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The right decision at the right time in the right place and for a right undertaking can make a lot of difference in deciding the destiny of an individual. From this angle, I am fortunate to associate with VYOMA which has given me the direction in life undertaking through this post-graduation in Yogic sciences. I am thankful to God Almighty for having given me a situation like this and given me strength to complete my project. The present study was designed and carried out under the guidance of Dr.H.R.Nagendra (VC .VYOMA) and Dr. R. Nagarathna (Dean of life Sciences, VYOMA). The contributions of the other staff are gratefully acknowledged.

Shruddha Kamat.

DECLARATION

I hereby declare that the work presented in this dissertation is done by me under the guidance of Dr R Nagarathna & Dr H R Nagendra. I also declare that this work entitled

Part-I

Correlation of nāḍīs in ancient Indian scriptures and meridians in ancient Chinese medicine.

Part- II

Effect of yoga on the visual memory in school children.

Has not previously formed the basis of any degree, diploma, membership or similar titles.

Place: Prashanti Kutiram
(32 kms from Bangalore).

Shruddha. S. Kamat

January 10, 2004.

CERTIFICATE

This is to certify that Kumari SHRUDDHA.S.KAMAT is submitting this Literature Research CORRELATION OF NĀḌIS IN ANCIENT INDIAN SCRIPTURES AND MERIDIANS IN ANCIENT CHINESE MEDICINE and Experimental Research EFFECT OF YOGA ON THE VISUAL MEMORY IN SCHOOL CHILDREN in partial fulfillment of the requirements for the Master of Yogic Sciences registered with effect from Jan 12th 200'3 to Jan 12th 200'4 by the Vivekananda Yoga Mahavidyapeetham of Swami Vivekananda Yoga Anusandhana Samsthana under the division of Life sciences and is a record of the work carried out by him in this institute.

12 January 2004.

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ABSTRACT

PART-I

Correlation of nāḍīs in ancient Indian scriptures and meridians in ancient Chinese medicine.

The present study is done to have a comprehensive view of the concepts of nāḍīs and Meridians in the ancient Indian scriptures and the ancient Chinese medicine respectively. The word nāḍī comes from the Saṁskṛta root nād, meaning movement. In the Ṛgvedā, it means stream. In yoga, nāḍīs are the channels of Kuṇḍalinī energy. Ayurveda mentions 72,000 different nāḍīs. Tantra yoga identifies 14 principle nāḍīs of which the following three namely iḍā, Pingalā, and the suśumnā nāḍī are important. . Chinese medicine proposes that there are currents of energy in the body, called meridians that are modulated by the effects of yin and yang, and influenced by environmental and emotional effects. There were correlations found between nāḍīs and meridians in regard to various aspects. Energy as Qi and prānā is found in writing of ancient medical guide such as "Yellow emperor's Guide" in Chinese, and Ayurvedic system in India. The Chinese mode is more synthetic, it tends to see how different phenomena are inter-connected, in Chinese thought, man has never been separated from nature, he is an inseparable part of his environment, the idea is conveyed that human beings are an integral part of nature, but only a small part. The goal is not to dominate nature, but to to live in harmony with it. Hence, a relation is found between ancient Indian scriptures and ancient Chinese medicine and hence an overall view of most of the concepts of nāḍīs and meridians are outlined in the study. Further research may be done on the details of the diagnosis of disease based on nāḍīs and Meridians.

PART-II

Effect of yoga on the visual memory in school children.

The present study assessed the visual memory in school children following general yoga practices. Children (n= 297 whose ages ranged from 10-12 years) were randomly assigned 3 groups. Each group practiced a specific yoga module (Physical stamina = Dynamic practices; Creativity = artwork, crafts, skits; IQ = Special quiz, debate). These techniques were practiced and visual memory was assessed initially and after 9 days. There were 277 children who were got after dropouts and checking for abnormal data and that were taken for assessment. All 3 groups showed significant increase in visual memory ($p<0.001$, paired sample t- test) but physical stamina showed a higher increase (27.73 % change) than other two groups. The left or right dominant yoga modules have influenced the visual memory more than physical and balancing effects of yoga modules.

CONTENTS

PART I LITERARY RESEARCH
CORRELATION OF NĀḌIS IN ANCIENT INDIAN SCRIPTURES AND MERIDIANS IN ANCIENT CHINESE MEDICINE

PART-II
EFFECT OF YOGA ON THE VISUAL MEMORY IN SCHOOL CHILDREN

CHAPTER 1

INTRODUCTION

Beneath our dense physical anatomy lies a more subtle structure complete with subtle organs and nourished by subtle energies. Chi / Ki / Qi / prānā are the basic circulating energy of life no matter which eastern culture is its form. Prānā is the universal life force known through time immemorial as Chi, manna, and orgone. Prānā sustains all life forms. The nāḍīs are the pathways of vital energy in Āyurvedic medicine. They compose the structure of the subtle body. The practice of Haṭha Yoga balances the flow of prānā through nāḍīs. They are called the iḍā, Pingalā, and Suṣumnā. The idea of nāḍīs first appears in the earliest Upaniṣads (7^{th} – 8^{th} century B.C). The heart for example was said to be the centre of the 72 lakh nāḍīs. The concept was developed in the later Upaniṣads-from 2^{nd} century B.C to the 2^{nd} century C. E and later and the nascent yoga and Tantric schools. The Kṣurikā-Upaniṣat and later Haṭhayogapradipika mention the 72,000 nāḍīs, especially the iḍā, Pingalā and Suṣumnā channels (10). The Yoga Upaniṣads as well as the Śiva saṁhitā are full of traditional Haṭha yoga practices.

This study was planned to review the earlier studies done, also to fathom the field of nāḍīs and to find whether there is correlation between nāḍīs and meridians. This would however help to cater to the needs of the medical community.

CHAPTER 2

CONCEPT OF NĀḌĪS IN ANCIENT INDIAN SCRIPTURES

The word nāḍi comes from the saṁskṛt root 'nād' meaning 'movement'. In the Ṛg- vedā the most ancient Hindu scripture, the word nāḍī is used to mean 'stream'. The concept of nāḍīs is based on the understanding that they are channels; any channel through which anything flows is a nāḍī. The Śiva purāṇā clearly states that nāḍīs are not only nerves, but all kinds of channels, this is the reason that saṁskṛt terms for nerve and snayu is not used for nāḍīs in the texts of ancient Indian medicine, Āyurveda (10). There are two types of nāḍīs:

1) Subtle, non-material, invisible channels of subtle energy called yoga nāḍīs. The subtle nāḍīs are again of two kinds: the channels of manas or the mind (manovāhini or manovāhināḍīs), and the channels of citta, the feeling self or being (cittavāhi- nāḍīs)
2) Gross channels of subtle energy, visible as cords, vessels, or tubes. Included in this concept of nāḍīs are acupuncture meridians, nerves, muscles and the streams of the cardiovascular and lymphatic system such as the arteries and veins.

Prānic energy is carried by the nāḍīs that belong to each type, subtler and gross. The nāḍīs that carry prānic energy are called prānāvahināḍīs work and influence the functions of central, autonomic–(sympathetic and parasympathetic) nervous system. To some degree these nerves and sense organs operated by them, are influenced by the yoga nāḍīs such as iḍā and Pingalā which are linked with the cakras. The cakras work with nāḍīs of both kinds, gross and subtle, but Kuṇḍalinī only works with the most subtle of the nāḍī suṣumnā. When the kuṇḍalinī is awakened and the prānā is absorbed

in kuṇḍalinī, the other nāḍīs stop functioning and the working of cakra is temporarily suspended until the kuṇḍalinī becomes dominant again.

Āyurveda mentions 72,000 different nāḍīs. Ones pulse is also called nāḍī and medical diagnosis often commences by observing the throbbing of the nāḍī in the carotid artery. In the Yoga śikhopaniṣad it is clearly stated that there are hundred and one nāḍis that are connected in the heart center or anāhata cakrā. It continues "the iḍā nāḍī is situated on the left side and the Pingalā nāḍī on the right side, between these two is a main nāḍī the suṣumnā" .

Within the suṣumnā is concealed the Brahma nāḍī, which is pure in character like the supreme consciousness (Brahman). The Brahma nāḍī is the void that connects to the Brahma randra, a void between the two hemispheres of the brain, located in the uppermost cakra, the Sahasrāra, the thousand petalled lotus. One who knows this is the knower of all.

Aspirants who are able to master the nāḍīs can attain the highest states of consciousness and gain the powers known as Siddhis (perfections), giving them full command over the elements and gunas. The tantric treatise Śiva Saṁhitā identifies 14 principle nāḍīs. Of these, 3 main nāḍīs; iḍā, Pingalā, suṣumnā are considered the most important for aspirants of yoga and tantric practitioners. They are identified with the three main rivers of India: iḍā is also known as Gangā, Pingalā as Yamunā, and suṣumnā as Sarasvati. All three of these nāḍīs originate in the same region, the kanda, the fibrous material below the mūlādhāra cakra around which the nerves interweave. This junction of these three holy streams is called yukta triveṇi (yukta = combined, triveṇi = three streams). It takes the form of a downwards pointing bow or a triangle in the center of which the coiled. The left side of the triangle is the iḍā nāḍi, the right side Pingalā nāḍī and the top suṣumnā nāḍī. The three nāḍīs proceed upward from the mūlādhāra cakra,

with the iḍā and Pingalā alternating from the right to left sides of the suṣumnā at each succeeding cakra until they reach the ājñā cakra, the point between the eyebrows, where they meet again, forming a gentle knot. The iḍā and Pingalā nāḍīs terminate in the left and right nostrils respectively and suṣumnā continues upwards to the Sahasrāra cakra at the crown of the head. The meeting of these three streams in the ājñācakra is called mukta triveṇi. A yogi who has passed through the viśuddhi cakra at the throat to the ājñā cakra transcends the five elements and becomes freed (mukta) from the bondage of time-bound consciousness. That is why this meeting of the three nāḍis is called mukta triveṇi. The scriptures say,

"*Triveṇi yoga saḥ proktā, tantra snānam mahā phalam*"

This union is called triveṇi and one who bathes in this triveṇi achieves great merit.

