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Yoga physiology and anatomy according to classical yoga and tantra texts

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Abstract

Yoga has grown to be a very popular science. It has become one of the most favored alternative therapy and fitness programs. A huge amount of scientific investigations are being carried out throughout the world using state-of-the-art technology in order to identify, measure and verify the almost miraculous results of yoga on the human body and mind. It is necessary to understand the science of yoga in a holistic sense which necessitates the understanding of terms and concepts as mentioned in the classical texts of yoga. These concepts of yoga physiology and anatomy which are presented here, might be easily brushed away as 'unscientific' since these concepts have *yet to be* verified by 'machines'. Nevertheless, in order to understand and explain the miraculous benefits, the modern medicine needs to look at them to find answers – if not now; at least in the near future.

Keywords: Yoga, yoga physiology, yoga anatomy, yoga texts, tantra texts

1. Introduction

Yoga realizes that the spark of Divinity is present in every human being. This spiritual energy lies in a dormant state, coiled three and a half times like a serpent, at the base of the spine called *muladhara chakra* (*Gheranda Samhita* ^[1], III.49). Ancient sages studied the human body thoroughly and revealed that life force or *prana shakti* operates in gross body through the nerve system, whose central access is the spiral column. There are frequent references to the *chakras* (psychic energy centres) in the minor Upanishads, especially yoga and in tantra literature. In the recent wake of interest in yogic sciences, it is important that the yoga physiology and yoga anatomy is understood.

2. Materials and methods

Yoga and Tantra classical texts were thoroughly investigated for references to yoga physiology and yoga anatomy. They are: *Hathayoga Pradipika* (HYP), *Siva Samhita* ^[2] (SS), *Gheranda Samhita* ^[3] (GS), *Hatha Ratnavali* (HR), *Gorakhsa Sataka* (GS) *Gorakhsa Samhita* (GRS), *Siva Svarodaya* (SSW) and many *Yoga Upanishads* ^[4] such as *Dharsana Upanishad* (DU), *Dhyana Bindu Upanishad* (DBU), *Sandilya Upanishad* (SU) *Trisikha Brahmana Upanishad* (TBU), *Varaha Upanishad* (VU), *Yoga Chudamani Upanishad* (YCU), *Yoga Sikha Upanishad* (YSU) and *Yoga Kundali Upanishad* (YKU), *Yoga Yajnavalkya* (YY), *Sat Chakra Nirupana* ^[5] (SCN) others. All the relevant references were identified and noted. It was found that the following classical texts have mentioned about yoga physiology and yoga anatomy to some extent.

3. Results & Discussion

All the yoga practices are tailored with the sole purpose of making the practitioner to rouse the spiritual energy from its dormant resting stage at the root of the spine, higher up through various psychic centres till it reaches the thousand petal lotus, *Sahasrara* in the top of the head and merges with the Universal Consciousness ^[6]. This is *mukti* or liberation in the yogic sense and the process has been described in detail in various esoteric works. Its practical aspect is alive till today, being handed over from generation to generation, from preceptor to disciple, in a hidden lineage spread throughout India underneath the bubbling superficial social and public

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life of the country [7]. Here the details of spiritual nerve channels (*nadis*), nerve centre (*kanda*) and the different kinds of airs (*vayus*) is deliberated.

3.1 Nadis

The physical body is structured by an underlying system of *nadis*. In recent times the *nadi* system has been associated with the nervous system. *Chandhogya* and *Brihadaranyaka Upanishads* clearly state that *nadis* are entirely subtle in nature. The word *nadi* comes from the Sanskrit root *nad* which means 'flow'. *Nada* is a resonating and subtle vibration. Therefore, we can say that *nadis* are subtle flows of vibration. The *Upanishads* explain that the *nadis* penetrate the body from the soles of the feet to the crown of the head, carrying *prana*, the breath of life.

The entire network of *nadis* is so vast that even *yogic* texts differ in their calculations of the exact number. References in the *Goraksha Sataka* (GRS; 25), *Siva Svarodaya* (SSW-32) and *Hatha Yoga Pradipika* (HYP; IV-18) place their number at 72,000; the *Prapancasara tantra* says 300,000; while the *Siva Samhita* (SS-II.13) states that 3,50,000 emerge from the navel center. Regardless of the exact figure, the description of their structure is always the same. They are described as thin strand like threads, similar to those of the lotus stem, which emanate from the spinal column (*merudanda*).

