

# A Study on the Application of Additional Acoustic for Improving of the Electric Fan Function

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## Abstract

Electric fans, which are only used in summer, are now demanding a new paradigm.

At present, the electric fan has been in a very difficult competition due to the popularization of home appliances such as air conditioners, dehumidifiers and air purifiers that control air and wind. Now is the time for big innovation of the electric fan. Institute of Sound Engineering at Soongsil University in Korea, intends to work using for the sound know-how for many years, which has been studied for many years, to help Electric fans can health promotion, well-being and healing. From this point of view, a study on the application of additional sound to improve Electric fan function was conducted. Existing, the wind of the Electric fan mixes frequencies that help people's health with those that harm people's health. As a research method, a method of attaching a device to generate a body's own health frequency to an Electric fan is performed to help people's health. The study of healthy wind Electric fans will play a big role in reviving the Electric fans as popular electric appliances.

**Keywords:** Electric fan, Sound engineering research center, Healthy wind frequency, Popular home appliances, Revival

## 1. INTRODUCTION

In 1882, the first fan was marketed by Dyson co., in the United States, and in Korea, the first fan was sold by Gold Star co., in 1959. Meantime, the electric fan, which had been used the advantages of cheap electronic price, easy installation, and low electric charge, has been faithfully serving as a cooling device for the common people. However, with the development of electronic technology, air conditioners, dehumidifiers and air purifiers appeared in turn, which caused the electric fans to

become less popular. Now, we faced the situation of the times when there was not enough justification for the advantages of mobility and economics of electric fans. The reason is that air conditioners and dehumidifiers have become much cheaper, richer people's quality of life has made them more economical, and power saving technology has been developed to reduce the burden of maintenance costs. If we do not regain the popularity of the electric fan at this point, it will disappear, and we will have to go to a museum or antique store to find it. However, since the electric fan generates natural wind by the power of the motor and delivers it to the human body, it is an ideal cooling fan that has less side effects on metabolism and less purchase, installation, and maintenance costs. In this regard, the Institute of Sound Engineering intends to begin research on electric fan acoustic evaluation and innovation. We will study the health sound wind electric fan for human health by integrating the health frequency studied by the sound engineering research institute for many years <sup>[1][2][3]</sup>.

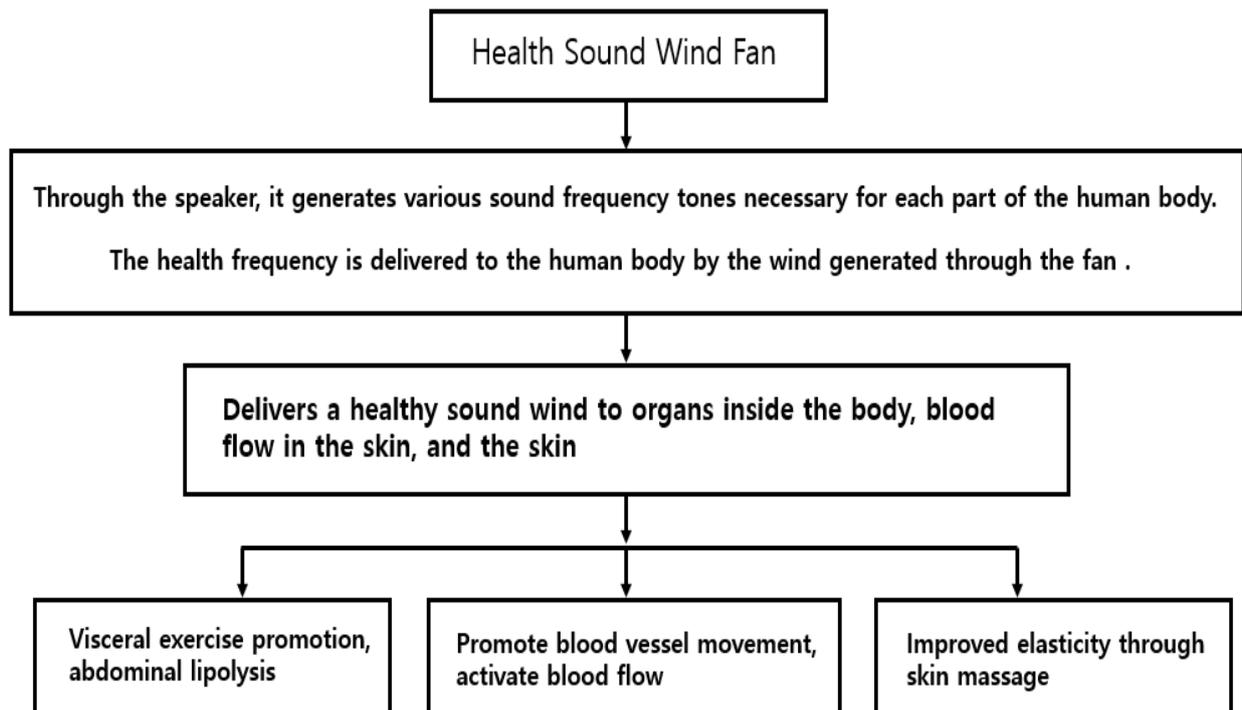
## 2. STUDY ON THE ELECTRIC FAN OF HEALTHY SOUND WIND

