

# Effect of Prayer and “OM” Meditation in Enhancing Galvanic Skin Response

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## Abstract

The research was conducted with the purpose to study the effect of prayer and meditation on galvanic skin response (GSR). It was hypothesized that there was a significant positive effect of prayer and meditation (Om chanting) on galvanic skin response (GSR). The sample consisted of 20 normal, healthy female participants through purposive sampling. The age group of the sample was 18 to 24 years (Mean= 18.7, SD= 1.55). Gender was female and minimum education was graduation. The daily practice time of prayer and meditation session was 30 minutes for one month. Pre- Post data were recorded before and after intervention of prayer and meditation session by using single group pre-post research design. Recordings of galvanic skin response (GSR) were made on a computerized polygraph (Model Physiopac, PP 4, Medicaid Systems, Chandigarh, India) test. The results revealed a significant increase in GSR values as an effect of prayer and meditation which suggested the psychophysiological relaxation. Practicing prayer and meditation increases the galvanic skin response and hence decreases the stress level of the individual.

**Keywords:** galvanic skin response, prayer, meditation

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## Introduction

Today in this world all around, we find suffering, pain, disorders, war, disharmony, distrust, and feeling of insecurity, frustration, stress and conflict galore. There is an enormous selfishness present in human beings which leads to all kind of miseries and ills in society. Human being has become narrow minded and self-centered to the extent that he does not hesitate to torture others for the sake of his happiness (Sidhaye & Anaspure, 2010). In such a scenario, as stated by Goleman (1995), a blend of spiritual awareness, mindfulness, and emotional intelligence is required because “it enhances the quality of life not through trapping, but by adding spice to the small moments of every day” (Goleman, 1995).

Through prayer and meditation a person is expected to get mental peace and this mental peace affects their emotional state. So the present research examines the effect of prayer and meditation (Om chanting) on GSR of university going students. Om chanting meditation is a concentrative type of meditation that involves focusing of attention on breath and internal or external chanting (or *mantra*).

## The Concept of Meditation

Meditation is generally an internal, personal practice and done without any external involvement, though many practitioners of meditation may rely on external objects such as candle flames as point on which to focus their attention as an aid to the process. Meditation often involves invoking or cultivating a feeling or internal state, such

as compassion, or attending to a specific focal point (Bedakelian, 2011; Ovcharov, 2011). Meditation is a mental exercise in which one directs one's mind to think inwardly by shutting one's sense organs to external stimulations. It is a Vedic exercise which can be used as a powerful instrument to restrain sense organs, control autonomic nervous system and also to attain super consciousness.

"The word *meditation* is used to describe practices that self-regulate the body and mind, thereby affecting mental events by engaging a specific attentional set." (Vaitl et al., 2005, pp. 98-127; Cahn & Polich, 2006; "Meditation," 2012). "Meditation refers to a family of self-regulation practices that focus on training attention and awareness in order to bring mental processes under greater voluntary control and thereby foster general mental well-being and development and/or specific capacities such as calm, clarity, and concentration." (Walsh & Shapiro, 2006, pp. 227-239; "Meditation," 2012) "The need for the meditator to retrain his attention, whether through concentration or mindfulness, is the single invariant ingredient in.... every meditation system" (Goleman, 1998, pp. 107; "Meditation," 2012).

Meditative styles can be usefully classified into two types – mindfulness and concentrative – depending on how the attention processes are directed. Concentrative meditational techniques involve focusing on specific mental or sensory activity: a repeated sound, an imagined image, or specific body sensations such as the breath. Transcendental meditation (TM) fits somewhat within the concentrative forms, because practice centers on the repetition of a mantra, but the method places a primary emphasis on absence of concentrative effort and the development of a witnessing, thought-free "transcendental awareness." The mantra is thought to eventually occupy awareness during meditative practice without concentrative effort; thereby possibly distinguishing the technique from other concentrative practices (Mahesh Yogi as cited in Cahn & Polich, 2006; Travis, Tecce, Arenander, & Wallace, 2002). Transcendental meditation involves the continuous chanting of a mantra, until a dream – like state of mind is attained. This is useful for those who are easily distracted as chanting a mantra will prevent one's mind from wandering. Transcendental meditation facilitates memory of right hemisphere functioning (Pagano & Frumkin, 1977). Internal use of the mantra in TM may improve left hemisphere as it improves verbal memory (Korby & Hufnagel, 1977). The practice of TM improves academic performance of university students (Kember, 1985).

