

**RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES,
KARNATAKA, BANGALORE.**

ANNEXURE - II

SYNOPSIS FOR REGISTRATION OF SUBJECTS FOR DISSERTATION

1	NAME OF THE CANDIDATE AND ADDRESS	DR.MAHANTHA M POSTGRADUATE STUDENT, DEPT OF PHYSIOLOGY, SHIVAMOGGA INSTITUTE OF MEDICAL SCIENCES, SHIMOGA- 577201.
2	NAME OF THE INSTITUTION	SHIVAMOGGA INSTITUTE OF MEDICAL SCIENCES, SHIMOGA- 577201.
3	COURSE OF STUDY AND SUBJECT	MD COURSE IN PHYSIOLOGY
4	DATE OF ADMISSION TO COURSE	30TH JUNE 2011
5	TITLE OF THE TOPIC	“ EFFECT OF YOGA ON AUTONOMIC NERVOUS SYSTEM IN NORMAL HEALTHY SUBJECTS IN SHIMOGA- AN OBSERVATIONAL, CROSS SECTIONAL STUDY.

BRIEF RESUME OF INTENDED WORK:**6.1. NEED FOR THE STUDY:**

As age advances the physiological parameters undergo many changes.¹ Some deleterious changes lead to decline in the quality of life in geriatric people.¹ Aging has a profound effect on the interacting neural and endocrine mechanisms that regulate heart rate. ¹The parasympathetic and sympathetic influences get attenuated and this reflects on cardiovascular system.

YOGA:

- It is derived from its Sanskrit origin "yuj" means "to bind" or "to join" or "to apply".²
- It is philosophy and practice that connects the body and mind to energise and balance the whole person.³
- It is practiced all over the world. It produces physiological changes and have sound scientific basis.²
- It when adopted as a way of life is claimed to bestow the practitioner with ideal physical, mental, intellectual and spiritual health.³

Psychosocial stresses of our modern life precipitates various cardiovascular and other disorders by distorting basic neuroendocrine mechanism.² The psychosocial stresses activate limbic system and hypothalamus which controls the autonomic nervous system.² Autonomic Nervous System (ANS) is part of nervous system that is responsible for homeostasis.⁴ There are 2 major subdivisions in ANS namely Sympathetic and Parasympathetic.

The harmful effects of these stresses on bodily systems can be reduced effectively by enhancing the adaptive mechanisms of our body that can restore the equilibrium.² By giving rest to the mind and body, yoga can shake off many disorders of psychosocial origin by promoting release of endorphins, natural pain killers and mood elevators from brain.²

The present study however is designed to ascertain whether yoga practice after 6 months has any effect on autonomic nervous system.

6.2 REVIEW OF LITERATURE:

A study conducted on the effect of yoga on cardiovascular system in 100 subjects above forty years(50 yoga practitioners and 50 non yoga practitioners) showed a significant reduction in the pulse rate and also valsalva ratio significantly higher in yoga practitioners than in non yoga practitioners.¹

In a study conducted on the effect of yoga on heart rate and blood pressure and its clinical significance in healthy volunteers above 40 years showed significant reduction in heart rate in subjects practicing yoga.²

A Randomised controlled trial by Cheema BS,Marshall P W,Chang D,Colagiuri B,Machliss B on the effect of office worksite based yoga programme on heart rate variability; showed improvement in health status and thereby reduced the risk of cardiovascular metabolic diseases.⁵

A Case Control study conducted on the effect of Hatha yoga and Omkar meditation on cardiorespiratory performance, psychological profile and melatonin secretion suggests that yogic practises can be used as psychophysiologic stimuli to increase endogenous secretion of melatonin which in turn might be responsible for improved sense of wellbeing.³

A study conducted on HIV infected adults with cardiovascular risk factors reported that yoga intervention reduces blood pressure.⁶

Telles S,Singh N,Balakrishna A performed a study on the effect of high frequency yoga breathing (HFYB) and breath awareness showed reduced parasympathetic modulation during and after HFYB and increased sympathetic modulation with reduced parasympathetic modulation during and after breath awareness.⁷

A randomized controlled study done by Telles S,Singh N,Joshi M,Balakrishna A on Bihar flood survivors who practiced yoga showed reduction in post traumatic stress symptoms like sadness, anxiety and heart rate.⁸

Hence the present study is designed to evaluate the effect of yoga on autonomic nervous system.

6.3 AIMS & OBJECTIVES OF STUDY

1. To evaluate the effects of yoga on autonomic nervous system in yogic practitioners above the age group of 35 years.
2. To compare the results of autonomic function tests in yogic practitioners with that of the non yogic practitioners in the same age group.

7. MATERIALS AND METHODS:

7.1. SOURCE OF DATA:

Type of study : An Observational, Cross sectional study

Period of study: One Year

Site of study: Shivamogga Institute Of Medical Sciences, Shimoga

Inclusion criteria:

GROUP1: Yoga practitioners attending yoga centers of either sex above the age group of 35 years in Shimoga.

GROUP2: Non yoga practitioners of either sex above the age group of 35 years having similar exclusion criteria as group one will be selected from non teaching staff of SIMS Shimoga.

Exclusion criteria:

1. Subjects having diabetes mellitus, hypertension and
2. Subjects having the habit of smoking, chewing tobacco, alcohol consumption and any form of substance abuse.
3. Subjects having cardiac and respiratory disorders.
4. Subjects performing any other type of physical exercises.