The electric fans stimulate our bodies with wind, sound and vibration. Wind, sound and vibration are all the main functions of an electric fan that directly irritate human skin. The electric fan wind moves the air by the rotation of the fan, but the sound stimulates the skin invisibly by shaking the air using sound waves. Vibration also affects humans through ultra-low frequency, low frequency, high frequency, and ultrasonic ranges outside the audible frequency range that humans hear. In this study, we make the electric fan of health sound wind by combining well-being, healing sound and emotional sound with IT technology, emotional technology and health technology that have been studied for many years on the characteristics of wind, sound and vibration of fan.

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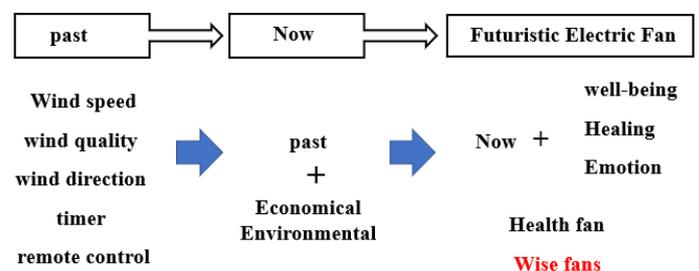
**Figure 1.** Overview of the electric fan of health sound wind

The electric fan of health sound wind is a principle that restores the natural frequency of the human body by transmitting the sound frequency tone to the human body by attaching a speaker to the fan as outlined in Fig. 1. The electric fan of health sound wind will be the electric fan of the future that will protect the human body's rhythm about the internal organs, blood vessels and skin of the human body. [4][5]

### 2.1 Necessity of the electric fan evolution

The first-generation electric fans of the early days played a great role simply by letting the heat out with just one type wind. Afterwards, the second-generation electric fan gradually divided the wind type from weak wind to strong wind, rotated the direction of the wind, and attached a timer to control the time. These developments have been as simple as possible, such as the distribution of power or the adoption of gears and bearings for rotation. Since then, the third generation has evolved from pursuing the distinction between the weaker winds than the weak winds and the finer winds such as natural winds, allowing reservations from any time to any time, or controlling them using a remote control or the Internet. Of course, the subdivision and reservation function of the wind is a developmental stage that began to consider health. The electric fan of the future should be revived as a fan for health in preparation for the centenarian age. The modern society that has run for industrialization is now in a time to find item for the fourth industrial revolution. The fourth industry is expected to become a society based on the Internet of Things (IOT) with artificial intelligence (AI) in the Internet space, and various

industries are expected to operate autonomously based on the Internet.



**Figure 2.** Necessity of the electric Fan Evolution

Many industries will be merged into one and new industries will be born. However, the ultimate goal will be the healthy life of mankind. In other words, high-level industries will focus on human well-being, healing and emotion. After all, the electric fan of health sound wind will achieve this human goal based on AI and IOT.