Of all the thousands of *nadis*, *sushumna* is said to be the most important. *Sandilya Upanishad* (SU; I.10-12) and *Siva Samhita* (II.14 & 15) lists *sushumna*, *pingala*, *ida*, *sarasvati*, *kuhu*, *yasasvini*, *varuni*, *gandhari*, *sankhini*, *pusha*, *visvodari*, *alambusa*, *hastijihvaka*, and *payasvani*, as the principal *nadis*. *Hatha Ratnavali* (HR; IV -35 & 36) also names the above *nadis* excluding *hamsini*, *hastijihvaka*, and *payasvani* but adds *jihva nadi*. The *Siva Svarodaya* (36) names ten major *nadis* that connect to the 'doorways' leading in and out of the body. They are: *sushumna*, *pingala*, *ida*, *gandhari*, *hastijihva*, *pusha*, *alambusa*, *yasasvini*, *kuhu* and *sankhini*. Of these ten, *ida*, *pingala* and *sushumna* are most important (SS-II.15). They conduct the energy to the *cakras*, situated along the spinal column.

The seven lesser *nadis* are known as *gandhari*, originating from behind *ida* (DU-IV.14; SU-I.12) and ending in the left eye (*Yoga Chudamani Upanishad* [YCU]-18 & *Goraksha Samhita* [GRS] -29); *hastijihva*, starting from behind *ida* (DU-IV.14) and connecting to the right eye (YCU-19 & GRS-30); *pusha*, starting behind *pingala* (DU-IV.15 & SU-I.12) connecting to the right ear (GRS-30); *yasasvini*, which is from behind the *pingala* between *pusha* and *sarasvati* (DU-IV.15) ending at the tip of the left big toe (SU-I.12 & DU-IV.19) and in the left ear (YCU-19 & GS-30); *alambusa*, from *kandastana* and surrounding the anus (DU-IV.7 & SU-I.12) to the mouth (YCU-17 & GS-30); *kuhu*, starting on one side of the *sushumna* (DU-IV.13 & SU-I.12) and then running to the reproductive organs (GS-31 & SU-I.12); *sankhini*, starting between the *nadis*, *gandhari* and *sarasvati* (DU-IV.22) ending in the tip of the right ear (SU-I.12) supporting *sushumna* on its stalk above the neck (SCN-40).

The other *nadis* include, *payasvini*, which originates between *pusha* and *sarasvati* (SU-I.11) ending at the edge of the right ear (DU-IV.20); *sarasvati*, that behind *sushumna* (DU-IV.13 & SU-I.11) flowing upwards till the tip of the tongue (YSU-V.23); *shura*, the *nadi* that goes between the eyebrows (YSU-V.22); *varuni*, that which originates between the two *nadis* *yasasvini* and *kuhu* (DU-IV.16), reaching all parts above and below *Kundalini* (SU-I.12) *visvodari*, that which starts between *kuhu* and *hastijihva*, located inside the *kanda stana*

(DU-IV.15); *vajra*, that is present inside *sushumna* (SCN-1) and *chitrini*, that is inside the *nadi vajra* (SCN-2), which is itself is present inside the *sushumna*. All of these principal *nadis* have their mouths downwards supported by the vertebral column and are like thin threads of lotus (SS-II.17). The *Yoga Sikha Upanishad* (V.13-27) considers the 'navel wheel' to be the place where all the *nadis* have originated unlike other *yoga* treatises. The *Trisikha Brahmana Upanishad* (TBU-32) too explains about the *nadis* and their place of origination. According to it the place two inches below the generative organ and two inches above the anus, is the midpoint for the human being. In this place, called *tundam* (YBU-31) is the *kanda* the root for all the *nadis*. The *Darsana Upanishad* (IV.11 & 12) describes the deities associated with the *nadis*. The deities for the following *nadis* are: *sushumna* - Siva, *ida* - Vishnu, *pingala* - Brahma, *sarasvati* - Virat, *kuhu* - Klutu, *yasasvini* - Sun, *varuni* - Pawan, *hastijihvaka* - Varuna, *gandhari* - Moon, *sankhini* - Chadraka, *pusha* - Bhuddi, *visvodari* - Pawaka, *alambusa* - Varuna and *payasvani* - Prajapati.

3.1.1 Sushumna Nadi

Sushumna starts from the middle of the *kanda* (TBU-31) up to the head (SCN-2) going up the spine (DU-IV.10) till *Sahasrara* (TBS-31). It is also called as *Brahma nadi* (YSU-V.17). *Sushumna* is like the inner passage of a thin lotus stalk and shines like a ray of lightning (TSB-31). Out of all the *nadis* *sushumna* alone is the highest and the beloved of the *yogis* (SS-II.16). *Sushumna* is named as *trikunda*, *sucihatha*, *govita*, *sikara*, *trisanki*, *vajri* and *omkari* in *Hatha Ratnavali* (II.142). Lord *Siva* is in *sushumna* and *Siva* is in the form of *hamsa* (SSW-50). *Sushumna* represents the fire (SS-II.17) and fire consumes all actions (SSW-125). *Sushumna* is *sambhavi* (HYP-IV.18), the power that grants peace, *visvarupini* (YSU-I.119), *visvadarini* (SU-I.10) and *sarasvati* (the river) (HYP-IV.16). It is *nirahara* (beyond needing nourishment), it is *nirarula* (unbroken, steady) and it becomes absorbed in the subtlest *tattvas* (SSW-136).

