



CHINESE & ASIAN MEDICINE

What are the Meridians?

The meridian and collateral system (jing luo, hereinafter referred to as "Meridians") is comprised of the main meridian channels (jing mai) and the collateral vessels (luo mai). Jing takes from meaning of the Chinese word pathway (also jing) and are the main branches of the system. Luo means a "net," and are the side branches of the system.

In the Chinese medical classic, *Huang Di Nei Jing*, it is said that "the twelve meridians connect to the zang and fu organs within, and are spread like a net through the limbs without." This implies that a person's five zang and six fu organs, as well as his limbs and musculoskeletal system, are all connected into an integrated whole by the meridians. The meridians also coordinate the balance and order within the body. Only when a state of equilibrium is maintained can all the functions in the body be appropriately performed. As one can see, meridians are the pathways through which the various organ and tissue systems in the body coordinate and communicate.

In the *Huang Di Nei Jing*, there are many more discussions regarding the pathway-like characteristics of the meridians.

"Allow the *qi* and blood to flow and the yin and yang to be nourished."¹: the meridians are the passageways through which the energy that enables metabolic processes within the body to occur is delivered.

"Reduce the excess, tonify the deficient, allowing the yin and yang to be restored."²: The meridians are the pathways through which diseases may be treated.



"When an external evil attacks the body, it must first adhere itself to the skin and hair; if it is not expelled, it will invade the tertiary collaterals. If it is still not expelled, it will advance into the meridians, which connect to the five zang organs, and spread itself among the stomach and intestines..."³: The meridians are also the channels through which disease and pathological changes are transmitted.

"The meridians may also present themselves in a diffused and unregulated state. They "follow the skin, along and within the crevices between the flesh, and immerses into the membranes, finally spreading among the chest and abdomen."⁴ This different form that the meridians may take distributes energy and material to the tissues and organs in the chest and abdomen areas and serves to nourish and regulate these parts of the body. This widespread and diffused form of the meridians more closely resembles an empty area without a specific (and restrictive) structure that can be filled by energy and matter.

Regardless of whether the meridians are a network of pathways or an empty area, they all possess the characteristic of space. These different types of spaces allow for energy and material to be transported through the body in order to maintain the normal metabolism of body tissues. The "space-like" characteristic of the meridians can also be found in the description of acupuncture points.

In Meridian Theory, the Chinese word usually translated into English as "point" (xue) actually means "a space," and is also referred to as "node" (jie) or "cavitation" (qi xue) in the *Huang Di Nei Jing*. Some classical texts specifically emphasized the "space-like" characteristic of points, and differentiated the points from physical structures such as skin, muscles, tendons, and bones. Some texts stated "that which is referred to as a 'node' is where the shen and *qi* roams, entering and exiting the body, and not skin, flesh, tendons or bones."⁵ *Zhen Jiu Jia Yi Jing* (the A-B Canon of Acupuncture) used the word "cavity" directly when referring to "points."

If one accepts this theory that meridians are the spaces that exist inside our bodies, then the results from many research studies can be rationally and easily explained. Experiments that use isotope tracing technology is one of the classic ways to conduct research on meridians.

In 1987, at the Chinese Academy of Acupuncture, Dr. Jingbi Meng and his associates used radioisotopes to conduct studies on ten meridians, including the Pericardium channel, the San Jiao channel, the Stomach channel, the Liver channel, the Gall Bladder channel and so on. The movement of the isotopes was steady, and clearly in a linear fashion. When the tracks left by these movements were traced, they were mostly in line with the meridians as described by ancient Chinese medical texts.⁶ The route and speed of the movement, as well as the fact that the movement is easily affected by externally applied pressure and environmental factors such as low temperature, are all characteristics that support the theory that the meridians are actually the spaces that exist in the body. They also indicate that meridians are not, as some theories have proposed, known body structures such as nerves or blood vessels.

In 1980, Prof. Zongxiang Zhu and his associates at the Institute of Biophysics at the Chinese Academy of Sciences performed an experiment where they used a rubber hammer to vertically percuss the skin surface of the human body. Whenever the hammer struck a meridian line, the sound produced was noticeably louder and higher pitched than the sound from when the hammer was not striking on a meridian line. The sound was similar to one produced when tapping above hollow space. Furthermore, regardless of which meridian it was, whether it was a main or collateral branch, the sounds that were transmitted all had very high vibrations, distinctly different from the test points outside of the meridians.⁷ Greater amplitude is directly related to a louder sound. The space-like quality of the meridians was a requirement for the increase in amplitude.

When performing electrophysiological measurement related experiments on the meridians, the "space-like" feature of meridians can also be indirectly proven.