According to Lalitā Sahasranāma (a tantric text devoted to the divine mother), the suṣumnā is not one nāḍī but made up of three principle yoga nāḍīs, which are the subtlest of the subtle. The outermost part of suṣumnā is the fiery-red suṣumnā, which is beyond the limits of time. Inside it, is the lustrous vajra nāḍī also known as vajrini, which is of the nature of sun and of poison. Inside the vajra nāḍī is the pale citra nāḍī also known as citrini which is of the nature of moon and nectar dropping. Inside the citrini nāḍi, is a void called the Brahma nāḍi which connects to the Brahma randra. The suṣumnā and the void are both of the nature of inertia (tamas), whereas the vajrini is active (rajas) and the citrini is pure illumination (sattva). Citrini radiates life energy; it is extremely subtle, pure intelligence and is revealed through yoga to yogis (according to the kshaṭa cakra nirūpana verse 2) (10).

The citrini nāḍīs is responsible for dreams, hallucinations and visions and is automatically active in painters, poets and visionaries (in Saṁskṛta citra means a hand made picture or a painting). The terminating point of citra nāḍī is called the Brahma

dwara, the door of Brahman through which kuṇḍalinī ascends to her final abode in the soma cakra within the Sahasrāra cakra. The suṣumnā generally remains dormant when the other nāḍis flow strongly and is activated when the flow through the other nāḍis is restrained. The oscillating force of prānā is responsible for breathing, causing most breath taken with any given hour to be drawn in through only one nostril, thus activating either the iḍā or the Pingalā nāḍīs and through them, the other nāḍīs. The suṣumnā nāḍī is activated only when the breath comes through both nostrils simultaneously, which typically happens only ten breaths per hour, at the change over from one nostril to the other. Through the practice of prāṇāyāma, the Suṣumnā nāḍī can also be activated, though in this way, it causes a temporary suspension of inhalation and exhalation. The other nāḍis then stop functioning and Kuṇḍalinī is aroused to rise upward in the Suṣumnā through the Brahma nāḍī. When the spiritual energy of Kuṇḍalinī ascends in the Suṣumnā, it harmonizes the energy of iḍā and Pingalā nāḍīs, which encircle the various cakras.

The Suṣumnā is the only nāḍī that is not time-bound. A yogi who has established himself or herself in meditation, at the *Ājñā cakra* (the midpoint between the eyebrows), in whom the spiritual energy of Kuṇḍalinī has risen into the Brahma randra region, becomes a knower of the past, present and future, trikāladarśi (tri-three, kāla-time, darśi-seer). The yogi goes beyond time (kāla) and cannot be touched by death. (Death is also called kāla in Saṁskṛta). When breathing becomes suspended through prāṇāyāma, the function of the physical body comes to a stand- still and the process of ageing is stopped. In addition to its brief operation each, at each change of the nasal cycle, the Suṣumnā automatically operates, at dawn and dusk. It has the effect of calming down the system, thus making meditation easy. That is one of the main reasons that meditation at dawn and dusk has been incorporated in the religious

practices of many traditions (10). Also, just before death all human beings breathe Suṣumnā breath, both nostrils working simultaneously. It is said that death with the exception of accidental death – is not possible when either, the iḍā or Pingalā nāḍī is dominant. That is, death does not occur when ones breath is predominantly in only the left or right nostril. In acupuncture there is a meridian, called the Governor Vessel meridian which has some correspondence with the suṣumnā. In this meridian, the energy flow starts at the coccyx, ascends the spine, reaches a point at the top of the head and then comes down along the meridian line to a point just below the naval. In general, acupuncture meridians may be equated with the nāḍīs that carry prānic energy (10). The scriptures on the yoga also mention many minor nāḍīs. 14 nāḍīs are the major ones. Of the fourteen the first ten are the most important because they are related to what are called the "ten gates", through which prāṇā leaves the body. According to Hindu tradition, the body is castle with ten opening or gates and at death, ones vital force exits from one of the ten. The śiva svarodayā connects the first ten nāḍīs with the ten gates as below:

1) Suṣumnā, connected with Brahma randra the tenth gate (fontanelle)
2) Iḍā , the left nostril, connected with the ninth gate
3) Pingalā, the right nostril connected with the eighth gate
4) Gāndhārī the left eye connected with the seventh gate
5) Hastajihvā , the right eye connected with the sixth gate
6) Yaśasvini , the left ear, connected with the fifth gate
7) Puṣā the right ear connected with the fourth gate
8) Alambuṣā , the mouth, connected with the third gate
9) Kuhū , the genitals, connected with the second gate
10) Śaṅkhini, the anus, connected with the first gate

Most animals leave the body through the first and second gates; they defecate and urinate at the time of death. Most humans leave the body through one of the third to the ninth gates, dying with open mouth, bleeding nostrils, open eyes or droplets of blood coming out of the ears. Only yogis leave the body from the tenth gate, the gate of liberation (mokṣa). This gate is open at the time of birth and is felt as the "soft spot" in a new born baby's head. After six months, it begins to harden, after which it can only be reopened through the special yogic practices. One who leaves the body through this gate does not come back and is free from the cycle of birth and death.

2. 1 NĀḌIS ACCORDING TO HAṬHA YOGA (11)

द्वासप्ततिसहस्त्राणि नडीद्वाराणि पंजरे ।

सुषुम्ना शांभवी शक्तिः शेषास्त्वेव निरर्थकाः ॥१८ ॥

Dvasaptaśatisahasrāṇi nāḍidvarāṇi pañjare

Suṣumnā śāmbhavī śaktiḥ śeṣāstveva nirarthakāḥ ।। (Ch 4.18)

{*There are 72,000 nāḍīs throughout the cage of the body. Suṣumnā is the Śāmbhavī, the remaining nāḍīs are unimportant.*}

According to the Tantras there are 72,000 or more such channels or networks through which the stimuli flow like an electric current from one point to another. Human body is understood with great accuracy while our ancient seers understood the structure and the functioning of the vital body called Prānāmaya Kośa. These nāḍīs cover the whole body and through them the inherent rhythms of activity in the different organs of the body are mentioned. Within this network of nāḍīs , there are 101 main channels and of these ten, three are most important for the control of flow of prānā and consciousness

within all the other nāḍīs of the body. These three nāḍīs are called iḍā ,Pingalā and Suṣumnā. iḍā nāḍī controls all the mental process while Pingalā nāḍī controls all the vital process. iḍā is known as the moon, Pingalā as the sun. A third nāḍī, Suṣumnā is the channel for the awakening of the spiritual consciousness. .

इडा भगवती गंगा पिंगला यमुना नदी।

ईडापिंगलयोर्मध्ये बालरण्डा च कुंडली ॥११० ॥

Iḍā bhagavatī gaṅgā piṅgalā yamunā nadī ।

Īḍapiṅgalayormadhye bālaranḍā ca kuṇḍalī।।। (chap 3.110)

{*It is also said that iḍā is Gangā, Pingalā the river Yamunā. Between iḍā and Pingalā in the middle is this young widow, kuṇḍalinī*).

Iḍā, Pingalā and Suṣumnā nāḍīs begin in Mūlādhāra in the pelvic floor. From Mūlādhāra Suṣumnā flows directly upwards within the canal, while Iḍā passes to the left and Pingalā to the right. At Svadhisthāna cakra or the sacral plexus the three nāḍīs come together again and iḍā and Pingalā cross over one another. Iḍā passes up to the right, Pingalā to the left and Suṣumnā continues to flow directly upwards in the central canal. The three nāḍis come together again at Manipura cakra, the solar plexus, and so on. Finally, iḍā , Pinṅgalā and Suṣumnā meet in the Ājnā cakra.

Idā and Pingalā function in the body alternately and not simultaneously. If one observe his nostrils he will find that generally one is flowing freely and other is blocked .When the left nostril is open, it is the lunar energy or iḍā nāḍī which is flowing. When the right nostril is free, the solar energy or Pingalā nāḍī is flowing.

Investigations have shown that when the right nostril is flowing, the left hemisphere of the brain is activated. When the left nostril is flowing, the right hemisphere is activated.

This is how the nāḍīs or energy channels control the brain and the events of life and consciousness.

Now, if these two energies –prānā and cittā, Pingalā and iḍā, life and consciousness, can be made to function simultaneously, then both hemispheres of the brain can be made to function simultaneously and to participate together in the thinking, living, intuitive and regulating processes.

In ordinary life this does not happen because the simultaneous awakening and function of life force and consciousness can take place only if the central canal- Suṣumnā, is connected with Kuṇḍalinī, the source of energy. If Suṣumnā can be connected in the physical body, it can reactivate the brain cells and create a new physical structure.

Various ancient mystical societies conceived that the highest heaven (Sahasrāra) has the same musical tone as the earth (Mūlādhāra cakra) and that it differs only in the musical pitch. Since there are seven basic notes in the musical scale, then this relate directly to the different cakra levels.

श्रूयते प्रथमाभ्यासे नादो नानाविधो महान्।

ततोऽभ्यासे वर्धमाने श्रूयते सूक्ष्मसूक्ष्मकः ॥४ ॥८४ ॥

Śrūyate prathamābhyāse nādo nānāvidho mahān।

Tato' bhyāse vardhamāne śrūyate sūkṣmasūkṣmakaḥ।।(ch 4.84).

(*When he first begins to hear sounds during practice, there are various prominent nādas but with prolonged practice the subtlest of subtleties becomes audible).*

According to Tantra, everything is manifestation of shabda, subtle sound vibrations. This is really another way of defining the Kuṇḍalinī. Sound in the form of mantras can also be used to raise the Kuṇḍalinī. It should therefore, not be surprising to know that cosmic sound AUM symbolizes and is Kuṇḍalinī. Aum arises in the realm of the

Sahasrāra and then descends through the various cakra levels, until it manifests in gross matter and organic life, including man. In the Chandogya upaniṣad it says: "AUM resides in all created things (i.e. it is the Kuṇḍalinī). Generally it remains downwards enjoying the material world". In man, Aum or Kuṇḍalinī resides in Mūlādhāra. The letter of Aum represents many things, but they notably indicate Tamas, Rajas and Sattva that are: A- Tamas, U-Rajas and M- Sattva. Tamas predominates in the lower cakra, Rajas in the middle cakras, and Sattva in the higher cakras. Therefore, AUM symbolizes the progressive ascent of Kuṇḍalinī through the cakras. The AUM, as a whole, symbolizes the Sahasrāra. But AUM is not only symbol but it can also be used as a mantra to raise the Kuṇḍalinī when utilized under the right circumstances.

.According to Haṭha yoga pradīpika, Yoga is a powerful method of raising the Kuṇḍalinī. The following selections highlight thus:

रुद्रग्रंथि यदा भित्वा शर्वपीठगतोऽनिलः।

निष्पत्तौ वैणवः शब्दः क्वण्द्वीणाक्वणो भवेत्॥ ४॥७६॥

Rudragranthi yadā bhitvā śarvapīṭhagato nilaḥ।

Nispattau vaiṇavaḥ śabdaḥ kvaṇdvīṇākvaṇo bhavet।।(chap 4.76)

(*"In the final stage, when the prāṇa enters the Ājnā cakra. The rudra granthi is pierced. The sound of a veena (musical instrument) takes place like the sound of a flute"*).

