

The Chi FAQ - Version 1.4

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1 Introduction: Why did you write this FAQ?

Welcome to the Chi FAQ version 1.4. A lot of times I get asked “Why did you bother to write this FAQ in the first place” or a similar question. So I would like to tell you a little bit about why I started writing and maintaining this FAQ. I’ve been training Chinese Martial Arts (various kinds) for a long time; I’ve been a member of the Martial Arts Social communities where I lived; and I’ve been a subscriber to several internet discussion forums on Martial Arts – all for the better part of twenty years. Over this time, I have noticed that there is one topic which is very confusing to both newcomers and advanced students: **Chi**. I’ve noticed that it seems everyone has a story to tell (good or bad!) about Chi. It works. It doesn’t work. It does x, y, or z. And the worst part is, no one seems to have any proof, and no one agrees with each other.

You have arts like Tai Chi, which are supposed to be all about chi. There’s even a “Chi Style”, believe it or not. Yet no one seems to know anything about it, let alone to actually be able to use it. Martial artists don’t understand it or use it, and even skeptics, when you press them, don’t really know what Chi is supposed to be in the first place. When I asked some of my martial artist friends, I got all the predictable answers about waiting for 10 years (which turned into 20 years after I’d been doing it for 10!). Yet along the way I met several people who had been doing martial arts for 20 and 30 years who were really no better than I was.

So I started asking why. I started asking “What is Chi?”

Over time I began to realize that it wasn’t about some Ancient Chinese Secret. It was just that most of the information was not available in English. There was a very real communication barrier. Quite basically, there was no authoritative information available in English, and worse, people had filled the void with misinformation and misunderstanding. Why? I guess in part it’s because a lot of books that got published in Chinese, even modern books, simply never made it to English. Chinese Masters had poor English. And without the necessary background in Chinese Philosophy or Medicine, no one would have understood the terms anyways. A great example from the world of Tai Chi is “Tai Chi Basic Exercises” by Chen Zheng-Lei. This book was first published in 1998 and then again in 2004, when it was re-released with a DVD. It discusses everything – even seated meditation. Yet this book was never translated into English. And nothing like this is available in English, even today. Yet the book is reasonably authoritative, discusses the practice and the intended results in detail, and would set a great many misunderstandings to rest. Yet we do not have access to this information. We are in the dark, confused.

The truth is, people have acquired a little bit of information on the subject, but have not been able to resist filling in the blanks with speculation. And of course, as this speculation is wrong, it is quickly rooted out by the skeptics. Once Chi has been demonized in this way, the misinformation acts to block the truth about Chi and Chinese

Martial arts, and this damages the community and it damages the reputation of Chinese Martial arts and causes the culture to die.

So when I started asking around and writing this FAQ, I got a lot of questions like “Why bother? Chi isn’t real anyways”. The problem with that was yes, all that fancy chi bolt stuff wasn’t real, **but that’s not what I was asking about**. I was asking about Chi. Not how to knock people out without touching them.

So I set out to examine the authoritative sources and to provide an English reference to the way Chi is used and discussed properly in Chinese.

The result is this FAQ – a simple, authoritative reference, complete with footies and even a table of contents! I realize this will not end the great Chi wars of the internet. I only want to promote a common understanding among English speakers, which did not previously exist.

Before we actually get into the FAQ I feel it’s important to cover some common misconceptions.

Common Misconceptions

Often people will have several misconceptions about chi, and the first thing which must be done is quickly touch on some of them. Usually these are never phrased as questions but rather as statements of belief. Still, a proper counter deserves a place in this FAQ.

There is no scientific evidence for the existence of Chi

This is a misleading assertion at best, and at worst totally false. Scientific studies have been conducted which demonstrate that, for example, changes in brain wave patterns occur when qualified people perform “Toh-Ate” (see section 3.1.2). Of course, this may be criticized as being evidence that the exercise affects brain wave patterns, not that it may have anything to do with “chi”.

There may however be some real scientific evidence which records meridians being observed. See section 3 for papers by Yujiro Ikemi, Langevin and Yandow, and others which may prove useful.

Finally, I would like to point out why statements of this kind are so misleading. It makes the assumption that Chi requires any proof whatsoever. If I told you that Chi referred to the human body, or to kinetic energy, or to blood – could you say then that chi didn’t exist, or required proof? You could, but it would be rather strange trying to prove that humans exist, or that kinetic energy existed. So, it is probably wrong to even assume that this is a kind of statement which could be made about Chi, regardless of if it was true or not.

There is little or no agreement on what Chi is, even among proponents.

Or for instance, “Chi is a catch-all term for any number of effects.”

Although of course there are outright frauds and charlatans on both sides of the fence, the current crop of misinformation is largely an English-speaking problem. There exist a great number of reasonably authoritative works in Chinese, for instance, which define the meaning and use of Chi very well. This FAQ considers accounts which differ from this rather large body of written work to be in error. Furthermore, it would seem that many of the highly-respected instructors of Chinese Internal Martial Arts agree with and promote the ideas in these classic works. Even in the Wushu Crowd – for example in early 2008 Wu Bin (the head coach of China’s Wushu Team, instructor of Jet Li) was quoted as using Jing-Qi-Shen as a demarcation line for skill in Wushu.

Therefore it would seem that the difficulty in approaching this problem from the outside is really a matter of trust; who can the outsider trust to give accurate information? This is really the main point of this FAQ. Everything here is referenced and should be easy to follow up on. Hopefully this will clear up a lot of misinformation (such as there isn’t a one true definition of Chi).

2 Are Chi Bolts Real? (Re: Chi Emission)

This covers any question about Chi being emitted such as in “lin kong jin”, “no-touch knockouts”, “kiai masters” who can stun or disable with a shout etc. The answer?

No.

Let's examine the evidence.

“The Emission of Chi outside the body is preposterous.” – Wang, Xiang-Zhai (Founder of modern Yi Quan)

In Robert W. Smith's "Chinese Boxing: Masters and Methods" (1974), Tai Chi Chuan Master Cheng Man-Ching explained empty force to a young Tai Chi student who claimed her teacher had controlled her without physical contact. According to Cheng, "...the trick will not work against an equal or superior.", and the entire skill, "...depended on student awe, however, and would not work against a good boxer"(page 35).¹ (Maybe now would be a good time to point out, as an aside, that Huang Sheng-Shyan was a student of Cheng Man-Ching!)

Finally, in the the *Huangdi Neijing* (Zhu Ming Translation), perhaps the ultimate authoritative reference available in English, it is clearly stated “The *qi* is not only the basic material that forms the body, but also the dynamic power of the body.”² This is quite plain; *qi* on one hand can refer to the human body or any of its components; in another it can refer to the dynamic processes of the body. This may not be a satisfactory explanation for some, so we can examine another quote: “What is qi? Uncle Qi (Chi P'o) answered: “...what nourishes the skin, fills the body and moistens the body hair like irrigation of mist and dew, is called *qi*.”³ Furthermore, the *Huangdi Neijing* lists several specific forms of this Qi, such as blood qi, other liquids and functions of the human body. All of them relate to operative processes of the human body. For example, “Men are endowed with qi from grains”⁴ followed by “(this) nutritive qi and defensive qi are the essential qi of food. The blood that is turned red by the heart spirit is the purified fluid of the middle warmer. So, the nutritive qi, defensive qi and blood, although having different names, are homologous.”⁵

Considering all of the above sources, and considering that the *qi* used in Tai Chi and all other Neijia were originally in accord with the discussions in the *Huangdi Neijing*, it is quite clear that the emission of chi was never intended to be a technique in Chinese Martial Arts. This is a very important conclusion, because it destroys any possible thought that chi (qi) may operate outside of the body.

¹ C. J. Hardman, San Diego CA, USA (From a book review appearing on Amazon.com)

² The Medical Classic of the Yellow Emperor (Zhu Ming), pg. 2

³ Ibid., at 56

⁴ Ibid., at 59

⁵ Ibid., at 61

But what about scientific studies done on Emitted Qi?

The result of such studies is invariably that Qi does not really operate in this way, or with only very limited effects. For example, in scientific papers by S. Tsuyoshi Ohnishi and Tomoko Ohnishi (“Philosophy, Psychology, Physics and Practice of Ki”) it is concluded that while there may be some infra-red radiation emitted by some practitioners, it does not affect people who have not studied that particular form of Ki-emission. This scientifically confirms the conclusions we reached above, that the emission of Ki (Chi) is not a viable martial arts technique.

But what about Lin Kong Jin?

(Also; What about George Dillman’s no touch knockouts? What about Richard Mooney’s Lin Kong Jin? What about Master Shi? Etc etc)

There are some people who claim that they were taught a kind of “Empty Force” and that it is a very real phenomenon. These people can be separated into two types. One group has no connection to Chinese Martial Arts, or will claim to be proficient in many martial arts – in other words investigating their lineage will turn up that they can not be considered authoritative. Claims made by this group will naturally be discounted out of hand. The second group of people do have a very real connection to Chinese Martial Arts. Master Shi in Beijing, or Richard Mooney would make great examples. These people are part of lineages stretching back hundreds of years. So why do they claim Empty Force is real?

Let’s use Richard Mooney as an example, since he has published a book and several articles, and is easy to quote. For example, take the following quote from a Richard Mooney article:

“One of the most astonishing, and disturbing, things that I have come across is the lack of understanding that modern day martial arts practitioners have concerning what qi "is", and what can be done with it. ... I have encountered martial artists who think that Qi is a concept that only embodies a specific type of mindset, or structural alignment. These people are mistaking the package for the product inside.” –from http://www.fightingarts.com/content01/use_of_qi_1.html

He goes further and states “It is the purpose of this and following articles to inform and enlighten the reader as to the valid reality of the use of qi for healing and for self defense.” I’ll note here that as noble a goal as this starts out, nowhere in the article does Richard Mooney actually say what chi is or discuss an actual method for it’s use. He does mention in passing what he believes he may do with Chi; and what he assumes other people may do with Chi, or what he assumes they did with Chi; but nowhere is an authoritative source referenced and no strong statement is made. This is the main problem with Richard’s article; the claim is made, but I can’t find where they provide any source which verifies what they are doing is an authentic martial arts technique. They

mechanism is never explained. There is a discussion of the training for it, but not any kind of process by which it works. How then do we know the training will work?

A second problem is that every original source seems to contradict what is being said by the empty force crowd. For example in the above quoted article, Richard Mooney makes the claim that Lin Kong Jin is a technique from Xingyiquan. However nowhere in any Xingyiquan book or classic (such as the classic of stepping, or the classic of six harmonies) can we find any discussion of anything remotely approaching Lin Kong Jin.

“As I understand it from two different but prominent Chinese martial artists, the lin kong jin (emitted chi) idea originated as being a skill where you made a controlled feint which caused a predictable reaction. Same as one of the "Aiki Throws" that don't involve touching and just as susceptible to games playing. However, the idea of lin kong jin became distorted in southern China and began to include the emitted qi things from qigongs. Let me separate the two for a moment, because there *may* be something worthy of exploration in emitted qi, but the lin kong jin part of it is too distorted.” (Mike Sigman from rec.martial-arts on Dec. 30, 1998)

Therefore we consider the problem with no-touch skills is twofold: First, there are too many authoritative figures who speak out against lin kong jin and say that it is not real. For example in the case of Richard Mooney and Lin Kong Jin specifically, Wang Xiang-Zhai (the founder of the art) is known to have discounted empty force as an illusion or trick. (I admit, that's another reason why I chose to use him as such a prominent example earlier, because the Xingyi/Lin Kong Jin statements are such easy claims to refute). I don't harbor any ill will towards Richard Mooney. In fact to be completely fair, I'll point out that most of these emitted-qi folks practice a real lineage of martial arts (George Dillman or Richard Mooney for instance) and still study the original, underlying systems their no-touch skills are based on. So they should still acquire some fighting ability even if Empty Force isn't real.

The second problem is that no matter who says what, the claims made directly contradict even a weak reading of the martial arts classics. It is therefore very difficult to consider their claims as authoritative. Nowhere in any authentic martial arts manual of Chinese Kung Fu, even in Chinese, does it say that Chi may be emitted from the body, nor that any known application worked in that way. The only references we can find are to chi circulating in the body, or being an otherwise internal mechanism. Applications are always described as taking place during contact.

In conclusion, the notion of chi being emitted and used in martial arts (ala no touch knockouts etc) is fictional. It's pure misinformation spread by pop-culture kung-fu books. However, as empty force training is often attached to very real systems of kung fu, so the entire practice should be carefully examined to distinguish what is useful and what isn't.

For more information and information on tests done on this type of empty force, please see the following recommended sites:

- An Article by Richard Mooney
http://www.fightingarts.com/content01/use_of_qi_1.html
- JREF Article on Empty Force
<http://www.randi.org/jr/071902.html>
- “An Empty Force”
http://www.uechi-ryu.com/an_empty_force.htm
- Response to Rebuttal
http://www.uechi-ryu.com/response_to_the_empty_force_test.htm

3 Is Chi a Scientific Theory?

(Also any such questions like “what scientific evidence/proofs exist?”) Short answer:

Yes.

Although we may note that as stated in the section on Misconceptions on page 3, this may be the wrong question to ask, we can still try and give the issue the analysis it deserves. Let’s first define precisely what is being asked for, so that there is no misunderstanding. This is to counter two kinds of *bad questions*: a) people who really are not interested in an answer per se but ask anyways because they assume one can’t be given. b) such questions as “Is chi in accord with Western thinking?”, which is not relevant to any meaningful discussion, and is a separate question from whether or not it is *scientific*.

Step one: What would constitute a scientific proof, anyways?

It is important to define what, precisely, would constitute a scientific theory of anything, let alone *Chi*. Well, considering *chi*, if you could make a statement about chi, which could be tested independently, and repeatedly, then that statement would constitute a scientific theory (generally speaking). Ultimately, the proof of such a statement is what we’re after. This is because assuming “proof of chi” exists, then this means chi is a scientific theory. The quality of such a proof is therefore the main problem we are faced with in answering this question.

First, *observable proofs*. The most accurate of proofs in science are observable proofs. When an apple fell in his garden, Sir Isaac Newton concluded that there was some force that brought it down. Thus, the concept of gravity was born. This is often what is meant by the honest skeptic who asks “show me scientific evidence that chi exists”. Yet we cannot in good faith present that a simple proof by observation (or essentially by induction) exists or is even desirable should it exist. Such an observable proof could be attacked on the grounds that we are interpreting the observation to allow for the existence of chi – that is to say, we are merely applying the label chi to something which is already a well-understood scientific process. Most such claims are without merit, because they are thinly veiled attempts to define Chi as unscientific because it is not “Western”, or at best some form of apologetics.

So then, what about *falsifiability* as a criteria for any theory? True scientific *proof* only becomes possible after there is an allowance or a possibility to observe differing results.

“In work beginning in the 1930s, Karl Popper gave falsifiability a renewed emphasis as a criterion of empirical statements in science.”

“Popper uses falsification as a criterion of demarcation to draw a sharp line between scientific and unscientific theories.”⁶

So the simple version of this is that if Chi was falsifiable, it would be a scientific theory. We must now ask if the theory of chi is falsifiable or not. We do this by showing that something which would falsify the existence of Chi if it were observed, regardless if that observation has been made yet or not. The underlying implication is that if it is possible to make such an observation then chi is a de facto scientific theory.

It turns out that the required proof is surprisingly easy to do. Instead of seeking a simple proof by observation,

“...we go for the next best thing, which is proving theories wrong. That's easy. You just find some evidence that contradicts what the theory says. The theory is then **falsified** and stays that way.

So, a scientific theory is one which can in principle be falsified. The theory has to make strong statements about evidence. If the statements aren't strong, then the theory fits any evidence, and is **unfalsifiable**.”⁷

So ultimately what do we need; we need a test for chi. Many martial arts contain exercises known as *chi kung*, which train the practitioner to develop his chi. Alone, this constitutes an observable proof: anyone can feel their own chi and therefore observe that chi is real (scientific). Following the above discussion, however, we do not take this as a scientific proof (regardless of it's repeatability), because it is not objective. We then note that there exist two person exercises which train practitioners how to work with their chi. This exercise is known by various names in various different arts; Ka shou, Da shou, Tui shou, Chi sao – Many arts such as Tai Chi, Hsing-I, Praying Mantis, Eagle Claw, Wing Chun, and even Hung Gar contain such exercises. These exercises are a vehicle for a sophisticated methodological falsification of chi, where by "Falsified theories are to be replaced by theories which can account for the phenomena which falsified the prior theory, that is, with greater explanatory power"⁸

Since “Chi” is currently the highest known level of accomplishment achieved through training in the well-defined sets of *chi kung* exercises, chi therefore could be falsified in the same manner that chi is intended to be discovered to falsify all theories which come before it. In essence at each level of progress made through training in martial arts which work with chi, the process provides greater opportunity for its own falsification. Therefore the condition "It must be possible in principle to make such an observation that would show that the proposition was false, even if that observation is not actually made."⁹ has been fulfilled. It may not be pretty, and it may send the die-hard skeptics into a howling rage.. however this does in fact imply that chi as it is used in martial arts is indeed a scientific theory.

⁶ Wikipedia: Falsifiability (as at April 1st, 2007)

⁷ From www.don-lindsay-archive.org/creation/falsify.html as at April 1st, 2007

⁸ Wikipedia: Falsifiability (as at April 1st, 2007)

⁹ Ibid.

Step two: What scientific evidence may exist?

