

# The principle of symmetry in acupuncture and its clinical applications

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**Abstract:** Clinical practice of acupuncture and study of the traditional Chinese medicine literature has led to the observation that if the diaphragm is used as an axis of symmetry, there are many symmetrical points on the upper and lower halves of the body. The symmetrical points share several common properties, including physiological functions, mechanisms of pathogenesis and therapeutic effects. Employing these corresponding points on the upper and lower parts of the body simultaneously can frequently enhance the therapeutic outcome rather substantially. This phenomenon may be called the Principle of Symmetry. Traditional and modern scientific literature already provides evidence that verifies the reliability of this principle. Furthermore, this principle may be viewed as the derivative of the Thalamic Neuron Theory.

*Keywords:* Pain, Thalamic Neuron Theory, Acupuncture, Principle of Symmetry, Traditional Chinese Medicine

**題目：針灸之對稱定律及其臨床應用**

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**摘要：**

筆者體驗到如以橫隔膜為對稱軸，身體上半部和下半部有許多對稱點。這

些對稱點無論在生理功能，病理機制或治療效應方面，都有不少共通處。同時應用這些上下相呼應的穴位進行治療，往往事半功倍。這現象可稱之為對稱定律。傳統文獻和現代醫學已包涵多方面的證據，核實這定律的可靠性。此外這定律又可視為腦丘神經原學說的衍生物。

**关键词：**痛, 腦丘神經原學說, 針灸, 對稱定律, 中醫學

## **Introduction**

One of the main reasons why acupuncture, an integral part of traditional Chinese medicine (TCM), has not been fully accepted by mainstream modern medicine stems is the difficulty of explaining its many therapeutic principles and healing mechanisms. Many animal studies and human clinical trials have shown the efficacy of acupuncture on different medical conditions (Lin and Chen, 2012; Wang *et al.*, 2012; Zhang *et al.*, 2012; Xu *et al.*, 2013). However, its underlying mechanisms are not well understood. In an attempt to solve the mysteries of TCM in general and acupuncture in particular, the author has published a hypothesis known as the Thalamic Neuron Theory (TNT) in a series of articles (Lee, 1977; Lee, 1978; Lee, 1981; Lee, 1994; Lee, 2002). The Principle of Symmetry, the focus of this article, is essentially a corollary of this very same hypothesis. Evidence from modern medical sciences and TCM teachings will be examined to strengthen the foundation of this concept, which may prove highly useful in selecting acupuncture points in the treatment of many medical conditions.

## **Therapeutic Efficacy of Anatomically Distant Acupuncture Points and The Thalamic Neuron Theory**

“For Disease of the Head, Puncture the Foot” has been a well-accepted therapeutic principle for thousands of years, yet it remains a major stumbling block for the acceptance of acupuncture because as valid and practical as it is, it cannot be readily explained by knowledge of modern neuroanatomy. Most traditional acupuncturists practice this principle without questioning its scientific basis. A possible explanation is that a meridian travels from head to toe or vice versa, so the two areas are somehow connected via the meridian.

However, this explanation falls short at closer examination, as the acupuncture points of the torso along any one particular meridian are definitely closer to the head than the foot is to the head. Why not use the points on either the chest or back instead? Why did the ancient medical scholars stress so much on using points on the foot to treat problems of the head? The connection by the meridian is only part of the story. This is but one of the many acupuncture principles that defy modern scientific explanation. In order to bridge the gap between traditional practice and modern biomedical rationale, the Thalamic Neuron Theory was proposed in an attempt to explain acupuncture in general, although it may have implications in traditional Chinese medicine as a whole. The salient points of this hypothesis consist of the following:

1. In conjunction with any pathological process, a focus of abnormal activities is set up in the brain.
2. Stimulating the brain cells of this focus via peripheral stimulation such as acupuncture can normalize the activity of these abnormal brain cells, usually by repeated stimulations similar to the process of habituation or conditioning.
3. There is a homunculus or neuronal representation of a miniature human body in the central nervous system, which is the master control of all physiological functions, and this particular homunculus probably resides in the thalamus.
4. This homunculus assumes the posture of a fetus with its large head buried in the pelvic region and its large hands and feet crowded around the face (Fig. 1). The hands and feet cross over to the contralateral sides as in a fetus.