In early 1950, while Dr. Yoshio Nakatani of Japan,⁸ Dr. J.E.H. Niboyet of France⁹ and their contemporary researchers passed direct current through patients' skin and demonstrated that the electricity conductivity was higher in areas that fit the classical description of the meridians. Between 1978 and 1982, Prof. Zongxiang Zhu and his associates at the Institute of Biophysics at the Chinese Academy of Sciences utilized devices that measured skin impedance to test more than 1000 experiments in the more than four year time period. They showed that for almost any person and any meridian, lower resistance could be detected along the paths of the meridians.¹⁰

In their analysis of the cause for the occurrence of high power or low resistance, using biological knowledge and theories that were already widely accepted, Dr. Weisheng Yang et al., deduced that "the reason for low resistance in the meridians was because of the relatively higher content of interstitial fluids (tissue fluids)."¹¹ The reason that the meridians contain a higher degree of tissue fluid is precisely due to the existence of space, allowing different substances in the body to be able to seep into and fill the area, and thereby changing the conductivity. But whenever there is a disease condition, the structure of the space within the meridians will also change. Therefore, in experiments, the conclusion may also be drawn that "the low resistance feature of the points will change due to the existence of disease."

As one of the earliest scientists to pioneer research on the meridians, Prof. Zongxiang Zhu said during the discussion forum for the release of *The Theory of Physiological Spaces* that "almost all of the experiments that I have conducted prior to this can prove that meridians are the spaces that exist inside the body, but I had never considered this angle or designed my research based on this

theory."¹² During clinical practice, the space-like characteristic of meridians can also be seen.

When giving acupuncture, an experienced acupuncturist can feel directly with his hand the condition of the space within the meridians. This is referred to in the ancient classics as "where the space for the acupuncture point is located is where the needle should be placed"¹³ and "when needling here, one would most certainly hit the space of the acupuncture point and not the flesh joints; once the needle reaches the space in the acupuncture point, the sensation will follow the appropriate port onward."¹⁴ During the Tang Dynasty in China, the famous acupuncturist Shangshan Yang proposed that "the word 'port' (gang) used here means 'the empty space within the point'."

A basic principle in acupuncture therapy is "wherever the meridian passes through, it has the ability to treat." Once there is a point of abnormal obstruction on the meridian, it will negatively affect the normal movement of *qi* and blood. These types of abnormal occurrences on the meridian lines have long been noted in Chinese medical classics. For example: "if there is a knotted buildup as one follows the channel, needle the point where the knot is located"¹⁵, "if it is painful and hard upon palpation and is solid like a tendon, one may apply moxibustion."¹⁶ The use of descriptions such as "knotted buildup," "painful and hard upon palpation," and "like a tendon" is the result of when the normal space in meridians is taken up by solid tissue. During treatment, if these points of obstruction can be eliminated, results will be instantaneous. These points also match what are called ah shi points in the book *Essential Formulas for Emergency Use Worth A Thousand Ducats of Gold*, written by the famous physician Simiao Sun in the Tang dynasty. "Regardless of where the point may be located, if there is pain at this location, these are called ah shi points. They are called 'ah shi' points because they are effective when treated with moxibustion or acupuncture." In clinical practice, one may find that these ah shi points are mostly where physical obstructions has taken up what used to be the space of the meridians. When palpated or pressed, these points have often turned harder than other parts of the body and they are especially painful or sensitive.

Even though large sums of evidence pointing to the existence of meridians can be found through both scientific experimentation and clinical practice, why can people not find or see the actual structure of the meridians during autopsies? This is because of the space-like characteristic of the meridians. Because their structure is actually just made up of space and the space is located between the other physical structures of the body, once the area is cut open during an autopsy, the physical structures around the space would be destroyed instantly, which means the empty space will be changed or even disappears completely. This is the same idea as when a cup has been smashed to bits, the space wherein water may fill up also disappears along with the physical structure of the cup. But emptiness does not signify the lack of function. This space is an objective existence and its function is directly related to its property of emptiness. The same reasoning applies to the meridians in the body.

From how the human body is constructed, one can also see that this definition for meridians makes sense. In the human body, regardless of if it is hair, organs, soft tissue or hard bones, between the tissues, between the cells, even going as miniscule as between the molecules, space is everywhere. It is precisely this space that links the different tissues and cells in the body into one connected, integrated and cooperative whole. Combining both the description of the meridians in classical Chinese medical texts and conclusions from modern scientific experiments, no other established systems match the Meridians more so than the spaces that are present throughout the body. Only the spaces in the body fit all the characteristics that meridians possess.

Therefore, we may conclude that the meridians must be "space in the body that exist in a relatively

orderly and stable manner."¹⁷

References:

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