches.)	Pre-test	3.98 ± .20 <sup>a</sup>	4.03 ± .16 <sup>a</sup>	.64
	Post-test	4.25 ± .19 <sup>a</sup>	4.04 ± .15 <sup>a</sup>	11.03*
	Adj. Post-test	4.27 <sup>b</sup>	4.02 <sup>b</sup>	51.22*

Note. <sup>a</sup> mean ± SD. <sup>b</sup> means. \*Significant .05 level of confidence. The table values required for significance at a .05 confidence level with *df* 2 and 42 and 2 and 41 were 3.22 and 3.21, respectively.

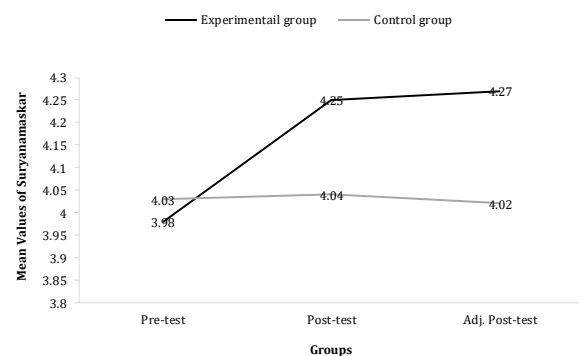
Table 3 shows that the pre-test means *F*- the ratio of the Suryanamaskar practice group and control group on depression was .504, insignificant at a .05 confidence level. The post-test and adjusted post-test mean *F*-ratio value of the Suryanamaskar practice group and control group was 165.31 and 165.597, significant at a .05 confidence level. The pre-test means *F*- the ratio of the Suryanamaskar practice group and control group on trunk flexibility was .64, which was insignificant at a .05 confidence level. The post and adjusted post-test mean *F*-ratio values of the experimental and control groups were 11.03 and 51.22, which was significant at a .05 confidence level. After applying the covariance analysis, this study's result shows a significant decrease in depression and an increase in trunk flexibility.

**Figure 1**

Mean Values of Suryanamaskar Practice Group and Control Group on Depression

**Figure 2**

Mean Values of Suryanamaskar Practice Group and Control Group on Flexibility



## Discussion

The present study aimed to examine the impact of Suryanamaskar as a substitute treatment or a complementary method of therapy for depression and depressive symptoms. In the present study the participants from the older population aged 50 to 60. Godse et al. (2015) found a significant reduction in stress levels after Suryanamaskar practice. Furthermore, many studies indicated that yoga is the best treatment for reducing the depression of patients (Rao et al., 2015; Satyapriya et al., 2013; Tekur et al., 2012; Umadevi et al., 2013) and older people (Lakkireddy et al., 2013). In addition, some studies show that yoga is the best tool to reduce the depression of women from

various age groups (Kinser, 2013, 2014; Manincor, 2016). The multiple advantages of Suryanamaskar are maintaining the body with explosiveness and the brain becoming calm. Moreover, yoga specialists instruct all humans to practice Suryanamaskar routinely (Halder, 2015).

The dynamic Suryanamaskar has significantly improved the flexibility among college women (Choudhary, 2010; Chowdhary, 2017; Singh, 2010) and school girls (Sisodia, 2017; Zala, 2019). Cheema et al. (2013) have reported improved low back and hamstring flexibility after practicing yoga. Hatha yoga has also improved the flexibility of different age groups (Shankar, 2011). It may be commented that the observations from the present research work, the practice of Suryanamaskar is a tool to help reduce depression and improve flexibility after practicing twice a day for 12 weeks.

### Conclusion

According to the current study, Suryanamaskar increases hip flexibility while reducing depression. It works well to increase the physical and mental health of older persons. A small amount of space is sufficient for the sun salutation, and a short time is required to complete a specific number of cycles. Moreover, Suryanamaskar targets the musculoskeletal system and the body's cardiovascular, pulmonary, gastrointestinal, and central nervous systems. So, it may be inferred that Suryanamaskar should be selected to enhance muscles' flexibility throughout the entire body in older people.

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