### 3. THE ELECTRIC FAN OF HEALTH SOUND WIND

In 1950, German scientist Unfried Schumann discovered that the Earth's natural frequency is 7.83 Hz, which is the same as the human body's natural frequency. In addition, research on the natural frequency of the human body has been continued by life scientists in various fields. The human body maintains

health by resonating with the natural vibration frequency from the internal organs to the external skin based on the skeletal structure. The electric fan of health sound wind is equipped with a special speaker that generates a natural vibration frequency in the fan part to generate a natural vibration frequency for each part to massage the human body along with the wind of the fan to help maintain health All. The electric fan of health sound wind can be customized according to the health conditions of each part of the body as you select the type and frequency of the wind.[6]

### 3.1 Natural frequency study of the human body

The time when I became interested in the natural frequency of the human body is when I discovered the natural frequency of the earth. This is the beginning of the discovery that the earth's natural vibration frequency, which has found the earth's natural frequency of 7.83 Hz, resonates with the natural frequency of the human body.

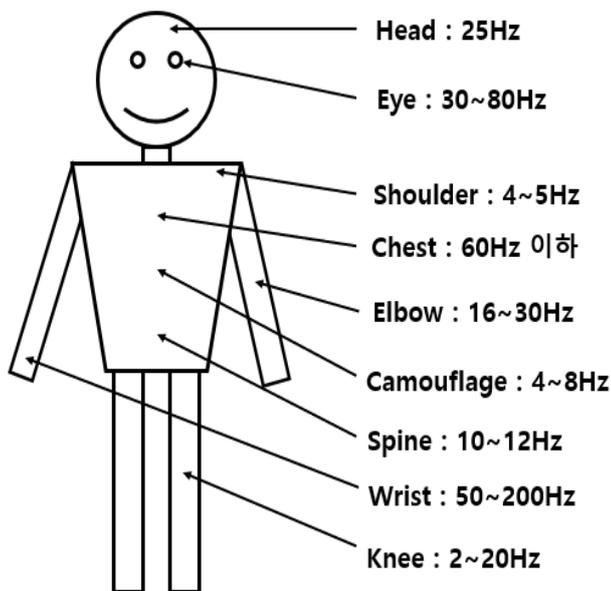
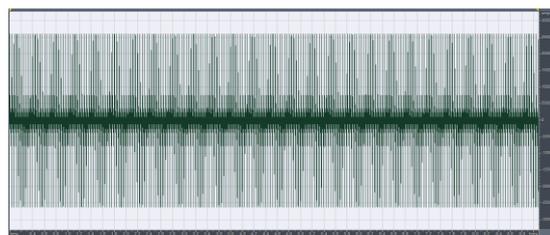
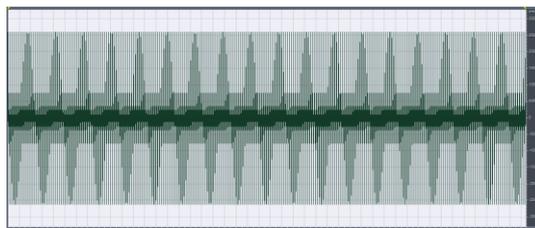


Figure 3. Natural frequencies of parts of the human body.

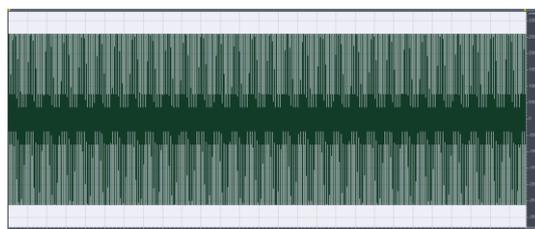
After that, the average frequency of the human body was found to be the same as the earth's natural frequency of 7.83 Hz, and we found out that each frequency in the human body has a different frequency. The natural frequency of the human body has been researched and tested in various ways. The natural frequency of the human body has been studied in various places, such as Europe, the United States, Japan, and has been used in various ways. People have been using the natural frequency of the human body as a treatment for human health or as a way to protect the health. Since the human body contains water with more than 70% water, it can stimulate the cells through the skin resonance effect of the ultra-low frequency below 20Hz and the ultrasonic wave above 20kHz, which is outside the human audio frequency band 20Hz to 20kHz.



