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Is there scientific evidence for chakras?

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Abstract:

Chakras are part of Eastern spiritual traditions and Western biofield therapies. In this narrative review, anatomical and physiological evidence in support of chakras as scientifically detectable structures is examined. Although there have been few scientific studies of the chakras, evidence suggests that chakras may emit electromagnetic radiation and be associated with underlying nerve plexuses.

Keywords: Chakra, Biofield, Human Electromagnetic Radiation, Subtle Body, Energy Medicine, Energy Healing

Introduction:

The chakra system originated in India about 1000 years ago as part of Hindu and Buddhist tantric yoga traditions (Feuerstein, 2001). In tantric yoga, practitioners meditate on the chakras to attain higher states of consciousness (Motoyama, 1981). Chakras were first introduced to the West by the Theosophical Society in 1880 (Leland, 2016). A Western version of the chakra system was further developed by psychologists, philosophers and bodyworkers during the Human Potential Movement in the 1960s and 70s. In the Western system, chakras provide a psychological map for self-development and a path of healing for self and others (Judith, 2004).

Currently, chakras are a popular topic in New Age spirituality and healing, and biofield therapies (Gerber, 2000; Dale, 2009). New Age practitioners describe a subtle anatomy of the human body which includes: an aura or biofield; energy meridians or channels;

and chakras, which are considered to be "energy centers" controlling the flow of prana or life force within the mental, emotional and physical bodies. While chakras are part of the subtle body in many spiritual traditions, it is not clear if they have an anatomical or physiological basis, similar to acupuncture points or meridians in Traditional Chinese Medicine (Ahn et al., 2008). In this review, I examine scientific evidence in support of the subtle energy structures known as chakras.

Method:

To locate scientific studies of the chakras, I searched the following databases: PubMed, ResearchGate and Google Scholar. Analogous to the approach used for acupuncture points and meridians, I narrowed the search to anatomical and physiological studies that provide evidence in support of chakras. Peer-reviewed theoretical papers and non-peer reviewed intuitive descriptions of the chakras were excluded from this study. The following search terms were used: "chakra", "chakras", "scientific studies of the chakras", "science of chakras", and "human electromagnetic radiation". Books containing scientific studies of the chakras were identified from book reviews in Google Scholar, and from reference books in Energy Medicine (Gerber, 2000; Benor, 2004; Wisneski and Anderson, 2009; Swanson, 2010).

Results:

Sixteen peer-reviewed articles were identified in PubMed. Based on subject matter, these articles can be divided into three subtopics: anatomical studies of chakra locations (n=2); theoretical reviews of subtle anatomy; and clinical studies of mind-body therapies. Google Scholar and ResearchGate yielded a small number of studies published in conference proceedings and non-indexed databases. Two physiological studies were found in books (Motoyama, 1981; Hunt, 1996).

Anatomical studies:

In an early text, Leadbeter (1927) noted that the midline chakras are located close to major neurological plexuses, suggesting an association between the chakras and the nervous system. Recently, Rokade (2017) observed that the cardiac plexus of nerves is located at the base of the heart, in close proximity to the heart chakra. The muladhara chakra (base or root chakra) is closely associated with the inferior hypogastric plexus and its sub plexuses (Sweta et al., 2018). These studies support the hypothesis that the midline chakras have neuroanatomical correlates.

Physiological studies:

Two early studies are found in books written by scientists. In *Theories of the Chakras*, Motoyama (1981) describes a series of preliminary experiments examining electric, magnetic and optical emissions from chakras during meditation. In these experiments, experienced meditators sat on a chair in an electrostatically shielded, light-proof room. A round copper electrode and photo-electric cell were positioned in front of a given chakra, with another copper

electrode placed in front of a control chakra. A magnetometer was placed on the floor near the subject. The subject was asked to meditate on one chakra, and to indicate the beginning of any emissions [sensations] from that chakra by pushing a button. During periods of chakra emission, a weak light was detected by the photo-electric cell, and high-frequency oscillations were detected with the copper electrode adjacent to the active chakra, but not the control chakra. The author includes copies of experimental recordings in his book, which provide evidence that chakras may emit measurable, detectable energy. According to Motoyama, "when the nonphysical [mind] interacts with the physical [body], there are perturbations in physical space with measurable radiations."

Hunt (1977, 1996) describes her chakra experiments in *Infinite Mind* and in a project report to the Dr. Ida Rolf Institute. As a measure of chakra electrical activity, Hunt affixed electromyographic (EMG) surface electrodes on 9 chakra/acupuncture locations in 4 experimental subjects, each of whom received 10 Structural Integration ("Rolfing", i.e., deep massage) healing sessions, for a total of 40 recorded sessions. Electrode placements varied by experiment, depending on the area of the subject's body being manipulated ("Rolfed") by the healer. Simultaneous with the electronic data, an auric reader, Rosalyn Bruyere, recorded her observations with a microphone, noting color, size and energy movement of the chakras and auric 'cloud' of the subject as each session progressed. As a major finding, Hunt observed that particular wave forms and frequencies in chakra electrical activity corresponded to particular colors observed by Bruyere at those same chakra locations. With frequency analysis between 100 Hz – 1 KHz, distinct frequency bands were discovered for each auric color, regardless of chakra location. Another notable finding was an observed increase in amplitude of electrical activity as a chakra 'opened'. Following Hunt's work, Wirth and colleagues (1997) did multisite chakra EMG recordings during Qigong and Therapeutic Touch healing sessions, but the scientific validity of Wirth's research findings has been questioned (Solfvin et al., 2005).

Recently, Rowold and Hewson (2020) took a similar approach to Hunt, using EMG electrodes affixed to the seven major chakra areas, and recording frequencies above 200Hz. They measured baseline values in two groups: biofield practitioners (BP, n=20) and university students (ST, n=24). For both groups, they observed 10 distinct frequency bands – the 8 bands described by Hunt plus two additional bands. The BP group displayed higher band power than the ST group, suggesting that healers may have more biofield 'power' or energy to do healing.

Jalil et al. (2015) used a hand-held radiofrequency meter with a dipole whip antenna to detect MHz radiation from the seven major chakras in 26 young, healthy subjects. These authors did extensive calibration of the detector, determining the optimal antenna length and distance from the human body. They found that each chakra radiates a unique band of frequencies in the MHz range. Mean frequencies for the chakras ranged from 29 MHz to 86 MHz, with the highest frequencies found at the third eye and crown chakras. In support of this

finding, the human body has an overall resonant radiofrequency around 53 MHz (King, 2000).

Conclusion:

These studies, though few in number, suggest that the chakras may be scientifically delineated, similar to acupuncture points and meridians which have unique electrical properties (Ahn et al., 2008) and possible anatomical correlates (Bai et al., 2011). The Motoyama and Hunt studies were pioneering, demonstrating the possibility of studying chakras, and bridging spiritual/clairvoyant experiences of the chakras with scientific measurements. Later studies by Rowold and Hewson (2020), and Jalil et al. (2015), are more carefully designed, pointing the way for future studies. Overall, it appears that radiations are detectable at chakra sites, which is consistent with the emerging field of energy medicine and biofield therapies (Matos et al., 2021).

Although spiritual traditions were the first to describe a subtle body and subtle energies (Loizzo, 2016), scientific evidence suggests that the 'subtle energy' in energy medicine is neither supernatural nor does it require a revision in biophysics (Srinivasan, 2010; Kafatos et al., 2015). The biofield, of which chakras are part, is based on bioelectromagnetics and biophysical fields that play a regulatory role in cellular structure and function (Movaffaghi and Mohammad, 2009).

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