

The “Leg-Three-Miles” Acupuncture Point for Internal Medicine Problems

As early as 1000 BCE, physicians have recognized the value of acupuncture for the treatment of internal medical disorders.¹ Chinese acupuncturists understood that harmonious interrelationships were vital to health, whether the focus of this balance related to internal organs, family members, society, or the universe as a whole. These ancient healers observed that stimulation of specific sites on the body was capable of influencing broad restorative changes within the system, and they acknowledged that these effects were mediated via the vasculature and associated with nerves.² Modern medicine has achieved a deeper understanding of the neurophysiologic networks that provide and control the delicate moment-to-moment integration of impulses throughout the body. Nonetheless, acupuncture remains one of the most powerful approaches available to access these networks and thereby help the body return to optimal functional capacity.

While the comprehensive repertoire of acupuncture points includes hundreds of neurovascular sites around the body, acupuncture treatments most often incorporate only a fraction of these. A common but mistaken assumption is that the most effective acupuncture treatments, especially those provided in China, result from complex and elaborate diagnostic analyses, stemming from mystical insights that westerners can only hope to achieve with long and concerted effort. In reality, according to Belgian physician Francois Beyens, MD, Secretary General of the International Council of Medical Acupuncture and Related Techniques (ICMART), Chinese acupuncturists use only a handful of points and yet achieve highly satisfactory results.³ When, during his training in China, he asked his mentors why they chose only from this small subset of vital points, their reply was simply, “Because they work!”

Specifically, a site on the pelvic limb called “Zusanli” (also known as Stomach 36, or ST-36) is one of the most frequently used of all acupuncture points. The Chinese name Zusanli means “Leg Three Miles”. Oral tradition has it that in ancient times, most individuals traveled on foot, and stimulation of Zusanli would relieve fatigue dramatically enough that the effects would allow one to travel another three miles.⁴ It was indeed common for people who were about to embark on a long journey to needle or moxa this point (which involves warming

¹ Veith I. *The Yellow Emperor's Classic of Internal Medicine*. Berkeley: University of California Press, 1949. p. 7.

² Kendall DE. Problems with the Energy-Meridian Theory. Obtained at <http://www.ormed.edu/newsletters/energymeridian.htm> on March 17, 2002.

³ Beyens, F. Personal communication, at the 1999 Annual Symposium of the American Academy of Medical Acupuncture.

⁴ Ellis A et al. *Grasping the Wind*. Brookline: Paradigm Publications, 1989. P. 91.

the area with a medicinal herb such as mugwort), in order to build the necessary strength and endurance for the trip.⁵

Zusanli is one of the four most important acupuncture points on the body, and indications for its use are myriad. A truncated list of the indications for Zusanli in humans includes: epigastric pain, nausea, vomiting, poor appetite, abdominal distention, flatulence, diarrhea, edema, shortness of breath, cough, chest pain, muscle pain, arthritis, and even loss of consciousness.⁶ Hwang and Limehouse cite the following indications for the use of Zusanli in canine patients: “gastrointestinal disorders, general tonification point for any weak condition, paralysis of the pelvic limb, endocrine and metabolic

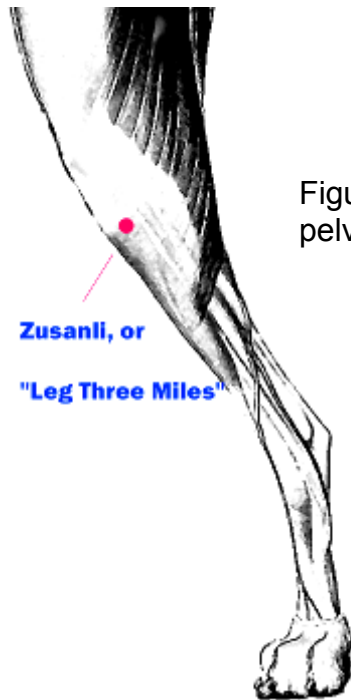


Figure 1. Lateral view of the canine pelvic limb

diseases, and acupuncture analgesia”.⁷ (See Figure 1 for location of Zusanli in dogs.) Fleming suggests Zusanli for equine patients with “tibial and fibular pain, stifle pain, upward fixation of the patella, arthritis of the tarsal joint, paralysis of the tibial and fibular nerves, gastrointestinal disorders, acetylcholine effects, fever, anorexia, and lethargy”.⁸ For avian patients, McCluggage points to Zusanli

⁵ Lade A. *Acupuncture Points, Images and Functions*. Seattle: Eastland Press, International. 1989; pp. 72-3.

⁶ Deadman P et al. *A Manual of Acupuncture*. East Sussex, England: Journal of Chinese Medicine Publications., 1998. Pages 158-161.