5. Chains of neurons along the longitudinal axis of the homunculus actually represent the meridians in the periphery.
  
6. Along these neuronal chains are functionally discrete groups of neurons, which represent the acupuncture loci in the periphery. These groups of neurons representing the acupuncture points function like regional managers. Each neuronal group processes information from the areas within its sphere of influence and can exert a powerful effect on those same areas.

Based upon these postulates, one can then proceed to examine how they may be helpful in understanding the teachings of classical Chinese acupuncture in a more scientific fashion.

Armed with TNT, the “For Disease of the Head, Puncture the Foot” principle can be readily explained, as now the foot is actually placed right next to the head. By stimulating a point on the foot, the therapeutic impulse will spread in the vicinity of the head of the thalamic homunculus and normalize the pathologically active neurons. This is why Inner Court (ST-44), a point between the second and third toe, can be used to control pain in the teeth (Shieh). This is because within the homunculus, it lies just adjacent to the face and teeth (Fig. 1 and Table 1). A number of acupuncture points that are used to treat areas of the body, that seem to be quite a distance away and bear no close anatomical relationship with the points used, can also be explained on this basis (Fig. 1 and Table 1). Therapeutic responsive areas and the acupuncture points are actually physically adjacent to each other in the thalamic homunculus. Table I lists additional examples. Since the thalamic homunculus is presumed

to have its large head buried into the pelvic region, it can simply be imagined facing its own pelvis. In this strange fetal position, certain fascinating aspects about traditional Chinese acupuncture can be revealed.

### **Folding up the Torso**

When the body is rolled up in a fetal position as postulated, it can also be imagined that the body is more or less folded forward at the level of the diaphragm. Now let us look at some of the known facts of traditional acupuncture.

- a. The Grand Concourse point on the vertex of the head, otherwise known as GV-20, is an important point in the treatment of hemorrhoidal or anal symptoms such as rectal prolapse (Lu, 1961).
- b. The point located at the tip of the nose is equivalent to the external genitalia (Pak, 1996)
- c. Conception vessel 6 or CV-6 is known in Chinese as the Sea of Qi, and CV-17 on the sternum between the two nipples is known in Chinese as the Chest Center, but is also known as the upper Sea of Qi (Wang, 1972)

When the body is folded at the level of the diaphragm, imagine now the Grand Concourse point (GV-20) is touching the anal area, the tip of the nose is in contact with the genital, the Human Center point (GV-26) is opposite CV-4, and the upper Sea of Qi (CV-17) and the Sea of Qi (CV-6) now coincide with each other (Fig. 2). CV-4, known in Chinese as the Gate of Prime or *Dan-Tien*, believed to be the center of storage for the most essential of

all energy, coincides with the Human Center point GV-26. This simple folding of the body accomplished by the fetal posture of the homunculus in the thalamus will therefore explain a good number of traditional Chinese acupuncture phenomena previously inexplicable. If this theory is accurate, then a new acupuncture principle can be derived: *Along the midline of the body, the more superior the point is, the lower the part of the body it is equivalent to, with the level of the diaphragm being the dividing line, or the axis of symmetry.* This may be called the Principle of Symmetry. Using this hypothesis, it is also possible to explain the relationship between the sexual organ and the nose. It is well known that the sense of smell has a great deal to do with sexual arousal. It has been an observation in modern medicine that the nasal mucosa possesses erectile properties much like those of the genitals (Ham, and Leeson, 1961).