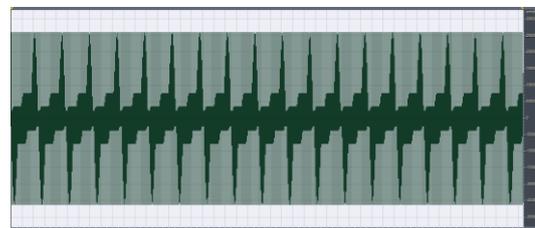
a. 20Hz Frequency Sound



b. 30Hz Frequency Sound



c. 50Hz Frequency Sound



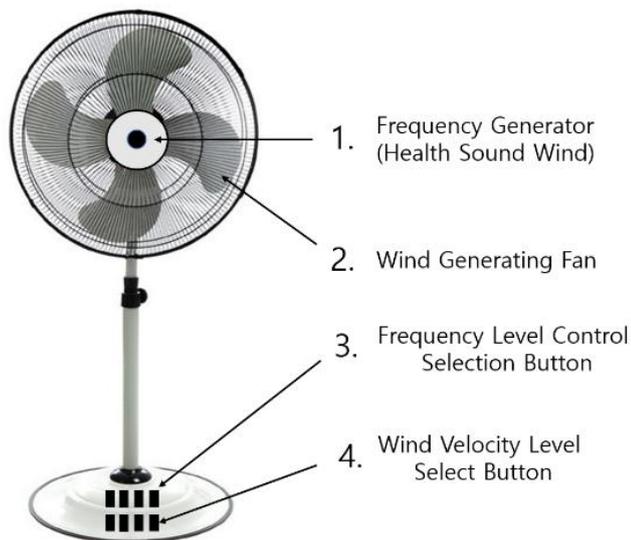
d. 60Hz Frequency Sound

Figure 4. Tim Domain graph of the natural frequency range of the human body

'a' to 'd' of figure 4 is a Tim domain graph of '20Hz' to '60Hz' frequency corresponding to the natural frequency range of the human body. Sound waves in the low frequency band cause vibrations affecting the inside of the human body, and vibrations in the high frequency band cause vibration affecting waves from the upper body to the head. Such phenomena cause the natural frequencies of the human organs to resonate, so low frequency sounds (less than 100 Hz) corresponding to human organs help digestion when the indigestion is intact and activate the heart and stomach. Sound waves in the 100Hz to 500Hz band resonate blood vessels and blood cells, which are just below the skin, to help blood circulation if used properly. Skin beauty keeps skin elastic and healthy by allowing ultrasonic and ultra-high frequency sounds over 20kHz to resonate with the skin surface. [7][8]

### 3.2 Structure and principle of the electric fan of health sound wind

The electric fan of health sound wind is equipped with an additional switch and controllable speakers for frequency generation, which are not found in conventional electric fans. The switch to control frequency generation has 4 steps to choose from for skin, eye, respiratory and immune boosting.



**Figure 5.** Structure of the electric fan of health sound wind

The structure of the electric fan of health sound wind is shown in Figure 5. 1 in Figure 5 is a speaker to generate the human body's own frequency, the sound of health, and it works in synchronization with the control button of number 3 in Figure 5. The frequency controller has four stages: skin, eyes, respiratory system and immunity. And the frequency controller can select each frequency for health. Numbers 2 and 4 in Figure 5 are the same fan and wind speed control buttons as conventional the electric fans [9][10].

### 3.3 Efficacy of the electric fan of health sound wind

The electric fan of health sound wind generates a frequency that resonates with the natural frequency of each part of the human body. And the frequency is transmitted to people by the wind of the electric fan of health sound wind to help keep people healthy. First, the electric fan of health sound wind sends the skin's necessary frequencies to the human skin and scalp, giving the skin elasticity and keeping the scalp healthy. As a result, the electric fan of health sound wind has a cosmetic-like effect on the skin, giving it a radiant look on the face, preventing aging, preventing hair loss on the scalp and helping hair growth. Second, the electric fan of health sound wind delivers the natural and resonant frequencies of the eye along with the wind to the human body to relieve eye fatigue and help protect and restore vision. Third, the electric fan of health sound wind delivers the natural frequency of the respiratory

tract to the human body along with the wind, restoring the mouth and nasal cavity, as well as the vocal cords and vocal cords, to prevent sore throats and vocal cord nodules.

