



INFLUENCE OF SAMARPAN MEDITATION ON BODY MASS INDEX AND BASAL METABOLIC RATE

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ABSTRACT

The aim of present study was to evaluate the effect of Samarpan Meditation on body mass index (BMI) and basal metabolic rate (BMR). After taking written consent, 53 residential participants (Female 24, Male 29) enrolled in the study were in the age range of 20 to 65 years. We measured their repeated BMI and BMR on 15th, 30th and 45th days of meditation programme. Almost all participants tend to become normal. Study indicates partially-significant improvement in BMI and BMR after performing Samarpan Meditation.

KEYWORDS: Meditation, body mass index (BMI), basal metabolic rate (BMR).

BACKGROUND

Yoga and Meditation are ancient techniques practiced by sages and yogis as a desirable and healthy way of life. The very meaning of meditation is to achieve a balance within the internal and external environment, thereby seeking to attain mental, spiritual and physical well-being. This is made possible through the practice of "Pranayama" or breathing exercises, "Asana" or specific postures, and Meditation.^[1] Some investigators have revealed effect of yoga and meditation on autonomic nervous system. Meditation lead to increased parasympathetic activation that underlies a relaxation response, also elicit enhanced sympathetic activation that underlies a robust arousal response.^[2] It is thought that practicing yoga over a period of time leads to a decrease in respiratory rate, muscular relaxation along with calming of the mind, which might be interpreted at least partly as a decreased state of arousal.^[3,4] Many acute studies have demonstrated that Transcendental Meditation, Zen Meditation, Om Meditation, and Yogic relaxation reduce the resting oxygen consumption rate, respiratory rate, heart rate, and the spontaneous galvanic skin response.^[5-9] These changes are thought to be due to decreased arousal as well as decreased mental and muscular activity. Hence studies are required to evaluate effect of meditation on BMI and BMR.

Body mass index (BMI) indicates body weight (in kg) against height (in meter). High BMI (Obesity) is associated with depression. Stronger in countries with poor socioeconomic conditions, adverse socioeconomic contextual conditions may increase depression associated with obesity.^[10] BMI are grouped in to under-weight, normal weight, over weight and obese with score is less

than 18.5, 18.5 to 24.9, 25 to 30 and above 30 respectively. BMI and BMR was calculated as, BMI = Weight (Kg) / Height (M²); BMR = 9.99 x weight + 6.25 x height - 4.92 x age + 166 x sex (males, 1; females, 0) - 161.^[11] Basal metabolic rate (BMR) was introduced to describe energy expended at rest in contrast to energy expended during physical activity and has been described as the "minimal rate of energy expenditure compatible with life".^[12] It represents the energy required for maintenance, necessary to sustain and maintain the integrity of vital functions and is mainly determined by the amount of lean tissue. Generally, BMR represents 60–80% of total daily energy expenditure (TDEE).^[13,14]

Samarpan Meditation is a type of meditation in which participants need to observe the coming thoughts and emotions throughout the time of meditation. By the time participants may achieve thoughtless state of mind through which one can enter in the state of meditation. In state of meditation body performs required function very efficiently that results to improve the health. The present investigation is an attempt to evaluate the effect of Samarpan Meditation on BMR and BMI.

METHODOLOGY

The present study was conducted at Dandi Samarpan Ashram, Navsari, Gujarat, India. The study was approved by Gujarat University Ethics Committee (GU/IEC/01/2019). Participants were selected on the bases of inclusion and exclusion criteria. **Inclusion criteria:** Age of participant must be ranged 20 to 65 years. They were healthy and practicing meditation from at least 06 months or more. **Exclusion criteria:** Unhealthy individuals and fellow with age below 20 year

or above 65 year were excluded from the study. Total 53 participants (Male 29, Female 24) were enrolled after taken written consent. Participant's data (Age, Gender, Height and Weight) were documented on enrolment and height, weight were documented on interval of 15 days as 0th, 15th, 30th, 45th day of meditation programme to find gradations. Data was collected and analyzed using Student's t-test.

Use of mobile phone, social media, news, etc. was strictly prohibited during the 45 days meditation programme. Hence programme was running under controlled condition in which participants stays surrounded by natural environment. With routine programme includes meditation twice a day. With meditation, controlled condition also helps participants to resolve imbalanced psychological status.