### **The Veracity of the Principle of Symmetry**

#### *The linkage between the breasts and ovaries*

It is well-established that women who are prone to the development of breast cancers are also predisposed to ovarian cancers, as these cancers may be mediated by the BRCA genes. Both the breasts and ovaries serve vital functions in reproduction and are closely related genetically and embryologically. So, it is not at all surprising that they may also be anatomically linked in the central nervous system. By folding up the torso at the diaphragm according to the scheme of the TNT homunculus, the nipples now fall onto the vicinity of the ovaries. In other words the nipples and ovaries are mirror images across the diaphragm, demonstrating the Principle of Symmetry.

### *The relationship of the organs (Zhang) and viscera (Fu)*

The intimate relationships between the organs and viscera (Wang, 1972): lung and large intestine, heart and small intestine, liver and gallbladder, stomach and spleen (pancreas), kidney and bladder may be further illustrated by this very principle. As the body is folded upon itself at the diaphragm, some very interesting phenomena are observed. The heart, which is located at the center of the chest cavity now overlaps the small intestines, which is located at the center of the abdomen on the other side of the diaphragm. The lungs that surround the heart in the chest now overlap the large intestine, which basically surrounds the small intestine in the abdomen. Likewise, the liver and gallbladder, as well as the stomach and spleen (pancreas) are juxtaposed at the level of the diaphragm. The kidney and bladder, on the other hand, are both located in the lower abdomen. So the relationships of the Zhang and Fu based on traditional Chinese medicine theories are borne out by such close anatomical relationships, probably due to their intimate relationships during embryological development, also manifested by the structural configuration of the TNT homunculus.

### *Evidence from auriculomedicine*

Paul Nogier, the father of modern ear acupuncture and auriculomedicine, became world renowned in the early 1950s when he first postulated that different parts of the ear actually represent various parts of the body, assuming the image of an inverted embryo (Nogier, 1972). In 1979, he proposed that there is another pattern of point distribution on the ear in the form of an upright embryo or a miniature man (Nogier, 2008). The TNT model, however, can quickly reconcile this apparent contradiction. Dr. Nogier discovered points representing the upper parts of the body can sometimes be equivalent to the lower parts of the body and vice



versa. Due to the overlapping anatomical parts of the TNT homunculus, with the head and tail converged together, the head is now the tail and the tail the head. For example, the pelvis of the inverted embryo is equivalent to the upper chest or neck of the upright embryo, and vice versa.

*Acupuncture points of the same names along the gallbladder meridian*

Along the gallbladder meridian exists a Head Near Tearing point (GB-15) in the temple area and also a Foot Near Tearing point (GB-41) on the dorsum of the foot between the fourth and fifth metatarsals. Interestingly, located at the tip of the fourth toe is a point known as the Foot Orifice Yin (GB-44), while there is also an Orifice Yin point (GB-11) in the occipital area. Referencing the TNT model, it is not difficult to find that these points with the same names actually occupy the same anatomical locations within the homunculus in the CNS although they appear to be located at opposite ends of the body. Once again, the head is the foot and the foot is the head, following the pattern of a neurophysiological symmetry, affirming the Principle of Symmetry.

*Special properties of the shoulder well point (GB-20)*

GB 20, located on the upper trapezius, is a powerful and important treatment point. It is also a forbidden point during pregnancy because of its tendency to, if vigorously stimulated, induce labor (Yang, 1973). At first glance, it seems odd that a point on the shoulder will have such a potent influence on the uterus, which is located deep in the pelvis. But if the torso is folded together at the diaphragm, then this point will fall onto the pelvic region next to the uterus. GB-20 and the uterus are virtually next-door neighbors within the homunculus in the

CNS. Therefore stimulating the shoulder well point vigorously will also produce strong stimulations on the uterus, causing contractions in a pregnant woman, sometimes prematurely. Furthermore, GB-20, according to traditional acupuncture literature, is a convergence point for the gallbladder, Yang perimeter stomach and Sanjiao meridians (Yang, 1973). It is therefore somehow connected to the pelvic area. Employing the Principle of Symmetry, a derivative of the TNT, such a connection is but a short hop instead of a long extension. Broken Basin (ST-12), that is just above the clavicle is another point known to induce labor in pregnant women (Pak, 1996). Since it is located just in front of and in close proximity to GB-20, it possesses similar physiological functions.