Warning: This section and the one after it is very large. If you wish to skip to the next section, the FAQ resumes on page 41.

I don't know if, in particular, any of this is helpful or useful. And I don't know if I'm providing proper or useful references (someone help me with this please) but I will record where I got them from.

Papers of unknown worth

The following need to be read and evaluated. I've included them here because they look like they might be worthwhile.

- James L., PhD. Oschman. *Energy Medicine: The Scientific Basis of Bioenergy Therapies*. Edinburgh: Churchill Livingstone. [ISBN 0443062617](#).
- Wright, Thomas; Eisenberg, David (1995). *Encounters with Qi: exploring Chinese medicine*. New York: Norton. [ISBN 0393312135](#).
- Porkert, Manfred (1974). *The theoretical foundations of Chinese medicine: systems of correspondence*. Cambridge, Mass: MIT Press. [ISBN 0-262-16058-7](#).
- Soo, Chee (1984). *The Chinese art of Tai Chi Chuan*. Wellingborough: Aquarian Press. [ISBN 0-85030-387-7](#).
- Yan, X; Lu F et al. (2002). "[Certain physical manifestation and effects of external Qi of yan xin life science technology](#)" (pdf). *Journal of Scientific Exploration* **16** (3): 381-411. Retrieved on [2008-02-11](#).

If you know of any others, please drop me a line.

3.1.2 Work by S. Tsuyoshi Ohnishi and Tomoko Ohnishi

The above scientists (see below*) have published dozens of *scientific* papers on *Ki energy*, and also on other more “normal” things, like studies on rats or sickle cell anemia. They’ve also done some really medically intensive stuff no one but a specialist would need or understand – like “Biologically significant physico-chemical properties of antioxidative prostaglandin derivatives.” Or “Inhibition of lipid peroxidation by some dihydropyridine derivatives.” The articles are available on various sites: PubMed, MedLine, some kind of separate NIH archive (NCBI?), and apparently a few other pay-sites for medical papers.

We are of course, more interested in the Ki studies than lipid peroxidation or antioxidative prostaglandin derivatives. They are done from a distinctly Japanese perspective, hence the use of the word Ki in this section, but there should be no reason to throw it out if it is well-researched.

*For the record, they are S. Tsuyoshi Ohnishi, Ph.D, of the Philadelphia Biomedical Research Institute, King of Prussia, PA 19406 and Tomoko Ohnishi, Ph.D, of the Department of Biochemistry and Biophysics, University of Pennsylvania School of Medicine, Philadelphia, PA 19104, USA.

A great article to start with is:

“Philosophy, Psychology, Physics and Practice of Ki”

<http://ecam.oxfordjournals.org/cgi/content/full/nen005v1#B34>

The references section of this article contains links to several dozen other papers all archived online. It’s a goldmine of possibly useful information. Here are some random examples:

- Chen K. An analytic review of studies on measuring effects of external Qi in China. *Altern Ther Health Med* (2004;) 10:: 38–50. [\[ISI\]](#)[\[Medline\]](#)
- Ohnishi ST, Ohnishi T, Nishino K, Tsurusaki Y, Yamaguchi M. Growth inhibition of cultured human carcinoma cells by Ki-energy (Life Energy): Scientific evidence of Ki-effect on cancer cells. <http://ecam.oxfordjournals.org/cgi/reprint/2/3/387>. *Evid Based Complement Alternat Med* (2005;) 2:: 387–93. [\[Abstract/Free Full Text\]](#)
- Ohnishi ST, Ohnishi T, Nishino K. Ki- Energy (life-energy) protects isolated mitochondria from oxidative injury. <http://ecam.oxfordjournals.org/cgi/reprint/3/4/475>. *Evid Based Complement Alternat Med* (2006;) 3:: 475–82. [\[Abstract/Free Full Text\]](#)
- Ohnishi ST, Nishino K, Uchiyama K, Ohnishi T, Yamaguchi M. Ki-energy (life-energy) stimulates osteoblastic cells and inhibits the formation of osteoclast-like cells in bone cell cultured models. <http://ecam.oxfordjournals.org/cgi/reprint/nem037>. *Evid Based Complement Alternat Med* (2007;).

- Ohnishi ST, Ohnishi T. The Nishino Breathing Method and Ki-energy (life-energy): A challenge to traditional scientific thinking. <http://ecam.oxfordjournals.org/cgi/reprint/3/2/191>. *Evid Based Complement Altern Med* (2006;) 3:: 191–200. [[CrossRef](#)]
- Ohnishi ST, Ohnishi T. How far can Ki-energy reach?—A hypothetical mechanism for the generation and transmission of Ki-energy. (2008;) <http://ecam.oxfordjournals.org/cgi/content/full/nem102v1> *Evid Based Complement Altern Med*.
- Shinagawa Y. (1990;) Tokyo: Kobunsha. *The Science of Qigong* (in Japanese).
- Machi Y. (1993;) Tokyo: Tokyo Denki University Press. *The Science of Ki* (in Japanese).

And others on another site

(<http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=search&db=pubmed&term=Ohnishi%20ST%5Bau%5D&dispmax=50>)

- Ohnishi ST, Ohnishi T, Nishino K. Ki-energy (life-energy) protects isolated rat liver mitochondria from oxidative injury. *Evid Based Complement Alternat Med*. 2006 Dec;3(4):475-82. Epub 2006 Jun 8. PMID: 17173111 [PubMed - in process]

Abstract: *Ki* (in Japanese) or *Qi* (in Chinese) is the key concept in Eastern medicine, Eastern philosophy, as well as in martial arts. We explain the philosophical and psychological background of *Ki*. We emphasize that the unique aspects of Eastern philosophy are ‘non-linearity’ and ‘holistic’ approach. We then present physics aspect of *Ki*. Our experiments demonstrated that a ‘*Ki*-beam’ carries ‘entropy’ (or information), which is different from ‘energy’. We introduce our experience of having taught *Ki* to 37 beginners in the United States through the Nishino Breathing Method. If beginners had martial arts training or a strong background in music or dance, about half of them could sense *Ki* within 10 weeks (1 h class per week) of practice.

Keywords: collective unconsciousness – Eastern medicine – *Ki* energy – *Ki* entropy – martial arts – Nishino Breathing Method – *Qi* – *Ki* information – Taiki practice – Toh-ate technique

3.1.3 Papers by Yujiro Ikemi

i.e. “Integration of Eastern and Western Psychosomatic Medicine” by Yujiro Ikemi

In September 2006, poster “Thinktoomuch” wrote the following on a randi.org forum:

“I have come across a statement that Japanese scientists have demonstrated the existence of the chi meridians by injecting isotopes in the acupuncture points and recording linear flows 10-15 cm long instead of the normally expected amorphous blob obtained anywhere just 1-2 cm away (Y Ikemi (ed) Integration of Eastern and Western Psychosomatic Medicine, Kyushu University Press, 1996). This looks straightforward enough and easy to verify. Has anybody done so? Would there be any reasons to doubt those physicians? I have googled Ikemi and it appears that he was very well respected by Western, especially US, physicians. Does any of you have access to the medical journals where this kind of research could/has been reviewed? Any real "education" gratefully accepted.”

If anyone has a copy of this paper, or it’s abstract, or knows where it is, I would be grateful.

Follow ups: It’s apparently available in book form (?) and was apparently originally published in:

[Japanese Journal of Psychosomatic Medicine](#) Vol. 37, No.1(19961225) p. 81

Or

[Japanese Society of Psychosomatic Medicine](#) ISSN:03850307

(I can’t read Japanese).

Any more information? Drop me a line, please!

3.1.4 Langevin and Yandow

i.e. “Relationship of acupuncture points and meridians to connective tissue planes.”

Langevin HM, Yandow JA. (Department of Neurology, University of Vermont College of Medicine, Burlington, VT 05405, USA. hlangevi@zoo.uvm.edu)

The full article is available in PDF form from several sources. Try:

<http://www.med.uvm.edu/neurology/downloads/Relationshipofacupuncturepointsandmeridianstoconnectivetissueplanes.pdf>
and it's also hosted on NIH's PubMed at <http://www.ncbi.nlm.nih.gov/pubmed/12467083>.

Abstract:

Acupuncture meridians traditionally are believed to constitute channels connecting the surface of the body to internal organs. We hypothesize that the network of acupuncture points and meridians can be viewed as a representation of the network formed by interstitial connective tissue. This hypothesis is supported by ultrasound images showing connective tissue cleavage planes at acupuncture points in normal human subjects. To test this hypothesis, we mapped acupuncture points in serial gross anatomical sections through the human arm. **We found an 80% correspondence between the sites of acupuncture points and the location of intermuscular or intramuscular connective tissue planes in postmortem tissue sections. [emphasis added -renli]** We propose that the anatomical relationship of acupuncture points and meridians to connective tissue planes is relevant to acupuncture's mechanism of action and suggests a potentially important integrative role for interstitial connective tissue. Copyright 2002 Wiley-Liss, Inc.

PMID: 12467083 [PubMed - indexed for MEDLINE]

3.1.9 Studies relating to the general medical benefits of Tai Chi

This section is very large. Most of the information comes from the website <http://www.billvandenboom.com/study.php>. I've copied the abstracts here. Note that although the site deals primarily with **Tai Chi**, sections 7 and 8 should allow most of this information to apply to any chi-based martial art, if it is a benefit arising from the use of Chi.

Comparative Studies

Adler PA, Roberts BL. The use of Tai Chi to improve health in older adults. Orthop Nurs. 2006 Mar-Apr;25(2):122-6. // Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, OH, USA.

Tai Chi is a slow and gentle exercise that is suitable for older adults with chronic illness. This exercise offers the benefits of flexibility, muscle strengthening, and endurance training. Tai Chi has the capability of improving the health of elders without exacerbating existing impairments. Therefore, older adults may be more inclined to participate in and maintain an exercise program. The purpose of this article is to (1) compare Tai Chi to muscle-strengthening and aerobic exercise, (2) describe possible mechanisms for the effects of Tai Chi on factors that contribute to disability, and (3) identify nursing interventions to promote the use of Tai Chi.

Audette JF, Jin YS, Newcomer R, Stein L, Duncan G, Frontera WR. Tai Chi versus brisk walking in elderly women. Age Ageing. 2006 Jul;35(4):388-93. Epub 2006 Apr 19. // Spaulding Rehabilitation Hospital, Department of Physical Medicine & Rehabilitation, Harvard Medical School, 125 Nashua Street, Boston, MA 02114, USA.

Purpose: to compare the effects of a short style of Tai Chi versus brisk walking training programme on aerobic capacity, heart rate variability (HRV), strength, flexibility, balance, psychological status and quality of life in elderly women. METHODS: nineteen community-dwelling, sedentary women (aged 71.4 +/- 4.5 years) were randomly assigned to Tai Chi Chuan (TCC; n = 11) or brisk walking group (BWG; n = 8). A separate group of elderly women was recruited from the same population to act as a sedentary comparison group (SCG; n = 8). The exercise groups met for 1 h, three days per week for 12 weeks. Outcomes measured before and after training included estimated VO(2)max, spectral analysis of HRV (high-frequency, low-frequency power as well as high- and low-frequency power in normalised units) as a measure of autonomic control of the heart, isometric knee extension and handgrip muscle strength, single-leg stance time, the State Trait Anxiety Inventory (STAI), Profile of Mood States (POMS) and Short Form-36 (SF-36) questionnaires.

Results: significant improvement was seen in estimated VO(2)max in the TCC group (TCC versus SCG P = 0.003, TCC versus BWG P = 0.08). The mean within-person

change of high-frequency power in normalised units (HFnu) increased [8.2 (0.14-16.3)], representing increased parasympathetic activity, and low-frequency power in normalised units (LFnu) decreased [-8.7 (-16.8-0.5)], representing decreased sympathetic activity, in the TCC group only. Significant gains were also seen in the non-dominant knee extensor strength and single-leg stance time (TCC versus BWG $P < 0.05$).

Conclusions: a short style of TCC was found to be an effective way to improve many fitness measures in elderly women over a 3-month period. TCC was also found to be significantly better than brisk walking in enhancing certain measures of fitness including lower extremity strength, balance and flexibility.

Balance Studies

Gatts SK, Woollacott MH. How Tai Chi improves balance: Biomechanics of recovery to a walking slip in impaired seniors. *Gait Posture*. 2006 Apr 29; [Epub ahead of print] // Department of Human Physiology, University of Oregon, Eugene, OR 97403, United States.

BACKGROUND AND AIMS: This study examined the effect of Tai Chi (TC) training on biomechanical responses to large, fast walking perturbations in balance-impaired seniors. **METHODS:** Twenty-two seniors (age 68-92, BERG 44 or less) with surgical interventions to knees, hips, and back were randomly divided into control or TC groups. Groups trained 1.5h/day, 5 days/week for 3 weeks. Controls received TC training after post-control testing. Subjects walked across a force plate triggered to move forward 15cm at 40cm/s at right heel strike (RHS). Kinematics, center of pressure (COP) and center of mass (COM) responses were measured.

Results: TC but not control training significantly reduced tripping ($p \leq 0.005$), medial cross-step distance ($p \leq 0.038$), and increased use of swing leg heel strike ($p \leq 0.001$). COM anterior-posterior (A/P) path significantly increased after TC ($p \leq 0.017$) but not control training. TC training showed a trend toward increased COM-COP A/P angular separation at RHS ($p < 0.067$).

Conclusions: Tai Chi training significantly enhanced balance responses by more efficacious use of mechanisms controlling stepping strategies of the swing leg. COM A/P path significantly increased after TC implying improved ability to tolerate unsteadiness. COM-COP A/P separation angle at RHS increased suggesting a longer step and increased mechanical loading at the hip.

Taylor-Piliae RE, Haskell WL, Stotts NA, Froelicher ES. Improvement in balance, strength, and flexibility after 12 weeks of Tai chi exercise in ethnic Chinese adults with cardiovascular disease risk factors. *Altern Ther Health Med*. 2006 Mar-Apr;12(2):50-8. // Stanford Prevention Research Center, Stanford University School of Medicine, Stanford University, Calif, USA.

CONTEXT: Declines in physical performance are associated with aging and chronic health conditions. Appropriate physical activity interventions can reverse functional limitations and help maintain independent living. Tai chi is a popular form of exercise in China among older adults. **OBJECTIVE:** To determine whether tai chi improves balance, muscular strength and endurance, and flexibility over time. **DESIGN:** Repeated measures intervention; data collected at baseline, 6 weeks, and 12 weeks. **SETTING:** Community center in the San Francisco Bay Area. **PARTICIPANTS:** Thirty-nine Chinese adults with at least 1 cardiovascular disease (CVD) risk factor. **INTERVENTIONS:** A 60-minute tai chi exercise class 3 times per week for 12 weeks. **MAIN OUTCOME MEASURES:** A battery of physical fitness measures specifically developed for older adults assessed balance, muscular strength and endurance, and flexibility.

Results: Subjects were 65.7 (+/- 8.3) years old, Cantonese-speaking (97%) immigrants, with 12 years or less of formal education (87%) and very low income (67%). Reported CVD risk factors were hypertension (92%), hypercholesteremia (49%), diabetes (21%), and 1 current smoker. Subjects were below the 50th percentile of fitness at baseline compared to age- and gender-specific normative US data. Statistically significant improvements were observed in all balance, muscular strength and endurance, and flexibility measures after 6 weeks, and they increased further after 12 weeks.

Conclusions: Tai chi is a potent intervention that improved balance, upper- and lower-body muscular strength and endurance, and upper- and lower-body flexibility in these older Chinese adults. These findings provide important information for future community-based tai chi exercise programs and support current public health initiatives to reduce disability from chronic health conditions and enhance physical function in older adults.

Sattin RW, Easley KA, Wolf SL, Chen Y, Kutner MH. Reduction in fear of falling through intense tai chi exercise training in older, transitionally frail adults. J Am Geriatr Soc. 2005 Jul;53(7):1168-78. // National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, Atlanta, Georgia 30341, USA. rsattin@cdc.gov

OBJECTIVES: To determine whether an intense tai chi exercise program could reduce fear of falling better than a wellness education (WE) program in older adults who had fallen previously and meet criteria for transitioning to frailty. **DESIGN:** Cluster-randomized, controlled trial of 48 weeks' duration. **SETTING:** Ten matched pairs of congregate living facilities in the greater Atlanta area. **PARTICIPANTS:** Sample of 291 women and 20 men, aged 70 to 97. **MEASUREMENTS:** Activity-related fear of falling using the Activities-Specific Balance Confidence Scale (ABC) and the Fall Efficacy Scale at baseline and every 4 months for 1 year. Demographics, time to first fall and all subsequent falls, functional measures, Centers for Epidemiologic Studies Depression Scale, medication use, level of physical activity, comorbidities, and adherence to interventions.

Results: Mean ABC was similar in both cohort groups at the time of randomization but became significantly higher (decreased fear) in the tai chi cohort at 8 months (57.9 vs 49.0, $P < .001$) and at study end (59.2 vs 47.9, $P < .001$). After adjusting for covariates, the mean ABC after 12 months of intervention was significantly greater in the tai chi group than in the WE group, with the differences increasing with time (mean difference at 12 months=9.5 points, 95% confidence interval=4.8-14.2, $P < .001$).

Conclusion: Tai chi led to a significantly greater reduction in fear of falling than a WE program in transitionally frail older adults. The mean percentage change in ABC scores widened between tai chi and WE participants over the trial period. Tai chi should be considered in any program designed to reduce falling and fear of falling in transitionally frail older adults.