This describes the process of raising the Kuṇḍalinī. The practice of Nāda Yoga is an excellent technique and if one is inclined, we suggests one practice it earnestly. Incidentally music is powerful medium for producing changes in one's state of mind. Under the right condition, it has a direct influence on the cakrās. It depends on one's sensitivity. In fact, many great musicians attained elevated state of awareness through

sound because of their heightened sensitivity. Music becomes a particularly powerful method of raising the Kuṇḍalinī when it is combined with Bhakti Yoga.

The word 'haṭha' is a combination of two sounds 'ha' and 'ṭha'. Ha stands for the sun and ṭha stands for the moon. Haṭha thus is balance and union of sun and moon. Through practice of different postures (āsanas) and breath control (prāṇāyama), this yoga energizes the subtle channels, the yoga nāḍīs. Energy moves through these channels without any obstruction because each and every cell of the body has been cleansed by the purificatory practices of haṭha yoga. A body thus trained does not present any obstacles to the state of concentration or meditation which leads to Samadhi.

2. 2 NĀḌIS ACCORDING TO TANTRA YOGA (10)

It works with the dynamic praṇa energy which the organisms receive through nasal breathing. According to tantric teachings, two of the major yoga nāḍīs (carriers of subtle energy in the body) terminate in the nostrils. The iḍā nāḍī terminates in the left nostril and is activated by breath in that nostril. The Pingalā nāḍī terminates and is activated by breath in the right nostril. When both nostrils work simultaneously, the major yoga nāḍī called the suṣumnā becomes active, creating coordination between the right and left sides of the body. Typically a human being breathes at an average rate of fifteen breaths per minute or nine hundred times an hour. Out of that, 890 breaths are taken in one nostril or the other, activating either iḍā nāḍī or the Pingalā nāḍī. Only ten breaths per hour are taken with both nostrils working together, thus activating the suṣumnā nāḍī. However, the use of alternative breathing techniques taught by yoga enables an aspirant to activate the suṣumnā at will. The subtle energy centers of the cakra are situated in the suṣumnā nāḍī, working with the dynamic prānā energy which is in constant motion in the nāḍī field. The suṣumnā nāḍī has a very delicate nāḍī inside of it

called brahma nāḍī, which is the carrier of spiritual energy. The joint operation of the right and left nostrils that occurs naturally each hour stimulates the suṣumnā nāḍī, but it does not stimulate the brahma nāḍi. The brahma nāḍī is influenced only when the suṣumnā is activated by prāṇāyāma (conscious breath control). Then the spiritual energy which is dormant in the sleeping kuṇḍalinī is aroused to move upwards through the brahma nāḍī. When the dormant spiritual energy is roused, the working of the physicochemical energy stops and the body becomes calm and motionless. Dynamic prānā is absorbed in the aroused kuṇḍalinī energy. One's metabolism decreases and the vital functions of the body stop. In the end, the sensory system stops functioning. The Kuṇḍalinī moves through the hollow path inside the vertebral column passing through the cakras, the centers of transformation. Piercing all the lower cakras she ultimately reaches the Sahasrāra cakra where she unites with her beloved Śiva. After this union Kuṇḍalinī goes back to her abode in the mūlādhāra cakra at the base of the spine. During her descent the powers and operations of the cakras are restored. The aspirant or yogi returns to working, time bound, 'I' consciousness, and the cyclical operation of three well know states of consciousness, the waking state, the dream state, and the sleep state of consciousness, which are influenced by the three gunas (qualities) namely sattva (equanimity, balance or lightness), rajas (passion, activity or mobility) and tamas (sloth, inertia or darkness).

2.3 NĀḌIS ACCORDING TO UPANIṢADS

2.3.1 Kaṭhopaniṣat (12)

शतं चैका च हृदयस्व नाड्यः

तासां मूर्धानमभिनिःसृतैका ।

तयोर्ध्वमायन्नमृतत्वमेति

विष्वङ्ङन्या उत्क्रमेण भवन्ति ॥१६ ॥ ६ ॥

Śataṁ caikā ca hrdayasva nāḍyaḥ

Tāsāṁ mūrdhānamabhiniaḥsṛtaikā

Tayoirdhvamāyannamṛtatvameti ।

Viṣvaṅṅanyā utkrameṇa bhavanti ।।16।। (6th chapter)

(*Hundred and one are the nerves of the heart; of them one has extended toward the crown of the head. Going upwards by it, man attains immortality, but others lead in departing differently.)*

2.3.2 Praśnopaniṣat (13)

हृदि ह्येष आत्मा अत्रैतदेकशतं नाडीनां तासां शतं शतमेकैकस्यां

द्वासप्ततिर्द्वासप्ततिः प्रतिशाखा नाडीसहस्राणि भवन्त्यासु व्यानश्चरति ॥३ ॥६ ॥

Hṛdi hyeṣa ātmā atraitadekaśataṁ naḍīnāṁ tāsāṁ śataṁ śatamekaikasyāṁ

DvāsaptatirdvāsaptatiḥpratiśākhānadīsahasrāṇīBhavantyāsu vyānaścarati।।3।6।।

(*This* Ātman *(Self i.e., the subtle body) is indeed in the heart. There are hundred and one main nāḍīs (channels, tubes, for praṇa) in the Prānāmaya kośa. In each one of these, there are 100 branches, which have 72,000 nāḍīs each. And through all these, flows the Vy*āna. *Vy*āna *governs the sense of touch and the flow of impulses in the nerves.)*

2.3.3 Varāhopaniṣat (V, 54/5) (10)

It mentions that the nāḍīs penetrate the body from the soles of the feet to the crown of the head. In them is prānā, the breath of life and in that life abides Atman, which is the abode of śakti, creatrix of the animate and inanimate worlds.

(V, 29, 30) -describes it as blazing and shining (jvalanti), and as being sound incarnate (nādarupīni). It is also called the "Supporter of the universe" (viśvadhārini: viśva=universe, dhārini=supporter), the brahma nāḍī and the aperture of Brahma (Brahma randra). It is illumination (sattva). It gives delight to the sādhaka when praṇa enters it and swallows time.

(V, 52, 55)- ,states that when food is digested, the nāḍīs carry the best part to nourish the subtler body(sūkṣma śarīra) , the middle part to the gross body (sthūla śarīra) and discharge the inferior part in the form of faeces, urine and sweat.

2. 4 NĀḌIS ACCORDING TO AYURVEDA (8)

तेषां तु खलु स्त्रोतसां यथास्थूलं

कतिचित्प्रकारान्मूलतश्च प्रकोपविज्ञानतश्चानुव्याक्यास्यामः

ये भविष्यन्त्यलमनुक्तर्थन्यानाय न्यानवतां विज्नानाय

चन्यानवताम्। तद्यथा प्राणोदकान्नरसरुधिरमांसमेदोस्तिमज्जशुक्रमूत्रपुरीषस्वेदवहानिति

वातपित्तश्लेस्मणां पुनः सर्वशरिरचरणां

सर्वाणां स्त्रोतांस्ययन भूतानि तद्वदतीन्द्रियाणां पुनः सत्त्वादिनां केवलं

चेतनावच्छरीरमयनभूतमधिष्टानभूतं च।

तदेतत् स्रोतसां प्रकृतिभूतत्त्वान्न विकारैरुपसृज्यते शरीरम् ॥६॥

Teṣāṁ tu khalu srotasāṁ yathāsthūlaṁ

Katicitprakārānmūlataśca prakopavijñānataścānuvyākyāsyāmaḥ

Ye bhaviṣyantyalamanuktarthanyānāya nyānavatāṁ vijnānāya

Cānyānavatām।tadyathā

Prāṇodakānnarasarudhiramāṁsamedostimajjaśukramūtrapurīṣasvedavahāniti

Vātapittaślesmaṇāṁ punaḥ sarvaśarīracaranāṁ

Sarvāṇi srotāṁsyayanabhūtānitadvadatīndriyāṇāṁpunaḥ sattvādiṇāṁ kevalaṁ

Cetanāvaccharīramayanabhūtamadhistānabhūtaṁ ca ।

Tadetat srotasāṁ prakṛtibhutattvānna vikārairupasṛjyate śarīram ।।6।।

Of all these, some varieties of gross (important) channels will be described here. With reference to their controlling organs and also the symptoms manifested by their vitiation. This description will be sufficient for an ignorant man to understand the characteristic features of these channels, while for a wise-man, this description will provide enough material enabling him to understand he characteristic features of these channels which are not described here. These channels are those carrying (1) prāṇa -vital breath,(2) udaka-water,(3) anna-food,(4) rasa-plasma,(5) rudhira-blood specifically the hemoglobin part of it,(6) maṁsa-muscle tissue ,(7) medas-fat or adipose tissue ,(8)asthi-bone or osseous tissue,(9) majjā-marrow,(10) śukra -semen, specifically the sperm,

(11) mūtra-urine,(12) purīṣa-faeces,(13) sveda-sweat .