#### *UB-11 or Grand Ventilation point and its connections*

According to traditional medical literature, Grand Ventilation point (UB-11) relates to many functions of the bone (Lu, 1971), which is considered as an extension of the kidney. Upon folding the torso, this point, dictated by the Principle of Symmetry, will fall onto the lower pelvic region where the kidney Qi originates from the Gate of Prime (CV-4), although located on the upper back at the level of T-1,. More interestingly, UB-11 is also considered to have close connections to two acupuncture points on the stomach meridian known as ST-37 and ST-39, which respectively represent the large intestine and small intestine (Acupuncture Teaching Section of Shanghai Chinese Medical College, 1972). Stimulating this point with such a deep connection to the interior of the body can let out or expel “external evil”, hence the name Grand Ventilation. The Principle of Symmetry not only can elucidate many unanswered questions in the practice of acupuncture, but can also greatly enhance the therapeutic result in many ways. For instance, in the treatment of migraine headache, one might use the Head Near Tearing point (GB-15) as well as the Foot Near

Tearing point (GB-41) simultaneously. In the treatment of hemorrhoids, one might stimulate points near the hemorrhoids as well as GV-20, at the vertex of the head. Performing moxibustion at the Sea of Qi (CV-6) and the Chest Center (CV-17), or upper Sea of Qi simultaneously may reinforce the treatment for someone who is debilitated and suffering from shortness of breath. In other words, if an alarm point or trigger point is discovered on one part of the body, try to locate its mirror image on the other side of the diaphragm, with approximately equal distance from the diaphragm as the alarm point. Applying treatment at both sites tends to significantly improve the overall efficacy of the treatment.

As pointed out earlier, the Principle of Symmetry is one of the many corollaries of the Thalamic Neuron Theory employing the special configuration of the homunculus. Due to the limitation of the scope of this paper, other discussion on the utilitarian nature of the TNT will be deferred for the future.

## **Summary**

Mechanisms of acupuncture have been explored by different investigators (Chou *et al.*, 2012; Gong *et al.*, 2012; Kim *et al.*, 2012; Chen *et al.*, 2013). In this article, simultaneously targeting the same site of pathology within the CNS, or more accurately, within the central homunculus, by stimulating acupuncture points located on both sides of the diaphragm following the Principle of Symmetry can significantly enhance the therapeutic efficacy. It is just like firing two cruise missiles from different directions to hit the same military target. For example, rendering acupuncture treatment at the Head and Foot near Tearing Points (GB 15 and GB 41) concurrently can be quite effective in the treatment of migraine. Diagnostically, the Principle of Symmetry can often correlate with separate and sometimes distant sites of