Within *sushumna* is a subtle *nadi*, the *vajrini*, and within it a still subtler one, the *citrini* (SCN-1 & 2). *Siva Samhita* describes *citrini* as brilliant with five colours, pure and moving in the middle of *sushumna* (SS-II.19). The interior of the *citrini* is called the *brahma nadi*. In that there is the subtlest of all hollows called *brahma randhra* (SS-II.18). The vital air or *prana* cannot flow through *sushumna* if it is filled with impurities (HYP-II.4). The *yoga* texts prescribe various practices in order that the *nadis* with get purified (HYP-II.6), especially *sushumna*, making the way clear for *Kundalini* to rise up. When the *prana* flows in the *sushumna* a state of *manonmani* (consciousness devoid of mind) is established (HYP-IV.20). It is also called *sunyasvara* and destroys all actions (SSW-124). *Siva Svarodaya* recommends that no action other than spiritual practices should be done when *prana* flows through *sushumna* (SSW-130).

The passage through *sushumna* is the giver of joy of immortality and by contemplating on it the *yogis* destroy their sins (SS-II.20). The *nadi sushumna* leads to *Brahma loka* and immortality (TBU-31). Thus the real purpose of *sushumna* is to provide a channel for the spiritual energy in man, which is a greater force than either *manas* or *prana sakti*. *Sushumna* contains the three gnats or *granthis*, viz., the Brahma, Vishnu and Rudra *granthis* (ref). *Hatha Yoga Pradipika* (II.66 & 67) recommends *pranayama* (*bhastrika*) so that the obstruction at the *brahma nadi* is cleared and allows the three *granthis* to be broken, thus quickly arousing *Kundalini*. When the *citta* is

absorbed in *sushumna*, the *prana* ceases to move, then the impurities are removed (*nadis* become clear) and *prana* is absorbed in *sushumna*. A person who has achieved this is called a *yogi* (YKU-I).

3.1.2 Ida Nadi

Ida originates at a point just below the base of the spine where the first energy center, known as *muladhara cakra*, is located. It emerges from the left side of *sushumna* (DU-IV.13; SU-I.11 & SCN-1) and spirals upwards, intersecting at the other four energy centers and plexuses in the spinal column and comes to a point of termination at the root of the left nostril (DU-IV.13), which joins *ajna cakra*, the sixth energy center.

The *Siva Svarodaya* (50) likens its nature to the energy created by the moon, therefore, it is also known as the *candra nadi*. *Ida* is associated with the parasympathetic nervous system (PNS), which sends impulses to the visceral organs to stimulate the internal processes. This creates a general state of relaxation in the superficial muscles, thus lowering the outer body temperature. Therefore, it is said that *ida* is cooling, relaxing and introverting. *Siva Samhita* (II.8) describes that the channel *ida*, goes over the body to nourish it, like the waters of the heavenly Ganges. *Ida* is compared to the day (HYP-IV.42)

In *Hatha Ratnavali* (II-144) the synonyms are *ida*, *candra* (moon), *sasi*, *vaii*, and *vama* (left side), while the others names are *bhagavati* and *ganga* (river) (HYP-III.11). *Ida* is in the form of *sakti* (SSW-52) and flows on the left side of the body. It is amirt (nectar) and the giver of strength and nourishment (SSW-57). *Ida*, the *candra nadi* is the female principle and when this *nadi* is active one should begin placid work (SSW-60). The flow of *prana* in *ida* gives *siddhi* (perfection or greater psychic ability) (SSW-58). According to *svara yoga*, left nostril breathing influences the activities of the mind, and it indicates that introversion and mental creativity predominate so that any extremely dynamic or extrovert activity should be avoided. The *svara yogi* thus manipulates the flow of air in the left nostril in order to directly control *ida* and bring about its influence at will or suppresses it when necessary. Through *ida* the mind can be controlled (SSW-67).

3.1.3 Pingala nadi

Pingala emerges on the right side of *muladhara* exactly opposite to *ida* starting from the right of *sushumna* (DU-IV.13, YSU-V.19 & SU-I.11) with its mouth over brahmarandhra (DU-IV.13). It spirals up the spinal column, crossing *ida* at the four major energy centers, and terminates at the root of the right nostril (SU-I.11). *Pingala* governs the whole right side of the body. To control *pingala* the breath in the right nostril is to be manipulated. *Pingala* is compared to the night (HYP-IV.42) and the river Yamuna signifies it (HYP-II.111).