In addition, the frequency of the electric fan of health sound wind transmitted through the respiratory passages enhances lung function and improves lung capacity. Fourth, the electric fan of health sound wind transmits the fundamental frequency of the body along with the wind to the body to stabilize the whole body. The frequency wind also strengthens the internal organs, strengthening immunity, keeping the thyroid gland and the gland healthy, preventing colds, and keeping condition of the body.[11]

**Table 1.** Health efficacy of the electric fan of health sound wind

part	efficacy
<b>Skin beauty (4Hz~20Hz)</b>	It gives the skin its elasticity at the right frequency to soften the face, strengthen the scalp and overall prevent aging.
<b>Eye (30Hz~60Hz)</b>	By using the frequency that fits the edge of the eye, it helps to relieve eye fatigue and clear the eyes, thereby protecting and restoring the overall vision.
<b>Respiratory system (50Hz~60Hz)</b>	It sends the proper frequency through the nose and mouth to massage the vocal tract and vocal cords, strengthening the neck, voice, and lung capacity.
<b>Immunity (4Hz~200Hz)</b>	It stabilizes the body and radiates frequencies that resonate to the organs in the body to protect the health by strengthening the overall immunity.

The electric fan of health sound wind will be an effective fan for People who have a lot of skin or scalp problems, tired of eyes due to using a lot of eyesight using, has a sore throat due to a sore throat, splitting of voice, or sputum of voice. have a low immunity and be made often cold, suffers from constipation due to indigestion. Furthermore, the electric fan of health sound wind will help to recover fatigue to prevent the drowsy driving of people who need to drive, the eye health of the lecturers, the eye health of the students who study, and the need for time difference adaptation.

### 3.4 Prevention of human hazards of the electric fan of health sound wind

The sound used in the electric fan of health sound wind should be operated with the highest priority to provide sound winds for health so that it is operated without harm to the human body in terms of sound intensity or frequency. The sound frequency used in the electric fan of health sound wind is generated based on the intrinsic frequency of the human body and thus activates the intrinsic frequency of each weakened human body part. The electric fan of health sound wind sets the standard so that the

loudness of the sound frequency occurs within a range that is not harmful to hearing. In addition, the electromagnetic standards recommended by the Occupational Safety and Health Administration should be strictly followed <sup>[12][13][14]</sup>.

**Table 2.** Item of hazards prevention of the electric fan of health sound wind

Field	Hazard Prevention
<b>Sound intensity</b>	The sound of the electric fan is designed to be below 50dB of daily noise level, so it is not harmful to hearing management.
<b>Electromagnetic (EM) Wave Whether or not to use</b>	Because it uses the principle that air is transmitted to the skin through the sound pressure, it is safe for electromagnetic waves because it uses almost no EM waves unlike existing electronic devices.
<b>Skin contact safety</b>	Health sound wind including frequency suitable for skin is transmitted to human body by non-contact, so it is safe from skin irritation or infection.
<b>Whether stress occurs</b>	The wind of health sound is transmitted to the human body to make you feel good and comfortable.

The frequency and intensity of the sound used for the electric fan of health sound wind should be kept below 50dB so as not to exceed the noise level of living. The electromagnetic wave standard is also different from other existing electronic devices, and almost no EM wave is used. Health sound frequency is transmitted to the human body in a non-contact, so even people with sensitive skin do not have to worry about skin problems. Health sound frequency does not have to worry about skin problems even if the skin is sensitive.

#### 4. CONCLUSION

The planning and research of the electric fan of health sound wind can be said to be a groundbreaking study in which the electric fan called the general electric fan is revived from the ordinary electric fan to the popular home appliance again. The Earth's natural frequency of 7.83 Hz, discovered by the German scientist Schumann, has led to the study of the human body's natural frequency. As a result, it was found that the natural frequency of the earth and the fundamental frequency of the human body resonated. The natural frequency of each part of the human body maintains the health of the human body and strengthens the immunity. If the body's natural frequency is broken down, it will lose immunity and eventually lose health. As we continued our research for human health, we sought ways to maintain the natural frequency of human health using the electric fan. In this study, we studied the electric fan of health sound wind that helps health by generating these natural frequencies in a fan and delivering them to those who have lost

their natural frequencies or those who are susceptible to their natural frequencies. If the proper wind of the electric fan and the proper natural frequency of the human body are properly combined and delivered to the human body more effectively, the electric fan will be reborn as popular electronics to protect the health.

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