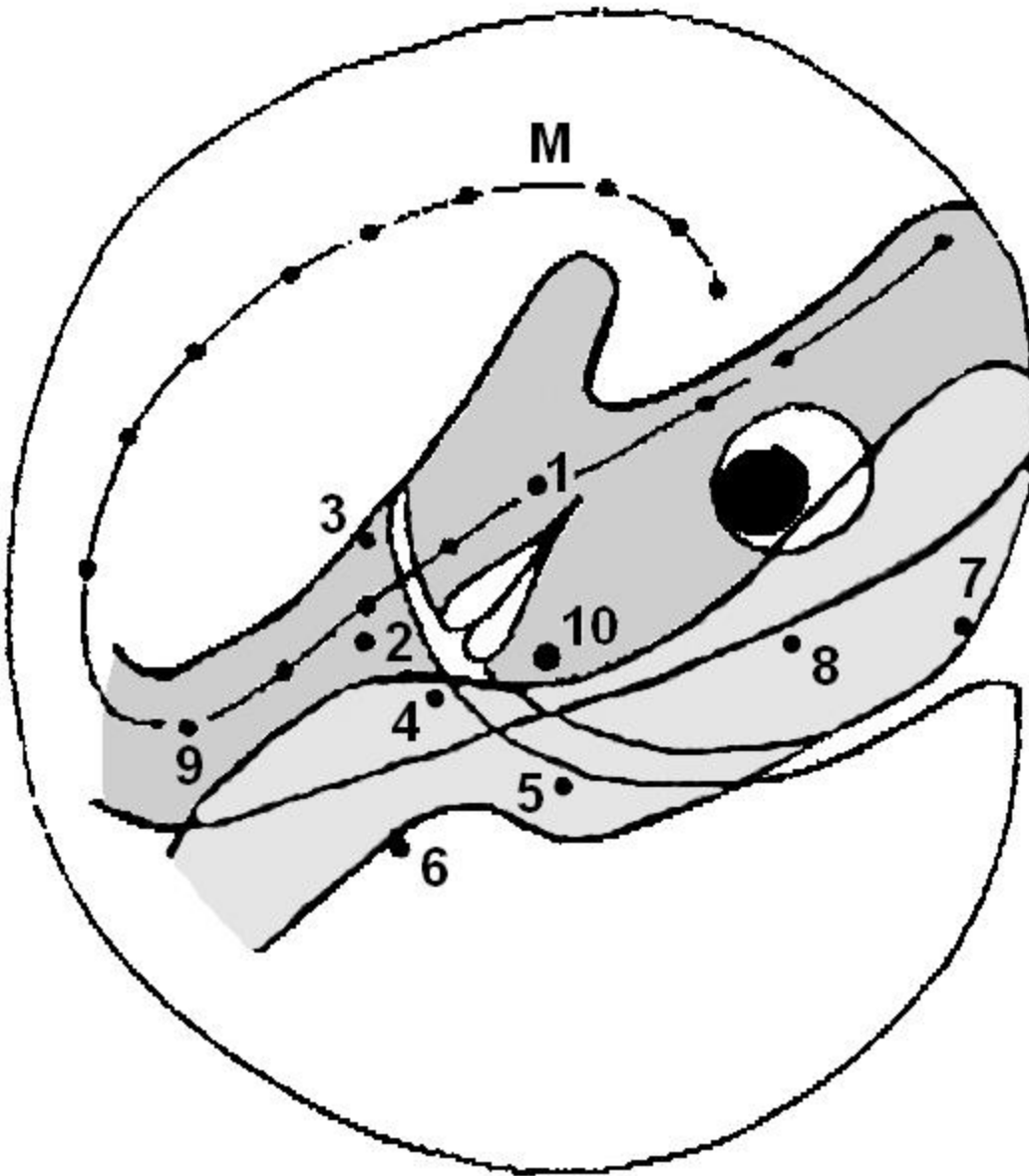
pathology located on both sides of the diaphragm, helping the clinician to narrow down the nature of the pathophysiological mechanisms. Therapeutically, it facilitates the choice of acupuncture formulae that enhances the clinical outcome by simply choosing a primary point along with its mirror image on the other side of the diaphragm. Although the Thalamic Neuron Theory was originally proposed to explain certain basic phenomena of pain and acupuncture (Lee, 1977), it has since been expanded considerably to attempt to shed more light on not only TCM, but also medicine in general. Principle of Symmetry is but one single derivative of this hypothesis.