Choi JH, Moon JS, Song R. Effects of Sun-style Tai Chi exercise on physical fitness and fall prevention in fall-prone older adults. J Adv Nurs. 2005 Jul;51(2):150-7. // Department of Nursing, Daewon Science College, Chungbuk, South Korea.

AIM: This paper reports a study to determine changes in the physical fitness (knee and ankle muscle strength, balance, flexibility, and mobility), fall avoidance efficacy, and fall episodes of institutionalized older adults after participating in a 12-week Sun-style Tai Chi exercise programme. BACKGROUND: Fall prevention has a high priority in health promotion for older people because a fall is associated with serious morbidity in this population. Regular exercise is effective in fall prevention for older adults because of improvements in strength and balance. Tai Chi exercise is considered to offer great potential for health promotion and rehabilitation, particularly in the maintenance of good mental and physical condition in older people. METHODS: A quasi-experimental design with a non-equivalent control group was used. Data were collected from September 2001 to January 2002. A total of 68 fall-prone older adults with a mean age of 77.8 years participated in the study, and 29 people in the Tai Chi group and 30 controls completed the post-test measures. The Tai Chi exercise programme was provided three times a week for 12 weeks in the experimental group. Data were analysed for group differences using t-tests.

Results: At post-test, the experimental group showed significantly improved muscle strength in knee and ankle flexors ($P < 0.001$) and extensors ($P < 0.01$), and improved flexibility ($P < 0.01$) and mobility ($P < 0.001$) compared with the control group. There was no significant group difference in fall episodes, but the relative risk ratio for the Tai Chi exercise group compared with the control group was 0.62. The experimental group reported significantly more confidence in fall avoidance than did the control group.

Conclusion: The findings reveal that Tai Chi exercise programmes can safely improve physical strength and reduce fall risk for fall-prone older adults in residential care facilities.

Li F, Harmer P, Fisher KJ, McAuley E, Chaumeton N, Eckstrom E, Wilson NL. Tai Chi and fall reductions in older adults: a randomized controlled trial. J Gerontol A Biol Sci Med Sci. 2005 Feb;60(2):187-94. // Oregon Research Institute, 1715 Franklin Boulevard, Eugene, OR 9740 , USA. fuzhongl@ori.org

BACKGROUND: The authors' objective was to evaluate the efficacy of a 6-month Tai Chi intervention for decreasing the number of falls and the risk for falling in older persons. **METHODS:** This randomized controlled trial involved a sample of 256 physically inactive, community-dwelling adults aged 70 to 92 (mean age, 77.48 years; standard deviation, 4.95 years) who were recruited through a patient database in Portland, Oregon. Participants were randomized to participate in a three-times-per-week Tai Chi group or to a stretching control group for 6 months. The primary outcome measure was the number of falls; the secondary outcome measures included functional balance (Berg Balance Scale, Dynamic Gait Index, Functional Reach, and single-leg standing), physical performance (50-foot speed walk, Up&Go), and fear of falling, assessed at baseline, 3 months, 6 months (intervention termination), and at a 6-month postintervention follow-up.

Results: At the end of the 6-month intervention, significantly fewer falls ($n=38$ vs 73 ; $p=.007$), lower proportions of fallers (28% vs 46% ; $p=.01$), and fewer injurious falls (7% vs 18% ; $p=.03$) were observed in the Tai Chi group compared with the stretching control group. After adjusting for baseline covariates, the risk for multiple falls in the Tai Chi group was 55% lower than that of the stretching control group (risk ratio, .45; 95% confidence interval, 0.30 to 0.70). Compared with the stretching control participants, the Tai Chi participants showed significant improvements ($p<.001$) in all measures of functional balance, physical performance, and reduced fear of falling. Intervention gains in these measures were maintained at a 6-month postintervention follow-up in the Tai Chi group.

Conclusions: A three-times-per-week, 6-month Tai Chi program is effective in decreasing the number of falls, the risk for falling, and the fear of falling, and it improves functional balance and physical performance in physically inactive persons aged 70 years or older.

McGibbon CA, Krebs DE, Wolf SL, Wayne PM, Scarborough DM, Parker SW. Tai Chi and vestibular rehabilitation effects on gaze and whole-body stability. J Vestib Res. 2004;14(6):467-78. // Institute of Biomedical Engineering, and Faculty of Kinesiology, University of New Brunswick, Fredericton, NB, Canada E3B 5A3. cmcgibb@unb.ca

Tai Chi (TC) is a comparatively new intervention for peripheral vestibular hypofunction, which is often treated with vestibular rehabilitation (VR). We compared gaze stability (GZS), whole-body stability (WBS) and footfall stability (FFS) during locomotion among 26 people with vestibulopathy (VSP), randomized into two treatment arms (13 TC and 13 VR). Each intervention program was offered for 10 weeks. GZS improved more for VR than for TC, but WBS (and FFS) improved more for TC than for VR. There was a significant relationship between changes in GZS and WBS for the VR

subjects ($r=0.60$, $p=0.01$), but not for TC subjects. There was a significant relationship between changes in WBS and FFS for both VR ($r=0.65$, $p < 0.01$) and TC ($r=0.58$, $p=0.02$) groups; the relationship disappeared in the VR but not the TC group when controlling for GZS. These findings suggest that VR and TC both benefit patients with VSP but via differing mechanisms. Moreover, these data are the first to test the assumption that improving gaze control among patients with VSP performance improves postural stability: it does not. We conclude that GZS is most improved in those who receive VR, but that TC improves WBS and FFS without improving GZS, suggesting patients with VSP can rely on non-gaze related mechanisms to improve postural control.

Tsang WW, Hui-Chan CW. Comparison of muscle torque, balance, and confidence in older tai chi and healthy adults. Med Sci Sports Exerc. 2005 Feb;37(2):280-9. // Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong (SAR), China.

PURPOSE: The objectives of this cross-sectional study were to examine whether older Tai Chi practitioners had better knee muscle strength, less body sway in perturbed single-leg stance, and greater balance confidence than healthy older adults. **METHODS:** Tai Chi and control subjects ($N = 24$ each, aged 69.3 ± 5.0 and 71.6 ± 6.1 yr, respectively) were matched with respect to age, gender, height, weight, and physical activity level. Concentric and eccentric isokinetic tests of the subjects' dominant knee extensors and flexors were conducted at an angular velocity of $30 \text{ degrees.s}^{-1}$. Control of body sway was assessed in static double-leg stance and in single-leg stance perturbed by forward or backward platform perturbations. The Activities-specific Balance Confidence (ABC) scale was used to investigate subjects' balance confidence in daily activities.

Results: Tai Chi practitioners had higher peak torque-to-body weight ratios in concentric and eccentric isokinetic contractions of their knee extensors and flexors ($P = 0.044$). They manifested less anteroposterior body sway angles in perturbed single-leg but not static double-leg stance than did control subjects ($P < 0.001$). Tai Chi practitioners also reported significantly higher balance confidence score ratios ($P = 0.001$). Older adults' knee muscle strengths showed negative correlations with body sway angles in perturbed single-leg stance and positive correlations with ABC score ratios. Moreover, their body sway angles in perturbed single-leg stance were negatively correlated with their ABC score ratios (all $P < 0.05$).

Conclusion: Our results demonstrate that long-term Tai Chi practitioners had better knee muscle strength, less body sway in perturbed single-leg stance, and greater balance confidence. Significant correlations among these three measures uncover the importance of knee muscle strength and balance control during perturbed single-leg stance in older adults' balance confidence in their daily activities.

Tsang WW, Hui-Chan CW. Effect of 4- and 8-wk intensive Tai Chi Training on balance control in the elderly. Med Sci Sports Exerc. 2004 Apr;36(4):648-57. // Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong (SAR), CHINA.

PURPOSE: The objective of this study was to examine whether 4 and/or 8 wk of intensive Tai Chi practice could improve balance control in the healthy elderly subjects. **METHODS:** Forty-nine community-dwelling elderly subjects (aged 69.1 +/- SD 5.8 yr) voluntarily participated in an intervention program of either supervised Tai Chi or general education for 1.5 h, 6x wk for 8 wk. Two balance tests were administered using computerized dynamic posturography before, at 4 and 8 wk during training, and at 4 wk after training ended: 1) the sensory organization test measured subjects' abilities to use somatosensory, visual, and vestibular information to control their body sway during stance under six sensory conditions; and 2) the limits of stability test measured subjects' abilities to voluntarily weight shift to eight spatial positions within their base of support. These outcome measures were compared between the two intervention groups, and with those of experienced Tai Chi practitioners having means of 7.2 and 10.1 yr of practice from two previous studies.

Results: Statistical analysis demonstrated that, after 4 and 8 wk of intensive Tai Chi training, the elderly subjects achieved significantly better 1) vestibular ratio in the sensory organization test ($P = 0.006$) and 2) directional control of their leaning trajectory in the limits of stability test ($P = 0.018$), when compared with those of the control group. These improvements were maintained even at follow-up 4 wk afterward. Furthermore, the improved balance performance from week 4 on was comparable to that of experienced Tai Chi practitioners.

Conclusions: The above findings indicated that even 4 wk of intensive Tai Chi training are sufficient to improve balance control in the elderly subjects.

Wolf SL, Barnhart HX, Kutner NG, McNeely E, Coogler C, Xu T. Reducing frailty and falls in older persons: an investigation of Tai Chi and computerized balance training. Atlanta FICSIT Group. Frailty and Injuries: Cooperative Studies of Intervention Techniques. J Am Geriatr Soc. 1996 May;44(5):489-97. // Department of Rehabilitation Medicine, Emory University School of Medicine, Atlanta, Georgia, USA.

OBJECTIVE: To evaluate the effects of two exercise approaches, Tai Chi (TC) and computerized balance training (BT), on specified primary outcomes (biomedical, functional, and psychosocial indicators of frailty) and secondary outcomes (occurrence of falls). **DESIGN:** The Atlanta FICSIT (Frailty and Injuries: Cooperative Studies of Intervention Techniques), a prospective, randomized, controlled clinical trial with three arms (TC, BT, and education [ED]). Intervention length was 15 weeks, with primary outcomes measured before and after intervention and at 4-month follow-up. Falls were monitored continuously throughout the study. **SETTING:** Persons aged 70 and older living in the community. **PARTICIPANTS:** A total of 200 participants, 162 women and 38 men; mean age was 76.2. **MEASUREMENTS:** Biomedical (strength, flexibility, cardiovascular endurance, body composition), functional (IADL), and psychosocial well-being (CES-D scale, fear of falling questionnaire, self-perception of present and future health, mastery index, perceived quality of sleep, and intrusiveness) variables.

Results: Grip strength declined in all groups, and lower extremity range of motion showed limited but statistically significant changes. Lowered blood pressure before and after a 12-minute walk was seen following TC participation. Fear of falling responses and intrusiveness responses were reduced after the TC intervention compared with the ED group ($P = .046$ and $P = .058$, respectively). After adjusting for fall risk factors, TC was found to reduce the risk of multiple falls by 47.5%.

Conclusions: A moderate TC intervention can impact favorably on defined biomedical and psychosocial indices of frailty. This intervention can also have favorable effects upon the occurrence of falls. Tai Chi warrants further study as an exercise treatment to improve the health of older people.

Wolf SL, Sattin RW, Kutner M, O'Grady M, Greenspan AI, Gregor RJ. Intense tai chi exercise training and fall occurrences in older, transitionally frail adults: a randomized, controlled trial. J Am Geriatr Soc. 2003 Dec;51(12):1693-701. // Department of Rehabilitation Medicine, Emory University School of Medicine, Atlanta, Georgia 30322, USA.

OBJECTIVES: To determine whether an intense tai chi (TC) exercise program could reduce the risk of falls more than a wellness education (WE) program in older adults meeting criteria for transitioning to frailty. **DESIGN:** Randomized, controlled trial of 48 weeks duration. **SETTING:** Twenty congregate living facilities in the greater Atlanta area. **PARTICIPANTS:** Sample of 291 women and 20 men aged 70 to 97. **MEASUREMENTS:** Demographics, time to first fall and all subsequent falls, functional measures, Sickness Impact Profile, Centers for Epidemiologic Studies-Depression Scale, Activities-specific Balance Confidence Scale, Falls Efficacy Scales, and adherence to interventions.

RESULTS: The risk ratio (RR) of falling was not statistically different in the TC group and the WE group (RR=0.75, 95% confidence interval (CI)=0.52-1.08), $P=.13$). Over the 48 weeks of intervention, 46% (n=132) of the participants did not fall; the percentage of participants that fell at least once was 47.6% for the TC group and 60.3% for the WE group.

CONCLUSION: TC did not reduce the RR of falling in transitionally frail, older adults, but the direction of effect observed in this study, together with positive findings seen previously in more-robust older adults, suggests that TC may be clinically important and should be evaluated further in this high-risk population.

Bone Studies

Qin L, Choy W, Leung K, Leung PC, Au S, Hung W, Dambacher M, Chan K. Beneficial effects of regular Tai Chi exercise on musculoskeletal system. J Bone Miner Metab. 2005;23(2):186-90. // Department of Orthopaedics and Traumatology,

**Prince of Wales Hospital, the Chinese University of Hong Kong, Hong Kong.
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This study was performed to evaluate the potential benefits of regular Tai Chi Chun (TCC) exercise on bone mineral density (BMD) and neuromuscular function in postmenopausal women. In this cross-sectional study, 99 healthy postmenopausal women, with a mean age of 55.9 \pm 3.1 years and within 10 years after the menopause, were recruited; including 48 subjects who had been regularly practicing TCC exercise for more than 3 h/week and 51 age- and sex-matched sedentary controls (CON). BMD was measured in the lumbar spine and proximal femur of the non-dominant leg (femoral neck, greater trochanter, and Ward's triangle), using dual-energy X-ray absorptiometry (DXA). Neuromuscular function was evaluated, including magnitude of trunk bend-and-reach, quadriceps muscle strength, and single-stance time on the nondominant leg. The TCC group showed overall higher BMD at all measurement sites, with a significant difference found at the spine (7.1%), greater trochanter (7.2%), and Ward's triangle (7.1%) of the proximal femur (all; $P < 0.05$). Functional tests revealed an average 43.3% significantly greater quadriceps strength ($P < 0.01$), and 67.8% significantly longer single-stance time in the TCC group as compared with the CON group ($P < 0.05$), as well as a greater magnitude of trunk bend-and-reach in the TCC group ($P = 0.08$). Bivariate linear correlation analysis showed that quadriceps muscle strength was significantly correlated with the single-stance time ($r = 0.41$; $P < 0.01$). This study revealed that regular TCC exercise may have an association with higher BMD and better neuromuscular function in early postmenopausal women.

Chan K, Qin L, Lau M, Woo J, Au S, Choy W, Lee K, Lee S. A randomized, prospective study of the effects of Tai Chi Chun exercise on bone mineral density in postmenopausal women. Arch Phys Med Rehabil. 2004 May;85(5):717-22. // Department of Orthopaedics and Traumatology, Chinese University of Hong Kong, Hong Kong .

OBJECTIVE: To evaluate the potential benefits of programmed Tai Chi Chun (TCC) exercise on the weight-bearing bones of early postmenopausal women. **DESIGN:** Age-matched and randomized prospective intervention. **SETTING:** University medical school. **PARTICIPANTS:** One hundred thirty-two healthy postmenopausal women (mean age, 54.0 \pm 3.5y) within 10 years of menopause onset were recruited and randomized into the TCC exercise group (n=67) or the sedentary control group (n=65). **INTERVENTION:** Supervised TCC exercise was performed by the TCC group for 45 minutes a day, 5 days a week, for 12 months; control subjects retained a sedentary life style. **Main outcome measures** Bone mineral density (BMD) was measured in the lumbar spine and proximal femur by using dual-energy x-ray absorptiometry and in the distal tibia by using multislice peripheral quantitative computed tomography (pQCT). All BMD measurements were repeated after 12 months in both groups. Fracture rate was also documented.

Results: Baseline measurements showed homogeneity in age, anthropometric variables, and menstruation status between the TCC and control groups. Exactly 81.6% of the

subjects in the TCC group and 83.1% of subjects in the control group completed the 12-month follow-up study. BMD measurements revealed a general bone loss in both TCC and sedentary control subjects at all measured skeletal sites, but with a reportedly slower rate in the TCC group. A significant 2.6- to 3.6-fold retardation of bone loss ($P < .01$) was found in both trabecular and cortical compartments of the distal tibia in the TCC group as compared with the controls, as measured by pQCT. A total of 4 fracture cases were documented during follow-up, including 3 subjects in the control group and 1 in the TCC group.

Conclusions: This is the first prospective and randomized study to show that a programmed TCC exercise intervention is beneficial for retarding bone loss in weight-bearing bones in early postmenopausal women. Long-term follow-up is needed to substantiate the role of TCC exercise in the prevention of osteoporosis and its related fracture.