*V*āta, *pitta and kapha move all over the body, hence all the channels of the body cater to the needs for movement. Similarly, factors which are beyond sensory perception (trans-sensory) like mind etc.., moving are located only in the sentient portion of the body. As long as the channels of circulation perform their normal functions, the body is free from diseases. (6).*

2.5 NĀḌIS ACCORDING TO GHERĀṆḌA SAṀHITĀ (14)

कुशासने मृगाजिने व्याघ्राजिने च कम्बले ।

स्थलासने समासिनः प्राङ्मुखो वाप्युदङ्मुखः

नाडीशुद्धिं समासाद्य प्राणायाम समभ्यसेत् ॥३३ ॥

Kuśāsane mṛgājine vyāghrājine ca kambale।

Sthalāsane samāsinaḥ prāṅmukho vāpyudaṅmukhaḥ

Nāḍīśuddhiṁ samāsādya prāṇāyāma samabhyaset।।33।।

(*He should sit on a seat of Kuśa-grass, or an antelope skin, or tiger skin, or a blanket, or on earth calmly and quietly, facing east or north. Having purified the nāḍīs let him begin prāṇāyāma.)*

चण्डकपालिरुवाच

नाडीशुद्धिं कथं कुर्यान्नाडीशुद्धिस्तु कीदृशी ।

तत् सर्वं श्रोतुमिच्छामि तद्वदस्व दयानिधे ॥३४ ॥

Caṇḍakapāliruvāca

Nāḍīśuddhiṁ kathaṁ kuryānnāḍīśuddhistu kidṛśī ।

Tat sar vaṁ śrotumicchāmi tadvadasva dayānidhe।।34 ।।

(*Chandakapali said, - O ocean of mercy ! How are nāḍīs purified, what is the purification of nāḍīs , I want to learn all this , recite this to me.)*

घेरन्ड उवाच

मलाकुलासु नाडिषु मारुतो नैव गच्छति ।

प्राणायामः कथं सिध्येत्तत्त्वज्ञानम् कथं भवेत्

तस्मादादौ नाडिशुद्धिं प्राणायामं ततोऽभ्यसेत ॥३५॥

Gherāṇḍa uvāca

Malākulasu nāḍiśu māruto naiva gacchati।

Pranayama kathaṁ sidhyettattvajñānam kathaṁ bhavet

Tasmādādau nāḍiśuddhiṁ pranayama tato'obhyaset।।35।।

(*Gheranḍa said, - The vāyu does not (cannot) enter the nāḍīs so long s they are full of impurities (e.g.; Faeces, etc,) How then prāṇāyāma be accomplished? How can there be the knowledge of tattvas? Therefore first he nāḍis should be purified, and then prāṇāyāma should be practised.)*

नाडिशुद्धिर्द्विविधा प्रोक्ता समनुनिर्मनुस्तथा।

बीजेन समनुं कुर्यान्निर्मनुं धौतकर्मणा ॥३६॥

Nāḍiśuddhirdvividhā proktā samanunirmanustathā ।

Bījena samanuṁ kuryannirmanuṁ dhautakarmaṇā ।।36।

(*The purification of nāḍīs is of two sorts: - samanu and nirmanu. The samanu is done by a mental process with Bīja mantra. The nirmanu is performed by physical cleanings.)*

धौतकर्म पुरा प्रोक्तं षट्कर्मसाधने

श्रुणुष्व समनुं चन्ड नाडिशुद्धिर्यथा भवेत ॥३७॥

Dhautakarma purā proktaṁ ṣaṭkarmasādhane yathā।

Śruṇuṣva samanuṁ canḍa nāḍiśuddhiryathā bhavet।।37।।

(*The physical cleanings or dhautis have already been taught. They consist of the six Sadhanas. Now, O chanda, listen to the samanu process of purifying the vessels.)*

उपविस्यासने योगी पद्मासनं समाचरेत्।

गुर्वादिन्यासं कुर्याद् यथैव गुरुभाशितम्

नाडिशुद्धिं प्रकुर्वीत् प्राणायामविशुद्धये ॥३८ ॥

Upavisyāsane yogī padmāsanaṁ samācaret ।

Gurvādinyāsaṁ kuryād yathaiva gurubhāśitam

Nāḍiśuddhiṁ prakurvīt prāṇāyāmaviśuddhaye ।।38।।

(*Sitting in Padmāsana posture, and performing the adoration of the Guru, as taught by the Teacher, let him perform purification of nāḍīs for success in prāṇāyāma.)*

2.6 NĀḌĪS ACCORDING TO BHAGAVAD-GITA (9)

स्पर्शान्कृत्वा बहिर्बाह्यांश्चक्षुश्चैवान्तरे भ्रुवौ।

प्राणापानौ समौ कृत्वा नासाभ्यन्तरचारिणौ ॥२७ ॥ छप् ५।

Sparśānkṛtvā bahirbāhyāaṁścakṣuścaivāntare bhruvau ।

Prāṇapānau samau kṛtvā nāsābhyantaracāriṇau ।।27 ।। (chap 5)।

(*Shutting out all external objects, fixing the vision between the eye-brows, making the inward and the outward breaths moving within the nostrils.)*

अहं वैश्वानरो भूत्वा प्राणिनां देहमाश्रितहः।

प्राणापानौ समायुक्त पचाम्यन्नं चतुर्विधम ॥१५ ॥१४ ॥

Ahaṁ vaiśvānaro bhūtvā prāṇināṁ dehamāśritahaḥ ।

Prāṇāpānau samāyukta pacāmyannaṁ caturvidham ।।15।14।।

(*Becoming the fire of life in the bodies of living creatures and united with the prānā (in going) and apāna (out going) breaths, I digest the four kinds of food.)*

2 .7 NĀḌĪS ACCORDING TO OTHER SCRIPTURES:

Śiva Svarodayā

"*Nāḍī bhedam tatha prāṇa tattva bhedam tathaiva ca*

Suśumnā mishra bhedam ca yo jānati sa mukti gah"

One who knows the secrets of the nāḍīs (their operation and effect), of prānā, and of suśumnā gets liberated from the cycle of birth and death, being totally enlightened.

Śiva Saṁhitā

The Śiva Saṁhitā mentions 350,000 nāḍīs, of which 14 are stated to be important, the three most vital are the suśumnā, iḍā and Pingalā.

CHAPTER-3

CONCEPT OF MERIDIANS IN ANCIENT CHINESE MEDICINE

Chinese Medicine refers to Traditional Chinese Medicine (Chinese Medicine). It is an ancient system of medicine and health care the oldest, continually practiced, literate medicine in the world that is based on the concept of balanced Qi or vital energy that flows throughout the body. Components of Chinese medicine include acupuncture, Chinese herbal medicine, massage therapy (acupressure, or called Tui Na) and other therapeutic techniques like Qi Gong and heat therapy.

Yang - The Chinese concept of positive energy and forces in the universe and human body Acupuncture is believed to remove yang imbalances and bring the body into to balance.

Yin - The Chinese concept of negative energy and forces in the universe and human body. Acupuncture is believed to remove yin imbalances and bring the body into balance.

Chinese Medicine has its roots in ancient history. The earliest artifacts yet discovered are Stone Age needles which have been unearthed in New Stone Age ruins. Inscriptions on bones and tortoise shells dating to the Shang Dynasty 3000 years ago bear the earliest written record of the pictograms for acupuncture and moxibustion. During the third and second centuries B.C., the "Yellow Emperor's Internal Classic" was compiled.

This work laid the theoretical foundation of Chinese Medicine and has survived until the present day.. The theories of Yin and Yang, the Five Phases, Solid and Hollow Organs, Energy Meridians, Qi and Blood, the Five Emotions and the Six Pathogens formed the basic knowledge of Chinese Medicine and acupuncture and moxibustion constituted the main forms of treatment. The basic theories of Chinese Medicine and their origin in ancient Daoist philosophy views a person as an energy system composed of both mind and body. Daoist thought stresses fluctuation and explains all phenomena in terms of constant cycles and the rising and falling of the forces of nature. The cycles of Yin and Yang and the Five Phases depict such cycles. The ancient Chinese described an essential life-force or vital-energy called Qi, which is present throughout the cosmos and in every living creature. This Qi can and must constantly move and change. Qi enters the body mainly in food and with the breath, after which it is extracted and circulated throughout the body along specific pathways call meridians. These meridians link the vital organs inside with the skin and muscles on the body surface, as well as form the channels of communication between the vital organs and accessory organs of the body. As long as Qi flows freely throughout the meridians, health is maintained. Disruption of the flow of Qi through the meridians results in pain and illness. The use of acupuncture can correct such disruption by shunting Qi to those areas where it is deficient and draining it from areas where it is excess. Recent western scientific experimentation confirmed the location of acupuncture meridians through the use of electromagnetic techniques. The points used in acupuncture have been observed to have a variety of unique bioelectric properties. The stimulation of these points was shown to cause definite physiological reactions in brain activity, blood chemistry, endocrine functions, blood pressure, heart rate and immune system response.

Chinese Medicine has its own unique understandings about the physiological activities

and pathological changes in the human body. It has, as well, many distinguishing features in terms of the diagnosis and treatment of disease. This unique theoretical system has two basic characteristics, i.e., the concept of integrity and treatment on the basis of differentiation of syndromes. For example, it views the body as an organic whole. The center of this organic integrity is the system of Zang-fu organs which are linked through an elaborate system of meridians. Chinese medicine also views the relationship between the human being and nature as an integrated one. And though it recognizes the importance of the six climatic factors and seven emotions in the pathogenesis of diseases, it emphasizes the importance of the endogenous pathogenic factors even more. A diagnostic system of syndrome differentiation (bian zheng) has been created based on the four diagnostic methods, the eight principal syndromes and the differentiation according to the theory of the Zang-fu organs. Chinese Medicine also places the first priority to prevention, while considering treatment as secondary. It suggests treating a disease by looking first into the root cause, taking into consideration, at the same time, the climatic and seasonal conditions, geographic location, and the patient constitution.

3. 1 Chinese Medicine and the Body-Mind-Spirit

In ancient times healing care had a strong spiritual core. Most illnesses were believed to be caused by evil spirits, or by angry gods or goddesses. Shamans, witches, faith healers were special persons whose power came from a common source. In the eyes of the people they treated, they had an ability to intercede with the gods. Through set rituals and offerings they appeased angry gods or channeled the powers of the gods to help patients heal. Herbs, bloodletting, and even insects were used along with hands-on touch of the healers, but no healer was considered effective unless he or she could call on the spirits or gods to help heal the sick.

