

# Distress Tolerance: A Comparative Study Before and After the Practice of Yoga

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**Received Date:** November 27, 2024; **Published Date:** December 26, 2024

## Abstract

Stress can sometimes turn out to a condition of feeling distressed. Distress tolerance is a person's ability to manage actual or perceived emotional distress. The influence of yoga practice in improving distress tolerance has been reported.

**Methods:** This study was carried out among 90 yoga practitioners of Patanjali Yoga Research Centre (PYRC), Kozhikode, Kerala State, India using a questionnaire, which contained the measure of Psychological Distress during the past 30 days and the characteristics of the respondents, namely Age, Sex, Marital status, Level of health problems faced during the past 30 days, and whether did yoga before joining the present yoga class at PYRC. The data was analyzed as proportion, score and through statistical tests.

**Results:** The practice of yoga has helped the respondents to better tolerate all the distressed feelings considered in the study. Comparatively less proportion of yoga practitioners reporting the experience of distressed feelings after yoga practice than before starting yoga practice and the statistical significance of the difference in the mean total distress score before and after yoga practice establish this fact. The statistical significance of the difference in the mean distress score of various distress items before and after yoga practice also helps to substantiate this. Less health problems faced during the past 30 days, comparatively younger yoga practitioners, men, married yoga practitioners, and people who have done yoga before joining the present yoga class are found to tolerate distressed feelings better than people who faced more health problems, comparatively elder people, women, unmarried persons, and those who have not practiced yoga before joining this class.

**Conclusion:** Undertaking studies on yoga by institutions including yoga centres will be useful for generating scientifically backed results, which may be more acceptable for people to become motivated to learn yoga, as well as to continue its practice. This is especially relevant in a country like India, where the number of people practicing yoga is not much and many people, who have learned yoga are discontinuing it after some time.

**Keywords:** Distress; Tolerance; Before Yoga; After Yoga

## Introduction

When mental stress is unwanted, unexpected and ongoing due to life changing events or situations, it turns out to be distress. Distress tolerance is a person's ability to manage actual or perceived emotional distress. It also involves managing an emotional incident without making it worse [1]. The tendency of a person to alleviate or escape negative emotional experience is distress tolerance [2]. Distress tolerance is considered as a transdiagnostic risk, maintenance or preventive factor of psychological disorders [3]. The level of distress tolerance has been reported to mediate medication adherence and health seeking behaviour [4,5]. Distress tolerance skills allow a person to survive an immediate emotional crisis without making it worse [6]. They also help them accept the reality of the situation when they feel out of control because they cannot change the situation. The capacity to handle difficult emotions can help a person more to quickly return to a state of equilibrium when new stressors arise [7]. Hatha yoga encourages one to implement present-centred awareness and non-reaction in the face of physical and psychological discomfort and emerges as a potential strategy for increasing distress

tolerance. Participants in the yoga condition reported greater increases in distress tolerance over the course of the intervention relative to the control group of people who did not do yoga [8].

## Materials and Methods

The study reported in this article was carried out among 90 yoga practitioners of Patanjali Yoga Research Centre (PYRC), Kozhikode, Kerala State, India using a questionnaire, which contained the measure of Psychological Distress during the past 30 days [9] and the characteristics of the respondents, namely Age, Sex, Marital status, Level of health problems faced during the past 30 days, and whether did yoga before joining the present yoga class at PYRC. The data was analyzed as proportion, score and through statistical tests

## Results

Table 1 gives details of the statistical significance of the difference in total distress scores before and after the practice of yoga.

Particulars	Before the practice of yoga	After the practice of yoga
Mean total distress score	20.9	16.3

$t = 2.36; p < 0.05$

**Table 1:** Statistical significance of the difference in total distress scores before and after the practice of yoga.

Table 2 gives details of the statistical significance of the difference in item wise distress scores before and after the practice of yoga.

Distress related item	Mean score		t value and statistical significance
	Before the practice of yoga	After the practice of yoga	
During the last 30 days, how often felt nervous	2.3	1.8	1.73; $p < 0.10$
During the last 30 days, how often felt nervous that nothing could calm you	2.1	1.6	1.68; $p < 0.10$
During the last 30 days, how often felt hopeless	2.3	1.6	2.82; $p < 0.01$
During the last 30 days, how often felt restless/fidgety	2.6	1.7	3.62; $p < 0.01$
During the last 30 days, how often felt so restless that it was not possible to sit still	2.1	1.5	2.20; $p < 0.05$
During the last 30 days, how often felt so sad that nothing could help to cheer up	1.8	1.3	2.02; $p < 0.05$

**Table 2:** Statistical significance of the difference in item wise distress scores before and after the practice of yoga.

Table 3 shows the responses on the experience of various distress related items before and after the practice of yoga.