⁷ Hwang Y-C and Limehouse JB. Chapter 9, Canine Acupuncture Atlas. In Schoen AM (ed.): *Veterinary Acupuncture, Ancient Art to Modern Medicine*, 2nd Edition. St. Louis: Mosby, Inc. 2001, p. 135.

⁸ Fleming P. Chapter 31, Transpositional Equine Acupuncture Atlas. In Schoen AM (ed.): *Veterinary Acupuncture, Ancient Art to Modern Medicine*. St. Louis: Mosby, Inc. 2001, pp. 404-5.

for “pathologic regurgitation, abdominal pain, indigestion, diarrhea, any digestive disorder, mental disorders, hemiplegia, pain in the knee and leg”.⁹ So many conditions are treatable with this point that even a thousand years ago, Qin Cheng-zu declared that by using Zusanli, “all diseases can be treated”.¹⁰

Readers can find this location on their own leg by placing the width of four fingers beneath the apex of the patella. Moving one finger-breadth lateral to the midline of the tibia, one arrives in a muscle groove between the anterior tibialis and extensor digitorum longus muscles. (See Figure 2.) Deep palpation of this point often reveals tenderness, and strong pressure or needling at this site can create a shock-like sensation accompanied by tingling or heaviness that radiates to the first or second toe. In fact, it is this spreading sensation, known as *de qi*, or “the echo of acupuncture” that heralds significant widespread effects resulting from stimulation of the point.¹¹ Local neuroanatomic structures affected by needling include: cutaneous branches of the lateral sural cutaneous nerve and the saphenous nerve, the recurrent articular nerve from the common peroneal nerve, and motor branches of the deep peroneal nerve. Local vessels comprise the anterior tibial recurrent artery and its companion vein.¹²

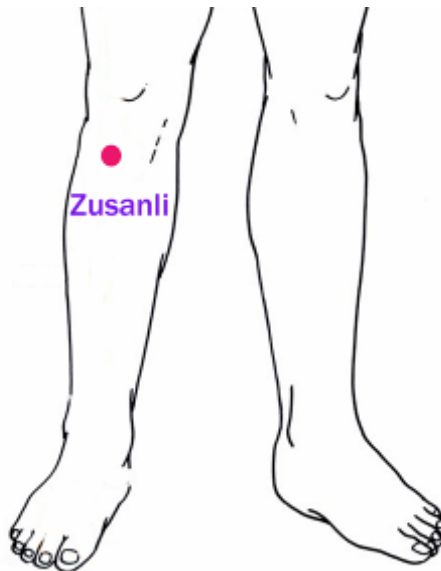


Figure 2. Human ST-36

The majority of effects of acupuncture result primarily from stimulation of vessels and nerves, yet many present-day acupuncturists explain that needling Zusanli is beneficial because it “tonifies Qi”, defining Qi as “the force or energy that controls

⁹ McCluggage D. Chapter 26, Acupuncture for the Avian Patient. In Schoen AM (ed.): *Veterinary Acupuncture, Ancient Art to Modern Medicine*. St. Louis: Mosby, Inc. 2001, p. 315.

¹⁰ Deadman, P. Op. cit.

¹¹ Omura Y. Patho-physiology of acupuncture treatment: effects of acupuncture on cardiovascular and nervous systems. *Acupuncture & Electro-Therapeutics Res.* 1975; 1:51-140.

¹² Helms JM et al. *Point Locations and Functions*. Berkeley: Medical Acupuncture Publishers. 2000, p. 162.

harmony in any living body".^{13, 14} Vague terminology such as "energy flow", "blocked energy" and "energy balancing" is coming under increasing criticism, in that it fails to provide satisfactory description of what is actually occurring in the health, disease, and healing.¹⁵ Furthermore, the notion that ancient Chinese physicians considered Qi to be energy is likewise coming under fire, with critics pointing to a 20th century mistranslation (by a French clerk working in China) of the Chinese character "qi" (vital air) as "energy" "for lack of a better word".¹⁶ Additional errors in translation by the same individual shifted the focus of acupuncture from its original emphasis on stimulation of significant locations along blood vessels and nerves, to a modern concept of "points" along invisible "meridians".¹⁷ Restoring the study of acupuncture to its original premise as a physiologic intervention will undoubtedly allow scientists the best opportunity to disentangle the complex neurophysiologic reactions underlying whole body benefit from needling of Zusanli.