Minimum sample size is 35 in each group (total 70) calculated by taking Mean (for study group 131.72 and for control 138.20) and Standard deviation (for study group 7.354 and for control 11.61) of the systolic blood pressure from the previous study with power of 80% and significance level of 0.05.³

The subjects will be selected by simple random sampling method.

7.2. METHOD OF COLLECTION OF DATA:

Two groups each containing 50 subjects aged above 35 years will be selected for the study.

Group 1-Yoga practitioners who are practicing yoga for atleast 1 hour everyday from 6 months and still continuing.

Group 2-Non yoga practitioners in SIMS Shimoga

All the subjects will be made to undergo the following test after taking the informed consent.

Tests for Sympathetic ANS -Blood pressure response

- a) Hand grip test (isometric exercise)
- b) Cold pressor response.

The blood pressure will be measured using sphygmomanometer.

Tests for Parasympathetic ANS-Heart rate variability

- a) Standing to lying ratio
- b) Valsalva ratio

Heart rate variability will be measured using HRV software.

Note: All the tests will be carried out on the subjects & controls in the relaxed state and privacy will be of utmost importance.

Statistical analysis

Statistical analysis will be done using the unpaired 't' test

7.3 Does the study require any investigation or interventions to be conducted on patients or other human or animals? If so, please describe briefly.

YES, The Blood pressure of the subjects will be measured using sphygmomanometer and heart rate variability will be measured using HRV software

7.4 Has the ethical clearance obtained from your institution?

YES, DOCUMENT ENCLOSED.

8. LIST OF REFERENCES:

1. Bharshankar JR, Bharshankar RN, Deshpande VN, Kaore SB, Gosavi GB. Effect of yoga on cardiovascular system in subjects above 40 years. *Ind. J Physiol Pharmacol* 2003; 47(2):202-206.
2. Devasena I, Narhare P. Effect of yoga on heart rate and blood pressure and its clinical significance. *Int J Biol Med Res* 2011; 2(3):750-753.
3. Harinath K, Malhotra AS, Pal K, Prasad R, Rajeshkumar, Kain TC et al. Effects of Hatha Yoga and Omkar Meditation on Cardiorespiratory Performance, Psychologic Profile and Melatonin Secretion. *Journal of alternative and complementary medicine* 2004;10(2): 261-268.
4. Barrett KE, Barman SM, Boitano S, Brooks HL, editors. *The Autonomic Nervous System. Ganong's Review of Medical Physiology*. Tata : McGraw-Hill, 2010:261-272
5. Cheema BS, Marshall PW, Chang D, Colagiuri B, Machliss B. Effect of an office worksite-based yoga program on heart rate variability-A randomized controlled trial. *BMC Public Health* 2011;11:578.
6. Cade T, Reeds DN, Mondy KE, Overton T, Grassino J, Tucker S et al. Yoga lifestyle intervention reduces blood pressure in HIV infected adults with cardiovascular disease risk factors. *HIV Med.* 2010 July 1;11(6):379-388.
7. Telles S, Singh N, Balkrishna A. Heart rate variability changes during high frequency yoga breathing and breath awareness. *Biopsychosocial Medicine* 2011;5:4.
8. Telles S, Singh N, Joshi M, Balkrishna A. Post traumatic stress symptoms and heart rate variability in Bihar flood survivors following yoga: A randomized controlled study. *BMC Psychiatry* 2010;10:18.

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LIST OF REFERENCES:

6. Devasena I, Narhare P. Effect of yoga on heart rate and blood pressure and its clinical significance. *Int J Biol Med Res* 2011; 2(3):750-753.
7. Barrett KE, Barman SM, Boitano S, Brooks HL, editors. *The Autonomic Nervous System. Ganong's Review of Medical Physiology*. Tata :McGraw-Hill, 2010:261-272
3. Bharshankar JR, Bharshankar RN, Deshpande VN, Kaore SB, Gosavi GB. Effect of yoga on cardiovascular system in subjects above 40 years. *Ind. J Physiol Pharmacol* 2003; 47(2):202-206.
4. Cheema BS, Marshall PW, Chang D, Colagiuri B, Machliss B. Effect of an office worksite-based yoga program on heart rate variability-A randomized controlled trial. *BMC Public Health* 2011; 11:578.
5. Harinath K, Malhotra AS, Pal K, Prasad R, Rajeshkumar, Kain TC et al. Effects of Hatha Yoga and Omkar Meditation on Cardiorespiratory Profile and Melatonin Secretion. *Journal of alternative*

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6. Cade T, Reeds DN, Mondy KE, Overton T, Grassino J, Tucker S et al. Yoga lifestyle intervention reduces blood pressure in HIV infected adults with cardiovascular disease risk factors . HIV Med. 2010 July 1;11(6):379-388.
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8. Telles S, Singh N, Joshi M, Balkrishna A. Post traumatic stress symptoms and heart rate variability in Bihar flood survivors following yoga:A randomized controlled study. BMC Psychiatry 2010;10:18.
9. Niranjana M, Bhagyalakshmi k, Ganaraja B, Adhikari P, Bhat R. Effects of yoga and supervised integrated exercise on heart rate variability and blood pressure in hypertensive patients. Journal of chinese clinical medicine 2009 march; 4(3).

9	SIGNATURE OF CANDIDATE:	
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