

太極拳能養生防身嗎?

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for

建中校友會

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Synopsis of Tai Chi Chuan 太極拳概要

- Can Tai Chi Chuan (TCC) enhance health and longevity? 太極拳能健身益壽嗎?
 - May be, but.....
- Can TCC be effective in Self-Defense? 太極拳能防身自衛嗎?
 - May be, but.....
 - It appears that you've the right to know about the difference between Tai Chi exercise 太極操 and TCC 太極拳
- How can you elevate your TCC level? 應如何提昇太極拳水平?
 - A very serious and important question. Here are some suggestions:
 - Find a teacher with proven ability rather than a teacher well-known
找有功夫的“明”師,而非僅是名師
 - Try to understand TCC Classics 多瞭解太極拳經論
 - Work hard daily 每日認真練拳
 - Verify your progress in push hands 從推手中驗證進步

Theories of Aging and Age-Related Death

老化的醫學理論

- Oxidative damage
- Cell DNA damage
- Tissue glycation
- Lipofuscin accumulation
- Mitochondrial dysfunctionality
- Chronic inflammation
- Immune system compromise
- Neurological degeneration
- Declines in hormone levels
- Susceptibility to cancers
- Susceptibility to cardiovascular diseases
- Telomere shortening
- Epigenomic transformations
- Stem cell supply chain breakdown
- More.....

How to Hack the “Code of Aging”?

如何破解“老化法則”?

- **Lobsters** (non-stop growth of telomerase keeping longevity) can live 150 years. On the contrary, mammals have high growth rates in embryonic and juvenile phases, but no growth in adult and old phases



“Longevity of lobsters is linked to ubiquitous telomerase expression,” Klapper, et al. *U. Kiel, FEBS Letters* V. 439, pp.143–146 (1998)

- **Galápagos Giant Tortoise** of 190 years; **Arctic Clam** of 400 years



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Can NIH and Silicon Valley Give Us More Birthdays?



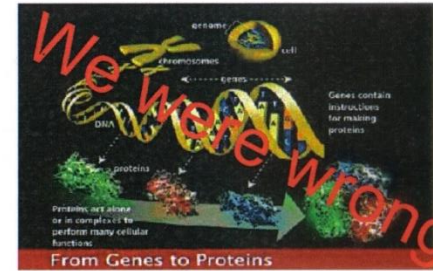
NIH Luigi Ferrucci GOOGLE Larry Page PAI Joon Yun

- Time Magazine forecasted baby born on 3-2-2015 will live 142 years old
- NIH includes TCC & Yoga etc. in NIH's Complementary & Alternative Medicine (CAM), and NIH/NIA's *Baltimore Longitudinal Studies of Aging* (BLSA) started in 1958 to answer critical questions about what happens as people get older
- Google Larry Page hoped to live 150 years old and created "Calico =California Life Company," with \$B investment; Dr. Arthur Levinson serves as CEO
- Joon Yun, founder of the Palo Alto Institute in California, announced \$1M Palo Alto Longevity Prize to winner of hacking the "code of aging" by Dec 31, 2019

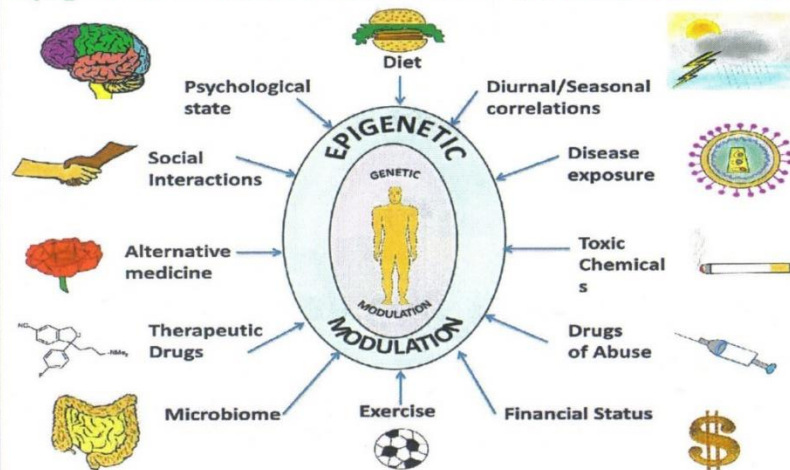
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Genetics/Genomics 遺傳/基因組 vs. Epigenetics/Epigenomics 表觀遺傳/表觀基因組