Research has already shed light on some of the mechanisms of action involved in the global actions of Zusanli. A common theme is the recreation of autonomic balance throughout the organism, most often achieved by reduction of unhealthful sympathetic nervous system over-stimulation that arose following pain, stress, illness, or injury. Many of these studies include the application of electrical stimulation to the needle inserted in Zusanli, which helps augment the effects of the treatment. One study on the sympathetic effects following manual and electrical acupuncture stimulation in humans showed a generalized, long-lasting warming, or sympathetic inhibition. Electroacupuncture created a transient sympathetic activation that most likely reflected segmental activation of vasomotor spinal reflexes.¹⁸ Another study with electroacupuncture stimulation showed enhanced splenic natural killer cytotoxicity in rats possibly through inhibition of splenic sympathetic nerve function.¹⁹ Acupuncture lowered blood pressure in dogs with experimentally-induced hypertension following electrical stimulation; this reduction in blood pressure was accompanied by increased

¹³ Limehouse JB and Taylor-Limehouse PA. Chapter 6, Eastern Concepts of Acupuncture. In Schoen AM (ed.): *Veterinary Acupuncture, Ancient Art to Modern Medicine*. St. Louis: Mosby, Inc. 2001, p. 80.

¹⁴ Deadman P. Op. cit.

¹⁵ Dossey L. How healing happens: Exploring the nonlocal gap. *Alternative Therapies*. 2001; 8(2): 12-6, 103-110.

¹⁶ Zmiewski, Paul, ed. Georges Soulié de Morant, Chinese Acupuncture (L'acupuncture Chinoise). trans. Lawrence Grinnell, Claudy Jeanmougin, and Maurice Leveque, Brookline, Mass.: Paradigm Publications, 1994. Referenced in Kendall DE: Problems with the Energy-Meridian Theory. Obtained at <http://www.orned.edu/newsletters/energymeridian.htm> on March 17, 2002.

¹⁷ Kendall DE. Problems with the Energy-Meridian Theory. Obtained at <http://www.orned.edu/newsletters/energymeridian.htm> on March 17, 2002.

¹⁸ Ernst M and Lee MHM. Sympathetic effects of manual and electrical acupuncture of the Tsusanli knee point: Comparison with the Hoku hand point sympathetic effects. *Experimental Neurology*. 1986; 94:1-10.

¹⁹ Yu Y et al. Enhancement of splenic interferon- γ , interleukin-2, and NK cytotoxicity by S36 acupoint acupuncture in F344 rats. *Japanese Journal of Physiology*. 1997; 47:173-178.

blood flow at the mesenteric artery.²⁰ Similarly, a study on human patients with hypertension also demonstrated reduction of blood pressure, possibly mediated by a decrease in renin secretion.²¹ Transcutaneous electrical nerve stimulation (TENS) in rats delayed onset of experimental arthritis and reduced bone erosion and joint destruction following intradermal injection of bovine type II collagen.²² Electroacupuncture applied to Zusanli reduced alcohol-drinking behavior in restricted rats, and this was associated with an increase in striatal dopamine levels.²³ Beneficial alterations in kinetic function of the human pylorus occur,²⁴ as does a significant reduction in gastric acid secretion.²⁵ A clinical review in the *American Journal of Gastroenterology* provides further supporting evidence for the efficacy of acupuncture on gastrointestinal function and in treating related disorders.²⁶

Researching the neural and vascular influences of the entire collection of acupuncture points as described above for Zusanli will be a prodigious task. We are fortunate to have access to the accumulated wisdom of thousands of years of observation of effects following acupuncture. Classical descriptions of effects obtained by stimulating certain acupuncture points help guide further research by providing clues to remaining neural networks awaiting discovery.

End note: For further information on Dr. Robinson and medical acupuncture training at Colorado State University, consult her website at www.aavma.org.

²⁰ Peng L et al. The effect of acupuncture on blood pressure: the interrelation of sympathetic activity and endogenous opioid peptides. *Acupuncture & Electro-therapeutics Res., Int. J.* 1983; 8:45-56.

²¹ Chiu YJ et al. Cardiovascular and endocrine effects of acupuncture in hypertensive patients. *Clinical and Experimental Hypertension.* 1997; 19(7):1047-1063.

²² Jianqiao F et al. Therapeutic effects of TENS at "Zusanli" on collagen-induced arthritis in rats. *Acupuncture Research.* 2001; 26:21-24.

²³ Yoshimoto K et al. Electroacupuncture stimulation suppresses the increase in alcohol-drinking behavior in restricted rates. *Alcoholism: Clinical and Experimental Research.* 2001; 25(6): 63S-68S.

²⁴ Li-wei Q et al. Effect of electroneedling of Zusanli on kinetic function of human pylorus. *International Journal of Clinical Acupuncture.* 1994; 5: 139-144.

²⁵ Lux G et al. Acupuncture inhibits vagal gastric acid secretion stimulated by sham feeding in healthy subjects. *Gut.* 1994; 35:1026-9.

²⁶ Li Y et al. The effect of acupuncture on gastrointestinal function and disorders. *American Journal of Gastroenterology.* 1992; 87:1372-1381.

Figures:

Figure 1: Zusanli location in dogs

Figure 2: Zusanli location in humans