These practices began to fall out of favors in the West with the advent of Hippocratic medicine. Western healers relied on herbs, balms, and slowly refined surgical procedures to address or suppress symptoms. The increasingly powerful church took a dim view of witches, shamans and faith healers. Many were accused of using black magic and other heretical practices and were often put to death. By the late 16th century the spiritual aspect of medicine had fallen away. Practice of medicine in the China, however, retained a strong spiritual core. Their healing tradition, based on learning from nature, learning from the five senses, and learning from symptoms, was well developed by 400 B.C.E. The examination of a patient consisted of looking, asking, listening, and touching the patient. The village doctor would use as many as six different physical assessments before beginning to treat his patient. The patient's color, sound, and predominant emotion were also taken into account during treatment. Every patient was seen as a whole person, not as a symptom. Therefore no two patients were treated in the same way. These early doctors who traveled from village to village were often Buddhist or Daoist practitioners. They and the people they served revered both their ancestors and nature and they believed that everything in the world, animate or inanimate, contained spirit or qi (pronounced chee). This qi was called original qi and since its source was heavenly it was spiritual. Humans were considered to be intermediaries between heaven and earth, that is, they carried out heaven's edicts on earth. Heavenly spirit (Shen) resided in the human heart where it was able to enter the blood and be carried throughout the body, so that one's bodily actions would be guided by the spirit. Thus if a person was ill, their spirit was also affected and required treatment. It was unthinkable to these doctors that they would not address the patient's spirit as well as their body and mind. These early village doctors believed that spirit/qi also flowed though the body in external and internal pathways called meridians or

channels. These channels all had points along them with specific uses for the body, the mind or the spirit. Needling these points, the doctor was able to treat the patient in a holistic way. These ancient acupuncture points are still being used today. This spiritual tradition of Chinese medicine continued into the 1920s. Sun Yat Sen, the leader of the Chinese Nationalists, and his follower, Chiang Kai Shek, noticed the success western doctors in China were having with drugs and surgical procedures on patients not helped by Chinese medicine. They came to consider Chinese medicine inferior to western medicine, and discouraged its practice. Village doctors, not trained in western medicine, were discouraged from practicing. This trend continued with Mao Tse Tung when the communists came to power in the 1950s. However, Mao realized that China did not have the facilities to train the thousands and thousands of western style practitioners China would need, so he permitted the old Chinese medicine to be again taught under the label of Traditional Chinese Medicine or TCM. Because Mao was a communist, he had all references and treatment protocols that referred to the spirit purged from the curricula at the Chinese medical teaching hospitals. However, despite its continuing repression in China, Classical Chinese Medicine, as many now call it, was able to stage a comeback in Europe, the United Kingdom, and the United States through the efforts of a number of acupuncture teachers, schools and practitioners who wanted to keep the rich tradition of ancient Chinese medicine alive and well. Acupuncturists trained in the Five Element system are in the forefront of those who treat the whole person with body-mind-spirit medicine. For these practitioners, their patients' health becomes an active, ongoing cooperative process of cultivating and nourishing life to the fullest.

3. 2 The Meridians

In addition to qi, acupuncture and Traditional Chinese Medicine recognize a subtle

energy system by which qi is circulated through the body. This transportation system is referred to as the channels or meridians. There are twelve main meridians in the body, six yin and six yang, and each relates to one of the Zangfu, or organs. To better visualize the concept of qi, and the meridians, think of the meridians as a river-bed, over which water flows and irrigates the land; feeding, nourishing and sustaining the substance through which it flows. (In Western medicine, the concept would be likened to the blood flowing through the circulatory system.) If a dam were placed at any point along the river, the nourishing effect that the water had on the whole river would stop at the point the dam was placed. The same is true in relation to qi and the meridians. When the qi becomes blocked, the rest of the body that was being nourished by the continuous flow now suffers. Illness and disease can result if the flow is not restored.

Acupuncture is one tool used to restore the flow of qi, by inserting needles into the acupuncture points (located on the meridians). These insertions are said to clear any residing blockages, or dams, thus freeing the river to better feed the body in its entirety.

3.3 Concept of Qi

The ancient Chinese described an essential life force or vital-energy called Qi, which is present throughout the cosmos and in every living creature. This Qi can and must constantly move and change. Qi enters the body mainly in food and with the breath, after which it is extracted and circulated throughout the body along specific pathways called meridians. These meridians link the vital organs inside with the skin and muscles on the body surface, as well as form the channels of communication between the vital organs and accessory organs of the body. As long as Qi flows freely throughout the meridians, health is maintained. Disruption of the flow of Qi through the meridian results in pain and illness. The use of acupuncture can correct such disruption by shunting Qi to those areas where it is deficient and draining it from areas where it is

excessive.

3. 4 Acupuncture

Acupuncture is an ancient Chinese method of treating ailments. The word acupuncture is made of two parts, acus, which means a needle, and puncture. This method provides relief from illness by needle puncture of specific points on the body. Reference to acupuncture as a modality of treatment can be found in ancient Chinese literature when stone needles called bien were used for this purpose. With the advent of metal, needles of copper and iron were used by practitioners of this form of medicines. This form of alternative medicine is based on the concept of Qui or Chi (pronounced 'chee'). This is a vital energy force comparable to prānā in Indian philosophy. According to traditional Chinese concept the structure of the universe is explained on the basis of Yin and Yang. They represent two aspects of energy, imbalance of which results in a disease condition. Yin stands for all that is negative like peace endurance, weakness etc. And Yang stands for all positive influences like strength, warmth, sun, heaven, male. Traditional Chinese medicine (TCM) states that the body is made up of five hollow organs. These are represented on the body surface according to their energy flow on Meridians. Specific points or acu-points were charted out on these meridians. The stimulation of these points by needles leads to a balance of energy forces and this is responsible for cure of diseases caused by imbalance of body energy.

Acupuncture treats ailments by insertion of needles at acupoints. To be effective a specific sensation called Quichi or Teichi should be elicited during needling. It is a pleasant tingling sensation radiating along a specific direction. Needling produces subjective sensations like pain, numbness, soreness, heaviness and distension objective beneficial effects produced are:

Analgesia i.e. pain-relieving effects useful in variety of painful conditions.

Sedation or calming effects useful in epilepsy, insomnia & mental disease like mania & anxiety states.

Homeostasis or maintaining the normal balance of the body.

Immunity improvement - better immunity & protection from infection.

Scientific basis of its effectiveness is based on Gate control of pain and production & release of pain relieving mediators called endorphins.

3.5 Yin and Yang and Five Elements

In Chinese medicine, acupuncture treatments are based on the theories of Yin and Yang, the opposite but complementary forces and Five Elements, the five phases of energy movement (fire, earth, air, water, and wind). The five elements reside in the main organs of the body (heart, spleen, lung, kidney, liver) and the interplay of these elements is what results in somato-emotional states. The harmonious and lawful movement of energy, of chi, throughout the organism is paramount to balanced state of yin and yang, and the five elements. Disruption of chi flow in the meridians can create illness.

Chinese medicine places primary emphasis on the balance of "Chi" (Qi, or Ki), or Life energy constantly flowing throughout the body. There are 12 major meridians, or pathways for chi, and each is associated with a major vital organ or vital function. These meridians form an invisible network that carries chi to every tissue in the body. In health, it is properly balanced, but if it becomes unbalanced, the result is disease. It is the job of the Chinese doctor to restore the balance using diet, acupuncture, and herbal formulas. The Life energy comes in two, but complementary parts: Yin and Yang. The Yin nature includes the earth, moon, night, fall and winter, cold, wetness, the feet, the female sex, tissue growth and a passive temperament. The Yang counterparts are the heavens, the sun, day, spring and summer, heat, dryness, light, the head, the male sex,

tissue breakdown, and an aggressive temperament. All individuals have both male and female polarities which consist of the combinations of Yin and Yang, requiring the Chinese doctor to tailor treatments to the individual's needs. The application of Yin and Yang is an important step in the process of making a traditional diagnosis and treatment.

Five Element theory postulates the Qi (Ki, Chi) which constitutes and animates the universe can be subdivided into five different phases, which are like qualities or "flavors" of Qi, namely Fire, Earth, Metal, Water and Wood. The human body contains all five of these qualities... Each element governs a pair of meridians, except Fire, which governs two pairs."

Water Element - Meridians of the Kidney and Bladder in the Water Element class, participants will study the meridians of the kidney and bladder, and develop an understanding of the elemental associations with water. These meridians play a fundamental role in understanding the Traditional Chinese Medicine (TCM) view of back pain. Additionally, participants will study the TCM view on longevity and will be trained to locate and palpate acupoints on the kidney and bladder meridians

Wood Element - Meridians of the Liver and Gall Bladder, this class will introduce and explore the complex relationship between the wood element meridians which tend to manifest stress in physical patterns. These meridians are useful in treating shoulder and hip pain. They are also helpful in treating depression and inducing energetic detoxification for the therapist and client. Participants will cultivate an understanding of the elemental associations with wood, and learn to locate and palpate acupoints of the wood element meridians. A brief introduction to qigong and its role in therapeutic bodywork will be included.

Fire Element - Meridians of the Heart, Small Intestines, Pericardium and San Jiao (Triple Warmer) The Fire Element class introduces the concepts of tonification and sedation of acupoints, deepens the participant's understanding and experience of Qi and presents exercises to improve Qi sensitivity. Participants will study the psycho-spiritual aspects of bodywork from an Asian perspective and investigate how this relates to personal growth. They will also learn to locate and palpate points on the four meridians of the arm related to the fire element.

Earth Element - Meridians of the Spleen and Stomach, the Earth Element class will focus on the meridians of the spleen and stomach. These meridians are often accessed when working with pain in the front of the body. An investigation of how Qi is created and circulates through the body and the role of diet will also be a key focus. Participants will learn to locate and palpate acupoints on the spleen and stomach meridians and gain an understanding of the elemental associations with earth.

Metal Element - Meridians of the Lung and Large Intestine .The Metal Element class will begin with an in-depth study of the meridians of the lung and large intestine which are the meridians of internal and external exchange. In China, these meridians are often used to alleviate chronic lung disorders such as allergies and asthma. Participants will learn and practice breathing exercises and releases for the chest and diaphragm, and explore the elemental associations with metal. In addition, location and palpation of acupoints of the metal element meridians will be covered.

Balancing Yin and Yang:

Whether acupuncture and other Traditional Chinese Medicine therapies are effective is no longer a question. The only question is "How does acupuncture and other Traditional Chinese Medicine therapies work?" A more traditional explanation is that

the body contains vital energy or Qi or Prāṇā which, when flowing smoothly over channels or meridians or energy centers (cakras) that run throughout the body, is expressed as health. Each of the 14 meridians pertains to a particular organ, such as the stomach, heart or large intestine. When the Qi or prānic energy is stagnant or blocked in the meridians or energy centers from physical, mental, emotional or spiritual causes of disharmony, or when there is an imbalance in the yin (female) and yang (male) forms of energy, then symptoms of ill health or disease are expressed. Acupuncture, moxibustion, herbs and vital energy therapy (passing energy from the practitioner's hand to a patient's body with or without touching) with meditation and self-relations psychotherapy clears up the blocked energy and rebalances, reintegrates, and reconnects the yin and yang to restore health. This explanation of how acupuncture and other TCM therapies effect change is perhaps weird or strange to Western ears but is closer to what actually happens.

3. 6 Moxibustion

Moxibustion is a heat therapy which is part of Chinese Medicine. It is usually seen as an adjunct therapy to acupuncture. In fact, the Chinese term for acupuncture is really "Acupuncture & Moxibustion." In Pinyin, this is Zhen Jiu, where Zhen means needle and Jiu means the heat from burning herbs. The metal needles conduct the moxa heat directly to the acupoint or diseased area.