Cardiovascular System Studies

Taylor-Piliae RE, Froelicher ES. Effectiveness of Tai Chi exercise in improving aerobic capacity: a meta-analysis. *Cardiovasc Nurs.* 2004 Jan-Feb;19(1):48-57. // Department of Physiological Nursing, School of Nursing, University of California, San Francisco, Calif 94143, USA. rtaylor@itsa.uscf.edu

PURPOSE: Meta-analysis involves the integration of several studies with small sample sizes, enabling the investigator to summarize research results into useful clinical information. Tai Chi exercise has recently gained the attention of Western researchers as a potential form of aerobic exercise. A goal of this meta-analysis was to estimate the effect of Tai Chi exercise on aerobic capacity. METHODS: A computerized search of 7 databases was done using key words and all languages. Sixteen study elements were critically appraised to determine study quality. D-STAT software was used to calculate the standardized mean differences (ES_{sm}) and the 95% confidence intervals (CI), using means and standard deviations (SD) reported on aerobic capacity expressed as peak oxygen uptake (VO_{2peak}) (mL x kg⁻¹ x min⁻¹).

Results: Of 441 citations obtained, only 7 focused on aerobic capacity in response to Tai Chi exercise (4 experimental and 3 cross-sectional). Older adults including those with heart disease participated (n = 344 subjects); on average men were aged 55.7 years (SD = 12.7) and women 60.7 years (SD = 6.2). Study quality scores ranged from 22 to 28 (mean = 25.1, SD = 2.0). Average effect size for the cross-sectional studies was large and statistically significant (ES_{sm} = 1.01; CI = +0.37, +1.66), while in the experimental studies the average effect size was small and not significant (ES_{sm} = 0.33; CI = -0.41, +1.07). Effect sizes of aerobic capacity in women (ES_{sm} = 0.83; CI = -0.43, +2.09) were greater than those for men (ES_{sm} = 0.65; CI = -0.04, +1.34), though not statistically significant. Aerobic capacity was higher in subjects performing classical Yang style (108 postures) Tai Chi (ES_{sm} = 1.10; CI = +0.82, +1.38), a 52-week Tai Chi exercise

intervention (ESsm = 0.94; C = +0.06, +1.81), compared with sedentary subjects (ESsm = 0.80; CI = +0.19, +1.41).

Conclusions: This meta-analysis suggests that Tai Chi may be an additional form of aerobic exercise. The greatest benefit was seen from the classical Yang style of Tai Chi exercise when performed for 1-year by sedentary adults with an initial low level of physical activity habits. Recommendations for future research are provided and the effect sizes generated provide information needed for sample size calculations. Randomized clinical trials in diverse populations, including those with chronic diseases, would expand the current knowledge about the effect of Tai Chi on aerobic capacity.

Thornton EW, Sykes KS , Tang WK. Health benefits of Tai Chi exercise: improved balance and blood pressure in middle-aged women. Health Promot Int. 2004 Mar;19(1):33-8. // Department of Psychology, University of Liverpool, UK. ewt1@liverpool.ac.uk

Tai Chi has been widely practiced as a Chinese martial art that focuses on slow sequential movements, providing a smooth, continuous and low intensity activity. It has been promoted to improve balance and strength and to reduce falls in the elderly, especially those 'at risk'. The potential benefits in healthy younger age cohorts and for wider aspects of health have received less attention. The present study documented prospective changes in balance and vascular responses for a community sample of middle-aged women. Seventeen relatively sedentary but healthy normotensive women aged 33-55 years were recruited into a three times per week, 12-week Tai Chi exercise programme. A further 17 sedentary subjects matched for age and body size were recruited as a control group. Dynamic balance measured by the Functional Reach Test was significantly improved following Tai Chi, with significant decreases in both mean systolic (9.71 mmHg) and diastolic (7.53 mmHg) blood pressure. The data confirm that Tai Chi exercise can be a good choice of exercise for middle-aged adults, with potential benefits for ageing as well as the aged.

Tsai JC, Wang WH, Chan P, Lin LJ, Wang CH, Tomlinson B, Hsieh MH, Yang HY, Liu JC. The beneficial effects of Tai Chi Chuan on blood pressure and lipid profile and anxiety status in a randomized controlled trial. Altern Complement Med. 2003 Oct;9(5):747-54. // Institute of Nursing, Taipei Medical University, Taipei, Taiwan, People's Republic of China.

OBJECTIVES: To evaluate the effects on blood pressure, lipid profile, and anxiety status on subjects received a 12-week Tai Chi Chuan exercise program. DESIGN: Randomized controlled study of a Tai Chi Chuan group and a group of sedentary life controls. SETTING: Taipei Medical University Hospitals and University campus in the Taipei , Taiwan , area. SUBJECTS: Two (2) selected groups of 76 healthy subjects with blood pressure at high-normal or stage I hypertension. INTERVENTION: A 12-week Tai Chi Chuan exercise training program was practiced regularly with a frequency of 3 times per week. Each session included 10-minute warm-up, 30-minute Tai Chi exercise, 10-minute cool-down. Exercise intensity was estimated to be approximately 64% of maximal

heart rate. OUTCOME MEASURES: Blood pressure, lipid profile and anxiety status (State-Trait Anxiety Inventory; STAI) were evaluated.

Results: After 12-weeks of Tai Chi training, the treatment group showed significant decrease in systolic blood pressure of 15.6 mm Hg and diastolic blood pressure 8.8 mm Hg. The serum total cholesterol level decreased 15.2 mg/dL and high-density lipoprotein cholesterol increased 4.7 mg/dL. By using STAI evaluation, both trait anxiety and state anxiety were decreased.

Conclusions: This study shows that under well-designed conditions, Tai Chi exercise training could decrease blood pressure and results in favorable lipid profile changes and improve subjects' anxiety status. Therefore, Tai Chi could be used as an alternative modality in treating patients with mild hypertension, with a promising economic effect.

Audette JF, Jin YS, Newcomer R, Stein L, Duncan G, Frontera WR. Tai Chi versus brisk walking in elderly women. Age Ageing. 2006 Jul;35(4):388-93. Epub 2006 Apr 19. // Spaulding Rehabilitation Hospital, Department of Physical Medicine & Rehabilitation, Harvard Medical School, 125 Nashua Street, Boston, MA 02114, USA.

Purpose: to compare the effects of a short style of Tai Chi versus brisk walking training programme on aerobic capacity, heart rate variability (HRV), strength, flexibility, balance, psychological status and quality of life in elderly women. METHODS: nineteen community-dwelling, sedentary women (aged 71.4 +/- 4.5 years) were randomly assigned to Tai Chi Chuan (TCC; n = 11) or brisk walking group (BWG; n = 8). A separate group of elderly women was recruited from the same population to act as a sedentary comparison group (SCG; n = 8). The exercise groups met for 1 h, three days per week for 12 weeks. Outcomes measured before and after training included estimated VO(2)max, spectral analysis of HRV (high-frequency, low-frequency power as well as high- and low-frequency power in normalised units) as a measure of autonomic control of the heart, isometric knee extension and handgrip muscle strength, single-leg stance time, the State Trait Anxiety Inventory (STAI), Profile of Mood States (POMS) and Short Form-36 (SF-36) questionnaires.

Results: significant improvement was seen in estimated VO(2)max in the TCC group (TCC versus SCG P = 0.003, TCC versus BWG P = 0.08). The mean within-person change of high-frequency power in normalised units (HFnu) increased [8.2 (0.14-16.3)], representing increased parasympathetic activity, and low-frequency power in normalised units (LFnu) decreased [-8.7 (-16.8-0.5)], representing decreased sympathetic activity, in the TCC group only. Significant gains were also seen in the non-dominant knee extensor strength and single-leg stance time (TCC versus BWG P<0.05).

Conclusions: a short style of TCC was found to be an effective way to improve many fitness measures in elderly women over a 3-month period. TCC was also found to be significantly better than brisk walking in enhancing certain measures of fitness including lower extremity strength, balance and flexibility.

J Gerontol A Biol Sci Med Sci. 2006 Feb;61(2):184-9. Wolf SL, O'Grady M, Easley KA, Guo Y, Kressig RW, Kutner M. The influence of intense Tai Chi training on physical performance and hemodynamic outcomes in transitionally frail, older adults. // Department of Rehabilitation Medicine, Emory University School of Medicine, 212 C Rehabilitation Center, 1441 Clifton Rd. NE, Atlanta, GA 30322, USA. swolf@emory.edu

BACKGROUND: Few data exist to evaluate whether Tai Chi (TC) training improves physical performance and hemodynamic outcomes more than a wellness education (WE) program does among older fallers transitioning to frailty. **METHODS:** This 48-week randomized clinical trial was provided at 10 matched pairs of congregate living facilities in the Atlanta metropolitan area to 291 women and 20 men, who were transitionally frail, ≥ 70 years old, and had fallen at least once within the past year. Pairs of facilities were randomized to either TC exercise (n = 158) or WE (control) interventions (n = 153) over 48 weeks. Physical performance (freely chosen gait speed, reach, chair-rises, 360 degrees turn, picking up an object from the floor, and single limb support) and hemodynamic outcomes (heart rate and blood pressure) were obtained at baseline and after 4, 8, and 12 months.

Results: Mean percent change (baseline to 1 year) for gait speed increased similarly in both cohorts (TC: 9.1% and WE: 8.2%; p = .78). However, time to complete three chair-rises decreased 12.3% for TC and increased 13.7% for WE (p = .006). Baseline to 1 year mean percent change decreased among TC and increased within WE cohorts for: body mass index (-2.3% vs 1.8%; p < .0001), systolic blood pressure (-3.4% vs 1.7%; p = .02), and resting heart rate (-5.9% vs 4.6%; p < .0001).

Conclusions: TC significantly improved chair-rise and cardiovascular performance. Because TC training reduced fall occurrences in this cohort, factors influencing functional and cardiovascular improvements may also favorably impact fall events.

Ko GT, Tsang PC, Chan HC. A 10-week Tai-Chi program improved the blood pressure, lipid profile and SF-36 scores in Hong Kong Chinese women. Med Sci Monit. 2006 Apr 25;12(5):CR196-199 [Epub ahead of print] // Department of Medicine, AH Nethersole Hospital, Hong Kong.

Background: Physical activity is associated with a better longevity and reduced morbidity. In addition, exercise has a mood-elevating effect, which improves self-esteem. Tai-Chi is a traditional Chinese aerobic exercise. We aimed to assess the short-term effects of Tai-Chi on the clinical parameters and health-related quality of life (QOL) in Hong Kong Chinese. **Material/Methods:** Twenty Chinese healthy female subjects were recruited. There were 2 Tai-Chi sessions per week for 10 weeks. Each session lasted for one hour. Health-related QOL was assessed with SF-36 questionnaire.

Results: Of the 20 subjects, their mean age was 40.8 \pm 5.9 years (median 42.5 years, range 30-50 years). At the end of the study, systolic blood pressure, total cholesterol and

low-density lipoprotein cholesterol levels significantly reduced (114 \pm 9 to 108 \pm 9 mmHg, $p=0.012$; 4.7 \pm 0.8 to 4.4 \pm 0.5 mmol/L, $p=0.020$ and 2.7 \pm 0.6 to 2.2 \pm 0.5 mmol/L, $p=0.001$, respectively). Among all SF-36 items, Vitality and Mental Health significantly improved after the 10-week Tai-Chi program (64.9 \pm 8.1 to 68.4 \pm 6.6, $p=0.038$ and 64.4 \pm 6.9 to 69.1 \pm 1.4, $p=0.003$, respectively).

Conclusions: A 10-week Tai-Chi exercise program improved systolic blood pressure, lipid profiles and some of the parameters of health-related QOL in Hong Kong Chinese women. Tai-Chi is likely to be a useful choice of physical activity. We need a larger study that covers a wider range of populations to confirm our results.

Taylor-Piliae RE, Haskell WL, Waters CM, Froelicher ES. Change in perceived psychosocial status following a 12-week Tai Chi exercise programme. J Adv Nurs. 2006 May;54(3):313-29.// Stanford Prevention Research Center, School of Medicine, Stanford University, Stanford, California 94305-5705, USA . rpiliae@stanford.edu

AIM: This paper reports a study to examine change in psychosocial status following a 12-week Tai Chi exercise intervention among ethnic Chinese people with cardiovascular disease risk factors living in the United States of America . BACKGROUND: Regular participation in physical activity is associated with protection against cardiovascular disease, and improvements in physical and psychological health. Increasing amounts of scientific evidence suggests that mind-body exercise, such as Tai Chi, are related to improvements in mental health, emotional well-being, and stress reduction. No prior study has examined the effect of a Tai Chi exercise intervention on psychosocial status among people with cardiovascular disease risk factors. METHODS: This was a quasi-experimental study. Participants attended a 60-minute Tai Chi exercise class three times per week for 12 weeks. Data were collected at baseline, 6 and 12 weeks following the intervention. Psychosocial status was assessed using Chinese versions of Cohen's Perceived Stress Scale, Profile of Mood States, Multidimensional Scale of Perceived Social Support, and Tai Chi exercise self-efficacy.

Results: A total of 39 participants, on average 66-year-old (\pm 8.3), married (85%), Cantonese-speaking (97%), immigrants participated. The majority were women (69%), with \leq 12 years education (87%). Statistically significant improvements in all measures of psychosocial status were found ($P \leq 0.05$) following the intervention. Improvement in mood state ($\eta^2 = 0.12$), and reduction in perceived stress ($\eta^2 = 0.13$) were found. In addition, Tai Chi exercise statistically significantly increased self-efficacy to overcome barriers to Tai Chi ($\eta^2 = 0.19$), confidence to perform Tai Chi ($\eta^2 = 0.27$), and perceived social support ($\eta^2 = 0.12$).

Conclusions: Tai Chi was a culturally appropriate mind-body exercise for these older adults, with statistically significant psychosocial benefits observed over 12-weeks. Further research examining Tai Chi exercise using a randomized clinical trial design with an attention-control group may reduce potential confounding effects, while exploring potential mechanisms underlying the relaxation response associated with mind-body

exercise. In addition, future studies with people with other chronic illnesses in all ethnic groups are recommended to determine if similar benefits can be achieved.

Galantino ML, Shepard K, Krafft L, Laperriere A, Ducette J, Sorbello A, Barnish M, Condoluci D, Farrar JT, Taylor-Piliae RE, Haskell WL, Froelicher ES. Hemodynamic responses to a community-based Tai Chi exercise intervention in ethnic Chinese adults with cardiovascular disease risk factors. Eur J Cardiovasc Nurs. 2006 Jun;5(2):165-74. Epub 2005 Nov 28. // Stanford Prevention Research Center, School of Medicine, Stanford University, Hoover Pavilion, MC 5705, 211 Quarry Road, Room N229, Stanford, CA 94305-5705, USA. rpiliae@stanford.edu

BACKGROUND: Cardiovascular disease (CVD) is the leading cause of death among older adults worldwide, including Europe, Asia, and North America. In the United States (US), CVD is also the leading cause of death among Asian-Americans. Physical activity has been shown to reduce CVD risk factors. Reduction in blood pressure (BP) in response to Tai Chi (TC) exercise in persons with CVD risk factors have been reported, though not in ethnic Chinese living in the US. **AIM:** Hemodynamic responses to a 12-week community-based TC exercise intervention among ethnic Chinese with CVD risk factors were examined. **METHODS:** Quasi-experimental design. Ethnic Chinese > 45 years old with at least 1 major CVD risk factor, living in the San Francisco Bay Area, attended a TC intervention three times a week for 12 weeks. A 2-min step-in-place test assessed aerobic endurance. BP and heart rate were measured at rest, and within 1-min after the step-test. Data were collected at baseline, 6 and 12 weeks.

Results: A total of 39 subjects (69% women), 66 +/- 8.3 years old, with hypertension (92%), hypercholesterolemia (49%), and/or diabetes (21%), and 1 current smoker participated. Adherence to the intervention was high (87%). Subjects were sedentary at baseline, though had a statistically significant improvement in aerobic endurance over time ($\eta^2 = 0.39$). At baseline, the average BP at rest was 150/86, while BP in response to the step-test was 178/99. Clinically and statistically significant reductions in BP at rest (131/77), and in response to the step-test (164/82) were found over 12 weeks of TC ($p < 0.01$). No significant change in heart rate was observed.

Conclusions: This innovative, culturally relevant, community-based 12-week TC exercise intervention, appealed to Chinese adults with CVD risk factors, with significant reductions in BP and improvement in aerobic endurance. Given the number of persons estimated to have HTN and other CVD risk factors, the identification of new approaches to improve health, combined with risk factor reduction is needed. This is particularly important, given the rise in HTN among adults in the US and the associated public health burden of HTN. TC has the potential to reduce expenditures associated with CVD by facilitating a lifestyle that promotes physical activity, while remaining a low-tech, low-cost alternative to exercise.

Immune System Studies

Yeh SH, Chuang H, Lin LW, Hsiao CY, Eng HL. Regular tai chi chuan exercise enhances functional mobility and CD4CD25 regulatory T cells. Br J Sports Med. 2006 Mar;40(3):239-43. // Chang Gung Institute of Technology, Kaohsiung, Taiwan. y470912@adm.cgmh.org.tw

BACKGROUND: The duration and vigour of physical exercise are widely considered to be critical elements that may positively or negatively affect physical health and immune response. **OBJECTIVES:** To investigate the effect of a 12 week programme of regular tai chi chuan exercise (TCC) on functional mobility, beliefs about benefits of exercise on physical and psychological health, and immune regulation in middle aged volunteers. **METHODS:** This quasi-experimental research design involving one group with testing before and after the programme was conducted to measure the effect of 12 weeks of TCC exercise in 14 men and 23 women from the normal community.

