

# The Meridian is a Set of Pathways for Interstitial Fluid to Travel among Tissues

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**Abstract** In traditional medicine, the essence of meridian has always been a topic of discussion. Lymphatic fluid travels around the tissues freely and randomly, and pools wherever the tissues are more loosely spaced. This is the so-called meridian, which is a set of pathways for interstitial fluid to travel. In dead tissues, fluids do not travel anymore, thus the pathways of meridian do not appear. However, in Chi Gong state or during acupuncture, capillaries relax and fluid flows out of capillaries, and more fluid travels among looser spaced tissues and forms the shape of meridian. These pathways are difficult to be observed because they only form when fluids are traveling.

**Keywords** Meridian, Acupuncture, Chi Gong State

In traditional medicine, the essence of meridian has always been a topic of discussion. It is commonly acknowledged that lymphatic fluid travels around the tissues freely and randomly, and pools wherever the tissues are more loosely spaced. This is the so-called meridian, which explains why there hasn't been any observation on meridian of a particular tissue phenomenon in Anatomy – the tissues must be alive in order to be observed.

Some researchers indicate that meridian has a character of low liquid-pressure resistance[1]. When meridian liquid-pressure in a pathway with some liquid is tested, its resistance is found to be comparatively lower, which indicates the tissues on this meridian are in fact looser. Furthermore, several researchers also point out that meridian has a character of low electroresistance[2] as well as electromagnetic transmission line[3,4]. The interstitial fluid carries a higher electroconductivity while flowing under the epidermis. Compared with its neighboring skin, its resistance will be lower during the measurement of its pathways, thus it is easier to become electromagnetic transmission line. It has a character of high sound conductivity[5], because it can transport soundwaves at a much higher rate compared to its neighboring skin. An effective in situ staining technique using hematoxylin to visualize the threadlike structure in brain ventricles and the spinal central canal of a rabbit has been developed[6]. After a radiotracer injection (NaTc99O<sub>4</sub>) at acupuncture points of

humans and animals, the appearance of radiotracer paths can be visualized in the corresponding meridian lines[7]. This experiment also proves our hypothesis of meridian being a set of pathways for free interstitial fluid to travel, because it allows the radiotracer NaTc99O<sub>4</sub> to travel through these pathways. A research has expressed the existence of infrared radiant tracks along human meridian courses with infrared thermal imaging technique[8], and has proved that interstitial fluid pathways are higher in temperature than neighboring skin. When concluding from all evidences described above, and adding the results of our observation during experiment[9,10], we find that the capillaries are relaxed during acupuncture if the person feels the circulation of meridian. A large amount of free-flowing lymphatic fluid enters the meridian. When the person feels fluid flowing in the meridian, we can detect the signals, which indicate the appearance of fluid, by using laser Doppler[9,10].

These experiments support the hypothesis, which states meridian is a set of pathways for interstitial fluid to travel. In dead tissues, fluids do not travel anymore, thus the pathways of meridian do not appear. This is why the phenomenon of meridian can only be observed in living tissues. However, in Chi Gong state or during acupuncture, capillaries relax and fluid flows out of capillaries, and more fluid travels among looser spaced tissues and forms the shape of meridian[9,10]. These pathways are difficult to be observed because they only form when fluids are traveling. Nevertheless, there are still researches that achieve the observation of a partial of these pathways[11–13].

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