

## ORIGINAL RESEARCH

# A comparative study of perceived stress between yoga practitioners and gym exercisers with special reference to timing

<sup>1</sup>Dr. Amit Soni, <sup>2</sup>Dr. Ajay Bhatt, <sup>3</sup>Dr. Vesti Randa, <sup>4</sup>Dr. Ajay Soni

<sup>1</sup>PG Resident, Department of Physiology, M.G.M. Medical College, Indore, Madhya Pradesh, India

<sup>2,3</sup>Associate Professor, Department of Physiology, M.G.M. Medical College, Indore, Madhya Pradesh, India

<sup>4</sup>Assistant Professor, Department of Physiology, M.G.M. Medical College, Indore, Madhya Pradesh, India

### Corresponding Author

Dr. Ajay Soni

Assistant Professor, Department of Physiology, M.G.M. Medical College, Indore, Madhya Pradesh, India

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### ABSTRACT

**BACKGRORUND:** This study aimed to examine the comparative effect of yoga and gym exercise on perceived stress with special reference to timing. It helps to find out which physical activity either yoga or gym exercise had better result and outcome on the stress level of an individual while done specifically in the morning and in the evening. **AIMS AND OBJECTIVES:** To compare the effect of (a) morning time 06 – 09 A.M. yoga and gym exercise and (b) evening 6 to 10 P.M. yoga and gym exercise on perceived stress in healthy adult of age group 30 to 45years. **MATERIALS AND METHODS:** 200 subjects were included in the study. Out of which, 50 were doing yoga in the morning and 50 in the evening. 50 doing gym exercise in the morning and 50 in the evening. Perceived stress was assessed by Cohen's PSS 14 Questionnaires. **RESULT:** The result of present study revealed that the 'p' value for the perceived stress of morning yoga and gym exercise was found to be 0.000. ( $p=0.000<0.050$ ), which is statistically significant, null hypothesis was rejected. Mean of perceived stress of morning yoga performers is 13.16 whereas for gym exercisers it is 21.32, which is higher than yoga exercisers. Similarly, the 'p' value for the perceived stress of evening yoga and gym exercise was found to be 0.088. ( $p=0.088>0.050$ ) which is statistically not significant, null hypothesis was accepted. B. Mean of perceived stress of morning yoga performers is 19.36 whereas for gym exercisers, it is 23.48. **CONCLUSION:** While comparing the morning and evening time of physical activities, it was concluded that the stress level of morning yoga practitioners are less than the morning gym exercisers, whereas the stress level of evening yoga practitioners are more or less same as compared to evening gym exercisers.

**Key words:** Stress, Perceived Stress, Yoga, Gym Exercise, Perceived Stress Scale

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### INTRODUCTION

Exercise and yoga both the physical activities, benefits the mental, physical and social performance and helps in reducing the stress level of a person. Mostly they are done either in the morning or evening, as per the subject's convenience. But for the better outcome, at what time, which activity should be done to provide the better results, is important. In this study, effect of morning time (06 to 09 AM) yoga practitioners and gym exercisers on perceived stress is compared. Similarly, evening time (06 to 10 PM) yoga practitioners and exercisers are compared. Stress can be defined as a process in which environmental demands strain an organism's adaptive capacity resulting in both psychological demands as well as biological changes that could place at risk for illness<sup>1</sup>. According to Chrousos GP 2009, Stress is a 'State of

disharmony and it is counteracted by an intricate repertoire of physiologic and behavioural response which aim to maintain the threatened homeostasis'<sup>2</sup>. Anna C Whittaker 2015 defined Perceived Stress as 'The feelings or thoughts that an individual has, about how much stress they are under at a given point in time or over a given period of time. It mainly tells about the uncontrollability and unpredictability of a person's life and with how much confidence a person can deal with the problems or difficulties'<sup>3</sup>. Cohen *et al.* 1983 defined Perceived Stress Scale (PSS) as the most widely used psychological instrument for measuring the 'perception of stresses'. It is a measure of the degree to which situations in a person's life is considered as stressful. The questions in the PSS are designed in such a way that they ask about feelings and thoughts a person experiences during the last

month. High score indicate that more perceived stress is present in daily life and vice versa <sup>4</sup>. Koppas MS *et al.* 2010, in his study on measuring the stress in epidemiological research, stated that the questions in the PSS are general in nature, the scale is considered broadly applicable for any population or subgroup <sup>5</sup>.

## REVIEW OF LITERATURE

In the book 'The heart of Patanjali' 1997, the word 'Yoga' has been described. It has its roots in a Sanskrit word 'Yuj' that means 'to unite or yoke, to join, that is union of mind and body for a healthy living, and to direct and concentrate one's attention' <sup>6</sup>. According to the Ministry of Ayush 'Yoga is a discipline to improve or develop inherent one power in a balanced manner' <sup>7</sup>. Yoga is a holistic way of life which leads to a state of complete physical, social, mental, and spiritual well-being and harmony with the nature. Primary goal of Yoga is mainly 'self-realization' which means union of self-consciousness with the supreme consciousness <sup>8</sup>.