Results: Regular TCC exercise had a highly significant positive effect on functional mobility ($p = 0.001$) and beliefs about the health benefits of exercise ($p = 0.013$) in the 37 participants. Total white blood cell and red blood cell count did not change significantly, but a highly significant ($p < 0.001$) decrease in monocyte count occurred. A significant ($p = 0.05$) increase in the ratio of T helper to suppressor cells (CD4:CD8) was found, along with a significant ($p = 0.015$) increase in CD4CD25 regulatory T cells. Production of the regulatory T cell mediators transforming growth factor beta and interleukin 10 under specific antigen stimulation (varicella zoster virus) was also significantly increased after this exercise programme.

Conclusions: A 12 week programme of regular TCC exercise enhances functional mobility, personal health expectations, and regulatory T cell function.

Psychological Studies

Wang YT, Taylor L, Pearl M, Chang LS. Effects of Tai Chi exercise on physical and mental health of college students. Am J Chin Med. 2004;32(3):453-9. // Department of Physical Therapy, Georgia State University, Atlanta, GA 30303, USA. ywang2@gsu.edu

The purpose of this pilot study is to examine the effects of Tai Chi Quan, a body-mind harmony exercise, on college students' perceptions of their physical and mental health. A three-month intervention of Tai Chi exercise was administered to college students, and multidimensional physical (PHD) and mental (MHD) health scores were assessed using the SF-36v2 health survey questionnaire before and after the intervention. Thirty college students participated in a 1-hour-long Tai Chi exercise intervention twice a week for 3 months. Each practice session included 10 minutes of breathing and stretching exercises followed by 50 minutes of Tai Chi Quan 24-form practice. PHD including physical function (PF), role physical (RP), bodily pain (BP), general health (GH), and MHD

including social function (SF), role mental/emotion function (RE), vitality (VT), perceptions of mental health (MH) were assessed. The normalized scores of each variable and the combined PHD or MHD scores before and after the Tai Chi intervention were examined by paired t-test ($p < 0.05$). Physical measures of BP and GH, and mental measures of RE, VT and MH were significantly improved after Tai Chi exercise intervention. When the overall PHD or MHD scores were evaluated, the MHD had increased significantly. In conclusion, Tai Chi exercise had positive effects on the self-assessed physical and mental health of college students. Scores on the mental health dimension appeared to be particularly sensitive to change. Colleges/universities might consider offering Tai Chi as a component of their ongoing physical activity programs available to students.

Chan K, Qin L, Lau M, Woo J, Au S, Choy W, Lee K, Lee S. A randomized, prospective study of the effects of Tai Chi Chun exercise on bone mineral density in postmenopausal women. Arch Phys Med Rehabil. 2004 May;85(5):717-22. // Department of Orthopaedics and Traumatology, Chinese University of Hong Kong, Hong Kong.

OBJECTIVE: To evaluate the potential benefits of programmed Tai Chi Chun (TCC) exercise on the weight-bearing bones of early postmenopausal women. **DESIGN:** Age-matched and randomized prospective intervention. **SETTING:** University medical school. **PARTICIPANTS:** One hundred thirty-two healthy postmenopausal women (mean age, 54.0 \pm 3.5y) within 10 years of menopause onset were recruited and randomized into the TCC exercise group (n=67) or the sedentary control group (n=65). **INTERVENTION:** Supervised TCC exercise was performed by the TCC group for 45 minutes a day, 5 days a week, for 12 months; control subjects retained a sedentary life style. **Main outcome measures** Bone mineral density (BMD) was measured in the lumbar spine and proximal femur by using dual-energy x-ray absorptiometry and in the distal tibia by using multislice peripheral quantitative computed tomography (pQCT). All BMD measurements were repeated after 12 months in both groups. Fracture rate was also documented.

Results: Baseline measurements showed homogeneity in age, anthropometric variables, and menstruation status between the TCC and control groups. Exactly 81.6% of the subjects in the TCC group and 83.1% of subjects in the control group completed the 12-month follow-up study. BMD measurements revealed a general bone loss in both TCC and sedentary control subjects at all measured skeletal sites, but with a reportedly slower rate in the TCC group. A significant 2.6- to 3.6-fold retardation of bone loss ($P < .01$) was found in both trabecular and cortical compartments of the distal tibia in the TCC group as compared with the controls, as measured by pQCT. A total of 4 fracture cases were documented during follow-up, including 3 subjects in the control group and 1 in the TCC group.

Conclusions: This is the first prospective and randomized study to show that a programmed TCC exercise intervention is beneficial for retarding bone loss in weight-bearing bones in early postmenopausal women. Long-term follow-up is needed to

substantiate the role of TCC exercise in the prevention of osteoporosis and its related fracture.

Taylor-Piliae RE, Haskell WL, Waters CM, Froelicher ES. Change in perceived psychosocial status following a 12-week Tai Chi exercise programme. J Adv Nurs. 2006 May;54(3):313-29. // Stanford Prevention Research Center , School of Medicine, Stanford University, Stanford, California 94305-5705, US. rpiliae@stanford.edu

AIM: This paper reports a study to examine change in psychosocial status following a 12-week Tai Chi exercise intervention among ethnic Chinese people with cardiovascular disease risk factors living in the United States of America . BACKGROUND: Regular participation in physical activity is associated with protection against cardiovascular disease, and improvements in physical and psychological health. Increasing amounts of scientific evidence suggests that mind-body exercise, such as Tai Chi, are related to improvements in mental health, emotional well-being, and stress reduction. No prior study has examined the effect of a Tai Chi exercise intervention on psychosocial status among people with cardiovascular disease risk factors. METHODS: This was a quasi-experimental study. Participants attended a 60-minute Tai Chi exercise class three times per week for 12 weeks. Data were collected at baseline, 6 and 12 weeks following the intervention. Psychosocial status was assessed using Chinese versions of Cohen's Perceived Stress Scale, Profile of Mood States, Multidimensional Scale of Perceived Social Support, and Tai Chi exercise self-efficacy.

Results: A total of 39 participants, on average 66-year-old (+/-8.3), married (85%), Cantonese-speaking (97%), immigrants participated. The majority were women (69%), with ≤ 12 years education (87%). Statistically significant improvements in all measures of psychosocial status were found ($P \leq 0.05$) following the intervention. Improvement in mood state ($\eta^2 = 0.12$), and reduction in perceived stress ($\eta^2 = 0.13$) were found. In addition, Tai Chi exercise statistically significantly increased self-efficacy to overcome barriers to Tai Chi ($\eta^2 = 0.19$), confidence to perform Tai Chi ($\eta^2 = 0.27$), and perceived social support ($\eta^2 = 0.12$).

Conclusions: Tai Chi was a culturally appropriate mind-body exercise for these older adults, with statistically significant psychosocial benefits observed over 12-weeks. Further research examining Tai Chi exercise using a randomized clinical trial design with an attention-control group may reduce potential confounding effects, while exploring potential mechanisms underlying the relaxation response associated with mind-body exercise. In addition, future studies with people with other chronic illnesses in all ethnic groups are recommended to determine if similar benefits can be achieved.

Robins JL, McCain NL, Gray DP, Elswick RK Jr, Walter JM, McDade E. Research on psychoneuroimmunology: tai chi as a stress management approach for individuals with HIV disease. Appl Nurs Res. 2006 Feb;19(1):2-9. // Integrating Wellness, Inc., Richmond, VA 23235, USA.

Psychoneuroimmunology is a framework for mind-body practice and research that combines cutting-edge scientific exploration with holistic philosophy to appreciate and understand stress responses. The rapidly growing research literature provides a foundation for building an integrative stress management model with the potential to positively influence the stress-disease relationship and, ultimately, health outcomes. This article introduces a novel tai chi intervention and provides quantitative and qualitative data from a randomized clinical trial indicating its effects on psychosocial variables in individuals living with various stages of HIV disease.

Jin P. Changes in heart rate, noradrenaline, cortisol and mood during Tai Chi. J Psychosom Res. 1989;33(2):197-206. // Department of Psychology, La Trobe University, Bundoora, Australia.

Changes in psychological and physiological functioning following participation in Tai Chi were assessed for 33 beginners and 33 practitioners. The variables in the three-way factorial design were experience (beginners vs practitioners), time (morning vs afternoon vs evening), and phase (before Tai Chi vs during Tai Chi vs after Tai Chi). Phase was a repeated measures variable. Relative to measures taken beforehand, practice of Tai Chi raised heart rate, increased noradrenaline excretion in urine, and decreased salivary cortisol concentration. Relative to baseline levels, subjects reported less tension, depression, anger, fatigue, confusion and state-anxiety, they felt more vigorous, and in general they had less total mood disturbance. The data suggest that Tai Chi results in gains that are comparable to those found with moderate exercise. There is need for research concerned with whether participation in Tai Chi has effects over and above those associated with physical exercise.

Therapeutic Studies

Lee KY, Jeong OY. [The effect of tai chi movement in patients with rheumatoid arthritis.] Taehan Kanho Hakhoe Chi. 2006 Apr;36(2):278-85. [Article in Korean] // Department of Nursing, Daejeon University, Daejeon, Korea. kang52@dju.ac.kr.

PURPOSE: This study was performed to verify the effect of Tai Chi exercise on patients with rheumatoid arthritis particularly their level of pain, fatigue, sense of balance and daily life performance (ADL). **METHOD:** It employed a non-equivalent control group pre- and post-test design. The research instruments used in this study were pain, fatigue, sense of balance and ADL. Thirty-two patients in the experimental group carried out 50 minutes of Tai Chi exercise for 12 weeks, and 29 patients in the control group did not. Before and after the experiment, both groups were tested for pain, fatigue, sense of balance and ADL. Collected data were processed using the SPSS/WIN 10.0 program analyzed by the frequency, percentage, chi2-test, and t-test.

Results: Pain and fatigue significantly decreased in the experimental group. However the improvement in ADL of the rheumatoid arthritis patients was not statistically significant but their sense of balance was enhanced significantly.

Conclusion: Tai Chi exercise is an effective nursing intervention that can be used for rheumatoid arthritis patients.

Mustian KM, Katula JA, Zhao H. A pilot study to assess the influence of tai chi chuan on functional capacity among breast cancer survivors. J Support Oncol. 2006 Mar;4(3):139-45. // University of Rochester School of Medicine and Dentistry, James P Wilmot Cancer Center, Department of Radiation Oncology, Behavioral Medicine Unit, Rochester, NY 14642, USA. Karen_Mustian@urmc.rochester.edu

Treatment of breast cancer can significantly diminish functional capacity in patients months and even years after the completion of treatments. Tai chi chuan (TCC) is a moderate form of exercise that may be an effective therapy for improving functional capacity among breast cancer survivors. We sought to provide pilot data comparing the efficacy of TCC and psychosocial therapy (PST; physical activity control) for improving functional capacity among breast cancer survivors post treatment. Twenty-one women who had completed treatment of breast cancer were randomized to receive TCC or PST 3 times/wk for 12 weeks. Functional capacity was assessed at baseline and at 12 weeks. The TCC group demonstrated significant improvement in functional capacity (specifically aerobic capacity, muscular strength, and flexibility) whereas the PST group showed significant improvement in flexibility only. These data suggest that TCC may be an efficacious intervention for enhancing functional capacity among breast cancer survivors and may support the need for larger randomized, controlled clinical trials to further elucidate these relationships.

Mustian KM, Katula JA, Gill DL, Roscoe JA, Lang D, Murphy K. Tai Chi Chuan, health-related quality of life and self-esteem: a randomized trial with breast cancer survivors. Support Care Cancer. 2004 Dec;12(12):871-6. Epub 2004 Sep 30. // Behavioral Medicine Unit, Department of Radiation Oncology, James P. Wilmot Cancer Center, University of Rochester School of Medicine and Dentistry, 601 Elmwood Avenue, Box 704, Rochester, NY 14642, USA. Karen_Mustian@urmc.rochester.edu

GOALS: Health-related quality of life (HRQL) and self-esteem are often diminished among women diagnosed and treated for breast cancer. Tai Chi is a moderate form of exercise that may be an effective therapy for improving HRQL and self-esteem among these women. We sought to compare the efficacy of Tai Chi Chuan (TCC) and psychosocial support (PST) for improving HRQL and self-esteem among breast cancer survivors. PATIENTS AND METHODS: A group of 21 women diagnosed with breast cancer, who had completed treatment within the last 30 months were randomized to receive 12 weeks of TCC or PST. Participants in both groups met three times a week for 60 minutes. HRQL and self-esteem were assessed at baseline, 6 weeks, and 12 weeks.

Results: The TCC group demonstrated significant improvements in HRQL, while the PST group reported declines in HRQL, with the differences between the two groups approaching significance at week 12. Additionally, the TCC group exhibited improvements in self-esteem, while the PST group reported declines in self-esteem, with the differences between groups reaching statistical significance at week 12. These findings, coupled with a visual inspection of the raw change scores, support the plausibility of a dose-response relationship concerning Tai Chi.

Conclusions: In this pilot investigation, the TCC group exhibited improvements in HRQL and self-esteem from baseline to 6 and 12 weeks, while the support group exhibited declines. Randomized, controlled clinical trials with larger sample sizes are needed.

Han A, Robinson V, Judd M, Taixiang W, Wells G, Tugwell P. Tai chi for treating rheumatoid arthritis. Cochrane Database Syst Rev. 2004;(3):CD004849. // 5-83 Pape Avenue, Toronto, Ontario, Canada, M4M 2V5.

BACKGROUND: Rheumatoid arthritis (RA) is a chronic, systemic inflammatory autoimmune disease that results in the destruction of the musculoskeletal system. The major goals of treatment are to relieve pain, reduce inflammation, slow down or stop joint damage, prevent disability, and preserve or improve the person's sense of well-being and ability to function. Tai Chi, interchangeably known as Tai Chi Chuan, is an ancient Chinese health-promoting martial art form that has been recognized in China as an effective arthritis therapy for centuries. **OBJECTIVES:** To assess the effectiveness and safety of Tai Chi as a treatment for people with RA. **SEARCH STRATEGY:** We searched the Cochrane Controlled Trials Register (CCTR), MEDLINE, Pedro and CINAHL databases up to September 2002, using the Cochrane Collaboration search strategy for randomised controlled trials. We also searched the Chinese Biomedical Database up to December 2003 and the Beijing Chinese Academy of Traditional Medicine up to December 2003. **SELECTION CRITERIA:** Randomized controlled trials and controlled clinical trials examining the benefits and harms of exercise programs with Tai Chi instruction or incorporating principles of Tai Chi philosophy were selected. We included control groups who received no therapy, sham therapy or another type of therapy. **DATA COLLECTION AND ANALYSIS:** Two reviewers determined the studies to be included in this review, rated the methodological quality and extracted data using standardized forms.

Results: Four trials including 206 participants, were included in this review. Tai Chi-based exercise programs had no clinically important or statistically significant effect on most outcomes of disease activity, which included activities of daily living, tender and swollen joints and patient global overall rating. For range of motion, Tai Chi participants had statistically significant and clinically important improvements in ankle plantar flexion. No detrimental effects were found. One study found that compared to people who participated in traditional ROM exercise/rest programs those in a Tai Chi dance program reported a significantly higher level of participation in and enjoyment of exercise both immediately and four months after completion of the Tai Chi program.

Conclusions: The results suggest Tai Chi does not exacerbate symptoms of rheumatoid arthritis. In addition, Tai Chi has statistically significant benefits on lower extremity range of motion, in particular ankle range of motion, for people with RA. The included studies did not assess the effects on patient-reported pain.

Li F, Fisher KJ, Harmer P, Irbe D, Tearse RG, Weimer C. Tai chi and self-rated quality of sleep and daytime sleepiness in older adults: a randomized controlled trial. J Am Geriatr Soc. 2004 Jun;52(6):892-900. // Oregon Research Institute, Eugene, Oregon 87403, USA. fuzhongl@ori.org

OBJECTIVES: To determine the effectiveness of tai chi on self-rated sleep quality and daytime sleepiness in older adults reporting moderate sleep complaints. **DESIGN:** Randomized, controlled trial with allocation to tai chi or exercise control. **SETTING:** General community. **PARTICIPANTS:** One hundred eighteen women and men aged 60 to 92. **INTERVENTION:** Participants were randomized into tai chi or low-impact exercise and participated in a 60-minute session, three times per week, for 24 consecutive weeks. **MEASUREMENTS:** Primary outcome measures were the seven subscales of the Pittsburgh Sleep Quality Index (PSQI), PSQI global score, and Epworth Sleepiness Scale (ESS). Secondary outcome measures were physical performance (single leg stand, timed chair rise, 50-foot speed walk) and 12-item short form (SF-12) physical and mental summary scores.

Results: Tai chi participants reported significant improvements in five of the PSQI subscale scores (sleep quality, sleep-onset latency, sleep duration, sleep efficiency, sleep disturbances) ($P < .01$), PSQI global score ($P = .001$), and ESS scores ($P = .002$) in comparison with the low-impact exercise participants. Tai chi participants reported sleep-onset latency of about 18 minutes less per night (95% confidence interval (CI) = -28.64 to -7.12) and sleep duration of about 48 minutes more per night (95% CI = 14.71-82.41) than low-impact exercise participants. Tai chi participants also showed better scores in secondary outcome measures than low-impact exercise participants. Both groups reported improvements in SF-12 mental summary scores.

Conclusion: Older adults with moderate sleep complaints can improve self-rated sleep quality through a 6-month, low- to moderate-intensity tai chi program. Tai chi appears to be effective as a nonpharmacological approach to sleep enhancement for sleep-disturbed elderly individuals.