- Not long ago, we thought that once we sequenced the genes in the human genome, we would be ready to understand biology, diseases, and aging
- Now we need to go far beyond genetics to epigenetics to understand what is going on in biology and aging



Epigenetic Influences on Humans 表觀遺傳的影響因素

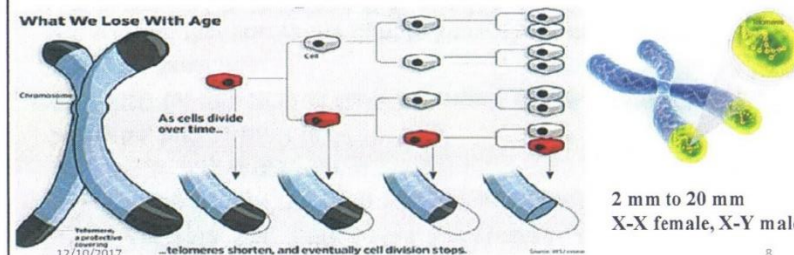


"Epigenetic Across Human Life Span," by R.R. Kanherkar, N. Bhatia-Dey, & A. B. Csoka

Aging and Telomere Length 老化和端粒長度

Nobel Laureate Elizabeth Blackburn, discovered the **Telomerase** keeping **Telomere** balance in size, has involved with stress reduction & marketed **Telomerase Activator (TA)** as food supplement (\$600 per bottle per month)

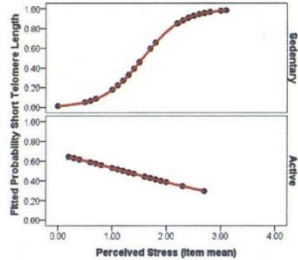
- 3 billion pairs of A-T C-G codons of DNA packed in 23 pairs in a total of 46 chromosomes un-winded linearly in 3m long
- We lose telomere size; i.e., 50 times in 9 months known as Hayflick limit
- Kenyon of UCSF discovered worm DAF-2 aging gene; DAF-16 for Longevity gene; but we're complex



Telomere Length Related to Stress & Exercise

運動影響精神壓力和端粒長度

- Chronic stress related to short telomere is seen in sedentary individuals, but not in those who exercise
- Regular mildly cardiovascular exercise, such as Tai Chi Chuan, is likely to protect telomere lengths
- Vigorous aerobic exercise may further serve to keep telomere lengths at youthful levels
- Excessively strenuous exercise leading to fatigue may lead to compromised telomere lengths and be life-shortening



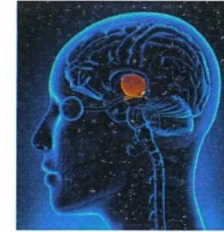
“The Power of Exercise: Buffering the Effect of Chronic Stress on Telomere Length” by Eli Puterman, Jue Lin, Elizabeth Blackburn, et al.

“Can meditation slow rate of cellular aging? Cognitive stress, mindfulness, and telomeres” by Elissa Epel, et al.

Aging Controlled by Stem Cells 幹細胞控制老化

“Hypothalamic stem cells control aging speed partly through exosomal miRNAs”; Zhang Y, et al; Nature, 3 August 2017

- Injecting mice with microRNA-rich exosomes isolated from cultures of young hypothalamus stem cells slowed the animals’ physical and cognitive breakdown
- Protecting or replacing the hypothalamus’s stem cells, or replicating the effects of the microRNAs, could slow aging in humans



Hypothalamus, a command center deep in the brain, helps control everything from hunger to sleep



Prof. 蔡東升
Dongsheng Cai,
Albert Einstein
College of
Medicine

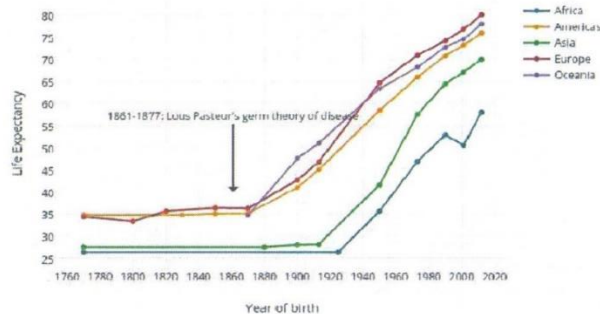
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Living longer isn't important if you're not healthy!¹⁰

We're Living Longer!