RESULTS

Meditation helps participants to normalize their BMI and BMR, means high weight tend to decrease as well as under-weight tend to increase; this phenomena is called normalization. In table 1 the result shows time-dependent

non-significant normalization in BMI as well as BMR on 45th day as compared with 0th day of meditation.

Table 2 shows effect of Samarpan Meditation on BMI as per WHO classification. In male and female participants, all classified parameter shows non-significant normalization while in male participants with normal weight and overweight shows significant normalization. In male participants with obesity do not show any change during 45 day.

Table 3 shows effect of Samarpan Meditation on BMR as per WHO classification. In male and female participants, all classified parameter shows non-significant normalization while in male participants with underweight shows significant normalization. In male participants with obesity do not show any change during 45 day.

It should be noted that the findings referred to above, particularly with reference to meditation, are different from those found during sleep, to the extent that these are observed in a wakeful relaxed state, and usually in the sitting posture.

Table 1: Age-Wise and Gender-Wise effect of Samarpan Meditation on body mass index and basal metabolic rate.

Days	BMI				BMR			
	0	15	30	45	0	15	30	45
Age-Wise								
20-35	23.38±0.85	23.37±0.84	23.32±0.84	23.28±0.81	1488±36	1487±36	1486±36	1485±36
36-50	24.67±0.89	24.59±0.88	24.57±0.85	24.48±0.83	1355±57	1353±56	1352±55	1350±55
51-65	31.90±1.94	32.04±1.91	31.94±1.89	31.88±1.86	1591±85	1595±84	1592±83	1590±83
Gender-Wise								
Female	25.46±0.95	25.43±0.93	25.38±0.91	25.31±0.89	1233±28	1232±28	1231±27	1229±27
Male	20.63±0.90	19.04±0.91	19.71±0.90	19.78±0.89	1590±25	1590±25	1589±24	1587±24
Total								
Total	24.50±0.64	24.49±0.64	24.44±0.63	24.39±0.61	1428±31	1428±30	1427±30	1425±30

Values are Mean±SEM.

Table 2: Effect of Samarpan Meditation on Body Mass Index.

BMI	WHO Classification	Days			
		0	15	30	45
Male	Under weight	17.07±0.54	17.32±0.49	17.52±0.47	17.66±0.47
	Normal weight	22.24±0.27	21.97±0.30	21.77±0.31	21.63±0.25*
	Over weight	27.08±0.20	26.19±0.19	26.16±0.19	26.10±0.22*
	Obese	32.59±1.05	32.88±0.99	32.89±0.99	32.60±1.02
	Total	20.63±0.90	19.04±0.91	19.71±0.90	19.78±0.89
Female	Normal weight	22.47±0.52	22.51±0.47	22.55±0.45	22.56±0.42
	Over weight	27.92±0.48	27.7±0.55	27.51±0.56	27.26±0.62
	Obese	33.62±0.27	33.54±0.31	33.35±0.33	33.17±0.36
	Total	25.46±0.95	25.43±0.93	25.38±0.91	25.31±0.89

Values are Mean±SEM

Values are significantly different at

* $p < 0.05$ as compared with 0 day

Table 3: Effect of Samarpan Meditation on Basal Metabolic Rate.

BMR	WHO Classification	Days			
		0	15	30	45
Male	Under weight	1392±00	1399±01	1404±02	1408±02*
	Normal weight	1566±24	1564±23	1562±23	1562±23
	Over weight	1669±39	1667±36	1665±35	1659±32
	Obese	1725±55	1732±55	1733±57	1725±55
	Total	1590±25	1590±25	1589±24	1587±24
Female	Normal weight	1166±28	1167±273	1168±26	1168±26
	Over weight	1276±22	1271±23	1266±22	1260±24
	Obese	1428±32	1426±32	1422±32	1418±33
	Total	1233±28	1232±28	1231±27	1229±27

Values are Mean±SEM

Values are significantly different at

* p < 0.05 as compared with 0 day

DISCUSSIONS

The result shows normalization of BMI and BMR by Samarpan Meditation. This might be due to change in sympatho-vagal tone. These changes might be due to change in functioning of autonomic nervous system. In previous study we observed that Samarpan Meditation shows significant reduction in pulse rate and increased Peripheral capillary oxygen saturation with the help of meditation.^[15] Heartfulness processes of cleaning and meditation had a positive effect on sympathovagal balance.^[16] Meditation play key role for mental stability as well as awaken of positiveness in ourself.^[17] Yoga and meditation benefit participants by reducing dyspnea, fatigue and pulse rate and improving functional performance and peripheral capillary SpO₂%.^[18] Yoga can now be included as an adjunct to conventional therapy for pulmonary rehabilitation programs for chronic obstructive pulmonary disease (COPD) patients.^[18] Yoga and Meditation has shown promise as a useful lifestyle intervention. A different research strongly indicates the positive results of yoga and meditation over the diseases.

