

## A Study of Physiological Analysis of *Sadhaka Pitta*

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### Abstract

*Ayurveda* is recognized as foremost life science and describes ways to prevent and manage lifestyle disorders, the world is being attracted towards its potential. The holistic approach of *Ayurveda*, treating the patient as a whole, meaning intervention targeted toward complete physical, psychological, and spiritual well-being makes this science a wonderful option in lifestyle disorders. Ancient Indian *Rishi-Munis* stated that the aim of life is to attain *Purusartha Chatushtaya* (i.e. *Dharma, Artha, Kama, and Moksha*).

This *Purusartha Chatushtaya* can only be attained by healthy and long life. For this purpose everyone must follow rules, regulations and conducts which are described in *Ayurveda*.

Research shows a link between an upbeat mental state and physical signs of good health. These include lower blood pressure, reduced risk of heart disease, and a healthier weight, there are many ways to improve or maintain good emotional health. The one of the relaxation technique / stress reduce technique is Transcendental meditation (TM).

**Keywords:** *Sadhaka Pitta*, pulse rate, blood pressure, meditation, temperature

### Introduction

*Pitta* is described as “AGNI” and also described the functions of *Prakrit* and *Vaikrit Pitta*. The *Agni* is included in *Pitta* in the body for producing the effects in vitiated or unvitiated states respectively. Such type of symptoms are occurred such as digestion – indigestion, vision – non-vision (proper), degree or otherwise of heat, normal- abnormal complexion, prowess-fear, anger-exhilaration, confusion and clarity such as duals<sup>1</sup>.

In *Brahmavaivarta Purana* location of *Pitta* is specified and said that it is placed in *Manipura Chakra*. In other place *Pitta* is said to be grievous for creatures<sup>2</sup>.

First time five types of *Pitta* have been explained with its name by *Acharya Sushruta* but in this manuscript *Pitta* is depicted as the name *Agni*.

The five types of *Pitta* are mentioned for the first time in the form of *Pachakagni*, *Ranjakagni*, *Sadhakagni*, *Alochakagni* and *Bhrajakagni*. Here *Acharya Sushruta* also mentioned the location and functions of *Pitta Dosha*<sup>3</sup>.

*Sadhaka Pitta* is one among the sub types of *Pitta* associated with certain mental faculties and emotions. The word *Sadhaka* derived from the root word 'Saadha'- which means 'to accomplish'<sup>4</sup>. It is the one which helps to achieve *Chaturvidha Purushartha* i.e. *Dharma*, *Artha*, *Kama* and *Moksha*<sup>5</sup>.

### ***Sthana and Karma***

It is located in the *Hridaya* and it is responsible for *Buddhi* (intelligence), *Medha* (memory), *Abhimana* (self-esteem), *Utsaaha* (enthusiasm) and for the achievement of one's own aspirations<sup>6</sup>.

*Pitta* located in *Hridaya* is to be known as *Sadhakagni* and its function is to enable one to achieve one's own aspirations. It dispels the *Kapha* and *Tamas* from *Hridaya* and enables the *Manas* to perceive the things clearly<sup>7</sup>. It also enables the reception of *Shabdha*, *Sparsha*, *Gandha* etc<sup>8</sup>.

**Meditation & neurophysiology**– studies have shown substantial bodily changes as a consequence of regular meditative practice, for instance one study by Richard Davidson and Jon Kabat-Zinn showed that eight weeks of mindfulness-based meditation produced significant increases in left-sided anterior brain activity, which is associated with positive emotional states. It seems that we are able to think of positive emotion as a skill which can be achieved with training similar to learning to ride a bike or play the piano<sup>9</sup>.

Serotonin (5HT), sometimes called the "calming chemical," but actually when calmness achieved serotonin level increases in the body. It is best known for its mood modulating effects. A lack of 5HT has been linked to depression and related neuropsychiatric disorders. But 5HT is farther reaching-and has also been implicated in appetite, sleep, memory and most recently decision making behaviors<sup>10</sup>.

