

MEASUREMENTS IN HEALTH AND PATHOLOGICAL CONDITIONS USING ACUGRAPH

Thesis submitted by

KUNTAL GHOSH

Towards the partial fulfillment of

DOCTOR OF PHILOSOPHY (YOGA)

JANUARY 2017



SWAMI VIVEKANANDA YOGA ANUSANDHANA SAMSTHANA (S-VYASA)

(Declared as Deemed-to-be University under Section 3 of the UGC Act, 1956)

19, Ekanath Bhavan, Gavipuram Circle, K.G. Nagar,

Bangalore -560 019, India

Website: www.svyasa.org

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CONDITIONS USING ACUGRAPH**

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By

KUNTAL GHOSH

UNDER THE GUIDANCE OF

T.M. SRINIVASAN, Ph.D., D.Sc.

ALEX HANKEY, Ph.D.

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DECLARATION

I, hereby declare that this study was conducted by me at Swami Vivekananda Yoga Anusandhana Samsthana (S-VYASA), Bengaluru, under the guidance of Dr. T. M. Srinivasan and Dr. Alex Hankey, Professor, Division of Yoga and Physical Sciences, S-VYASA University Bengaluru.

I also declare that the experimental content of the subject matter of my thesis entitled **“MEASUREMENTS IN HEALTH AND PATHOLOGICAL CONDITIONS USING ACUGRAPH”** has not previously formed the basis of the award of any degree, diploma, associate-ship, fellowship or similar titles.

Date:

KUNTAL GHOSH

Place: Bengaluru

(Candidate)

CERTIFICATE

This is to certify that Kuntal Ghosh who was given PhD. registration with effect from January 2012 by Swami Vivekananda Yoga Anusandhana Samsthana, Deemed University under the Division of Yoga and Physical Sciences has successfully completed the required training in acquiring the relevant background knowledge and has completed the required course of research for not less than two years to submit this thesis entitled 'MEASUREMENTS IN HEALTH AND PATHOLOGICAL CONDITIONS USING ACUGRAPH' as per the regulations of the University. We also declare that the subject matter of the thesis has not previously formed the basis of the award of any degree, diploma, associate-ship, fellowship or similar titles.

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A C K N O W L E D G E M E N T

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Date:

Place: Bengaluru

KUNTAL GHOSH

**STANDARD INTERNATIONAL TRANSLITERATION CODE USED TO
TRANSLITERATE SANSKRIT WORDS**

| | | | | | | | | |
|----|---|-----|---|---|-----|-----|---|-----|
| अ | = | a | च | = | ca | म | = | ma |
| आ | = | ā | छ | = | cha | य | = | ya |
| इ | = | i | ज | = | ja | र | = | ra |
| ई | = | ī | झ | = | jha | ल | = | la |
| उ | = | u | ञ | = | ña | व | = | va |
| ऊ | = | ū | ट | = | ṭa | श | = | śa |
| ऋ | = | ṛ | ठ | = | ṭha | ष | = | ṣa |
| ॠ | = | ṝ | ड | = | ḍa | स | = | sa |
| ए | = | e | ढ | = | ḍha | ह | = | ha |
| ऐ | = | ai | ण | = | ṇa | क्ष | = | kṣa |
| ओ | = | o | त | = | ta | त्र | = | tra |
| औ | = | au | थ | = | tha | ज्ञ | = | jña |
| अं | = | am | द | = | da | | | |
| अः | = | aḥ | ध | = | dha | | | |
| क | = | ka | न | = | na | | | |
| ख | = | kha | प | = | pa | | | |
| ग | = | ga | फ | = | pha | | | |
| घ | = | gha | ब | = | ba | | | |
| ङ | = | ṅa | भ | = | bha | | | |

ABSTRACT

INTRODUCTION

Ancient systems of wisdom speak about a subtle energy system, saying that it pervades the human body, constituting a regulatory system with important implications for health. They agree that it carries a ‘subtle energy’ known as Qi in China and Prana in India. Both systems maintain that its proper regulation is the key to health. Chinese doctors assess Qi at acupoints using finger tips to assess levels and qualities of Qi. Modern electroacupuncture tools assess conductances at acupoints, claiming that this measures levels of Qi energy. Swami Vivekananda Yoga Anusandhana Samsthana (S-VYASA) has characterized pathologies and assessed Yoga programs by measuring changes in such values. This thesis reports on further studies of both these kinds with many original results.