Yocum DE, Castro WL, Cornett M. Exercise, education, and behavioral modification as alternative therapy for pain and stress in rheumatic disease. Rheum Dis Clin North Am. 2000 Feb;26(1):145-59, x-xi. // Arizona Arthritis Center, University of Arizona, Tucson, USA.

Stress and pain mechanisms are complex and share many central nervous system pathways. Both are critical issues for patients with rheumatoid arthritis and other connective tissue diseases. The link between stress and neuroendocrine function

suggests that alternative therapies focusing on improved psychologic and metabolic function could significantly change patients' pain outcomes. Programs using alternative therapies such as tai chi and meditation in combination with traditional medications appear to be beneficial for patients with arthritis. These individuals appear to live better lives and may have better long-term outcomes.

3.2 *What Credible Criticism remains?*

Once the meritless claims against Chi are thrown out, still, there must be some worthwhile criticism of the theory. I've cut and pasted this section from Wikipedia. I'd enjoy some contributions here, so ante up, players!

3.2.1 Wikipedia Example

In 1694, during the "quarrel of the Ancients and Moderns", after having seen some meridian diagrams from the [Lèi Jīng](#) and misinterpreting them as anatomical drawings, British Scholar [William Wotton](#) wrote this famous criticism of TCM^[9]:

It would be tedious to dwell any longer upon such Notions as these, which every page of Cleyer's book is full of. The Anatomical Figures annexed to the Tracts, which also were sent out of China, are so very whimsical, that a Man would almost believe the whole to be a Banter, if these Theories were not agreeable to the occasional hints that may be found in the Travels of the Missionaries. This, however, does no prejudice to their [Medicinal Simples], which may, perhaps, be very admirable, and which a long Experience may have taught the Chineses to apply with great success; and it is possible that they may sometimes give not unhappy Guesses in ordinary Cases, by feeling their Patients Pulses: Still, this is little to Physic, as an Art; and however, the Chineses may be allowed to be excellent Empiricks, as many of the West-Indian Salvages [Savages] are, yet it cannot be believed that they can be tolerable Philosophers; which, in an Enquiry into the Learning of any Nation, is the first Question that is to be considered.

Needham's commentary on this is valuable, as he goes on to note how this very much fixed the Scientific Establishment's position on acupuncture in general thenceforth, giving several later examples of misinterpretations becoming official lines for the fledgling field of Scientific Medicine.

Skeptics of Traditional Chinese Medicine (TCM) often characterize the system as pseudoscientific. Proponents reply that TCM is a prescientific system that continues to have practical relevance. Others will say that this is a simple communication mismatch between the reductionist Western medical system focused on form, and the holistic Eastern system focused on function, and that they are both valid ways to approach development of knowledge.

As an example of how this criticism process usually pans out, first someone discovers something like you can use radiotracers to trace the channels^[10]. A later study attributes the artifact to the movement of fluids through the venous and lymphatic system^[11]. While there appears to be a disagreement, there is not - despite the conclusions drawn by the authors in their summary notes. The scientists have started with an incorrect assumption that the channels run through the accupoints and nowhere else, but as any

first year Chinese Medicine student will tell you, there is not an inch of the body which is not a part of a channel.

9 Needham, Joseph; Lu Gwei-Djen (1980). [*Celestial Lancets*](#). Cambridge, UK: [Cambridge Press](#), pp. 281-282. [ISBN 0-521-21513-7](#).

10 Nuclear Medicine & Acupuncture: A study on the migration of radioactive isotopes after injection at Acupoints [Nuclear Medicine & Acupuncture](#)

11 "[Acupuncture meridians demythified. Contribution of radiotracer methodology](#)".

Retrieved on [2007-05-07](#).

4 What is Chi? (Quick Answer)

<p style="text-align: center;">  <i>Chi</i> </p>	<p><i>Chi</i> (left) is a Chinese (or Japanese, Korean, etc.) word which means Air. In Chinese, it functions similar to how a <i>noun modifier</i> would in English. Therefore it has a particular and definite meaning in a particular and definite context. Examples would be weather (sky chi), breath (breath chi), or balloon (chi ball). By itself it contains an implied meaning of “state” or “configuration”; this can be seen in the way it is used contextually above, for example sky chi referring to the configuration of the sky (the weather).</p>
<p>In Martial Arts, when Chi is referred to as belonging to someone, as in Mr. Smith’s Chi, or “feel your Chi”, the context is generally the breath (configuration of the breath) as a metaphor for the exact positioning of the body (i.e. “Chi Shi” - see right). Therefore, the first important conclusion we may draw about the word is that it requires a strong context before a technical (i.e. useable) meaning can be obtained, and that it generally refers to the specific configuration or state of whatever noun it modifies. For example, in the Huangdi Neijing, <i>blood qi</i> refers to blood and circulation, while <i>food qi</i> refers to the nutrients gained from food.</p>	<p style="text-align: center;">  <i>Chi Shi</i> </p>

Therefore, while a general definition for the word would not be meaningful, we can understand what the word means within the martial arts by looking at the specific martial arts cultural contexts in which it is most often used.

For example, according to Doshu, Kisshomaru Ueshiba, the son of Morihei Ueshiba:

"We may hear students say that `It is a feeling of some kind of energy coming forth from mind and body in harmony.' Or `It is a strange, vital power which appears unexpectedly at times from an unknown source.' Or `It is the sense of perfect timing and matched breathing experienced in practicing Aikido.' Or `It is a spontaneous, unconscious movement which refreshes mind and body after a good workout,' and so forth.

Each answer is valid in the sense that it is a true reaction gained through actual personal experience. And being a direct expression of a felt condition, it contains a certitude that cannot be denied. If this is so, the differences in responses is negligible, and the great variety attests to not only the difficulty in precisely defining Ki. but shows that the depth and breadth of Ki. defy coverage by a single definition."¹⁰

¹⁰ "The Spirit of Aikido" (<http://www.aikidofaq.com/principles.html>, as at March 22nd, 2007)

5.0 Is Chi an exclusively Chinese concept?

This question is often asked in a slightly different form:

“How is Yoga related to Kung Fu?” or “How does Chakra relate to Chi?” or “How are Prana and Chi related?”

In actuality it's a very difficult question to answer because of the number of cultures involved, and because it is so rare to find someone who has deeply explored two traditions, let alone one!

At any rate, the Indians have ‘Prana’, the Greeks had ‘Pneuma’, the Hebrews ‘Ruakh’, and many other cultures have different names for what may at times appear to be a similar concept. But - are they related in the sense that they describe the same basic thing?

This isn't really a FAQ on Prana, Yoga, Pneuma, Ruakh or countless other terms. However as this is a FAQ on Chi, it is instructive to point out how the party line Chi definition may be similar or different from certain other concepts.

First up is Prana. According to the wikipedia entry,

“**Prana** (प्राण, IAST: *prāṇa*) is a Sanskrit word that refers to a vital, life-sustaining force of living beings and vital energy in natural processes of the universe. Prana is a central concept in Indian medicine and Yoga where it is believed to flow through a network of fine subtle channels called nadis. The three main channels are: the ida, the pingala, and the sushumna.”¹¹

From this we are led to investigating four terms: the nadis, the ida, pingala, and sushumna.

“**Nadis** (Sanskrit: *channel* or *vein*) are the channels through which, in traditional Indian medicine and spiritual science, the energies of the subtle body are said to flow. They connect at special points of intensity called chakras. Nadis seems to correspond to the meridians of traditional Chinese medicine.”¹²

From the above it seems logical to assume if the nadis corresponded sufficiently well with the meridian system of Chinese Medicine, that prana and qi (at least in the context of the type of qi that flows in meridians) would be basically the same thing. Therefore the door to this question has been found. Does Nadis correspond to Meridian theory? Nadis theory states that the main channels are the “Ida, Pingala and Sushumna”.

One source describes Sushumna as follows:

¹¹ Wikipedia: Prana (as at September 11th, 2007)

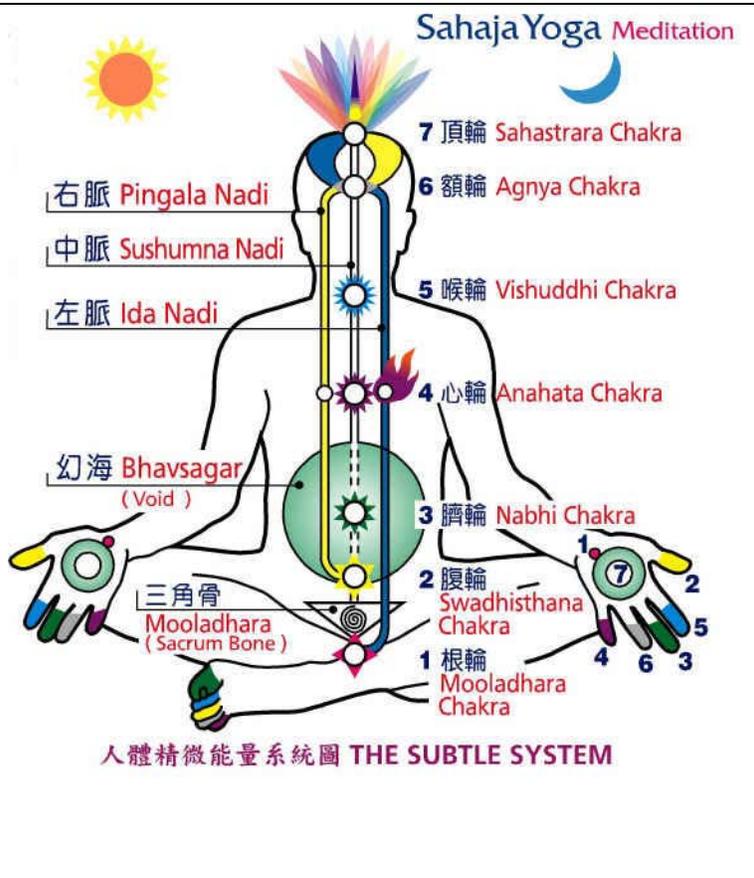
¹² Ibid.

“The *sushumna* (most gracious) nadi is the body's great river, running from the base of the spine to the crown of the head, passing through each of the seven chakras in its course. It...rises up from its origin at the *muladhara* (root) chakra to its true home at the *sahasrara* (thousandfold) chakra at the crown of the head.”¹³

At first glance it may appear then that the sushumna nadi corresponds to the governing channel of meridian theory. This is an exciting correlation; However, the Ida and Pingala nadis do not have any immediately observable correlation; the same source describes them as

The chart to the right may be interesting because it seems to connect fingers with toes in a particular way; for example the pointer finger is connected to the second largest toe. Looking at meridian theory charts from Chinese Medicine, it might be thought that LI (Large Intestine) #1 (pointer finger) can be connected to ST (Stomach) #45 via the points ST #12 and #25; furthermore through the Governing Vessel.

It is unknown if this constitutes real “proof” that there is a connection between Prana and Chi. It is one thing to make the claim, another to provide evidence supporting this claim..



NOTE: I have lost the reference to where I got this chart. If anyone knows where this chart is from, please contact me so I can properly credit the source).

In the end, I was unable to locate any sufficiently useful nadis chart to make an accurate, detailed comparison, nor was I able to locate what I felt was sufficient information to really show they were exactly the same thing; although it is obvious even from this cursory examination that they are, indeed, very similar concepts.

¹³ “Balancing Act” by James Bailey (from www.yogajournal.com/wisdom/927, as at March 27th, 2008)

6.0 What is the etymology of the word Chi?

It is so easy to ask “what is Chi” and not fully appreciate the difficulty in translating a word from a foreign language into English. Sometimes a direct translation is not possible. The difficulty is that grammar structure and common contextual usage found in language A may not be found in language B, or may be present but very different, which can lead to great confusion. What makes things worse in our case is that we’re dealing with more than one language; we are attempting to simultaneously understand the meaning in at least Chinese (Chi and Qi) and Japanese (Ki), across a broad spectrum of martial arts styles.

To make things easy to approach we can observe that these languages share a common writing system to some degree and the ideograph in both languages is the same. Korean appears to use either the Chinese or Japanese word to represent the concept. Let us therefore choose one language for simplicity’s sake. This FAQ will use Chinese and Pinyin because it is the most common of the three presented above. Below is a small chart illustrating which tone marks correspond to which numbers in the pinyin system.

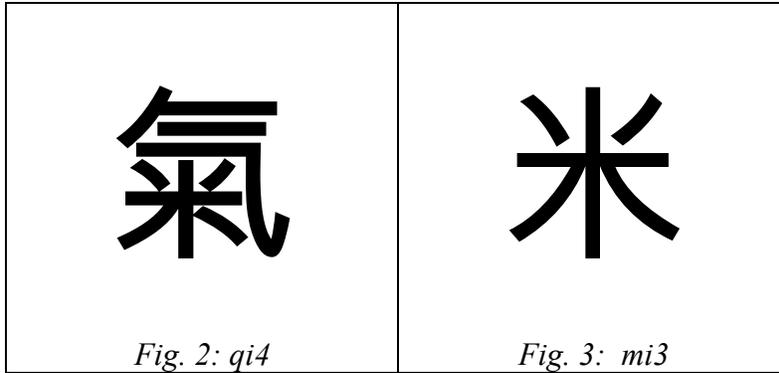
Pinyin with Numbers	qi1	qi2	qi3	qi4
Pinyin with Tone Marks	qī	Qí	qǐ	qì
Written Chinese	七	棋	起	氣
Translation	Seven	Board Game	Arise; Begin	Gas; Mood

Fig. 1: Pinyin Tone Marks for Qi

Note: in this case there is no known meaning or ideogram for qi5 (qi).

Although all of the words qi1, qi2, qi3, and qi4 can be written “chi”, they all hold completely different meanings. What makes things worse for English speakers is that even if we specify the correct tone, there are a number of contextual readings for each spoken word. We must therefore go directly to the ideogram if we want to understand what a word means. In this case, rather luckily, the meaning we need is the most common reading of the spoken word. Nevertheless my dictionary lists ten separate words that are pronounced qi4, some examples being "to arrest", "to cry", and "to expect (anxiously)".

With this knowledge it is finally possible to ask the precise question, “what is chi” only by rephrasing it what is “氣”. For sanity’s sake, when I say “chi” from now on, I am referring directly to the ideogram 氣. It is pronounced “chee” as in “cheese”, with a falling tone.



The direct translation of Chi is “gas” as in steam or vapor. Indirectly translated, it contains the idea that the gas may have a specific configuration, which in certain contexts can be understood as as atmosphere, mood, weather, temperature, smell, etc.

The precise etymology then, is the ideogram for “grains of rice” (see figure 3) encased in the ideogram for “air; pictograph of curling clouds” (not shown, but also pronounced qi4). The implied meaning is the steam which comes from cooked (or cooking) rice. For more information, please visit <http://www.zhongwen.com>

7.0 What kind of Chi is used in Martial Arts?

Note: This section is specifically intended to counter any kind of proposition that there is secret or withheld knowledge regarding chi in the martial arts.

It is obvious that a major component of Traditional Chinese Medicine (TCM) is the concept of Chi. A quick study of TCM theories may help to make clear the meaning of Chi with respect to martial arts, in the hope of retracing the steps of the masters. We do this because we note that all of the chi-theories which are associated with martial arts come from medical texts such as the *Huangdi Neijing*.

In Chinese Medicine, a particular form of chi will refer to the Jing-Luo network of meridians used in acupuncture. The best way to understand what this refers to is by understanding a little more about Chinese Medicine:

“Blood is mainly composed of Nutritive Qi and Body Fluids, which come from the refined food transformed and transported by the Spleen and Stomach. So the Spleen and Stomach are also known as "the source of Qi and Blood", and the quality of the nutrients taken in, as well as the functional states of the Spleen and Stomach, influence directly the formation of Blood.”¹⁴

Compare this to the Martial Artist’s definition of Chi:

“Chi is a kind of driving force (*Dong Li*). For example blood circulation can be explained with the term Chi. ...Chi comes from food, from breathing, it is also given to us by our parents and stored in the body as "Original Qi" (*Yuan Qi*).”¹⁵

If Mr. Feng as a famous internal martial artist can conceptualize Chi in this way, we can understand that it is one and the same with the Chi of Traditional Chinese Medicine. This is an important statement; that the chi of traditional Chinese medicine and of martial arts are one and the same. With this we may safely state many conclusions regarding chi which could not be authoritatively made without such a solid connection. Also see the next section, “Chi in Tai Chi” for more on the connection with traditional medicine theories.

Another quote, this one from Morihei Ueshiba:

“There are two types of *ki*: ordinary *ki* and true *ki*. Ordinary *ki* is coarse and heavy; true *ki* is light and versatile. In order to perform well, you have to liberate yourself from ordinary *ki* and permeate your organs with true *ki*. That is the basis of powerful technique.”¹⁶

¹⁴ “Qi Theory” by Wang Tao (found on www.damo-qigong.net/qi-theory1.htm, March 22nd, 2007)

¹⁵ Feng Zhi-Qiang (from on www.chinafrominside.com/ma/taiji/FZQinterview.html, March 22nd, 2007)

¹⁶ “The Art of Peace” by Morihei Ueshiba, from <http://www.aikidondj.com/pages/ueshiba.html>, March 2007)

8.0 What is Chi? (as found in Tai Chi Chuan)

Considering section seven, above, we note that tai chi (and likely many other arts) were constructed in accordance with the theories set out in the *Huangdi Neijing*. It can then be categorically stated that the chi theories in tai chi are the same as the ones in the *huangdi neijing*. The added value in Tai Chi is that movements were designed which activate the chi in these channels, which helps to improve the health of the practitioner. That is, considering that chi exists and is as described in the *Huangdi Neijing*, Tai Chi operates on this chi to improve it's circulation and improve health. Tai Chi also assigns various martial arts applications to the circulation of chi. Although a detailed discussion of such applications is beyond the scope of this FAQ, suffice to say that the free-flow of chi could be considered the "safety zone", and that upsetting the opponent's chi on one level implies that he has lost his balance or is otherwise in a poor position where he has lost the ability to react (for example, if he was trapped in a "wristlock" and forced to tap).