### **Material and Method**

110 healthy volunteers were randomly divided into two groups of 55 volunteers each through MS Excel. The 5 Volunteers were dropped from each group due to their personal problem regarding travel, health or any other personal problem. So, they were unable to complete the follow up (total period of three months).

Group-1 (Intervention Group) was advised to do the Transcendental Meditation (TM), two times a day 6-00 a.m. to 6.15 a.m. & 7.00 p.m. to 7.15 p.m. daily for three months.

Group-2 (Control Group) was not advised for any specific instruction. The observations were analyzed using SPSS software 16.0 and results were obtained.

### Observation & Discussion

**Table Number 01:- Showing the distribution of the Healthy Volunteers in Group-1 (Intervention Group) and Group-2 (Control Group) according to Pulse rate per minute in Initial and After three months.**

Groups	Pulse rate per minute (Mean $\pm$ SD)		Within the group comparison Paired t-test
	Initial	After three month	
<b>Group-1 (Intervention Group) (n=50)</b>	73.14 $\pm$ 5.203	70.28 $\pm$ 5.713	<b>2.86 <math>\pm</math> 2.784 t=7.388 p&lt;0.05</b>
<b>Group-2 (Control Group) (n=50)</b>	72.27 $\pm$ 5.652	72.00 $\pm$ 5.295	<b>0.27 <math>\pm</math> 2.304 t=0.904 p&gt;0.05</b>
<b>Between the group comparison Unpaired t-test</b>	t=0.808 p>0.05	t=2.769 p<0.05	

This table shows that in Group-1 (Intervention Group), the mean pulse rate in Initial Healthy Volunteers was 73.14  $\pm$  5.203 while after Practicing TM for 3 Months, the pulse rate was found to be 70.28  $\pm$  5.713. It varied significantly (p<0.05).

In Group-2 (Control Group), the mean pulse rate in Initial Healthy Volunteers was 72.27  $\pm$  5.652 while without Practicing TM, the pulse rate was found to be 72.00  $\pm$  5.295 after 3 months. It did not vary significantly (p>0.05).

In Group-1 (Intervention Group), comparison within the group was found significant (p <0.05) and in Group-2 (Control Group), it was found Non significant (p >0.05).

Comparison between the Group-1 (Intervention Group) & Group-2 (Control Group), it was found Significant (p <0.05) after three months, which was Non significant initially (p >0.05).

**Table Number 02:- Showing the distribution of the Healthy Volunteers in Group-1 (Intervention Group) and Group-2 (Control Group) according to Systolic Blood Pressure mm of Hg in Initial and After three months.**

Groups	Systolic Blood Pressure mm of Hg (Mean $\pm$ SD)		Within the group comparison Paired t-test
	Initial	After three month	
<b>Group-1 (Intervention Group) (n=50)</b>	122.14 $\pm$ 6.213	118.28 $\pm$ 7.713	3.86 $\pm$ 6.884 t=2.388 p<0.001
<b>Group-2 (Control Group) (n=50)</b>	121.87 $\pm$ 6.652	122.10 $\pm$ 6.295	-0.33 $\pm$ 6.784 t=5.714 p>0.05
<b>Between the group comparison Unpaired t-test</b>	t=1.248 p>0.05	t=2.991p<0.001	

This table shows that in Group-1 (Intervention Group), the mean Systolic Blood Pressure in Initial Healthy Volunteers was 122.14  $\pm$  6.213 while after Practicing TM for 3 Months, the mean Systolic Blood Pressure was found to be 118.28  $\pm$  7.713. It varied significantly (p<0.001).

In Group-2 (Control Group), the mean Systolic Blood Pressure in Initial Healthy Volunteers was 121.87  $\pm$  6.652 while without Practicing TM for 3 Months, the mean Systolic Blood Pressure was found to be 122.10  $\pm$  6.295. It varied not significantly (p>0.05).

In Group-1 (Intervention Group) comparison within the group was found significant (p <0.05) and in Control Group-2, it was found Non significant (p >0.05).

Comparison between the Intervention Group-1 & Control Group-2, it was found Significant (p <0.05) after three months, which was Non significant initially (p >0.05).