Distress related item	Experience of the item during the last 30 days	Respondents (%)	
		Before the practice of yoga	After the practice of yoga
How often felt tired out for no good reason	Most of the time and some of the time	77.8	50
How often felt nervous	Most of the time and some of the time	83.3	61.1
How often felt nervous that nothing could calm you	Most of the time and some of the time	61.1	38.9
How often felt hopeless	Most of the time and some of the time	66.7	61.1
How often felt restless/fidgety	Most of the time and some of the time	77.8	61.1
How often felt so restless that it was not possible to sit still	Most of the time and some of the time	66.7	44.4
How often felt depressed	Most of the time and some of the time	72.2	61.1
How often felt that everything was an effort	Most of the time	27.8	11.1
How often felt so sad that nothing could help to cheer up	Most of the time and some of the time	50	22.2
How often felt worthless	Most of the time and some of the time	33.3	22.2

**Table 3:** Responses on the experience of various distress related items before and after the practice of yoga.

The results of ANOVA of total distress scores after the practice of yoga based on the level of health problems faced during the last 30 days is shown in Table 4.

Level of health problems faced during the last 30 days	Mean total distress score after the practice of yoga	F and statistical significance
Low	13.9	9.15; $p < 0.01$
Medium	20	
High	22.8	

**Table 4:** ANOVA of total distress scores after the practice of yoga based on the level of health problems faced during the last 30 days.

The results of ANOVA of total distress scores after the practice of yoga based on age of the practitioners are given in Table 5.

Age group	Mean total distress score after the practice of yoga	F and statistical significance
18-35	21	3.74; $p < 0.05$
45-60	14	
61-69	15	

**Table 5:** ANOVA of total distress scores after the practice of yoga based on age.

Table 6 shows the statistical significance of sex wise difference in total distress scores after the practice of yoga.

Particulars	Sex of the respondents	
	Men	Women
Mean total distress score	14.5	19.1

$t = -1.98$ ;  $p < 0.10$

**Table 6:** Statistical significance of sex wise difference in total distress scores after the practice of yoga.

The statistical significance of marital status wise difference in total distress scores after the practice of yoga is shown in Table 7.

Particulars	Marital status of the respondents	
	Married	Un-married
Mean total distress score	14.9	21

$t = -2.08$ ;  $p < 0.10$

**Table 7:** Statistical significance of marital status wise difference in total distress scores after the practice of yoga.

The statistical significance of marital status wise difference in total distress scores after the practice of yoga of people

who did yoga and did not do yoga before joining the present yoga class is shown in Table 8.

Particulars	Whether did yoga before joining the present yoga class	
	Yes	No
Mean total distress score	13	21.3

$t = 4.46$ ;  $p < 0.01$

**Table 8:** Statistical significance of the difference in total distress scores after the practice of yoga of people who did yoga and did not do yoga before joining the present yoga class.

## Discussion

### Total Distress Score

The mean total distress score after the practice of yoga is less (16.3), when compared to before starting yoga (20.9), with statistically significant difference in the scores (Table 1). This shows the effect of yoga practice in reducing the level of distress of the practitioners significantly, indicating improvement in distress tolerance due to yoga practice.

### Statistical Significance of the Difference in Item Wise Distress Scores before and after the Practice of Yoga

The following inferences are drawn based on the statistical significance of the difference in item wise distress scores before and after the practice of yoga shown in Table 2, and the proportion of respondents who reported the experience of various distress related items considering a period of past 30 days, which is shown in Table 3:

#### How Often Felt Nervous

The comparatively lower score obtained after the practice of yoga, when compared to before starting yoga practice for this item, and the statistically significant difference in the scores (Table 2) implies that after starting yoga practice, the respondents have felt less nervous than before they did yoga. This is further substantiated by the comparatively lesser proportion of people who have felt nervous most of the time and some of the time during the past 30 days after starting yoga (61.1 %), as compared to 83.3 % of respondents responding in this manner before starting their yoga practice (Table 3). Hence, yoga practice has helped in better toleration of nervousness.

#### How Often Felt Nervous that Nothing Could Calm You

The mean score for this item is only 1.6 for the respondents after the start of yoga practice, when compared to the score

of 2.1 before they started practicing yoga, with statistically significant difference in the scores (Table 2). This is also substantiated by the lesser proportion of respondents reporting the experience of this distress item most of the time and some of the time after yoga practice (38.9 % shown in Table 3) than the proportion reporting in this manner before starting their yoga practice (61.1 % respondents shown in Table 3). This finding indicates the effect of yoga practice in helping the respondents in calming down even under conditions which can make them nervous. Yoga practice has thus contributed to more tolerance of the feeling of so much of nervousness which can't be calmed down by any means.