3. 7 Treating Conditions through Chinese Medicine

Based on the assessment of Yin and Yang energy imbalance, the Chinese herbalist looks for patterns of distress in the patient's pulse, as well as tongue, face, and physical characteristics. The pulse system is highly developed in Chinese medicine, and consists of six positions on each wrist, and various pulse beats can be determined by the trained practitioner. According to Traditional Chinese medical text, the pulse corresponds to

different organ networks, areas of the body, meridians or energy channels, and physiological processes like breathing, digestion and elimination. These are thought to function in phase with Yin and Yang principles and also the energies represented by the five elements: Earth, Metal, Water, Wood, and Fire. Some general diagnostic correspondences are-

YIN
YANG

Interior
Exterior

Front
Back
Lower section
Upper section
Bones
Skin

Inner organs
Outer organs

Blood
Chi (Life energy)

Chronic

Acute

Deficiency

Excess

In general, the basic treatment principles are to tonify or stimulate in a case of deficient Yin or Yang energy, and to sedate or disperse when the energy pattern is one of excess. Herbal formulas are then tailored to fit the individual's need, or designed to fit the overall condition of the patient. Special herbal formulas have been traditionally used for thousands of years by Chinese herbalists for such ailments as fever, colds and flu, headaches, infections, menstrual problems, ulcers, high blood pressure, cancer, infertility, and diabetes to name a few. For example, "Gan Mao Ling", a two thousand year old formula, has been traditionally used for symptoms such as runny nose and scratchy throat. By taking six tablets of this formula every three hours, one can stop a cold in its tracts before it can take root. Chinese remedies are very effective and versatile. You can purchase Chinese herb formulas in many forms such as pills, tablets, extracts, or bulk to overcome numerous conditions and diseases.

Acupuncture and Conventional Medical Care:

Acupuncture blends well with conventional medical care. Acupuncture practitioners cooperate fully with other health care practitioners and recommend that you consult your physician or primary health care provider before starting any complementary health care modality. Physicians are aware of the use of acupuncture for pain management and many recommend its use for their patients.

3. 8 Qigong

Qigong is an ancient Chinese movement-based healing practice. It is composed of

integrated postures and movements designed to tone and purify one's internal energy, promote flexibility and increase physical strength.

CHAPTER-4

CORRELATION BETWEEN THE CONCEPT OF NĀḌĪS AND THE CONCEPT OF MERIDIANS

Ancient history

The earliest artifacts yet discovered are stone age-needles, which have been unearthed in New Stone Age ruins. During the third and second centuries B.C, the "Yellow Emperor's Internal Classic" was compiled. The content of this classic includes physiology and pathology of the human body, principles of diagnosis and prevention and treatment of disease. Interestingly, other ancient medical traditions were being put in writing at the same time, such as the āyurveda system of India.

Basic theories

The basic theories of Chinese medicine and their origin in ancient Daoist philosophy views a person as an energy system composed of both mind and body. Daoist thought stresses fluctuation and explains all phenomena in terms of constant cycles of rising and falling of the forces of nature. Also, the ancient Indian scriptures viewed our body as an energy system. Yin and Yang are complementary opposites representing a fundamental duality inherent in nature. The same forces that worked in nature also worked in the human body. Hence, health is perceived as a dynamic balance of Yin and Yang. Chinese medical theories might seem quaint and outmoded, but they actually create a

coherent picture of how the body works-one that allows for the diagnosis and treatment of subtle imbalances that are often unrecognized in Western medicine until they reach the gross pathology.

Concept of energy

The ancient Chinese described an essential life force or vital energy called Qi, which is present throughout the cosmos and in every living creature. The Qi can and must constantly move and change. Qi enters the body mainly in food and with the breath, after which it is extracted and circulated throughout the body along specific pathways called meridians. These meridians link the vital organs inside with the skin and muscles on the body surface, as well as form the channels of communication between the vital organs and accessory organs of the body. As long as Qi flows, health is maintained. Disruption of the flow of Qi through the meridians results in pain and illness. The use of acupuncture can correct such disruption by shunting Qi to those areas where it is deficient and draining it from areas where it is excess. Ancient seers described Prāṇā as an essential force, which pervades the whole universe. The yin-yang concept of acupuncture, as a network of energy-information processes of an organism, originating from embryological development, represents one of the most specific and most useful segments of the renowned Chinese traditional medicine. Indian traditional medicine, and especially one of its most prominent representatives, Swara yoga, is also acquainted with an energy system analogous to the Chinese acupuncture system: in Indian terminology the qi is called is called praṇa, and meridians as nāḍis (14 of them being basic, like in acupuncture, although three of them being of special medical and spiritual significance: Iḍā, Pingalā, and Suṣumnā).

Anatomy, physiology and philosophy

The traditional Chinese medicine is related to twelve organs and the meridian system. The organs are divided into two categories: the Yin organs, also called Zang; and the Yang organs, also called Fu. The Yin organs are the liver, heart, spleen, lungs and kidneys and also the pericardium. The Yin organs are paired with the Yang organs. The Yang organs are the gall bladder, small intestine, stomach, large intestine, bladder and the San Jiao (triple heater). The Zang produce the Yin energy whereas the Fu are concerned with the transformation and regulation of external influences (food) which is a Yang activity.The Zang/Fu is closely linked in all physiological and pathological activities. The heart is the most important of all the Zang organs. .All consciousness and every thought belong to the heart. The liver is a major factor in the regulation of blood supply. Spleen and pancreas are regarded as linked and acting almost as one organ .The transportation and transformation of food throughout the body is performed by the spleen. The lungs control the skin and hair (of fur). The Chinese described the internal organs, brain, spinal cord, the vascular system including superficial and internal routes, and the muscles of the body. They described inducing needling sensation and the propagation of sensations along the nodal (acu point) sites of the superficial body. Prāṇā is also been described in the Upaniṣads, where in the heart is the important vital organ for the praṇa (Kaṭhopaniṣat).

Acupuncture and Āyurveda

The points in acupuncture are related to Marmas in Āyurveda.

Disease

Chinese system has the advantage of perceiving subtle relationships and imbalances, so that disease can be treated before they become a threat to health and well-being .It has been found that Chinese medicine is often the treatment of choice for the kind of

chronic, degenerative problems. Such problems often involve a complex interplay of psychological, dietary and environmental factors. Chinese medicine is holistic, meaning that the whole person to the environment is taken into consideration as well. Treatments do not usually cause side effects, and a person being treated for a specific condition often notices an overall improvement in health. . In Chinese medicine, a disease due to deficiency or imbalance of energy in meridians. The Chinese medicine uses an intricate system of pulse and tongue diagnosis, palpation of points and meridians medical history and other signs and symptoms to create a composite diagnosis. A treatment plan is then formulated to induce the body to a balanced state of health. As in any form of healing, the patient's attitude, diet, determination and lifestyle will affect the outcome of a course of treatment. In Āyurveda too, the disease is due to an imbalance of the Trigunās (sattva, rajas, and tamas). In Chinese medicine, the patients are encouraged to actively participate in the healing process. In Chinese medicine, it can treat most conditions, but has limitations. In acute conditions, results may occur in a matter of minutes. In chronic conditions, some results should be seen within two weeks. However the signs that the medicine is working is apparent to the patient and practitioner alike from the very start. The diseases during the ancient period in India were treated based on the concept that the patient actively participates in the healing process.

The ancient Chinese knew that by living in harmony with nature and seasons, they could live long healthy lives. Even in our ancient scriptures, they recognized the importance of living in harmony with nature. So they constructed a system of medicine based on the 5 phases. The five corresponding seasons are spring, summer, late summer, fall and winter, they had important correspondences of organs, emotions,

health issues and foods oft each element and of seasons. These seasons may be related to the seasons talked about in Āyurveda (ritucharya).

Tibetan medicine is a distinct practice of medicine derived largely from Āyurvedic medicine, but with considerable influence from Chinese medicine, and some Unani (Greco-Persian), with a primary philosophical basis in Buddhism as practiced in Tibet, Nepal, Bhutan, Sikkim, and the western regions of China. In Acupuncture, there is a meridian, called the Governor Vessel meridian, which has some correspondence with the Suṣumnā. In this meridian, the energy flow starts at the coccyx, ascends the spine, reaches a point at the top of the head, and then courses down along the meridian line to a point just below the navel. In general, the acupuncture meridians may be equated with the nāḍis that carry pranic energy. Together with the Cakras, the nāḍis translated as 'conduits', 'nerves', and 'veins'. 'Vessels', 'arteries', constitute the composition of subtle or yogic body in Tantra. Like the Chinese meridians, the nāḍis constitute channels of flow of vital force (Prāṇā). Iḍā is associated with the Shakti –Rupa or the female principle; the Pingalā or the solar channel on the Right side with the Masculine principle (according to the Sammohana tantra, the puruśa). The central channel or Suçumnä is associated with fire and the union of the two.Of all methods in Chinese medicine, Acupuncture is the most widely known, but herbs, massage, exercise therapy, and dietary counseling is used as well. Most acupuncturists use a combination of these methods in their treatment prognosis. Herbal medicine affects the interior of the body directly because the herbs are ingested; acupuncture and massage affect the interior of the body indirectly because they involve the treatment of points on the surface of the body. In Chinese medicine, the principle of Qigong, is that" the mind leads the qi, and the qi leads the blood". This means that one uses the mind to guide and enhance the flow of qi through the meridians.

CHAPTER-5

SUMMARY AND CONCLUSIONS

* The present study is done to have a comprehensive view of the concepts of nāḍis and meridians in the ancient Indian scriptures and the ancient Chinese medicine respectively. The word nāḍi comes from the Saṁskṛta root NAD, meaning movement. In yoga, nāḍis are the channels of Kuṇḍalinī energy. The concept of nāḍis is based on the understanding that they are channels; any channel through which anything flows is a nāḍi. There are two types of nāḍis, Subtle, non material, invisible channels of subtle energy called yoga nāḍis. Gross channels of subtle energy, visible as cords, vessels, or tubes. The concept of nāḍis is told according to various Indian scriptures such as Āyurveda, Haṭha Yoga, Tantra yoga Kaṭhopaniṣat, Praśnopaniṣat, Varāhopaniṣat, Gherāṇḍa saṁhita, Śiva swarodaya Śiva Saṁhita.