**Table Number 03:- Showing the distribution of the Healthy Volunteers in Group-1 (Intervention Group) and Group-2 (Control Group) according to Diastolic Blood Pressure mm of Hg in Initial and After three months.**

Groups	Diastolic Blood Pressure mm of Hg (Mean $\pm$ SD)		Within the group comparison Paired t-test
	Initial	After three months	
<b>Group-1 (Intervention Group) (n=50)</b>	80.24 $\pm$ 4.203	76.27 $\pm$ 4.713	3.97 $\pm$ 4.884 t=4.988 p<0.01
<b>Group-2 (Control Group) (n=50)</b>	79.98 $\pm$ 4.352	79.90 $\pm$ 4.295	0.08 $\pm$ 4.784 t=0.434p>0.05
<b>Between the group comparison Unpaired t-test</b>	t=0.588 p>0.05	t=2.998p<0.01	

This table shows that in Group-1 (Intervention Group), the mean Diastolic Blood Pressure in Initial Healthy Volunteers was  $80.24 \pm 4.203$  while after Practicing TM for 3 Months, the mean Systolic Blood Pressure was found to be  $76.27 \pm 4.713$ . It varied significantly ( $p < 0.01$ ).

In Group-2 (Control Group) the mean Diastolic Blood Pressure in Initial Healthy Volunteers was  $79.98 \pm 4.352$  while without Practicing TM, the mean Diastolic Blood Pressure was found to be  $79.90 \pm 4.295$ . It varied not significantly ( $p > 0.05$ ).

In Group-1 (Intervention Group) comparison within the group was found significant ( $p < 0.01$ ) and in Group-2 (Control Group), it was found Non significant ( $p > 0.05$ ).

Comparison between the Group-1 (Intervention Group) & Group-2 (Control Group) was found Significant ( $p < 0.01$ ) after three months, which was Non significant initially ( $p > 0.05$ ).

**Table Number 04:- Showing the distribution of the Healthy Volunteers in Group-1 (Intervention Group) and Group-2 (Control Group) according to Respiratory rate per minute in Initial and After three months.**

Groups	Respiratory rate per minute (Mean $\pm$ SD)		Within the group comparison Paired t-test
	Initial	After three months	
<b>Group-1 (Intervention Group) (n=50)</b>	$18.14 \pm 2.203$	$16.28 \pm 2.713$	$1.86 \pm 2.884$ $t=6.388$ $p < 0.05$
<b>Group-2 (Control Group) (n=50)</b>	$18.50 \pm 2.402$	$18.44 \pm 2.295$	$0.06 \pm 1.784$ $t=1.714$ $p > 0.05$
<b>Between the group comparison Unpaired t-test</b>	$t=0.788$ $p > 0.05$	$t=2.968$ $p < 0.05$	

This table shows that in Group-1 (Intervention Group), the mean Respiratory rate in Initial Healthy Volunteers was  $18.14 \pm 2.203$  while after Practicing TM for 3 Months, the mean Respiratory rate was found to be  $16.28 \pm 2.713$ . It varied significantly ( $p < 0.05$ ).

In Group-2 (Control Group), the mean Respiratory rate in Initial Healthy Volunteers was  $18.50 \pm 2.402$  while without Practicing TM, the mean Respiratory rate was found to be  $18.44 \pm 2.295$ . It varied not significantly ( $p > 0.05$ ).

In Group-1 (Intervention Group) comparison within the group was found significant ( $p < 0.05$ ) and in Group-2 (Control Group), it was found Non significant ( $p > 0.05$ ).

Comparison between the Group-1 (Intervention Group) & Group-2 (Control Group), it was found Significant ( $p < 0.05$ ) after three month which was Non significant initially ( $p > 0.05$ ).