#### How Often Felt Hopeless

The mean score for this distress related item is comparatively less (1.6) for the respondents after they started yoga practice than the mean score of 2.3 before yoga practice, with statistically significant difference in these scores (Table 2). It can be made out from Table 3 that the proportion of respondents reporting the experience of this item most of the time and some of the time after yoga practice is also less (61.1%) than before yoga practice (66.7%). Mental stress is a major component making people experience hopelessness in life. The results indicate that yoga practice has contributed to more tolerance of the feeling of hopelessness in life. As observed in the case of the two distress items mentioned just before this, yoga practice has helped the respondents to remain less nervous, making them calmer. This might have probably helped them to overcome the feeling of hopelessness to a considerable extent.

#### How Often Felt Restless/Fidgety

Fidgety is the mental outcome of feeling restless due to nervousness. Agitation is a feeling of severe restlessness or uneasiness. It is more likely to show up when a person is under a lot of stress. Restlessness can be a main symptom in anxiety disorders and can also be a feature of manic episodes in bipolar disorder. The results of a study have indicated the influence of yoga practice in reducing restlessness significantly [10].

Under the present study, the proportion of respondents experiencing restlessness/fidgety most of the time and some of the time is only 61.1 % after yoga practice, when compared to 77.8 % before they started yoga practice (Table 3). Further, there exists statistically significant difference in the mean score for this distress related item before and after yoga practice, with a comparatively lower score only after yoga practice (Table 2). These results indicate that yoga practice has helped the respondents to reduce the feeling of restlessness/fidgety. Hence, yoga has contributed to more tolerance of the feeling of restlessness/fidgety for the practitioners.

Improvement in the mental state, which is usually achieved through the practice of yoga would have probably helped the respondents in reducing this distressed feeling.

### **How Often Felt So Restless that it was not possible to Sit Still**

It can be seen from Table 2 that statistically significant difference exists between the mean scores for this distress related item before and after the practice of yoga, with a comparatively higher mean score for the respondents before they started practicing yoga than after yoga practice. Table 3 also shows a comparatively higher proportion (66.7%) reporting the experience of this feeling before starting yoga practice than after they started yoga practice (44.4% respondents). These findings establish the fact that before starting yoga practice, more number of respondents felt so restless, making them difficult to even sit still, when compared to lesser number of respondents experiencing this distress related item after they started practicing yoga. Hence, yoga has contributed to more tolerance of feeling so restless/fidgety.

The level of restlessness which can make a person incapable of relaxing by sitting in a place without movement of the body and mind may be considered as an indication of extreme level of feeling restless, which may be mostly due to poor mental health, mainly from a stress related point of view. This is mostly caused due to various unfavourable aspects happening in life.

### **How Often Felt So Sad that Nothing Could Help to Cheer Up**

It can be seen from Table 3 that while 50 % of respondents experienced this most of the time and all the time before doing yoga, the figure has drastically reduced to 22.2 % respondents after they started doing yoga (Table 3). Further, there exists statistically significant difference (Table 2) in the mean score for this item before yoga practice (with a comparatively higher score of 1.8) and after yoga practice (lower score of 1.3 only), indicating the positive effect of yoga practice in reducing the feeling of sadness. Hence, yoga has helped the practitioners to better tolerate extreme sadness which cannot be overcome by any means. This can be considered as an outcome of the improvement in the mental health of the yoga practitioners.

### **How Often Felt Depressed**

Even though statistically significant difference in the mean score for this item before and after starting yoga practice was not observed, while 72.2 % of respondents reported experiencing this most of the time and some of the time before doing yoga, only 61.1 % reported so after starting

yoga practice (Table 3). The influence of the practice of yoga in better toleration of depressed feelings is evident from this.

### **How Often Felt That Everything was an Effort**

Even though statistically significant difference in the mean score for this item before and after starting yoga practice was not observed, while 27.8 % of respondents reported experiencing this most of the time before doing yoga, only 11.1 % reported experiencing it most of the time after starting yoga practice (Table 3). Hence, yoga practice has helped the respondents to better tolerate the distressed feeling that whatever they do in life involves lot of effort.

### **How Often Felt Worthless**

Even though only 22.2 % of the yoga practitioners reported experiencing this distress related item most of the time and some of the time after doing yoga, 33.3 % reported experiencing this in this manner before starting yoga practice (Table 3). Hence, yoga has contributed to more tolerance of the distress related feeling of worthlessness in life for the practitioners. Statistically significant difference in the mean score before and after starting yoga practice for feeling worthless was not observed.

### **Statistical Significance of the Difference in Distress Score after Yoga Practice Based on the Level of Health Problems Faced**

Table 4 shows that the mean distress score after yoga practice is the lowest (13.9) for the respondents reporting low level of health problems faced during the past 30 days, followed by those who reported medium level of health problems (score of 20.0), while the maximum mean distress score (22.8) is there for respondents who reported high level of health problems, with statistically significant difference in the scores. This indicates that better health has contributed to more distress tolerance for the yoga practitioners after they started practicing yoga.

