

Good Noise? Infrasound May Be Beneficial

THERAPEUTIC INFRASOUND

The production of therapeutic infrasound has had some scientific investigation. In the mid 1990's a group of 29 Americans travelled to China and the strength of the infrasonic emissions from their hands was measured in a sound proof room, using B&K equipment. The procedures followed earlier work with 27 Qigong Masters, where the microphone was suspended 20mm from the palm of the hand and infrasonic radiations detected, mainly in the range 8Hz to 12.5Hz, at levels upto 76dB. The acoustic energy of Qigong Masters was reported as over 1000 times greater than that of other persons. The effect is sometimes described as a "hand trembling".

Infrasonic emissions of the American group were measured before and after a week of training in Qigong. The initial average test score for the group was a level of 47dB, with only four scoring over 50dB, but levels increased after the training, as shown in Figure 1². A level of, say, 60dB at 10Hz is very low, nearly 40dB below the normal hearing threshold at that frequency. Although the background noise level was less than 30dB in the test room, infrasonic background levels in many locations are likely to be 50 – 60dB.

Qigong is one of the widely based systems of self-development, including martial arts, exercise, mind-body interactions etc, which have been practised in China for thousands of years. Medical Qigong is a form of Chinese Energetic Medicine combining the use of breathing control with individual physical movements,

Infrasound normally results in pessimistic responses, describing it as a complicated problem, bringing great misery to those exposed, whose difficulties arise from adverse subjective effects, compounded by inadequate assessment methods. But Chinese traditional medicine claims therapeutic uses for infrasound, produced from the hands of the "Qigong Masters", using an oriental system which many in the west, nurtured in experimental science and cause-and-effect medicine, find difficult to understand, and even more difficult to accept.

There have been recent changes in the UK, following a report on Complementary and Alternative Medicine (CAM) by the House of Lords Select Committee on Science and Technology.¹ It was estimated that the growth of CAM in the UK results in use by about 20% of the population, with an annual expenditure in excess of £1.5 billion. A result of the report has been the acceptance that CAM has a place in the health care of the UK and that more should be available on, or at least recommended by, the National Health Service. A directory of CAM practitioners is being developed for use by NHS healthcare professionals (www.nhsdirectory.org).

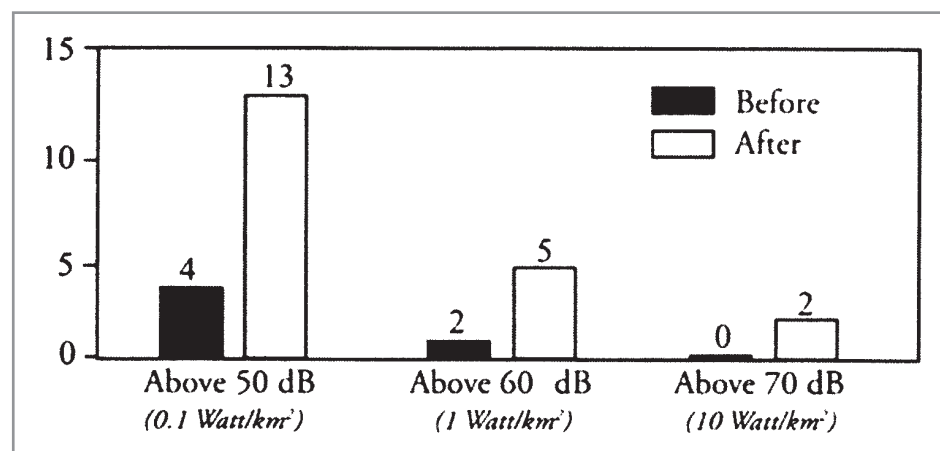


Figure 1. Effect of one week training on emission of infrasound from the hands³

creative visualization and perceptual intention, in order to bring strength and balance to the internal organs and "energetic fields". It is claimed that the infrasound produced from the hands of Qigong practitioners is used to give non-contact healing by application to

¹Complementary and Alternative Medicine. House of Lords Science and Technology Committee, Sixth Report. November 2000.

²Emitted Qi training Increases Infrasonic Sound Emission. www.chinahealthways.com/infrasonic.html

³In Figure 1, 60dB is described as an intensity of 1watt/km². A little thought shows that 1watt/km² is 10⁻⁶ watts/m², which is 60dB re 10⁻¹² watts

therapeutic
infrasound

the location of pain or to acupuncture points. There are, of course, other therapies which practice “healing hands”, but the physical mechanism of these is not identified.