Scientific studies on Om or Pranava suggest that the mental repetition of Om results in a physiological state at one time characterized by reduced physiological alertness, increased sensitivity as well as synchronicity, as well as changes at specific levels along the auditory pathway suggestive of increased sensitivity to sensory transmission (Kumar, Nagendra, Manjunath, Naveen, & Telles, 2010). Omkar chanting significantly effects the concentration, memory and level of fatigue (Khawale, 2011). Pranava meditation begins with a prayer seeking the blessings of the Almighty and sincerity of purpose, gradually leading into a powerful chanting of 'OM' (Krishnananda, 2011). Pranavjapa increases the Self- concept and decreases the depression (Singh, 2011). Advanced meditators (who can reach deeper levels) develop the ability to use their whole brain and to live in a more balanced state characterized by brain synchronization and whole brain functioning (Locher, 2008). Meditation improves brain coherence (Hagelin, 2010).

### The Concept of Prayer

Prayer is a form of religious practice that seeks to activate a volitional rapport to God through deliberate practice. Prayer may be either individual or communal and takes place in public or in private. It may involve the use of

words or song. When language is used, prayer may take the form of a hymn, incantation, formal creedal statement or a spontaneous utterance in the praying person (Ogbonmwan, 2010).

The word “pray” comes from the Latin word *precari*, which simply means to entreat or ask. In fact, although pray is not often used this way anymore, it can simply mean “please” (Richert, 2012). According to the [Spiritual Science Research Foundation \(2012\)](#), the word prayer or ‘*prarthana*’ (in sanskrit) is derived from two words ‘*pra*’ and ‘*artha*’ meaning pleading fervently. In other words, it is asking God for something with intense yearning. Prayer includes respect, love, pleading and faith. Prayer is an important tool of spiritual practice in the generic spiritual path of devotion. The meaning of *upasna* is – to sit near; have nearness or company. When we stay close to something, the qualities of that would come to us naturally. Benor (2000) defines healing (and prayer) as influences of one or more people upon another living system without utilizing known physical means of intervention. Chants are said to be raising our voices to God. Chanting is singing our prayers. Chant is vocal meditation. Chant is the breath made available in tone. Chant is ‘discovering’ spirit in sound (Khoo, 2008).

Larson and Larson (1991) surveyed 12 years of publication of the American Journal of Psychiatry and Archives of General Psychiatry. They found that when measuring participation in religious ceremony, social support, prayer, and relationship with God, 92% of the studies showed benefit for mental health, 4% were neutral, and 4% showed harm. McCullough, Hoyt, Larson, Koenig, & Thoresen (2000) studied that praying or meditating might actually be associated with longevity.

### Galvanic Skin Response

Galvanic skin response is a type of electrodermal response. A transient change in certain electrical properties of the skin associated with the sweat gland activity and elicited by any stimulus that evokes an arousal or orienting response, known as the galvanic skin response (GSR). It is a change in the electrical properties of a person’s skin caused by an interaction between environmental events and the individual’s psychological state. GSR is a method of capturing the autonomic nerve response as a parameter of the sweat gland function (i.e., measuring the electrical resistance of the skin). As stress level increases, changes in the electrical resistance of the skin are detected by GSR sensors. GSR varies with its moisture level. So skin conductance is used as an indication of psychological or physiological arousal. Although there are no absolute levels of GSR indicative of high workload or stress, GSR is a good relative indicator of stress. The galvanic skin response (GSR) feedback instrument measures skin conductivity from the fingers and/or palms. The GSR is highly sensitive to emotions in some people. GSR reflects sweat gland activity and changes in the sympathetic nervous system. The activity of the sweat glands in response to sympathetic nervous stimulation (increased sympathetic activation) results in an increase in the level of conductance (Fuller, 1977).