我們已經更長壽了!

Life expectancy by world region, 1770-2012



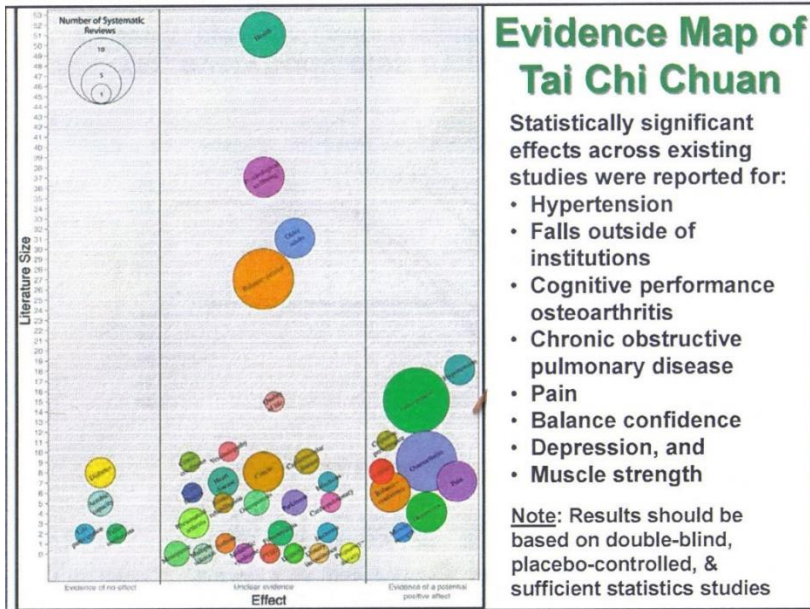
Yet, everybody dies by age 122
Jeanne Calment of France (1875-1997)

How to Add Another 20 Years in Lifespans

如何能再增壽20年

- For most people, genetic background need NOT be a major factor
- It can be done by paying attention to diet, exercise, lifestyle, and stress management
- “Hormesis” is about stress and how organisms adopt to deal with stress
 - At high doses stresses create damage
 - At low dose levels, stresses promote body defenses that make you stronger and healthier

▪ Tai Chi Chuan can be very effective in stress management



氣(气、炁、氣)是什麼? What is Chi (Qi)?

- In traditional Chinese culture, “Chi” is an active principle forming part of any living thing
- ‘Chi’ is frequently translated as "natural energy", "life force", or "energy flow"
- “Chi” is the central underlying principle in traditional Chinese medicine and martial arts
- The literal translation of “chi” is "breath", "air", or "gas"

But “Chi” is a purely hypothetical concept!

- 維持生命活動的基本物質?
- 天地一切事物組成的基本元素?
- 人類與一切生物具備的生命能量或動力?

多年來，世人投入了數億的研究經費，科學家進行了大量研究工作，但對氣、經絡等仍然沒有找到令人信服的證據。

氣功、禪、養生術與太極拳的比較 (Comparison of Qigong/Meditation/Regimen and TCC)

- 氣功、禪、養生學基本上是用調身、調心、調息等方法來鍛煉身體，與太極拳的內功含有相似的內容，但兩者的功法和鍛煉目的並不相同
- 氣功、禪、養生術的鍛煉使得毛細血管舒張，皮膚有麻、漲、熱的反應，認為是道家養生的“氣”；但是，這種氣感可以技擊防身嗎？
- 《乾隆舊鈔本太極拳經歌訣》中有句：「拿住丹田煉內功，哼哈二氣妙無窮」；只用氣功、禪、養生術的方法是練不出內家拳之特殊內勁。

氣功、禪、養生術與太極拳的比較 (Comparison of Qigong/Meditation/Regimen and TCC)




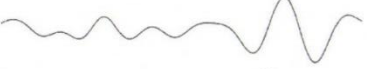

氣功、禪、養生術
Qigong,
Meditation,
& Regimen



太極拳
Tai Chi
Chuan



入靜是練功之首要 (Meditation in Brain Waves)