According to 'Centre for disease control and prevention physical activity for everyone' 2011, Exercise is defined as 'subcategory of physical activity that is planned, structured, repetitive and purposive in the sense that the improvement or maintenance of one or more component of physical fitness is the objective' <sup>9</sup>. Exercise helps in increasing the concentrations of norepinephrine which can moderate the brain's response to stress. It also releases the endorphins, which can create the feelings of happiness improves self-confidence in a person, and not only it prevents the cognitive decline but it also boosts the memory, helps in controlling the addiction, and thereby increasing the relaxation <sup>10</sup>.

## AIMS AND OBJECTIVES

### AIM

To study the comparative effect of morning time yoga and exercise with evening time on perceived stress in healthy adult of age group 30 to 45 years.

### OBJECTIVES

#### PRIMARY OBJECTIVES

1. To study the effect of morning time yoga on perceived stress.
2. To study the effect of evening time yoga on perceived stress.
3. To study the effect of morning time exercise on perceived stress.
4. To study the effect of evening time exercise on perceived stress.

#### SECONDARY OBJECTIVES

1. To compare the effect of yoga and exercise on perceived stress while doing them in the morning time.
2. To compare the effect of yoga and exercisers on perceived stress while doing them in the evening time.

## MATERIALS AND METHODS

**Study Type:** Cross Sectional. **Study Place:** Department of Physiology, MGM Medical College, Indore. **Subjects:** 200 subjects were taken. 50 doing yoga at the morning time, 50 doing yoga in the evening time. 50 doing exercise in the morning time, and 50 doing exercise in the evening time.

**Special information:** Regarding their Yoga/Exercise schedule, duration, types of various exercises and Yoga asana was obtained.

**Height:** Stadiometer was used to measure height.

**Weighing Machine:** 'Krupus' Weighing Machine was used to measure weight.

**Blood Pressure:** Diamond Deluxe sphygmomanometer was used to measure blood pressure.

**BMI:** Body Mass Index was calculated using Quetelet's index.  $BMI = \text{Weight in kilogram} / \text{Height in meter square}$ .

**Cohen's Perceived Stress Scale (PSS14 Questionnaires):** Was used to measure the perceived stress level. Special information regarding the perceived stress was obtained by filling the form of 14 questionnaires of Cohn's perceived stress scale by the subjects.

#### Perceived Stress Scoring PSS

Low-0-13. Moderate 14-26. High 27-40.

## INCLUSION CRITERIA

1. Healthy adult subjects aged between 30 to 50 years.
2. Subjects 5 basic asana Markatasana, Matsyasana, Bhujangasana, Naukasana, Setubandhasana.
3. Subject doing 5 basic gym exercise daily out of the various exercises.

### Non-Cardiac

chest/arms/forearms/biceps/triceps/shoulder/legs/thighs/abdomen. 4 out of them.

**Cardiac Exercise:** Treadmill exercise/running or jogging. 1 out of them.

4. Subjects doing gym exercise or yoga, for more than or equal to six months, at least 5 times per week, for more than 1 hour per session.

5. Morning time subject doing yoga or exercise at 6-9 am and Evening time subjects doing yoga or exercise at 6-10 pm.

6. Subject who showed willingness and gave written consent.

## EXCLUSION CRITERIA

1. History of any type of addiction including tobacco, cigarette smoking, alcohol etc.

2. History of any medical disease or surgical intervention.
3. Any unwillingness or refusal to give written informed consent.

exercisers. Group statistics test has been applied to detect the mean.

$H_{01}$  (Null Hypothesis) There is no significant difference in the mean value of perceived stress due to gym timings.

$H_{01a}$  (Alternate Hypothesis) There is a significant difference in the mean value of perceived stress due to gym timings.

**RESULT:**

1. Table No.1: The table showing the comparison of morning yoga practitioners and morning gym

**Table 1: Group Statistics**

	ExerciseMorning	N	Mean	Std.Deviation	Std.Error Mean
PerceivedStress	Yoga	25	13.1600	3.71573	.74315
	Gym	25	21.3200	5.61041	1.12208

Table No.1-Mean of perceived stress of morning yoga performers is 13.16 where are for gym exercisers it is 21.32 which is higher than yoga exercisers.

Levene’s test for equality of variance and ‘t’ test for equality of means, was applied to compare the morning and evening time of yoga practitioners and gym exercisers.