## Study Design

**Problem:** Is there any effect of prayer and meditation (Om chanting) on galvanic skin response of university students?

**Objective:** To study the effect of prayer and meditation on galvanic skin response (GSR).

**Hypothesis:** There is a significant positive effect of prayer and meditation (Om chanting) on galvanic skin response (GSR).

**Variables:**

**Independent Variable:** Prayer and Meditation

**Dependent Variable:** Galvanic Skin Response (GSR)

**Relevant Variables:**

- Age: 18 to 22 years of age
- Only female students
- Marital Status: Unmarried students
- Education: University students of Psychology Department

**Inclusion Criteria:** Only those who are willing to participate in prayer and meditation were included in the sample.

**Design:** To study the effect of I.V. on D.V. single group, pre- and post- test design was used.

**Sample:** The study was carried out on 20 normal, healthy female participants. A purposive sample was selected. The age group of the sample was 18 to 24 years (Mean= 18.7, SD= 1.55). Gender was female and minimum education was graduation. The students were taken from the Psychology Department of Dayalbagh Educational Institute, Agra. The sessions were repeated on 3 separate days continuously. Each subject was tested for 3 days continuously.

**Tools:** Recordings of galvanic skin response (GSR) were made on a computerized polygraph (Model Physiopac, PP 4, Medicaid Systems, Chandigarh, India). GSR values were measured in kilo-ohms. [Figure 1](#) shows the data measured on a single subject.

**Procedure of the Study:**

*Phase 1: Pre-test.* Readings on galvanic skin response (GSR) were obtained before the prayer and meditation session starts, by a computerized polygraph (Physiopac PP-4) manufactured by Medicaid Systems, Chandigarh.

*Phase 2: Experimental phase.* The researcher conducted prayer and meditation session for 30 minutes (15 min. for prayer and 15 min. for meditation), for 3 days. The researcher gave these instructions:

- Prayer: "Fold your hands, close your eyes and think about your God. Now concentrate on background musical prayer."
- Meditation: "First, enter your meditative state by securing a quiet, dimly lit comfortable sitting position. Background meditative music will help facilitate migration into deeper brain centers. Eyes can be open or shut. Breathe comfortably and slowly through your nose, into your belly and then into your chest. Feel that positive energy is running into all over body and each part of your body is pure and holy. Slowly let the air exhale through your mouth. Now chant the mantra, "OM" Visualize a situation when you were very happy and feel that happiness. Feel the positive energy and enjoy in this positive environment".

*Phase 3: Post-test.* GSR was measured again.