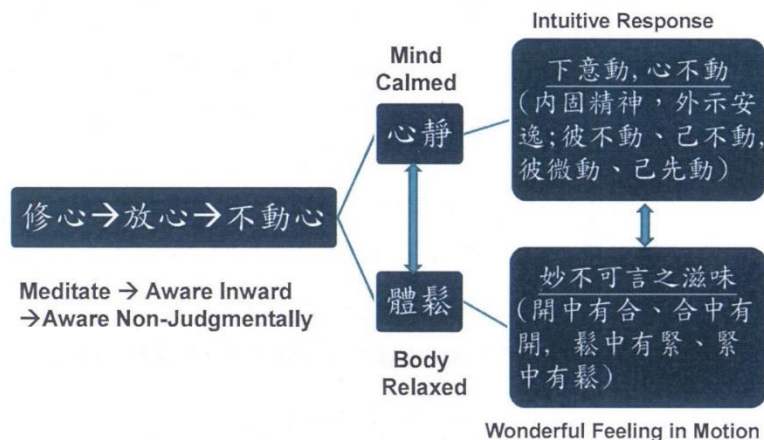
EEG State	Electroencephalography (EEG) Pattern	Frequency Range	State of Mind
Gamma		31-120 Hz	Hyper brain activity, learning
Beta		13-30 Hz	Highly alert and focused
Alpha		8-12 Hz	Relaxed, Reflective
Theta		4-7 Hz	Drowsiness, Meditative
Delta		0.5-4Hz	Deep sleep

神經系統的調整 (Bio-feedback Helps Auto-pilot ANS (No.10 Vagus nerve) vs. Experienced CNS)



- TCC's friend is called *Autonomic Nervous System (ANS)* 自主神經系統 which is different from the function of *Central Nervous Systems (CNS)* 中樞神經系統.
- How to activate the *Parasympathetic Nervous System (PNS)* 副交感神經系統 is the key

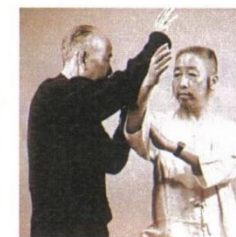
太極拳的身心修煉 TCC's Mind and Body Cultivation



Taijiquan's Sung, Chi, and Jing in Physiology

- **TCC's Sung (太極拳的鬆)** comes from release 由放而得; although it can be seen, someone cannot sense you while in touch with you. Sung supplements with tension 鬆中有緊, which cannot be seen
- **TCC's Chi (太極拳的氣)** lies mainly in the Chi phenomenology of inner "momentum transfer" 體內動量傳遞 resulting from accurate practices of TCC forms 功架的正確鍛煉 based on the TCC Classics
- **TCC's Jing (太極拳內勁) or Internal Strength** is attributed to the Chi phenomenology as the gravity force bounced from the ground and biomechanically transported throughout the body, which is also resulting from accurate practices of TCC forms based on the TCC Classics

The Essence of TCC is for Self-Defense



太極拳的本質是為技擊

Discussion

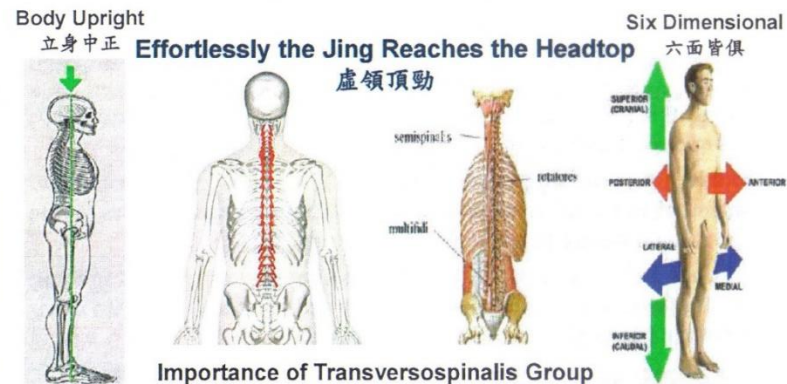
• How to Let Others Unable to Push You? 怎樣做到讓人家難以推倒你?