**Table1A:** Paired ‘t’ test-‘Independent sample t test’:-

**Table 1A: Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Perceived Stress	Equal variances assumed	1.619	.209	-6.063	48	.000	-8.16000	1.34586	-10.86603	-5.45397
	Equal variances not assumed			-6.063	41.657	.000	-8.16000	1.34586	-10.87671	-5.44329

Table No.1a-Null hypothesis which says that there is no significant difference in the mean value of perceived stress of yoga and gym exercisers in morning timings, has been rejected. Alternate hypothesis there is a significant difference in the mean value of perceived stress of yoga and gym exercisers in morning timings, has been accepted.

practitioners was low as compared to morning gym exercisers.

Table No. 2-Group Statistics test has been applied to detect the mean.

$H_{02}$ :There is no significant difference in the mean value of perceived stress of yoga and gym exercisers in evening timings.

The ‘p’value was found to be 0.000.( $p=0.000 < 0.050$ ), which is statistically significant. It means that the perceived stress varies according to the time of exercise. Perceived stress level of morning yoga

$H_{02a}$ :There is a significant difference in the mean value of perceived stress of yoga and gym exercisers in evening timings.

**Table2: Group Statistics**

	Exercise Morning	N	Mean	Std. Deviation	Std. Error Mean
Perceived stress	Yoga	25	19.3600	7.69134	1.53827
	Gym	25	23.4800	9.00981	1.80196

Table No. 2-Mean of perceived stress of morning yoga performers is 19.36 whereas for gym exercisers

it is 23.48 which is close to each other.

**Table3: Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Perceived stress	Equal variances assumed	.809	.373	-1.739	48	.088	-4.12000	2.36925	-8.88369	.64369
	Equal variances not assumed			-1.739	46.847	.089	-4.12000	2.36925	-8.88672	.64672

Table No. 2a, it was found that the null hypothesis which says that there is no significant difference in the mean value of perceived stress of yoga and gym exercisers in evening timings, has been accepted. Alternate hypothesis there is a significant difference in the mean value of perceived stress of yoga and gym exercisers in evening timings, has been rejected ( $p=.088>.050$ , Table no 8). It mean that the perceived stress varies according to the time of exercise. Effect

## DISCUSSION

While comparing the effect of morning time yoga practise and gym exercise on perceived stress, early morning yoga reduces the stress level better than gym exercise. In the morning yoga session, the brain gets lots of fresh oxygen which produces more oxygenated cells and decreases the cortisol synthesis which results in better focus, concentration and relaxation of mind. That helps a person to feel happier, optimistic and work with more attention and with maximum efficiency throughout the day. After having a proper sleep, a person feels more energetic and fresh in the morning, as a result more workout can be done in comparison with the evening time, which produces more sweat, resulting in releasing large amount of happy chemical endorphins, serotonin and dopamine that boosts the mood and relieves the stress level.

While comparing the effect of evening time yoga and gym exercise on perceived stress, it was fund that both had nearly the same results on stress level. Doing Yoga and Exercise regularly, improves the mental, physical and psychological conditions of a person and manages the stress level, mental balance and negative emotions<sup>11</sup>. But yoga can be better used as a complementary medicine because it not only leads to the harmonious development of the mind and the body, but it also helps in promoting the mental harmony, peace and happiness<sup>12</sup>. Practicing yoga and gym exercise regularly, not only increases the physical, mental, emotional and spiritual performance, but it acts as a preventive and alternative health measure to combat physical, mental diseases, disorders and disabilities specially stress, anxiety and depression<sup>13</sup>. Arora Sarika *et al.* 2008 in their study concluded that stress had a negative impact on the immune system and it makes a person more vulnerable to disease. Doing Yoga, regularly helps to overcome the other comorbidities associated with the disease and lead a better quality of life even during

the period of stress<sup>13</sup>. Shohani, Badfaretal. (2018) and Tayyabi *et al.* (2011) in their study on Stress, observed that Yoga decreases the stress, anxiety and depression in women<sup>15, 16</sup>. Doing Hatha yoga regularly can reduce perceived stress even more significantly<sup>17</sup>. Emma Childsand Harriet de Wit 2014 and Banno M *et al.* 2018in their studies, found that gym exercise decreases the stress level and its acute effect on the body<sup>18, 19</sup>.

## CONCLUSION

The stress level of morning yoga practitioners are less than the morning gym exercisers, whereas the stress level of evening yoga practitioners are more or less same as compared to evening gym exercisers.

From this result it can be concluded that morning yoga practice had better results in relieving the perceived stress of a person, as compared to morning gym exercise. Very few studies are done regarding the timing of doing yoga and gym. Still no specific conclusion had been drawn from those studies whether which timing of the activities morning or evening, will give better result in reducing the stress level. As yoga can be done at home and is cheap, it can be the better option for individuals, who can'tafford much and have no time to go outside for gymming or doing any other physical activities or relaxation techniques because of their busy schedule or other family reasons.

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