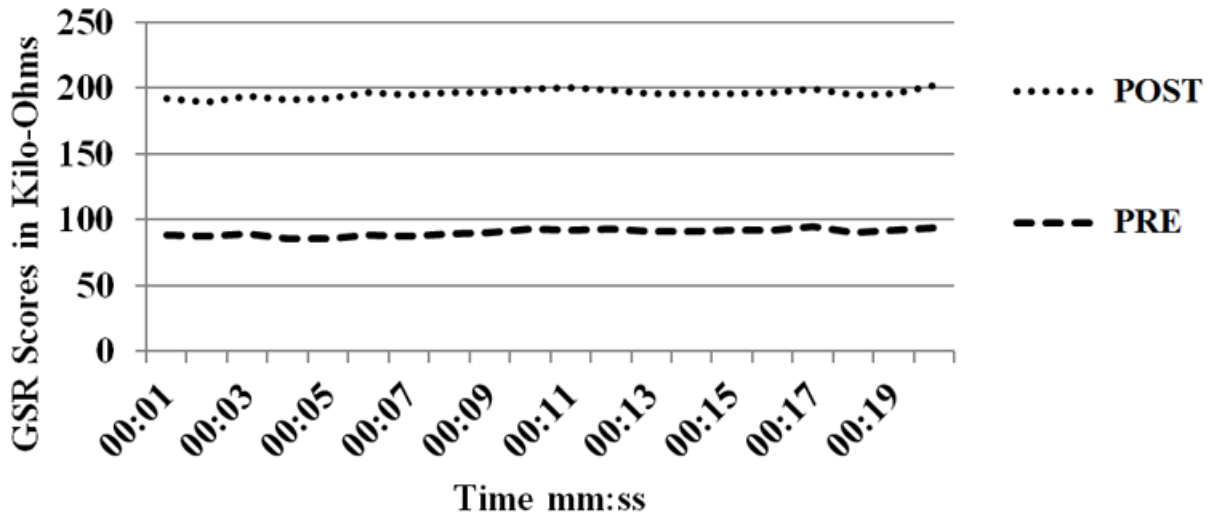


Figure 1. Graph showing data measured on a single subject

### Results and Discussion

The average scores of GSR of first 3 days for each subject were taken as a baseline measures. After one month intervention the average scores of GSR of last 3 days for each subject were taken as post measures (Figure 2).

Table 1 shows that obtained “t” value in respect to GSR is 6.76 that far exceed the critical value at .01 level. There is a significant difference between the pre- intervention GSR scores and post- intervention GSR scores among students.

Table 1

Mean, SD and t-ratio of Pretest and Post Test Scores of GSR (Galvanic Skin Response) in Kilo-Ohms

Measures	N	Mean	SD	SE <sub>D</sub>	r	t-value
Pre Measures	20	388.82	353.64	63.4	0.79	6.76**
Post Measures	20	817.53	449.83			

\*\*p < .01.

The results show higher mean score of post- intervention (Mean-817.53, SD-449.83) than pre- intervention mean score (Mean- 388.82, SD- 353.64). It shows that mean of pre- measures were significantly lower than the mean of post- measure scores of GSR. As stress level decreases GSR scores becomes high. In the present study, GSR scores increases which shows the relaxation. This improvement in GSR scores is also shown graphically (Figure 3).

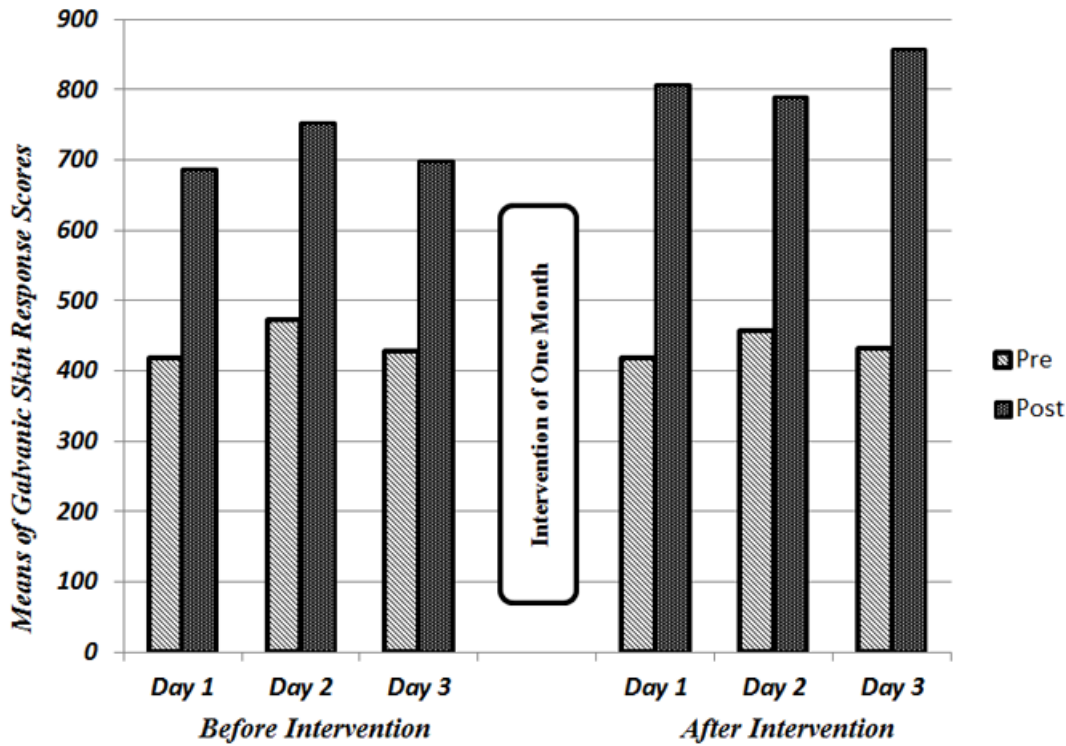


Figure 2. Graph showing means of first three days and last three days of one month intervention