* Chinese Medicine refers to Traditional Chinese Medicine (Chinese Medicine). It is an ancient system of medicine and health care the oldest, continually practiced, literate medicine in the world that is based on the concept of balanced Qi or vital energy that flows throughout the body. The ancient Chinese described an essential life-force or vital-energy called Qi, which is present throughout the cosmos and in every living creature. These meridians link the vital organs inside with the skin and muscles on the body surface, as well as form the channels of communication between the vital organs and accessory organs of the body. As long as Qi flows freely throughout the meridians, health is maintained. Disruption of the flow of Qi through the meridians results in pain

and illness. The use of acupuncture can correct such disruption by shunting Qi to those areas where it is deficient and draining it from areas where it is excess. These meridians form an invisible network that carries chi to every tissue in the body. Five Element theory postulates the Qi (Ki, Chi) which constitutes the universe can be subdivided into five different phases, namely Fire, Earth, Metal, Water and Wood. The human body contains all five of these qualities. The pulse system is highly developed in Chinese medicine, and consists of six positions on each wrist, and the trained practitioner can determine various pulse beats. According to Traditional Chinese medical text, the pulse corresponds to different organ networks, areas of the body, meridians or energy channels, and physiological processes like breathing, digestion and elimination.

* Indian traditional medicine, and especially one of its most prominent representatives, Swara yoga, is also acquainted with an energy system analogous to the Chinese acupuncture system in Indian terminology the qi is called is called Prāṇā, and meridians as nāḍis (14 of them being basic, like in acupuncture, although three of them being of special medical and spiritual significance: Iḍā, Pingalā, and Suṣumnā). The Zang/Fu is closely linked in all physiological and pathological activities. The heart is the most important of all the Zang organs. All consciousness and every thought belong to the heart. Praṇa is also been described in the Upaniṣads, where in the heart is the important vital organ for the Prāṇā (Kaṭhopaniṣat). The ancient Chinese knew that by living in harmony with nature and seasons, they could live long healthy lives. Even in our ancient scriptures, they recognized the importance of living in harmony with nature. The five corresponding seasons are spring, summer, late summer, fall and winter, they had important correspondences of organs, emotions, health issues and foods oft each element and of seasons. These seasons may be related to the seasons talked about in āyurveda (ritucharya). In acupuncture there is a meridian, called the

Governor Vessel meridian which has some correspondence with the suśumnā. In general, acupuncture meridians may be equated with the nāḍis that carry pranic energy.

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PART 2

EXPERIMENTAL RESEARCH

EFFECT OF YOGA ON THE VISUAL MEMORY

IN SCHOOL CHILDREN

CHAPTER 1

INTRODUCTION

Man's quest to have an excellent memory is well known from time immemorial. Some people may be born with an excellent memory but not everyone is so lucky! The key question is; is it possible to improve one's memory? The ability to remember & forget is one of the most complex and fascinating functions of the brain. It is well known that memory lapses are extremely selective; we remember something's & forget others. Everything we have ever experienced is buried in the brain. Remembering is linked with the activities of the different parts of the central nervous system. The parts of the brain involved in memory include the pre-frontal cortex, hypothalamus, and thalamus. Learning & recognition of patterns thus activated identical visual regions, but different extra – visual regions. Activation of immediate areas is not a pre-requisite for visual imagery for the patterns. Higher-level visual areas mediate storage, retrieval & recognition of complex visual patterns. Visual learning and recognition of same patterns make use of identical visual areas, whereas retrieval of material from storage sites activates only a subset of visual areas. All the above recognition of patterns is known from earlier studies (1). Sigmund Freud claimed that we forget anything, which causes us pain and anxiety. The studies done earlier showed the anxiety reducing effects of Yoga practice (2). Earlier study done showed the effect of particular nostril breathing on the spatial memory scores (3). The present study consisted of subjects divided into three Yoga modules and the study done to assess whether the practicing of

specific practices of the Yoga modules done for ten days would alter the performance of the school children on visual memory scores. The present study is done to assess as to which group out of the three modules would show much improvement. The present study is also done to examine whether the creativity group (yoga module) showed improvement in visual memory in school children.

CHAPTER 2

AIMS & SCOPE

AIMS:

1. To assess the efficacy of integrated yoga modules on visual memory in children.
2. To compare the effect of three different integrated yoga modules on visual memory in children.
3. To assess the gender effect

SCOPE:

This study is with both boys & girls children limited to an age group of 10 to 12 years and with an intervention of only 10 days.

CHAPTER 3

LITERATURE REVIEW

3.1 General

The system of yoga teaches the means by which the individual human spirit (Jīvātmā) can be in communion with the Supreme Universal Spirit (Paramātmā). It is a systematic approach for an individual to become one with the Supreme Universal Spirit or attain the highest level of consciousness of which man is capable. Around 200 BC, Patanjali evolved eight stages of yoga. These are systematically presented in the Yoga Sutras, which consist of around 200 aphorisms. The eight stages of yoga are: *yama* (Universal moral commandments), *niyamās* (rules for self-purification), *āsanas* (postures), *prāṇāyāma* (conscious rhythmic regulation of breathing), *pratyāhāra* (withdrawal and emancipation of the mind from the domination of the senses), *dhārana* (concentration), *dhyāna* (meditation) and *samādhi* (a state in which the aspirant becomes one with the Paramātmā or Universal Spirit).

The earliest scientific studies on yoga reported the radiological and pressure changes in the viscera related to the practice of *uddiyana bandha* and *nauli* (14). Later, another study systematic study on the oxygen consumption during

p*rāṇāyāmas* and reported an increase in the oxygen consumed, ranging from 12 to 25 percent, during the practice of *Ujjayi, kapāla bhāti* and *Bhastrikās* p*rāṇāyāmas* (15).

Since then, there have been a large number of research studies dealing with psychological, physiological and biochemical changes related to different yogic practices. Similarly, yogic practices are now being used in the management of different psychosomatic ailments.

3.2 Studies on memory

There is specific yoga breathing practice (Pr*āṇāyāma*) which involves breathing selectively through a particular nostril. These techniques can be practiced effortlessly for prolonged periods and allow the effect of unilateral nostril breathing to be studied. The effects of three Pr*āṇāyāma* practices (which involve left nostril, right nostril, and alternative nostril breathing) on autonomic functions and metabolism have been reported to be similar to the effects of forced Uninostril breathing (16, 17). Another study was carried out is which practice of right nostril breathing increased the performance of school children's spatial memory compared to those of control group (3). The present study was carried out to assess whether practicing general yoga would alter the performance of normal school children’s performance on visual memory test.

The influence of yoga is improving memory needs to be established through systematic and extensive Scientific research. The nasal cycle is an ultradian rhythm characterized by alternating pattern of the left and right nostril with a periodicity of 1 to 8 hour's (18). Some reports suggested a connection between the phase of the nasal cycle and the cerebral hemisphere, which is dominant, mediated through a neural reflex (19).

The hypothesis that music training can improve verbal memory was tested in children. The results showed those children with music training demonstrated better verbal but not visual memory than did their counterparts without such training. When these children were followed up after a year those who had began or continued music training demonstrated significant verbal memory improvement. Students who discontinued the training did not show any improvement. (20).

Another study aimed at investigating the possible dissociation between visual and spatial working memory. In the first experiment a working memory test for visual material and for spatial information was given to a group of normally developing children, in the second experiment the same visual and spatial working memory test was given to Williams Syndrome (WS) group. The results of this second experiment showed that the spatial span obtained by individuals

with WS was significantly lower than control participants but visual span was comparable in the two groups.

The neural processes subserving working memory and brain structures underlying this system continue to develop during childhood. The effects of age and gender on audiospatial and visuospatial working memory were investigated in a non- clinical sample of school aged children using n-back tests. The results showed that auditory and visual working memory performance improves with age, suggesting functional maturation of underlying cognitive process and brain areas. (21).

The extent to which the acquisition of expertise in knowledge rich domains, such as chess can be influenced by general individual characteristics, such as intelligence, has remained unclear. Previous studies with children have documented significant correlation between chess skill and performance on psychometric tests. No evidence for a correlation between chess skill and visual memory ability was found in a group of adult chess players. This finding, together with other data in the literature, suggests that there is surprisingly little evidence that chess skill and visuo-spatial ability are associated in adults. (22).

Another study reported evidence of the existence of multiple and distinct visual memory process in a memory search task in which a divided filed stimulus

presentation was used. This memory process can be distinguished on the basis of i) whether or not they are hemispherically organized ii) the locus of their underlying brain activity as evidenced by the scalp distribution of the event related brain potentials and by the localization of the event optical signal that accompany them (23).

An earlier study reported that delay of estimation produced significantly longer judgment time regardless of the verbal passage while short-term memory scores varied as a function of verbal content. An interaction of short-term memory scores between delay of estimation and content of verbal material showed that short-term memory scores were significantly improved between paragraphs and for delay of test. (24).

CHAPTER 4

METHODS

4.1 Subjects

Healthy two hundred and ninety-seven-school students between 10 to12 years of age & of both sex participated in this study. They attended a 10 days of residential yoga training course. 277 children completed the camp. Rest of the students dropped out of the camp as explained in trail profile (Appendix 3). Among the 277 students there were 180 boys and 97 girls.

Inclusion criteria:-

1. All children who participated in a residential personality development program.

2. Those who knew English language.

Exclusion Criteria:-

1. Children who were not normal in their mental health.

Informed consent:

The signed informed consent was not obtained from the parents / guardians of the children, who participated in the study. However, the parents had consented for them to take part in the 10 day Personality Development camp.

4.2 Study design

900 children with age range 10 to 12 years were screened for the above mentioned (under –subjects) inclusion criteria, 297 were selected with age range 10 to 12. There were 189 males and 109 females in the group. They were randomly allocated to three groups.

The pre-assessment was done on day 1 of the 10 day personality development camp in a residential setting. They were then followed for 9 days with their respective interventions i.e., IQ (intelligent quotient), CV (creativity), and PS (physical stamina). On day 9 the post assessment was done on all the three groups.

4.3 Randomization

Out of 900 children screened, 297 children satisfied the inclusion criteria. The subjects were then randomly allocated to three groups. This was done using lottery method, where the chits were picked by the person who had no other role in the study, to group the 297 children into 3 groups of 99 each. The three groups were then designated as Intelligent quotient group (IQG), Creativity group (CRG) and Physical stamina group (PSG), by the co-coordinator of the camp, who had no role in the intervention.

4.4 Masking

It is difficult to assess yoga practices in double blind trial because the intervention requires actual participation of the subjects and hence identities become known after allocation (21).

However, there was an attempt to blind the subjects for the intervention by giving another set of names for the three groups, which was used all through the 10 days camp viz. *shish* for IQG, *sruth*i for CRG, & laya for PSG. The assessment was made and scored by a blinded investigator.

4.5 Assessment

All subjects were assessed for visual memory at a time while seated approximately a meter apart to avoid distraction. The test material was projected on a screen, allowing 1 minute for each slide. After each slide was shown, 3 minutes were given to draw each slide. More details can be found in Appendix 4.