➤ You must not resist but be stable, elastic, coordinated, and flexible
你不可硬抗, 要能上下穩定、富有彈性、全身協調、靈活圓轉

• Are You Able to Transition from Getting Familiar with Correct Practices to Gradually Comprehending the Internal Strength? 你能由著熟而漸悟懂勁了嗎?

How to Stabilize Yourself? 怎樣能上下貫串穩定?

- Why and how to keep body upright?
- Is upright enough to stabilize yourself?
立身中正的內涵是什麼? 端正站立就能上下穩定嗎?



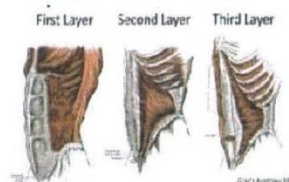
How to Become Elastic? 怎樣能富有彈性?

- Elastic is your body can resume its normal shape spontaneously after contraction or dilatation 身體能夠收縮、擴張後自發恢復其正常形狀
- Like loose but not loose, like extended but not extended 似鬆非鬆, 將展未展
- Relax but not collapse, tight but not stiff 鬆而不懈, 緊而不僵

Relax External Muscles
放鬆外層肌肉



Tai Chi Chuan Training
Is to Activate Deep-
Layer Core Muscles
太極拳是要激活深層核心



External Oblique vs. Internal Oblique
腹外斜肌與腹內斜肌

Relax Joints
放鬆關節



How to Coordinate? 如何協調?

- Coordinate within yourself (mind and body) 自我身心協調
 - At any place where there is insubstantiality, there must be substantiality; every place has both insubstantiality and substantiality 一處有一處虛實, 處處總此一虛實

Mind & body
coordination
身心協調



Synergistic
movement of
synovial joints
一個關節受力, 全身關節一同協調圓轉



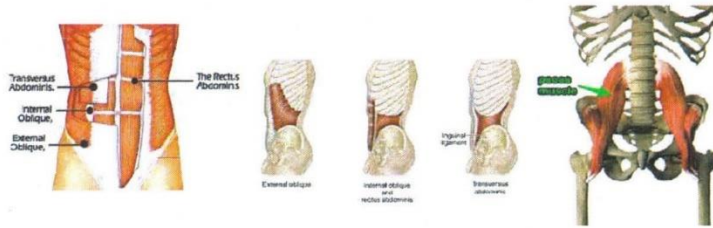
- Coordinate with opponent 同對方的協調

➤ Same pace and not the same pace (without antagonism) 跟對方同步及跟對方不同步(同步中的不同步並非對抗步)



How to Become Flexible? 怎樣能靈活圓轉?

- So you know waist is the commander and turning waist can make you flexible, but how about the hip joint? 你知道要主宰於腰，轉腰能圓通靈活，但究竟是轉腰還是轉腰胯?
- Follow your own inclination, you are clumsy; when you follow the opponent, you are vigorous 由己則滯，從人則活
- Do you understand the following two proverbs?
 - Hands are two doors, fighting is by feet 手是兩扇門，全憑腳打人
 - Tai Chi Chuan doesn't use hands, using hands is not Ta Chi Chuan 太極不動手，動手非太極

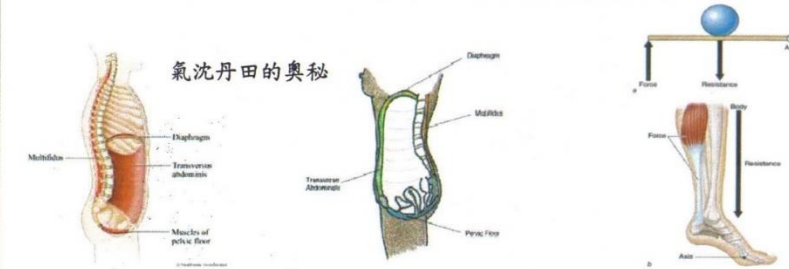


How to Get Familiar with Correct Practices? 怎樣著熟?

- Should you get familiar with movement of postures or with movement of momentum? 是著熟于拳式還是拳勢?
 - Ancient masters taught "outsides" the postures, but "insiders" the momentum transfer 古代大師們教別人練式，而自己練勢

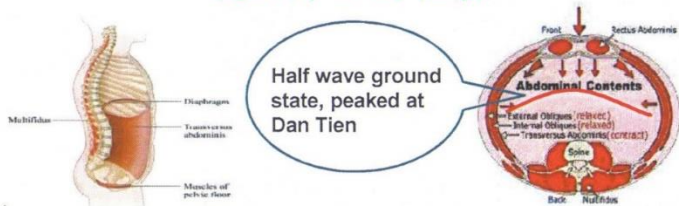
How to Comprehend Internal Strength? 如何懂勁?