Hatha Ratnavali (II.143) names *pingala* as *dumbhini*, *surya*, *yamina*, *aksara*, *kalagni*, *rudri*, *candi*. *Pingala* is the transmitter of *prana sakti*. It is the positive aspect, also known as the *surya* or the solar *nadi* (SSW-50 & HR-IV.37) because its energy is as invigorating as the sun's rays. *Pingala's* energy activates the physical body and externalizes the awareness. It is associated with the sympathetic nervous system (SNS), which releases adrenalin to stimulate the superficial muscles. *Pingala* is energizing, heating and extroverting. *Pingala* is known as the *daksina* (right flow) (SSW-49) and aids the growth of the body (SSW-57). *Surya*, the solar flow is the male principle; sun is *Siva* (SSW-60) and

when *prana* flows through *pingala* difficult and hard work should be done (SSW-61). *Pingala* is the giver of nirvana since the Lord of creation and destruction (the sun) moves in this *nadi* through auspicious ecliptical signs (SS-II.12). *Kundalini* arises when all the *nadis* are purified and when the *ida* and *pingala* are controlled. Then *Kundalini* rises up through the *sushumna* to reach *Sahasrara*. *Ida* is the *Sakti* and *pingala* is *Siva*. When *Kundalini* rises through *sushumna*, there is union of *Siva* and *Sakti* leading to liberation. This is the culmination of the yoga process.

3.2 Vayus

Vayu is the 'air'. According to *yoga* philosophy there are ten different *vayus* that have different functions and are located at distinct places in the body. It is the *vayu* that travels through the *nadis*. *Siva Svarodaya* (SSW-42-47) is a treatise that dealt with this topic at length. According to it, they are five main *pranas*: *prana*, *apana*, *samana*, *udana*, and *vyana* (SSW-42) and five subsidiary *vayus*: *naga*, *kurma*, *krikala*, *devadatta*, and *dhananjaya* (SSW-43). The eternal *prana* exists in the heart and *apana vayu* is in the excretory organs (SSW-43). *Samana vayu* is situated in the navel region, *udana* is in the throat and *vyana* pervades throughout the body (SSW-44). *Naga vayu* is for belching, *kurma vayu* is for blinking and likewise, *krikara*, sneezing; *devadatta*, yawning (SSW-46) and *dhananjaya* pervades after death. In the form of the *jiva*, these ten *vayus* work in all *nadis* (SSW-47). During *yogic* practices these *vayus* are controlled and mastered enabling *Kundalini* to rise up.

3.3 Kanda (Nerve Centre)

There is another important *yogic* anatomical part of the body that needs description and that is, the *kanda*. *Kanda* means a 'bulb', 'knot', 'swelling' or 'lump'. The shape of *kanda* is oval (VU-21; *Vasitha Samhita*-II.12; *Yoga Yajnavalkya* (YY-IV.17) and is said to be like the egg of a hen covered with skin (YSU-V.21; DU-IV.4 & YCU-14). In *Hatha Yoga Pradipika* (HYP-III.109) *kanda* is described as twelve fingers in height and four fingers in width whereas it is said to be four fingers in height and breath (DU-IV.14; VU-21). *Kanda* is the place said to be located two inches below the genitals and two inches above the anus, the midpoint of the human being, in a place called *tundam* (TBU-32 & YBU-31).

With reference to *muladhara cakra*, *kanda* is said to be located nine inches above the level of *muladhara* (DU-IV.3; HYP-III.109 & YSU-8). Although there are differences relating to the exact location of the *kanda*, *kanda* is said as the place from which all the *nadis* originate (YSU-IV.27; YCU-15; DBU-51 & HR-IV.33). It is said to be soft and white in colour (HYP-III.109). *Kanda* is the seat of *Kundalini* (DU-IV.11; YCU-36-37 & HYP-III.103). If the *Kundalini* rests below the *kanda* it binds (the *jiva*). If it goes above the level of *kanda* through the path of *sushumna* it gives liberation (YCU-44). For this purpose many *yoga* reatyses suggest to activate the *kanda* region by doing specified *asanas*, *pranayama*, *mudras* and *bandas* (HYP-III.110 & YKU-I.49). Once *kanda* is activated and controlled then *sushumna nadi* is opened allowing *Kundalini* to pass through to reach the *Sahasrara* (HYP-II.41).

4. Conclusions

Scientific investigations all over the world have shown that there are numerous benefits of *yoga* including physical, psychological, moral and spiritual. All these are brought forth due to the correct passage of the spiritual energy via the *nadis*

and the *cakras* in a graded manner. It is imperative to learn about the yoga physiology and anatomy in order to understand this popular alternative medical science by the new age person.

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