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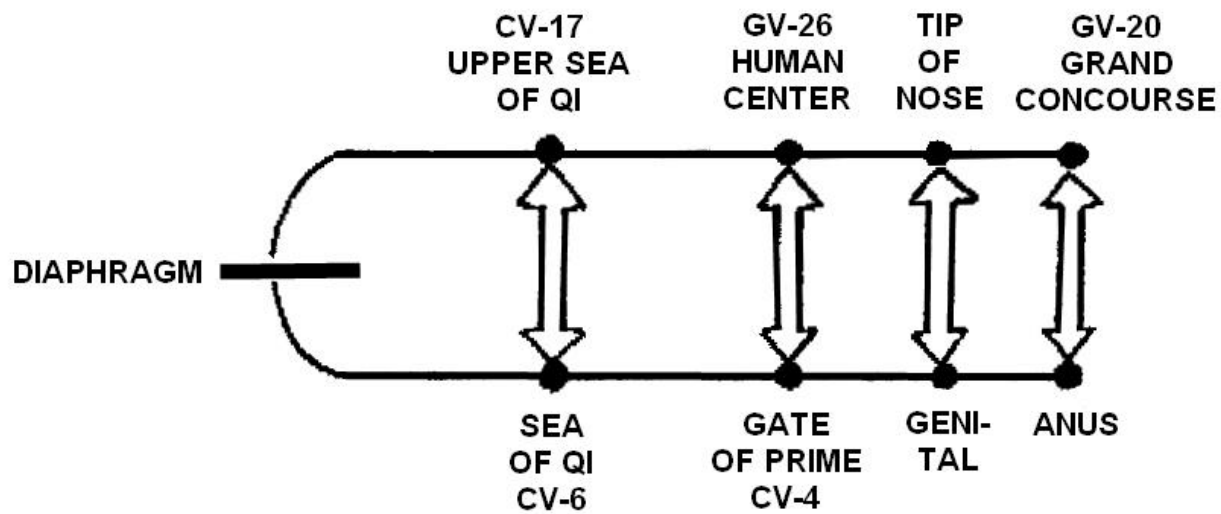
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**Figure 1.** A hypothetical embryonic posture of the thalamic homunculus. The curved line *M* travelling from the head to the hand represents a chain of thalamic neurons equivalent to an acupuncture meridian. The small dots along its course represent neuronal aggregates corresponding to acupuncture points in the periphery. This unique spatial arrangement of neurons within the thalamic homunculus can explain the effects of acupuncture points on regions of the body that seem to bear no segmental relationship with them. (See Table 1 for details). Note also that the Human Center point, #10, is situated in the center of the homunculus and LI-4 is actually much closer to the face than LI-11, and that is why LI-4 is more effective in the treatment of problems of the face. For the sake of simplicity, the crossover of the limbs are not shown.





**Figure 2.** If the body is folded forward at the level of the diaphragm, the traditional Chinese acupuncture teachings begin to make more sense, and there are equivalent points between the upper and the lower halves of the body.

**Table 1.** Efficacy of acupuncture points in terms of central connections in thalamic homunculus.

Acupuncture Points		Chinese Names	English Equivalent	Anatomical Locations of Points	Assign. No. in Figure 1	Body Regions Controlled and Treatable by Points
Ho-Ku	Con-Valley	LI-4	Web space between thumb and finger	1	Face and mouth	
Nei-Kuan	Inner Fort	PC-6	2 inches proximal to wrist at center line of flexor surface	2	Heart and thorax	
Lieh Ch'ueh	Split Space	LG-7	1 inch proximal to styloid process of radius	3	Head and neck	
Tsu-San Li	Leg-Three-Interior	ST-36	1 inch distal and lateral to the tibial tuberosity	4	Abdomen	
San Yin Chiao	Tri-Yin Merger	SP-6	3 inches above medial malleolus at posterior border of tibia	5	Lower abdomen and pelvic region	
Wei-Chung	Fold Center	UB-40	Center of popliteal fossa	6	Back	
Bai-Hui	Grand Concourse	GV-20	Vertex of head	7	Head and anal region	
Nei-Ting	Inner Court	ST-44	Between 2nd and 3rd toes	8	Teeth and feet	