4.6 Intervention

All three groups i.e., IQG, CRG and PSG underwent 10 days of "personality Development camp" during which they are engaged in IYM (Integrated Yoga Module) for 8 hours per day .This included activities under the following categories:

1. Breathing Exercises : 15 minutes/day

2. Śītalīkarana Vyayama : 15 Minutes/day

3. Āsana (Physical Posture) : 45 Minutes/day

4. Prāṇāyāma : 1 Hour/day

5. Meditation (OM) : 15 minutes/day

6. Lecture on yoga philosophy : 45 minutes/day

7. Krīḍā *Yoga* (yogic game) : 1 hour

8. Trāṭaka (yoga based eye exercise) : 30 minutes

However, the practices within each of the categories mentioned above, differed for each group and were specific to facilitate the faculty that was focused for each group. i.e., Intelligent quotient group (IQG), Creativity group (CRG) and Physical stamina group (PSG)

In addition to the above, each group had special yoga practices included to facilitate the quality of the group. They were:

(i) IQG 1.*Surya Anuloma Viloma* (Right nostril breathing) : 1 Hour/day

2. Chanting (Gita-Jnana yoga) : 1 Hour/day

(ii) CRG 1. *Chandra Anuloma Viloma* (Left nostril breathing) : 1 Hour/day

2. Chanting (Gita-Bhakti Yoga) : 1 Hour/day

(iii) PS 1. *Nāḍī Śuddhi* (Alternate breathing) : 1 Hour/day

2. Chanting (Hanuman cālisā) : 1 Hour/day

The details of the daily routine practices for each group are given in

Appendix 2.

4.7 Data extraction

The following data were extracted from the Wechsler memory scale's scoring sheet as follows, for the 3 slides.

If they draw two lines crossed, four flags-1, correctly facing one another- 1, accuracy-1, maximum score is 3.

a. Large small squares with two diameters-1, four small squares within a large square-1, two diameters in each small square-1, sixteen dots, each alone in a small square-1, accuracy of proportion-1, if design is complete but with superfluous square or lines-3, maximum score-5.

b. 1. Large rectangle with small rectangle inside-1, all vertices of inner rectangle connected to vertices of larger rectangle-1, smaller rectangle correctly shifted to the right and approximately that of exposed figure-1, maximum score-3.

   2. Open rectangle with correct loop at each end-1, center and either left or right side correctly reproduced-1, figure correct except one loop incorrectly reproduced-2, figure correctly reproduced and in approximate proportion-3, maximum score-3.

   Total maximum score on all figures-14.

4.8 Data analysis

The data were analyzed using the statistical package (SPSS version 10).

1. Tests for normalcy (one way ANOVA test), test for skewness were performed to analyze the initial data. Results are shown in Appendix 4(Table1).

2 The Paired‘t’ test also was done to know whether the groups showed improvement after 10 days of practice, the results are as shown in Appendix 4(Table 6).

3. Pre and Post mean values of the individual groups, the results are as shown in Appendix. 4 (Table 6). Paired‘t’ test also was done to know whether the groups showed improvement after 10 days of practice, the results are as shown in Appendix 4(Table6).

   ANOVA test was performed when significant results were observed.

   Multiple comparison Tukey test was performed, the results are as shown in Appendix 4 (Table5)

4 Unpaired‘t’ test was performed between male and female subjects, the results are as shown in Appendix 4(Table10).

5 The Wilcoxon test was done for groups as well as gender, which is shown as per Appendix 4(Table 11).

CHAPTER 5

RESULTS

Trial profile is given in Appendix 3.

Table-1 Results of all the three groups

		A		B		C	
Particular		Mean ± SD	Mean ± SD	Mean ± SD	Mean± SD	Mean± SD	Mean ± SD
		Pre	Post	Pre	Post	Pre	Post
N	B	56	56	66	66	68	68
	G	30	30	26	26	31	31
	T	86	86	92	92	99	99
Visual memory	B	10.09±2.14	12	9.68±2.31	10.24±2.39	10.06±1.64	10.32 ±2.12
	G	10.57±1.98	12	10±2.02	10.46±2.47	10.23±0.99	10.94 ±1.41
% changes	B		10.9		5.7		2.5
	G		13.5		4.6		6.9
			24.4		10.3		9.4

A- IQ group (24.4%), B-CV group (10.3%), C- PS group (9.4%).

Other Tables are given in Appendix 4.

1 The data were not normally distributed. .

2 There was initial matching of data as per the ANOVA for pre-data.

3 The visual memory mean scores for each of the groups are provided in (Appendix 4). All the 3 groups showed improvement in visual memory at the end of 9 days compared to the first day as per the paired t-test i.e., PSG ($p<0.001$), CRG ($p<0.001$) & IQG ($p<0.001$).Since the log-transformation could not make the data normally distributed the non-parametric Wilcoxon test also was used, the tables for which are given in appendix-11 .All the 3 groups showed improvement in visual memory at the end of 9 days, as per the Wilcoxon test done i.e., PSG($p<0.001$), CRG ($p<0.001$) & IQG ($p<0.001$). Among the 3 groups, intelligence quotient showed significant improvement (24.4%). [Multiple comparison Tukey test showed improvement in IQ versus CVgroup ($p<0.001$).

CHAPTER 6

DISCUSSIONS

The present study showed the effects of yoga modules (Intelligence quotient-IQ, Creativity-CR, and Physical stamina-PS) on visual reproduction in children. (Age range=10 to 12 years). After 10 days of Yoga practices, all the three groups showed a significant increase in visual memory scores. In the present study, the log-transformation done could not make the data normally distributed. Hence the nonparametric –Wilcoxon test was done which are shown, as in Appendix 4 (Table 11). The percentage increase in scores showed the IQ group had better improvement, followed by CR and PS respectively. There was no significant difference between males and females in the three groups on their baseline values. (p = 0.138) as shown in Appendix 4(Table 12). The females showed significantly higher improvement in IQ group compared to other groups. Several factors could have contributed to the increase in visual memory scores of the three groups. Children were enthusiastic about performing well on the tests. Yoga relaxes, reduces anxiety, which may improve efficiency (2).

Breathing through a particular nostril modifies the activity of the opposite cerebral hemisphere. An earlier study showed the effect of Yoga nostril breathing on spatial memory (3). The uninostril breathing included in the yoga module may also have

contributed to better visual memory in all groups in general and to a greater extent in the IQ group .The IQ group practiced sūrya anulomaviloma (SAV) prāṇāyāma which is known to activate left hemispheric functioning. The right nostril-breathing phase was found to correspond physiologically with the activity phase of the basic rest activity cycle, while left nostril breathing corresponded to the rest phase. Other studies demonstrated that breathing through particular nostril influences the cognitive functions in addition to physiological changes.

The alertful rest and reduction in the simultaneous thoughts obtained through yoga may have helped in better memory. It was also shown that meditation facilitates right hemisphere functioning (8). A previous report emphasized the right brain enhancing effects of meditation in improving creativity (14). It was seen in an earlier study, that there was significant reduction in simultaneous thoughts arousal during working memory tasks and recitation of prayer and meditation practices (4). In my study, there were specific modules for the three groups separately. Each module had an intensive and integrated course, which may have contributed to the increase in memory. The IQ module was given sūrya anulomaviloma prāṇāyāma (SAV) and other known practices that would activate higher brain functions and hence improve the memory, which may be another reason for the greater significance in the IQ group. An earlier study showed the anxiety reducing effect in improving performance in tasks requiring learning and

memory (9). This means that when the repetition of test was done for the subjects on the 9th day after the 1st day, the subjects may have reduced anxiety on the 9th day, since they were familiar with the test. This may have a role to play in the improvement in the memory scores. CAV would influence right brain & SAV would influence left hemisphere. This is seen in the result between CRG & IQG. The left or right dominant yoga modules have influenced the visual memory more than physical and balancing effects of yoga modules.

The study conducted on the relationship between skeletal age and IQ of children suggests that the degree of physical maturity of children is closely related to the intelligence of children (11). Earlier puberty and maturity in females than males may have contributed to better performance in girls than boys, even at baseline. In addition, this may explain greater improvement in girls after yoga in IQ group, although it may be considered as a fact that females possess more capacities of awareness, patience. Further studies may be done to check the efficacy of Yoga on the different age groups to test the speculation.

CHAPTER 7

SUMMARY & CONCLUSIONS

1. The present study is done to assess the efficacy of 'Integrated yoga module (IYM) with the use of three different yoga modules on visual memory.
2. The present study was also done to examine whether the creativity group (yoga module) showed much improvement in the visual memory in school children. The present study was also done to check whether gender had an effect on the changes in memory scores.
3. In this study, school children (n=297, age range = 10 to12 years) were randomly assigned to three groups namely IQG, CRG, and PSG.
4. The groups had interventions of IYM to enhance CRG, IQG and PSG. The number of students in each group during analysis was IQG (n=86), CRG (n=92), PSG (n=99).
5. The assessments for visual reproduction (visual memory) were taken on the 1st and 9th day of the course. The subjects were told that the memory test were for their self-assessment to understand the benefits derived from the course. The necessary conditions for the test namely, the seating arrangement, timing was strictly adhered to.

6. The scoring done for the test was based on Wechsler's memory scale for children. The intervention for the study included yoga practices, which were very specific for the three yoga modules.
7. The analysis of data was done after checking for elimination of abnormal data and attrition of data. The normality test showed that the groups were not of normal distribution. The 'f' test showed that the groups were homogenous. The Paired't' test indicated that all the three groups showed improvement. The Wilcoxon test done also showed improvement in the group's .The Multiple comparison Tukey test showed that there was significant difference between groups. It showed that the IQ group showed more significance than the other two groups. The scores showed results with regard to gender too. The total males between groups showed significant difference. ($p=0.000$) The total females did not show significant difference between groups. ($p=0.067$).
8. Hence the above study shows that Yoga has a role to play in the improvement of visual reproduction, with greater improvement in the IQ group. The improvement in IQ may be more due to the right or left dominant yoga modules which have influenced the visual memory.

CHAPTER 8

LIMITATIONS OF THE STUDY

1. The parents had consented for the children to take part in the 10 day Personality Development camp. The signed informed consent for the study was not obtained from the parents / guardians of the children, who participated in the study.
2. Pre yoga & diet histories were not acquired.

CHAPTER 9

SUGGESTIONS FOR FUTURE WORK

- Studies to be designed using more specific technique.
- Effect of individual practices rather than IAYM on memory with control groups to be studied.
- Effect of practices on the subjects of different age groups may be studied. Longer duration of follow up may be necessary.

CHAPTER 10

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