CONCLUSION

The results revealed partially-significant improvement in BMI and BMR with respect to time after performing Samarpan Meditation especially in male participants. Samarpan Meditation helps participants to normalize their BMI and BMR.

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DISCLOSURE

The authors declared no conflict of interest.

REFERENCES

1. Taimni LK: The Science of Yoga. Madras, The Theosophical Publishing House, 1961.
2. Amihai, I. and Kozhevnikov, M. (2015) The influence of Buddhist meditation traditions on the

autonomic system and attention. *Biomed. Res. Int.*, 2015; 731579. doi:10.1155/2015/731579. Epub 2015 Jun 4.

3. Maharishi Mahesh Yogi: The science of being and art of living. In (Rev. ed.) Los Angeles, International SRM Publications, 1969.
4. Nagendra HR, Nagarathna R: New perspectives in stress management. Bangalore Vivekananda Kendra Prakashana, 1977.
5. Hoffman JW, Benson H, Arns PA, Stainbrook GL, Landsberg GL, Young JB, Gill A: Reduced sympathetic nervous system responsivity associated with the relaxation response. *Science*, 1982; 215(4529): 190-2.
6. Wallace RK, Benson H, Wilson AF: A wakeful hypometabolic physiological state. *Am J Physiol*, 1971; 221: 795-99.
7. Wallace RK, Benson H: The physiology of meditation. In *Altered states of awareness* Edited by: Orme-Johnson DW and John T Farrow. Readings from Scientific American, San Francisco, WH. Freeman & Co, 1972: 86-91.
8. Telles S, Nagarathna R, Nagendra HR: Breathing through a particular nostril can alter metabolic and autonomic activities. *Indian J Physiol Pharmacol*, 1994; 38: 133-37.
9. Telles S, Nagarathna R, Nagendra HR: Autonomic changes during OM Meditation. *Indian J Physiol and Pharmacol*, 1995; 39: 418-20.
10. Alvarez-Galvez J, Gomez-Baya D. Socioeconomic Context as a Moderator in the Relationship between Body Mass Index and Depression in Europe. *Appl Psychol Health Well Being.*, 2017 Nov; 9(3): 410-428. doi: 10.1111/aphw.12104.
11. Mifflin MD1, St Jeor ST, Hill LA, Scott BJ, Daugherty SA, Koh YO. A new predictive equation for resting energy expenditure in healthy individuals. *Am J Clin Nutr.*, 1990 Feb; 51(2): 241-7.
12. Mitchell HH. *Comparative Nutrition of Man and Domestic Animals*, vol. 1. New York: Academic, 1962; 3-90.
13. Black AE, Coward WA, Cole TJ, Prentice AM. Human energy expenditure in affluent societies: an

- analysis of 574 doubly-labelled water measurements. *Eur J Clin Nutr.*, 1996; 50: 72–92.
14. Adriaens MP, Schoffelen PF, Westerterp KR. Intra-individual variation of basal metabolic rate and the influence of daily habitual physical activity before testing. *Br J Nutr.*, 2003; 90: 419–23.
 15. Raval, R, J., Shah, H., and Verma R., J.. Short-term effects of Samarpan Meditation on cardio-respiratory responses. *Ejpmr*, 2019; 6(5): 565-566.
 16. Aryaa, N.K., Singha, K., Malika, A. and Mehrotra, R. (2018) Effect of Heartfulness cleaning and meditation on heart rate variability. *Indian Heart J*, 70, Supplement 3: S50-S55.
 17. Orme-Johnson, D.W. (1973) Autonomic stability and Transcendental Meditation. *Psychosom. Med.*, 35(4): 341-349.
 18. Rajashree, R.*, Hankey, A., Nagendra, H.R. and Mohanty, S. (2016) Yoga-based pulmonary rehabilitation for the management of dyspnea in coal miners with chronic obstructive pulmonary disease: A randomized controlled trial. *J. Ayurveda Integrative M.*, 7: 158e-166e.