LITERARY AND SCIENTIFIC REVIEW

The review of ancient literature constructed the energy model of subtle energy systems of the human body based on TCM and Yoga, with special reference to the *Upaniṣad*, *Hatha Yoga* texts and modern text, Acuyoga. Both India and China are in basic agreement regarding the existence of the subtle energy system, its principal features and its importance, and its structure as major energy source (Dantians / *Chakras*), distribution channels (Meridians, *Nāḍī*), and access points (Acupuncture Points, *Marmas*). The scientific review considered all fundamental studies (18 up to 2007) in terms of the nature of the measurement instruments, the existence of acupoints, the existence of meridians, and interference from other sources.

AIMS

1. To understand Yoga's effects on the subtle energy system in health and disease
2. To understand how improper regulation of prana / Qi relates to ill health
3. To measure changes in meridian energy flows with pathology, and organ dysfunction

OBJECTIVES

- To investigate effects of lotus posture (Padmasana) on Qi energy
- To observe variations in Qi / prana in groups with pathology
- To observe energy differences between anxiety, depression, asthma and health
- To changes in regulation of subtle energy flow due to yogic practices in those with depression

METHODS

SUBJECTS

There were four studies undertaken here.

Study 1: Fifty two males aged 20-30 years

Study 2: Twenty one anxiety, 26 depression and 44 healthy with age range 20-50 years

Study 3: Thirteen patients of depression with age range 20-50 years

Study 4: Fifty asthmatic and 50 healthy subjects with age range 20-50 years

STUDY DESIGNS

Study 1: Two group control study: one sitting in Lotus Posture, and the other in a chair, were measured pre-post 10, 20 and 30 minutes of practice at the same times on successive days.

Study 2: Cross sectional study: Patients diagnosed with Anxiety (21), Depression (26) were compared to a group of 44 healthy subjects. All were measured between 9.30 am to 12 noon.

Study 3: A single group pre-post study. 13 depression patients from Study 2 who were also assessed post 7 days treatment in residence at S-VYASA's Arogyadhama Health Home.

Study 4: Asthma Cross Sectional study: Compared 50 asthma patients from various clinics in Bengaluru and West Bengal, with 50 healthy subjects from the same locations.

ASSESSMENT TOOLS

Acugraph: All four studies used Acugraph4 as the primary assessment tool to measure conductances at Jing-Well acupuncture points on all meridians. Acugraph4 is a digital meridian measuring system, used in many previous studies at this University.

Other Measurement Tools: For Study 4 with asthma patients, Peak Expiratory Flow Rate and the Mini Asthma Quality of Life Questionnaire were also employed.

DATA EXTRACTION AND ANALYSIS

Data was stored on Excel, and analyzed using SPSS-19 and GraphPad QuickCalcs software.

The following statistical tests were employed – t tests for changes in mean, F tests for SDs.

Study 1: RMANOVA and various t tests. Contingency Tables used for Fisher's Exact Test.

Studies 2 and 4: Independent t tests, and F tests; Study 3: Paired t test and F tests.