This conclusion is supported by the authoritative Tai Chi reference materials; according to Chen Xin, in his seminal "Illustrated Canon of Chen Family Taijiquan", "When we speak of *qi*, we are referring to the pattern which lies within Taiji boxing movements and the movement of *qi* as the principle focus of martial arts techniques." (page number). Further, Chen Xin states that Taijiquan is a method of moving "Zhong Qi" via the silk method¹⁷. Therefore Qi in Taijiquan can only be a derivative of these types of Qi. If another kind of Qi is discussed, it would need to be explained beforehand, and it would not be in accord with the authoritative references.

Chen Xin does in fact contextualize many other specific types of Qi. The basic one seems to be Yuan Qi. Yuan Qi is described as important to an early stage of progress: "To begin with, one must structure one's approach in terms of yuan-qi."¹⁸ We also know that "Zhong Qi (is) centralized and properly balanced yuan qi..."¹⁹. Therefore it seems pertinent to discuss Yuan Qi before Zhong Qi. We know that within Taijiquan, "Yuan qi moves all the processes in the body and is regarded as the third power between Heaven and Earth"²⁰. Therefore (for example) the following passage is contextualized as Yuan Qi: "only when the management process and qi work in concert as one can they create the phenomenon called Zhong Qi"²¹. We then are curious about the "management process". "A person's mind/heart plays the role of Host, governing all vital processes in the human body. When done properly, this is also called the Way of the Mind or the Managed Mind/Heart"²².

The final key comes with "the act of governing (all the vital processes in the human body), and qi itself are mutually dependant on each other for their functions"²³, and

¹⁷ "Illustrated Canon of Chen Family Taijiquan" by Chen Xin, pg. 110

¹⁸ Ibid., at 180

¹⁹ Ibid., at 178

²⁰ Ibid., at 182

²¹ Ibid., at 201

²² Ibid., at 188

²³ Ibid., at 188

“Development of heart qi enables a practitioner to accept orders from volition created in the kidneys”²⁴. From this clue about Heart Qi, we consider “To make the body move correctly in all directions, a practitioner should be internally prepared, developing the body’s internal structure”²⁵.

We now have the missing key to authoritatively state what Chi is in Taijiquan, not just that it is the same chi mentioned in the Huangdi Neijing.

Within Taijiquan, Qi therefore refers to the fitness created by the external form (Yuan Qi) and the internal qigong exercises (Heart Qi). Together they intend to produce the effect of Zhong Qi, which eventually leads to Haoran Zhi Qi²⁶ or Zheng-Qi²⁷ and finally Heng Qi²⁸, which is defined as the harmonious internal chi flow combined with the external form. According to Chen Xin, this is a superior method of maintaining one’s own balance while attacking the opponent’s: “Only by attaining the realm of Zhong Qi can you have power over your adversary...unaware of the truth (of the method of Zhong Qi), he cannot see his mistakes”²⁹.

Therefore in Taijiquan, we see that “...a practitioner must be able to move Haoran zhi Qi back and forth.”³⁰ and “The energy transmitted along the arteries is called Heng Qi.”³¹

Finally, we are told by Chen Xin specifically where this Qi must be circulated; “..a person can protect the body and keep it healthy through moving *qi* along the *ren mai* and *du mai* channels”³². This is described as eventually producing the Zheng Qi in the kidneys³³. Here the kidneys will likely refer to *between the kidneys*, i.e. the dantien.

From this we finally have conclusive proof that the health and martial benefits of taijiquan spring from the same source of qigong as the health practice, and that without this medical knowledge of qi, Taijiquan would be just another exercise and not able to be used for martial arts.

It is beyond the scope of this document to further define these terms or discuss any associated training methods.

There is one other angle I’d like to explore, however. According to Wang Xi’an, whom is considered an authoritative writer on Taijiquan, “Qi is an important part of our body. Qi is a general term for 4 kinds of sub-qi in our body. Firstly we have the yuan qi which without it the other 3 won’t exist. The second is the zheng qi created by the kidney. The

²⁴ Ibid., at 201

²⁵ Ibid., at 188

²⁶ Ibid., at 114

²⁷ Ibid., at 200

²⁸ Ibid., at 200

²⁹ Ibid., at 204

³⁰ Ibid., at 203

³¹ Ibid., at 204

³² Ibid., at 167

³³ Ibid., at 169

third is the magnetic qi known as wai qi (external qi). Lastly is the qi created by the digestion of the food we consume. These 4 sub-qi make up the internal qi or what we known as the qi of the dan-tian.”

Further,

“What is zhong qi? It is an unbiased and balanced qi. Qi is closely tied to yi and vice versa. Therefore if one's yi is biased, so will be his/her qi. Therefore one must maintain a clam, peaceful and natural in order for you to cultivate an unbiased and balanced zhong qi. Zhong qi is also either hard or soft, ying or yang. Another kind of qi is know as the hao ran qi (magnificent qi), which is even harder to comprehend and acquire. Such qi is as soft as cotton and yet can be as hard as steel. It is surfaced through the skin and of a strong nature. Such qi can only be acquired through years of hard work. It is also the benchmark that that indicates that you have reach the advanced level. As a beginner, you may win by brute force or size but at the advanced level, you will be able to have a convincing win. Some people when pushing hand with an expert will suddenly feel that he cannot advance or retreat and even feel weak. He would be just like standing on a rock sphere and would fall easily. This is the Haoran zhi qi of the expert at work. As the classic said "Use yi to move qi and move it beyond the bones. Use qi to move the body and move it accordingly to the mind.””

The above two quotes are from “Application Secrets of Chen Style Old Frame Routine One” and “Pushing methods of Chen Style Taijiquan”, by Wang Xi’an, as quoted on the webpage http://www.quizk.com/csg/index.php?option=com_content&task=view&id=20&Itemid=27

We can therefore finally conclude that the ideas presented in this section are accurate and represent the only acceptable one in Tai Chi Ch’uan, and that none of them are secret, just not previously available in English.

9.0 What is Chi? (Contextual Approach, Part 1)

We may gain a greater understanding of a word by examining the common contexts in which it is used. For example, "chiu" (qiu2, again the 2 means a rising tone) means "ball" or "sphere". Therefore "qi4qiu2" is precisely defined as balloon. When referring to a balloon as "qi4qiu2", even though qi4 qiu2 could refer to "angry prisoner" or perhaps even "anxiously seek", these meanings don't make sense if you're talking about giving a child a balloon, so they are discarded and only the idea of balloon would remain.

Other example takings of Chi include qi4wei4 meaning scent or odour, and tian1qi4 meaning weather. When discussing the meaning of qi4 in martial arts, we can only logically refer to the chi of the human bodies relevant to the discussion. This chi does not refer to the configuration of the sky as in tian1qi4, but rather the configuration of the human body, using breathing and breath as a metaphor.

氣息

Fig. 5-1: qi4xi2 ("breath"; lit. configuration of the breath or vapor of the breath)

Recall the latent meaning of 'configuration' or 'mood' found in the word *chi*. Here then *chi* refers to the exact configuration of a human body, or to the complete state of everything which is observable in and about the human body. Breath is taken as the major focal point of the analogy because breath is constantly changing configuration, and the air pressure in one's lungs often has a major effect on one's posture. It's the most visible changing mechanism of the body's chi, but as earlier seen the heartbeat(blood) could also be considered as a type of chi. By definition, if someone stopped breathing or their heart stopped, their chi would cease to change/flow or to exist, and death would occur. In general the stagnation of chi is synonymous with atrophy and death.

Another quick and dirty way to pick up on the meaning here is to note that the ideogram for xi2 is the ideogram for self (zi4) over the ideogram for heart (xin1). Alternate readings for the two being "from" and "center". As Chinese was written top to bottom and not left to right as in English, it is possible that these two separate words formed a contraction in xi2 and then acquired a new contextual meaning, always appearing together to denote the breath.

Since chi then uses breath as an analogy to represent the state of a human body (including positioning of hands and feet, placement of weight, even at some level a person's thoughts), we can understand Chi in as a holistic concept referring to the (sometimes very exact) positioning of the body while practicing martial arts.

We are now in an excellent position to examine a broad base of technical martial arts terms which use the word Chi.

	<p>Common: <i>Chi Kung</i></p> <p>Pinyin: <i>qi4 gong1</i></p> <p>Literally: <i>gas; mood - merit; Achievement</i></p> <p>Contextual Meaning: <i>Martial Arts Foundation Training</i></p>
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Figure 5-2: Chi Kung

One of the first terms someone may encounter is “chi kung” (qi4gong1 in pinyin). Chi Kung often refers to a series of warm-up exercises or to foundational training for practicing martial arts. Example of different types of chi kung exercise would be horse stance training, standing meditation, or repetitive motion training. By no stretch of the word, jogging and weightlifting can be considered forms of Chi Kung.

To conclude, it is instructive to explore the root meaning of the words in a quest to gain a greater understanding of how they are allowed to be used in context. The ideogram for Chi may bring to mind a metal pot with a fire underneath, and a process which produces steam and nutrition. It was thought that the exercises of health and martial arts (chi kung) operated in the same way as this cook pot. For example, it would take time and effort to produce a nutritious result.

To help you in this approach, provided below are examples of how the word Chi is used in context.

合氣道 : he2 qi4 dao3 (*Japanese: Aikidō*)

“Whenever I move, that’s Aikido.” –Morihei Ueshiba
(www.aikidofaq.com/introduction.html).

In Pinyin we can Romanize this as “he2 qi4 dao3” and take the contextual meaning of he2 as “to combine”. The term is then clearly understood as “the way of joining together (or harmonizing) the body”. The harmony of the body refers to internal and external harmony. In practice then, the *Aikidōka* literally joins together with the outside forces, for example the *uke* (opponent), with the common result that the opponent is lightly thrown, preferably without injury to either party.

Finally, another Morihei Ueshiba quote: "Heretofore, I studied many kinds of martial art systems -- Yagyu Ryu, Shinyo Ryu, Kito Ryu, Daito Ryu, Shinkage Ryu, and so on -- but Aikido is not a composite of those arts. All Aiki techniques are a function of ki." (<http://www.aikidoonline.com/Features/WhatisAikido.htm>)

元氣: yuan2 qi4

According to Chen Xin, “to keep 元氣 smooth, no movement may be uncomfortable.” (from 36 sicknesses, not published as part of the Illustrated Canon in English) Lit. Original chi, first chi. This is a term which relates to the chi present when you are born. One way to understand it is to compare losing all of your yuan2 qi4 with general organ failure (heart failure, kidney failure, etc) leading of course to death. The corollary to this concept is post-natal chi, which is accumulated from eating food, drinking water, breathing, etc. Note: 原氣 has the same meaning and pronunciation but may be obsolete. Also see: 先天之氣 (xian1 tian1 zhi1 qi4).

運氣 : yun4 qi4

Fortune, Luck. Since 運 has two meanings (the other is move or transport) in a Martial Arts context it may refer to the transportation of qi4 in the body.

意一領氣 : yi4 yi1 ling3 qi4

According to Liang, Shou-Yu, “*Yi Yi Ling Qi* implies that your mind is the activator (force), that leads (pulls) the energy”. This energy is the activating force realized by a final display of muscular strength. Training revolves around repetitive motion practice to build familiarity with technique, thereby shortening the work the body must do so that it can quickly conform with the desire to perform said technique. Here then, chi is considered an intermediary force between intention (yi4) and muscular strength (li4). The relationship is trained via chi kung exercises. An example would be a boxer who jogs and does bag work in order to increase his stamina and accuracy in the ring, in other words training his body to better respond to his will to move in a certain way during a fight. This mind-body connection is *yi yi ling qi*.

中氣: zhong1 qi4

Central Qi. This is a form of qi which is activated to drive body movement in the yi-qi-li paradigm. The waijia uses li4 to drive this kind of chi, while the neijia (internal schools) use yi4 (intention) to drive it. It is called central chi because it originates from the dantien. In TCM technical terms this would mean means it originates from the dai mai, du mai, and ren mai meridians in the dantien.

後天之氣: hou4 tian1 zhi1 qi4

By itself, hou4 tian1 means the day after tomorrow. Zhi1 here means “of”. Contextually in this phrase, hou4 tian1 refers to abilities you gained after you were born. To contrast with xian1 tian1 in xian1 tian1 zhi1 qi4, this would be the knowledge you would acquire through study, and not your inborn inclination to study. The usual English translation for the complete phrase is “postnatal chi”. Also see: 元氣 (yuan2 qi4). This type of chi is constantly being replenished by food chi, etc.

先天之氣: xian1 tian1 zhi1 qi4

By itself, xian1 tian1 means “first day”. Zhi1 here means “of”. This means the abilities you had when (before) you were born. To contrast with hou4 tian1 zhi1 qi4, this would refer to your natural ability to study, and not the knowledge you gain while studying. The usual English translation for the complete phrase is “prenatal chi”. Prenatal chi, once lost, can never be regained.

氣合, 氣合い: qi4 he2 (Japanese: kiai)

A primarily Japanese term that refers to fighting spirit. It is a compound of ki meaning mind, will, turn-of-mind or spirit and ai (合, 合い) being the contraction of the verb *awasu* (合わす), signifying "to unite"; literally "concentrated spirit". Kiai is a term used not only in martial arts but also in the board game *go* (*wei-qi*, or “圍棋”), where it also describes fighting spirit.

In martial arts, kiai commonly refers to a short yell that some martial artists shout before or during a fight or technique. Korean martial arts may call this sound a Yatz or Kihap. In bujutsu, it is usually linked to the inner amassing of energy released in a single explosive focus of will. Students of martial arts such as karate and judo (and related arts such as taiko drumming) use kiai to focus energy when executing a technique. It also refers to the shout that accompanies some techniques when performing kata (forms). Kiaijutsu is the Japanese art of using kiai when performing martial arts. The proper use of kiai involves concentrating on the use of one's *ki* more than it does shouting.

(definition from Wikipedia at en.wikipedia.org/wiki/Kiai)

The following is the Korean perspective, quoted with permission from "Han Guk Mu Sool". It's rather long, but I've included it verbatim in this version of the FAQ.

What is Ki Hap?

Ki Hap is commonly referred to as a spirit yell. Ki refers to our life's vital energy and Hap refers to harmony or unification. Together they represent a union

between Ki or breath, and technique or execution. Learning how to Ki Hap properly is one of the most important aspects of one's training. There is also a general misconception that a Ki Hap is a loud screeching scream. This screaming yell is something that seems to be encouraged at tournaments. The loud scream attracts spectators and impresses the judges. This may make a form seem more spectacular, however, that is not what a Ki Hap is for.

A proper Ki Hap must come from the lower abdomen (Dan Jun), your sacred center, not from your throat. If you Ki Hap repeatedly from your throat you will eventually lose your voice. If your Ki Hap is a deep grunt-like yell from your Dan Jun, you can do it all day long without losing your voice. To perform the Ki Hap properly, take a deep breath pushing the air down to your lower abdomen, tense this area, and Ki Hap. Imagine the Ki energy as the color red flowing outward from the Dan Jun to your technique.

Remember that all techniques originate from the Dan Jun. The Ki Hap is the best way to move Ki in the body from the Dan Jun instantly to provide greater power and speed. Through continued practice you will grasp the sensation of the Ki Hap from the Dan Jun and learn to move from there and feel intuitively from there as well.

In relationship to actual self-defense the Ki Hap is extremely important. First, it distracts the opponent causing him to freeze, giving you a physical and psychological advantage, and during that precise moment, an opportunity to make your move. Secondly, it gives you more power as the air is forced out. A strong Ki Hap in the face of an attacker will often make him blink closing both eyes. In real life self-defense you want to increase your odds for survival anyway you can. Therefore, the Ki Hap should be utilized as an effective survival tool. The Ki Hap also strengthens your resolve as your spirit becomes strong and your movements are without hesitation.

Sometimes beginning students feel uncomfortable, embarrassed, or think it is silly to Ki Hap. These feelings are normal and to be expected. New students are not sure of what sound or noise they should make or even how audible they should be when they perform the Ki Hap. Some new students will even shout the word Ki Hap. Again this is very normal for beginners and is part of the learning process. A Ki Hap is unique to each person. No two Ki Haps are alike. The Ki Hap is a reflection of that person's mental, physical, and spiritual state at that moment. For one to advance to the higher levels of Martial Arts training one must master the Ki Hap.

There is an old Martial Arts story of a learned man who was discussing the Ki Hap with a Martial Arts Master when he saw a bird. The learned man said, "Watch this," and he made a strong Ki Hap. The bird fell to the ground dead. The learned man said, "Do you see how great I am? I can kill a bird with

my Ki Hap.” The Master wasn’t pleased with what he saw and let out a strong Ki Hap. The bird came back to life and flew away...

From the above quote we may note that Kiai is in a technique which works on the flow of 中氣 (*Zong1 Qi4*, see above) from the Dantian.