**Table Number 05:- Showing the distribution of the Healthy Volunteers in Group-1 (Intervention Group) and Group-2 (Control Group) according to Body Temperature in Initial and After three months.**

Groups	Body Temperature (Mean $\pm$ SD)		Within the group comparison Paired t-test
	Initial	After three months	
<b>Group-1 (Intervention Group) (n=50)</b>	98.14 $\pm$ 1.203	98.88 $\pm$ 1.313	-0.74 $\pm$ 1.284 t=3.388 p>0.05
<b>Group-2 (Control Group) (n=50)</b>	98.07 $\pm$ 1.152	98.10 $\pm$ 1.295	-0.03 $\pm$ 1.184 t=4.712p>0.05
<b>Between the group comparison Unpaired t-test</b>	t=0.428 p>0.05	t=1.769 p>0.05	

This table shows that in Group-1 (Intervention Group), the mean Body Temperature in Initial Healthy Volunteers was 98.14  $\pm$  1.203 while after Practicing TM for 3 Months, the mean Body Temperature was found to be 98.88  $\pm$  1.313, did not show significantly ( $p > 0.05$ ).

In Group-2 (Control Group) the mean Body Temperature in Initial Healthy Volunteers were 98.07  $\pm$  1.152 while without Practicing TM, the mean Body Temperature was found to be 98.10  $\pm$  1.295, showed not significantly ( $p > 0.05$ ).

In Group-1 (Intervention Group), comparison within the group was found Non significant ( $p > 0.05$ ) and in Group-2 (Control Group), it was found Non significant ( $p > 0.05$ ).

Comparison between the Group-1 (Intervention Group) & Group-2 (Control Group), it was found non-Significant ( $p > 0.05$ ) after three month which was Non significant initially ( $p > 0.05$ ).

**Table Number 06:- Showing the distribution of the Healthy Volunteers in Group-1 (Intervention Group) and Group-2 (Control Group) according to GSR (Galvanic Skin Response) (Active Basal) in Initial and After three months.**

Groups	GSR (Galvanic Skin Response) (Active Basal) (Mean $\pm$ SD)		Within the group comparison Paired t-test
	Initial	After three months	
<b>Group-1 (Intervention Group) (n=50)</b>	79.480 $\pm$ 28.802	109.284 $\pm$ 36.414	29.704 $\pm$ 22.884 t=6.388 p<0.001
<b>Group-2 (Control Group) (n=50)</b>	73.466 $\pm$ 25.652	97.908 $\pm$ 28.296	-1.630 $\pm$ 1.784 t=1.714 p>0.05
<b>Between the group comparison Unpaired t-test</b>	t=0.768 p>0.05	t=0.692p<0.001	

This table shows that in Group-1 (Intervention Group), the mean GSR (Galvanic Skin Response) (Active Basal) in Initial Healthy Volunteers was 79.480  $\pm$  28.802 while after Practicing TM for 3 Months, the mean GSR (Galvanic Skin Response) (Active Basal) was found to be 109.284  $\pm$  36.414, it was found highly significant (p<0.001).

In Group-2 (Control Group) the mean GSR (Galvanic Skin Response) (Active Basal) in Initial Healthy Volunteers was 73.466  $\pm$  25.652 while without Practicing TM, the mean GSR (Galvanic Skin Response) (Active Basal) was found to be 97.908  $\pm$  28.296, showed not significant (p>0.05).

In Group-1 (Intervention Group) comparison within the group was found Highly significant (p <0.001) and in Group-2 (Control Group), it was found Non significant (p >0.05).

Comparison between the Group-1 (Intervention Group) & Group-2 (Control Group), it was found Highly Significant (p <0.001) after three month which was non significant initially (p >0.05).

## Conclusion

*Sadhaka Pitta* with its location as *Hridaya* can act as an instrumental tool for achieving intelligence, discrimination, self- esteem and enthusiasm. It is the one whose functions are very much similar with the functions of higher centers of the brain carried out by different neurotransmitters.

Recent researches on Transcendental Meditation, has found reduced blood pressure, increased insulin resistance (useful for preventing diabetes), slowing of biological aging and even a 48 percent reduction in the rates of heart attack, stroke and death.

For motivation and other psychosocial behaviours Norepinephrine is a very essential neurotransmitter in the brain. Incidentally, it also acts on heart as a cardiac stimulant. During emergency situations it is released from adrenal medulla and it helps for “fight or flight phenomenon”<sup>11</sup>.

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