RESULTS

The results of the four studies can be summarized as follows:

a) Study 1: Contrasting results were evident for the two postures. Contrary to expectations, sitting in a chair reduced Acupuncture Point (AP) meridian energy values, and did so for all time periods. Sitting in Lotus Posture showed little difference after 10 minutes, but increasing with time for 20 and 30 minutes. Results were highly significant and robust for the groups as a whole, but also attained significance for several meridians individually, particularly the lower limb meridians.

b) Study 2: The anxiety group showed highest meridian energy values while the depression groups were lowest for all but two meridians for which meridian energy levels were close. The healthy group meridians were between the two except for the two meridians mentioned.

c) Study 3: Pre-post data were compared for 13 of the 26 depression patients in Study 2 who reported for post testing. The most significant results were reductions in variances of the block of upper meridians, and the block of lower meridians, and all meridians taken together.

Means of individual meridian energy values changed in different directions for sets of upper and lower meridians, lower meridians decreasing from a mean of 50.01 to 46.09, while upper meridians increased from 43.99 to 45.65. Restoring upper and lower meridians to more balance is beneficial, and reduces overall variance for the group as a whole.

d) Study 4: Patient demographic data matched for ages and genders. Asthma patients had significantly lower values of meridian energy flow on three meridians: the hypothesized lung left and lung right meridians, and also the bladder, and gall bladder meridians on both sides.

DISCUSSION

Study 1 results agreed with predictions by various texts, the ancient *Hatha Yoga Pradipeeka*, and the modern text, Acuyoga, linking Yoga and acupuncture meridians. Those adopting *Padmasana*, Lotus Posture, showed gradually increasing conductance values at Jing-Well acupuncture points, particularly after 20 and 30 minutes in the posture, showing that adopting this posture has an energizing effect on the subtle energy system, and could therefore be beneficial for meditation. In contrast, the observed decreases in meridian energy flows for those sitting in the chair were less significant, not hypothesized, and thus an unexpected new observation. Further experiments to confirm this result would be worthwhile.

Study 2 characterizing anxiety and depression gave expected results. Particularly satisfying were the observations of higher variances for these two groups of very different patients compared with the low variances for the healthy group. The implications of increased variance are very subtle. When a variable is well controlled, its measured values for a group will show a value of variance which will tend to increase as variable values spread over a wider range for members of a group with a pathology. Decrease in quality of regulation tends to lead to pathology on the one hand, and increased variances on the other. The values of variances observed in Study 2 tended to confirm this principle.

Study 3 results are unusual because upper meridians normally have higher levels of energy than lower meridians. Here the observation was that this was reversed: lower meridians had higher values of meridian energy flows than upper meridians. Further studies are needed to confirm the reliability and robustness of this unexpected result. At the same time, reduction in this imbalance observed after 7 days of Yoga practice confirms that the action of Yoga treatments is to restore the pranic energy system to balance, in agreement with the general philosophy of Yoga medicine practiced at S-VYASA.

Study 4 produced valuable results in both observed differences in meridian energy flow values and variances. Expectations of reduced Lung Left and Right meridian energy flow values for the asthma group were fulfilled, as were the group's higher variances. The study's additional results of reductions in energy in the secondary meridians, bladder and gall bladder could be explained by emotions relating to asthma blocking those meridians: fear reduces energy flow in the bladder meridian, while frustration blocks that in the gall bladder meridian. The first result, indicating the influence of the disease on the health of bronchi etc., was expected; the last two explained by the emotional impact of having the disease, were not. These explanations require more detailed investigation: secondary psychological tests of emotions should be compared with differences noted in meridian measurements by assessing correlations between individual performances on both tests.

CONCLUSION

The four Acugraph studies gave consistent results, confirming hypotheses for Acugraph use at S-VYASA. Disease conditions can be characterized and the dynamics of Yoga treatments investigated. Studies reported in this thesis characterize 3 more disease conditions confirming in each case that pathology groups show higher group variances. The latter observation was used to support the new law of health, that poor health and pathology result from poor regulation, and that Yoga practices can be used to increase meridian energies, bring balance

to meridian imbalances and, particularly, to improve quality of regulation, and therefore quality of health, by improving regulation of various parameters.

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