Spiritual healing has a devoted following, whilst the Japanese Reiki system is developing rapidly in the west. (www.reiki.org)

MACHINES REPLACE MASTERS

China’s National Institute of Electroacoustics built the first medical infrasonic generator in 1985. A current version is marketed by the China Healthways Institute (CHI) of California as the “Infratonic Generator”, shown in Figure 2. (www.chinahealthways.com)

CHI claims that the generator makes use of “chaos” to assist its actions, but the chaos seems to originate in the use of a band of infrasonic electrical noise, described as in the range of 7.8Hz to 13.5Hz. This is a bandwidth of nearly 6Hz, centered on about 10.5Hz, resulting in a randomly

fluctuating envelope at an average frequency of around 4Hz, with carrier frequency varying about the centre frequency. The acoustic emissions are this electrical wave modified by the transducer characteristics, giving the infrasonic wave upon which the healing actions are based. Generation of objectionable infrasound requires a transducer diaphragm which can move relatively large amounts of air, requiring a big displacement, but as seen in Figure 2, infrasound is radiated from an enclosed source, about the size of the palm of the hand, which will limit the radiation to low infrasonic levels.

HOW DOES IT WORK?

Descriptions of the operation of the generator on the body are a little fuzzy and there is some crossover in the descriptions of infrasound and vibration. For example, the “Infratonic is a low frequency-high efficiency electroacoustic therapeutic massager”. There is the suggestion of a link between the frequencies of the



Figure 2. The CHI QGM 4.1 Infratonic generator

Infratonic generator and alpha rhythms of the brain, with the assumption that the generator stimulates the brain, which then reacts back to the site of the application. EEG measurements during Qigong therapy are said to have shown enhanced brain activity. But over-the-top descriptions such as the following, describing treatment of trauma, do not encourage confidence in the scientific basis of the method.

"Infrasonic waves from the Infratonic ripple through the acoustical field of the body. Through a patent pending process of infusing chaotic alpha, it gently softens and disperses these patterns of trauma naturally."⁴

Many published applications of the Infratonic generator have been on injuries to athletes and horses, although a very wide range of other ailments have

been treated. A thermographic study on chronic inflammation to the hocks of racehorses showed a reduction in heat radiation after treatment. Infrasound therapy is also claimed to accelerate the repair of damaged muscles in athletes. It is said that 2% of American doctors (about 8,000) use the Infratonic Generator⁵.

The US Food and Drug Administration, which regulates the sale of medical equipment, classifies the Qigong Infratonic Generator as a therapeutic massager and permits the following claims to be made: relaxes muscles, relieves pain, reduces inflammation, promotes local circulation. The mechanism by which these benefits are obtained is not specified. However, the possibility that low levels of infrasound may have a curative effect on the body, by penetrating tissues and activating favourable changes, is intriguing to acousticians and merits further critical evaluation.

⁴CHI Newsletter No. 103. Winter 2000

⁵www.chinahealthways.com/infratonic.html

SONAR V. FISH

The United States Navy may no longer test a powerful sonar system needed to protect its ships against enemy submarines because the noise it makes might possibly harm fish. In San Francisco, U.S. District Judge Elizabeth Laporte ruled on Tuesday August 26 that the Navy and the National Marine Fisheries Service had not considered alternatives that could protect whales and other marine life from the loud sounds created by the sonar.

SCHIPHOL

The Dutch National Aerospace Laboratory (NLR) has admitted that an error had been made in calculating noise pollution at Schiphol, ensuring controversy surrounding Amsterdam's Airport will continue to grow. The NLR's findings verified Schiphol's admission in June that a "stupid calculation error" had been made, which had forced Transport State Secretary Schultz van Haegen to request that the aerospace laboratory double check the calculations. The state secretary will now discuss the issue with the Cabinet and it is possible that noise pollution restrictions outlined in legislation dating back to the end of 2001 – which paved the way for Schiphol to expand with a fifth runway – might be stretched to allow the airport to make optimal use of the new landing and take-off strip. The adjustment would prevent Schiphol from breaching the existing noise pollution restrictions, which were outlined in the 2001 legislation. But environment groups and green-left party GroenLinks said Schiphol did not miscalculate, but claim instead the airport intentionally misled politicians and the public. They claim that the airport understated the noise pollution to ensure its expansion would be approved.