- What is the source of power for internal strength 勁的源動力是什麼?
- How to mutually aid "yin and yang" and change each other, so that you can say you understand internal strength 如何陰陽相濟來懂勁?
 - You should prove it from Push Hands 推手是證實懂勁功夫

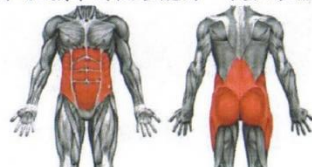


Sinking Chi down to "Dan Tien" (丹田) to Enhance Body Stabilization and Biomechanical Leverage

氣沉丹田的秘密

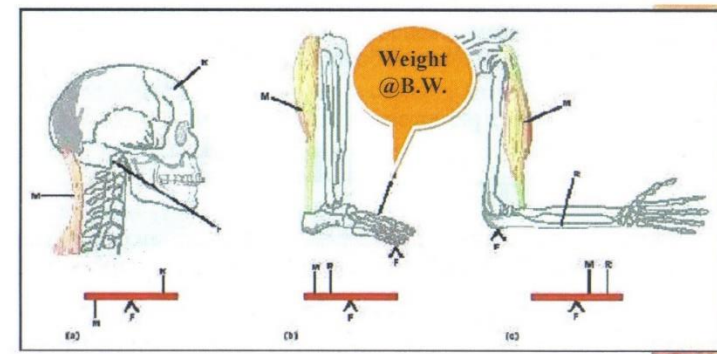


腹腔壓力 (intra-abdominal pressure) 升高，可提供良好的脊椎支撐力，保護腰椎的動作控制，增進了脊椎的穩定性。因而亦增加了膝關節的穩定度，改善下半身力量和肌纖維的徵召能力，提供軀體穩定流暢的動力鏈 (kinetic chains)。



體鬆身穩後的生物力學槓桿作用

Bubbling Well (B.W.) is defined to be the foot sole arch center, where the center of body weight should be stably located. TCC can utilize the Ball of Foot as the fulcrum to effectively transport the gravity force upward by applying the Second Class of Lever. That's why **the mother nature of gravity is TCC's best friend.**





Transform Chi's Phenomena to Jing's Effect

(由氣至勁的轉換)

- **TCC's Chi** is inner awareness of the phenomena of gravitational momentum transfer resulted from accurate practices of TCC forms following the TCC Classics
- **Inner momentum transfer** moves in kinetic chains downward and upward following nature of gravity and Newton's Laws
- **Chi phenomena** contributes to biomechanical transport of body weight bounced from the ground, which is called "**Internal Strength (or Jing)**"
- **TCC's Jing** is synergistically propagated through core muscles, tendons, ligaments, and associated bones and then delivered to the arms or any part of the body for use in self defense
- **Linear and angular momentum of Internal Strength or Jing** can be amplified by biomechanical lever type#2 and intra-abdominal pressure
- **TCC's Jing is managed by commander chief of "Dan-Tien"** and acts in waves (linear & angular momentum transfer) as whipping power in self-defense

Summary

- **Chi vs. Jing:** TCC's Chi, as physical momentum transfer phenomena, requires accurate practice 內煉 of the Chuan 拳 to transform from Chi's phenomena to Jing's effect in self-defense
- **TCC's Practices must activate the physiologic deep-layer core muscles group** for the spinal cord stability, while relaxing and enhancing the elasticity of shallow-layer core muscles for kinetic chain motions
- **Prof. Chen Man-Ching 鄭曼青 said well:**
 - (1) Internal martial art can improve the health while enhancing the self defense capability 內家拳以技養生;
 - (2) To inhale delightfully from the Heaven, to root thoroughly with the Earth, and to relax the Body extensively for longevity 吞天之氣、接地之力、壽人以柔

Questions?



For more information, please check out my student's website "緣聚華府練傳統太極"
at: <https://taijdc.wordpress.com>