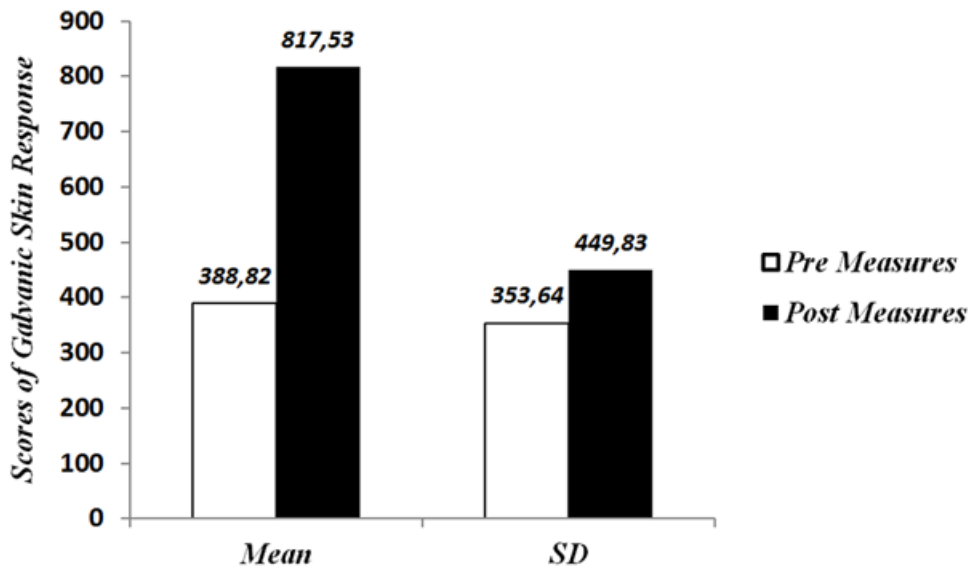


Figure 3. Comparison between pre-intervention GSR scores and post-intervention GSR scores

The present study revealed a significant increase in GSR values as an effect of prayer and meditation which suggested the psychophysiological relaxation. Statistical analysis shows that the prayer and meditation significantly

affects the GSR values. Increase in GSR values shows the relaxation and decrease in stress level. Findings reveal that the prayer and meditation affect the skin resistance of an individual.

Similarly results were also reported by Johnson & Lubin (1966) in their research that states of relaxation are accompanied by high skin resistance, which reaches its maximum during sleep. Shashi (2011) found that the galvanic skin response (GSR) and Electroencephalogram (EEG) increases during the practice of Om chanting meditation. After the prayer and meditation session subjects were more relaxed and they felt alertness. Chanting "OM" mentally causes increased alertness (Delius & Kellorová, 1971). Telles, Nagarathna, & Nagendra (1998) found that during "OM" meditation meditators showed a small but statistically significant reduction in heart rate compared to the control group. Reduction in heart rate shows the relaxation during meditation. In an article by Davis (2005), she refers to a quote by the well-known cardiologist and founder of Harvard's Mind/Body Institute Herbert Benson, who strongly asserts "Any condition that's caused or worsened by stress can be alleviated through meditation". Thus on the basis of above findings and discussions, it can be concluded that the prayer and meditation affect the galvanic skin response of an individual.

## Conclusion

There is a significant positive effect of prayer and meditation (Om chanting) on galvanic skin response (GSR). GSR can be used as a physiological measure in the study of different emotional and mental states. It gives a stable and consistent measure of the involvement of the subjects. GSR also indicates the level of concentration during the practice of meditation.

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