Note: “Chi” in English doesn’t always mean “Chi” in Chinese

Due to the fact that there are many similar sounding words in Chinese, some different words may be Romanized to the same spelling in English. This section is dedicated to recording instances of the word “Chi” in English which may be confusing to the English-speaking student.

太極拳: tai4 ji2 quan3 (“Tai Chi”)

“Tai Chi” is a bastardization of the Wade-Giles romanization **T'ai Chi Ch'üan**. This points to one of the problems many people have with Wade-Giles over pinyin – it is more ambiguous. Here, not only is the character for **Chi** in **T'ai Chi Ch'üan** visibly different than the Chi we are discussing in this FAQ, it is pronounced with a different tone and a different phonetic. In “internet pinyin”, you may write tai4 ji2 quan3.

起式: qi4 shi4

Loosely translated, “opening”, this “chi” sounds like the chi we define in this FAQ but it is a completely different word. It refers to the first movement of a form, for example “taiji qi shi” is the first movement of tai chi, called “opening” or “start of tai chi”.

欺壓: qi1 ya1

Generally means to use size and weight to win, instead of technique. According to a book about Chen Xin, in the chapter entitled 口手三十六病, “Qi1 means to cheat or deceive, Ya1 means to press down the opponent's hand with big force.” In short, this implies that improper technique has been used and the martial artist has resorted to “cheating” by not using proper technique. It is a warning because such “cheating” was thought impede progress in one’s training. In this case it is coincidence that this would mean impeding the flow of chi, so it is of some importance to understand the meaning of chi here. This Chi is both a different character (欺 vs. 氣) and a different tone. (Note: 口手 is an extremely rare term, and has since been replaced with 推手 in Tai Chi literature).

: Sumikiri

Morihei Ueshiba often referred to the state of stillness within motion as Sumikiri, which means total clarity of mind and body. The reference to stillness within motion here refers to the circular movement principle of Aikido (www.aikidoonline.com/Features/WhatisAikido.htm).

It is unknown if the character for ki appears in this word, so I will include it until I can get some Japanese for it.

10 What is Chi? (Contextual Approach, Part 2)

The contextual approach above has great value, but it does not indicate how those terms are used in conversation.

To arrive at a final, useful concept for the word Chi, it is instructive to observe how the word is used by masters of the martial arts when they talk about training and fighting. As the saying goes, when you drink from the water, remember the source of the well.

Wang Xiang-Zhai said:

“The idea that Chi may be emitted from the human body is *preposterous*, and is not the true teaching.” (Page 10, “Yiquan Essays”, available at www.yiquan.pl/engebooks.html).

“Training for health and for combat... are one thing, and should not be separated. If one is lost, abuses are created and it will lead astray.” (page 92, *ibidem*).

Chen, Xin said:

“Only after I read about the Taiji circular illustration in ancient classics I realized that to practice Taijiquan one has to understand silk reeling essence. Silk reeling is a method of moving Central Qi (*Zhong Qi*). If it is not understood, then the boxing is not understood either.” (Thanks again Jarek! chinafrominside.com/ma/taiji/chenxin.html)

Koichi Tohei said,

“In Aikido training, we make every effort to learn to fill our body with *ki* and use it powerfully. Therefore, we must understand well the deep meaning of *ki*.” (Koichi Tohei *What is Aikido?*, Rikugei Publishing House, Tokyo, 1962, page 113)

Shuichi Nagaoka said, “*Go no Kata* contributes to increased willpower, physical force, and *Ki*.” (judoinfo.com/gonokata.htm)

Chen, Xiao-Wang said:

“We also tend to use chin na and take-downs a lot. We treat push hands as a mockfight rather than an exercise. You have to be thrown around a lot to know what your ‘qi’ or your ‘jing’ is doing.” And “Both taiji and calligraphy involve the same ‘transportation of qi’ (yun qi) in our body. When I fight, I try to transport my qi to the point of impact without friction, still maintaining maximum efficiency. When I write, I try to do the same, except it is the tip of my brush. I practice my calligraphy the same way I do my taiji – with correct postures, relaxation and efficient ‘yun qi’. Both activities complement each other.” (from www.tai-chi-centre.com/keeper.htm)

“Qi by itself is weak, soft. The dantian “communicates” to the muscle and bone. The dantian is the storage of all the qi. The jingluo directs the qi through the body. When qi is generated, it is communicated (wired like a bomb) through the body. It is very important to understand the relationship of dantian to qi, qi and muscle, and muscle and bone.” The main communication is between the dantian and muscle -- this is the essence of Chen Taijiquan.”

“Some things can only be felt and cannot be described. You should be feeling "hot water", pouring through your arm and to your hand. Even at low levels, people can feel this. When the arm is circling the little finger moves, energy goes to the dantian. When the thumb moves, the qi goes from the dantian out to the hand.”

(from www.taiji-bg.com/articles/taijiquan/t38.htm)

“It is all about the interaction of Yin and Yang and Qi circulation.”

(<http://www.tai-chi-centre.com/qiconnection.htm>)

11 Which Martial Arts use Chi?

Some people may wish to study a martial art which strongly emphasizes chi development. Others may wish to avoid specific martial arts for precisely the same reason.

Many martial artists throughout history took studied TCM. Even if only to make an ointment to rub on bruises from practice, herbalism would be studied and knowledge passed down as part of the martial arts tradition. Herbalism is a part of TCM that works with the same foundation of Chi circulation and Internal Organs that Acupuncture does. The idea of Chi comes from Traditional Chinese Medicine, and the theories are not particularly complex, although it does require a lot of study to ensure familiarity with the various herbs, correlations of internal organs, and different herbs (etc). We know that as a result most if not all martial arts traditions became combined with Chinese Traditional Medicine, and while a top doctor of the time might not be a martial artist, you can bet that a top martial artist of the time would know something of medicine. So to truly know how deeply involved a martial art is with this sort of thing, you would have to know it's history and development.

Having said that, in general, all “Internal” Chinese martial arts, such as Tai Chi Chuan, Xing Yi Quan, Ba Gua Zhang, etc. require the development and use of Chi. On the other hand, “External” arts do not always focus so strongly on Chi development. Although they often use Chi to an extent, the External arts are more known for their use of physical strength, speed, and technique. This does not mean they are better or worse, just different. This is reflected in the terms *Neigong* and *Waigong* in the martial arts.

Arts which do not utilize Chi will usually have an origin outside of Asia. This is a simple result of the fact that Traditional Chinese Medicine theories originated in, and have their greatest prevalence in China. Look for arts such as Muay Thai Kickboxing, Brazilian Jujitsu, MMA (Mixed Martial Arts), Judo, and many forms/styles of American Karate for arts that do not focus on Chi/Ki development.

There are many exceptions to this rule and it is not possible to state them all. A notable exception is Modern Kempo Karate, which is known to require students to study Traditional Chinese Medicine and philosophy. Another example is the Taoist Tai Chi Society, which does not focus on Chi development and actually discourages such development from taking place.

Indonesian Silat has, at least as an inspiration, arts such as Xingyiquan, Taijiquan and Baguazhang – so it may also focus on Chi development although not as much. For Japanese arts, look for Tai ki ken and Aikido as Ki-based arts, and Karate and Judo for arts which do not often speak about Ki.

12 How do I feel my Chi?

Insert random zen-like fish seeking water parable here.

If Chi is a noticeable phenomenon within a practitioner's own body, the question becomes how to notice the Chi in order to begin controlling it or using it. The best way to experience these sensations and begin to use them is through the practice of Chi Kung (see definition in section 3). Feeling your Chi is similar to becoming aware of your heartbeat – Anyone can do it, but while some people can do it just by thinking about it, others have to physically take their own pulse.

“In Master CXW’s class, he always starts with half an hour of Zhan Zhuang, followed by 20 or 30 repetitions of the various Jiabenggong (chi kung) exercises. He says that after nearly 40 years of practice, he still does his Jiabenggong (chi kung) each day, especially when he is too busy to go through the forms.”
(<http://www.tai-chi-centre.com/qiconnection.htm>)

In the martial arts, Qi is the feeling of correct postural alignment. If we hold to the thought that feeling your Qi is a way of feeling the positioning of the body for the purpose of realizing correct martial arts technique, then the following quote may well provide an important insight into the nature of Ki/Chi/Qi.

Jigoro Kano wrote, “Let me give an example from among the facts I learned from the teachings of my master. Once my master threw me with what would now be called a Sumi-Gaeshi (corner throw). I didn't know how he did it, so I asked him. He said nothing and used the same technique on me again. So I begged him to explain to me how he had done it, whereupon he used the same technique on me once again. This time I asked him to explain in detail how to pull the arms, how to place the legs, and how far to lower the hips, without actually using the waza on me. To this the master replied, "even if you ask something like that now, it will be of no use to you. But if you repeat the waza over and over and practice, you will gradually come to understand.”

*Kano goes on to explain that Kodokan Judo *does not* follow this practice, and "For that reason, what once took five or six years to achieve can now be accomplished in three years.”*

These words of Kano come from the new book, "Mind over Muscle - Writings from the Founder of Judo" (quoting from a post made by Ben Holmes, found on usenet newsgroup rec.martial-arts)

It is beyond the scope of this FAQ to recommend or teach any one particular method - it is up to you to find a qualified instructor. There is a vast amount of material out there to research! Just remember that you should do your fair share of due diligence (and consult a doctor!) before attempting **any** exercise program.

13 How is Chi used in Chinese Medicine?

In Traditional Chinese Medicine, Chi is considered to be the life force of the human body. This includes the blood flow, the heartbeat, the breath, etc. A healthy body is synonymous with a good supply of free-flowing chi. When the body is sick, it is often understood or explained in terms of Chi. For example, it is said that smoking damages the chi of the lungs. Medically speaking this obviously affects the entire body, and this is reflected in Chinese Medicine by considering that the lungs (for example) are connected to all the other organs and parts of the body by a series of energy pathways called Jing and Luo.

Chinese medicine works by attempting to control the flow of Chi within the human body. Acupuncture works by directly blocking, unblocking, strengthening and weakening of the chi in the meridians. Herbalism works in a more indirect way, by strengthening or weakening the interaction between the internal organs. As a type of food Chi, you would also expect Herbalism to affect the quality of Chi which flows in the meridians – “you are what you eat”.

There is often an underlying scientific explanation for some of the effects observed in Acupuncture and Chinese Medicine. An empirical science itself, much of Chinese Medicine’s development is finding a philosophical answer for physical effects. Over thousands of years, the philosophy became so highly developed that it became indistinguishable from a science, although a science with theories as a foundation. For example if you squeeze someone’s neck in a choke hold, they will lose chi flow and begin to die (black out). Releasing the hold allows the chi to resume flowing, but if the blockage remains too long then it can cause serious problems, because it may weaken an organ and then that organ may not function as well later on. In this example, cutting off the blood supply to the brain results in brain damage or death. Another example could be damage to a muscle or even a slipped disc, which would affect movement for a period of time. The pain or discomfort would be blamed on incorrect chi flow, and when it was observed that massage or changing the way one moves alleviated the symptoms, it was thought that this was a way of unblocking the chi flow. Notions that you had to move around the injury only served to support the idea that there was something which would need to flow from one part of the body to another and could not traverse a blockage.

However, some of what goes on under the guise of Traditional Chinese Medicine is not scientific in that some parts have been observed to be ineffective. One reader writes,

*“...the philosophy is very distinguishable from a science, in that the theory is placed above praxis. I’m not an all-out sceptic, Chinese medicine is effective at treating *certain complaints*, but there is also a large body of literature that shows that many of the consequences of the theories have no actual, proven statistical benefits in treating a range of complaints. For balance, it may be worth putting something in regarding this. -Rich*

It is thought in Chinese Medicine that originally there are no blockages in chi flow along the meridians, but as a person gets older and health problems set in such as bad posture, smoking, lack of exercise, that blockages in chi flow are created. A healthy lifestyle and exercise was thought to “open” the chi flow. In this school of thought, since massage, exercise, and nutritional supplements all made the body healthier, they must all somehow affect the flow of chi in the meridians. Therefore schools sprung up around massage (acupuncture and acupressure), nutritional supplements (herbalism) and exercise (chi kung and martial arts).

14 How is Chi used in Martial Arts?

(also “what is the utility of chi” etc)

Different martial art systems have different ways of utilizing Chi, so an accurate description of what any particular martial art does is not feasible. There are however some generalities.

Yuan Qi

Generally speaking, “internal martial arts” want to use the mind to create and lead chi, with the goal of resulting physical motion. Therefore one generality we may make is that Chi is used in martial arts to initiate and/or drive physical movement. This form of movement is different from normal movement because such a movement would be related to the Chi of the practitioner in some way. Generally speaking this is accomplished in two ways: harmonizing physical motion with *yuan qi*, and harmonizing the physical position with *yuan qi*. Both of these goals are accomplished within the yi-qi-li paradigm.

The Yi-Qi-Li paradigm

This simply states that the mind(yi) leads the qi, and the qi leads the muscles to act. The meaning considering *yuan qi* is that instead of simply trying to activate muscle groups directly in order to accomplish a goal, the practitioner activates muscle groups together and/or in sequence for the express purpose of transference of force within in the human body. As stated above this is done in two strongly related ways:

Harmonizing Physical Position with Yuan Qi

The support structure of the human body naturally acts to support the weight of the human body. This is, basically, the musculoskeletal structure – muscles pull bones into position so that they may bear weight – this is how we stand and walk. It is also how we apply force to objects, such as lifting a cup – if we had no bones or muscles, we could not convert our energy to “work”. This natural support structure ... (chen jing discussion?)

Moving in harmony with Chi

To give an example of what this means, let us consider *yuan qi*. This is a type of chi which refers to the human body and also the dynamic forces of the human body (see pg. since we know that this can refer to the dynamic forces of the human body, we can say then that the practitioner who focuses on chi focuses on smooth transition between movements. This implies that the practitioner is trying to conserve a type of kinetic energy; to use the acceleration or force from a previous movement to more efficiently perform the next movement. Although not strictly the domain of “internal” martial arts, neither is “chi”. The best example I can imagine is throwing a punch. If a punch is thrown at a bag, the force enters the bag. If the punch is thrown in the air, the arm will vibrate as the force rebounds back into the arm. Usually, stiff and tense muscles block the

flow of chi back into the body, but in an art which utilizes this form of yuan qi, this special kinetic energy is intentionally recycled into another movement.

contrast here is in punching a punching bag; the force is allowed to travel into the bag and/or

; for example, if raising and lowering the arms in the body caused (or at least was not in conflict with) the Chi pattern,

movement of Chi in the body, the raising and lowering of the arms would be done at the precise time that the Chi moves

, while external schools use physical strength to create and lead chi in the body. Either way, the result is the application of a specific technique, in a specific way, in a specific situation, in accordance with the flow of chi. It is presumed that the intent is to teach someone how to move and fight in the exact same way as a previous master of the art, by means of transmitting the exact body positioning and feeling behind the moves that the master used.

Most of these specialized Chi skills were called Jings. There are hundreds of different Jings. An example would be someone who trained to jump very high, they would be said to possess qing jing, or light skills, because their body appeared to be very light. It may be required for someone to train in Qing Jing before certain kinds of kicks could be taught, because they wouldn't be effective until the proper kind of strength was gained. In this way, martial arts were built around theories of Chi development.

We can stop here, as different martial arts use different kinds of jing for different purposes, and a discussion of *jing* isn't really the topic anyways.

15 Is Chi required to learn martial arts?

This depends on what art you're doing, and how far you want to go with it. But for the most part, no. The study of Chi is in no way required to learn "martial arts". Yet some styles of martial arts require the training and development of Chi in their teaching method. This is difficult to ignore by dedicated practitioners of those arts, if they still hope to claim to practice the art in question. So while arts like Wrestling and Kickboxing make no use of Chi, it is not possible to say the same about arts like Liu He Ba Fa and Xing Yi Quan.

The fact will remain, at least for most Westerners, that the study of Chi appeals to those who seek a holistic approach to martial arts which goes beyond "just fighting". Everyone has their own reasons for practicing martial arts.

16 Top 10 Questions that Didn't Make It In

10. Qi, Chi, Ki? Isn't having three different spellings an obvious attempt to throw up dust?

This hilarious question was actually asked by "Mike K." on rec.martial-arts. The answer is found via an intelligent reading of "What is Chi (etymological answer)".

9. How about the truth? Chi is an imaginary concept devised by pre-scientific people to explain various phenomena.

This (of course) isn't really a question but a statement or accusation. While it's partially true since chi was developed by a pre-scientific people, the rest of it is not. The other sections of the FAQ should deal with this. (asked by Stanley Moore)

0. Are Chi Bolts Real?

The dumbest question that actually made it into the FAQ.

17 Contributors

The following is an acknowledgement of the people who contributed questions and answers to this FAQ. I've also included some names here whom I could not credit in any other way. They are listed in no particular order. You may be surprised to find your name on this list. It might mean at some point you asked a question or provided a tidbit of information that somehow found it's way into the FAQ, not necessarily that you intentionally contributed anything.

Chris Rickard and Al Gauthier (section on Kiai / Ki Hap)

"Mike K." from R.M-A (Top 10).

C. J. Hardman (Chi Emission/Are Chi Bolts Real)

Stanley Moore (Common Misconceptions, Top 10)

Bill VandenBoom, Certified Tai Chi and Qi Gong Instructor (3.1 Scientific Evidence)