### **Statistical Significance of the Difference in Distress Score after Yoga Practice Based on Age of the Respondents**

A comparatively low mean total distress score (15.0) after yoga practice was obtained by respondents in the elderly age group of 61 to 69 years, followed by the mean score of 14.0 by those in the 45 to 60 years middle aged group, while the highest mean distress score was for comparatively young yoga practitioners in the age group of 18 to 35 years, with statistically significant difference in the scores (Table 5). This indicates that as age goes up, the level of distress tolerance after starting yoga practice has increased for the respondents.

### **Sex Wise Statistical Significance of the Difference in Distress Score after Yoga Practice**

It can be inferred from Table 6 that men get a lower mean total distress score of 14.5 after yoga practice, while women have a higher score of 19.1, with statistically significant difference in the scores (Table 6). This indicates that men have been able to tolerate distress better than women after starting yoga practice. This may be probably because generally, women are more emotional than men, and hence, they are prone to more of distressed feelings when situations warrant so.

### **Marital Status Wise Statistical Significance of the Difference in Distress Score after Yoga Practice**

Married yoga practitioners have a comparatively lower mean total distress score of 14.9 after yoga practice, while unmarried respondents have a higher mean score of 21.0, with statistically significant difference in the scores (Table 7). This implies that married people are able to tolerate distressing feelings better than unmarried people. This result may be read along with the influence of higher age in improving the level of distress tolerance after starting yoga practice in this study, since married people would be mostly falling in the older age group.

### **Statistical Significance of the Difference in Distress Score after Yoga Practice Based on Whether Did Yoga earlier or not**

Those who have done yoga before joining the present yoga class have a lower mean total distress score of 13.0 after yoga practice, while those who have not done yoga earlier get a higher mean score of 21.3, with statistically significant difference in the scores (Table 8). This shows that previous experience in yoga practice has contributed to better distress tolerance for the respondents.

The effect of yoga in maintaining good mental state among the practitioners was observed in a study [11]. The results of a study showed that yoga contributes to up to about two times less mental stress for the respondents, when compared to before yoga practice [12]. Another study indicated the usefulness of yoga practice to reduce anxiety of people, which could also be an outcome of feeling distressed in life [13]. It has been reported that the practice of yoga will help people to maintain better mental health through the development of positive feelings, which will also help them to overcome psycho-somatic diseases/problems in their life [14].

The research results reported above highlight the effect of yoga in maintaining a positive mental state and reducing negative mental state of the practitioners, which can also be considered to be supportive of the influence of yoga practice

in reducing feelings of distress, as observed in the present study. This is because mental distress of people will be mainly due to negative mental state, stress, anxiety and other psychological problems. Functional Magnetic Resonance Imaging (fMRI) has been shown to be sensitive to the brain function due to external stimulus, including distress situation. Our present study on investigating the effects of yoga on reduction of distress is scientifically backed by the findings of this above study done at Mayo Clinic, in which the authors have demonstrated that brain stiffness increases due to an increase in external stress (such as visual stimulus), and this stress returns to a normal level after the stressful event is reduced, such as through the practice of yoga

To sum up the results of this study, it has been observed that after starting yoga practice, a lower proportion of respondents have experienced all the distress related items compared to before starting yoga practice. This shows the effect of practicing a relaxation technique like yoga in helping people to better tolerate the distressed feelings, which may be considered as an outcome of the improvement in their mental state achieved through the practice of yoga.

### **Conclusion**

The results of this study have clearly shown the effect of yoga practice in helping the respondents to better tolerate all the distressed feelings included under the study. Less proportion of yoga practitioners reporting the experience of the distressed feelings after yoga practice compared to before starting yoga practice, and the statistical significance of the difference in the mean total distress score before and after yoga practice establish this fact. The statistical significance of the difference in the mean distress score of various items before and after yoga practice also helps to substantiate this. Less health problems faced during the past 30 days has been found to help in better tolerance of distressed feelings by the yoga practitioners. Comparatively younger yoga practitioners are found to tolerate distressed feelings less than people in the higher age group. Men are found to better tolerate distressed feelings than women, while married yoga practitioners tolerate distressed feelings better than unmarried people. People who have done yoga before joining the present yoga class, in which this study was undertaken are found to be able to tolerate distressed feelings comparatively more than those who have not practiced yoga before joining this class.

Undertaking studies on yoga by institutions including as many yoga centres as possible will prove useful for generating scientifically backed results, which may be more acceptable for people to become motivated to learn yoga, as well as to continue its practice. This appears to be especially relevant in a country like India, where the number of people practicing

yoga is not much and many people who have learned yoga are discontinuing it after some time, as observed by the authors of this study.

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