

The Influence of Grip Asymmetry on Tai Chi Ruler and Wrist Exercises



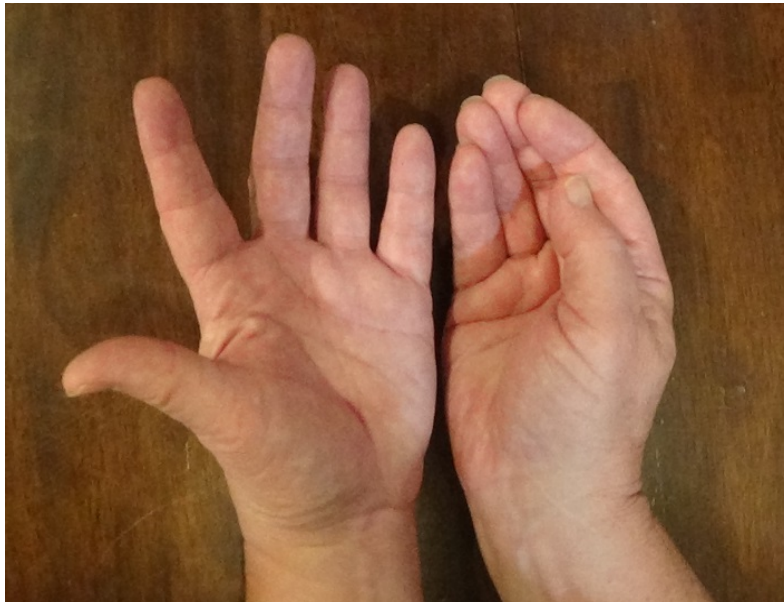
Peter F. Zoll

Silver Wolf Wushu

Wilseyville, California USA

The Problem

We teach the venerable Chinese martial art of Chen Family style Tai Chi Chuan to people with special needs, typically on the overly broad autism spectrum. However, we are willing to include students with other disabilities. One student has a condition known as arthrogryposis where, in this case, the right hand is remarkably less flexible than the left hand. Below is an image of both hands opened or flattened as much as possible.



Our curriculum is somewhat weapons-heavy: there are six unarmed forms or sets (sequences of canonical movements corresponding to Japanese katas or Korean poomse) and ten weapons sets. There's fair amount of right-handedness in Chen style, but with some diligence weapons can be managed. As most of our students benefit from Qigong an important part of the curriculum include several of the popular sets – Eight Brocades, Five Animals Frolic and Tendon Washing, among others. The first indications of trouble come during sitting and standing meditation when the right hand typically cannot reach the same meridian points as the left hand. A collection of objects known as Tai Chi tools are also a significant part of the curriculum.



The Tai Chi Bar shown above is used to relieve foot pain and currently presents no problems, although we should point out no (zero) students have arthrogryposis in the feet.

The Porcupine Ball shown below is about 2 inches in diameter and is done at about the same time as the Tai Chi Bar



With some care, all the exercises done with the Zhang (bottom, below) and the Chinese Wand (two pieces with copper caps above the blue Zhang bag) can be completed. Both are about 48" long and 1" in diameter. We have not taught the chidu (above the wands and below the tape measure) since the start of the COVID outbreak primarily because it is a two-person drill. It is not clear if we will restart chidu exercises. Were we to do so, the 2" diameter would be a challenge for the student under discussion.



Note that there are currently over 300 protein-coding genes involved in arthrogryposis.

We do some exercises with Wing Chun rings – the outward pressure exerted by the forearms seems, in some cases, to provide pain relief. To our mild surprise, the stainless steel rings are far more popular than the wooden rings.



Rattan (wood)



Stainless steel

The latex grip rings come in two shapes and various resistances. Some cleverness needed.



Circular shapes





Elliptical shapes

Implements like Wind-Fire Wheels and Tai Chi Double Rings are NOT canonical weapons but we have promised to teach seminars on both of them. The seminars function primarily as a reward for continuing to practice with Wing Chun rings and grip rings.

	
Wind-Fire Wheels	Tai Chi Double Rings

While preparing for future seminars we did some light sparring against a variety of weapons. These experiences confirmed that anyone using wheels or rings in a fight or in a simulated fight would want to protect his or her hands with gloves and his or her forearms with gauntlets. Neither the right hand glove nor the thumb section of the right arm gauntlet were good or even plausible fits and will require some thought. In passing we also suggest a baseball catcher's mask, kendo headgear or a face shield, especially if the teacher may be losing a step or if the students may still be improving their gracefulness.


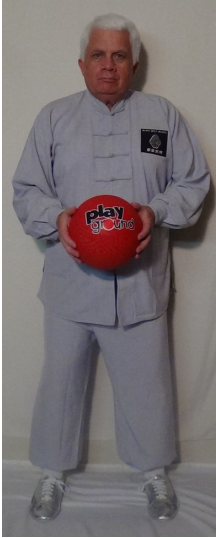
	
Protective Gloves holding Wing Chun Rings	Gauntlet

Current estimates (before the next gene survey paper coming in 2024) are over one million people with arthrogryposis in the United States, over six million in China and over thirty million on our Planet Earth. A small number, unless you are one of those millions.

Baoding Balls are about 2 inches in diameter and come in a seemingly endless variety of colors and textures. The general idea is to progress from two twirled in one hand to three twirled in one hand as well as two in each hand at the same time. Out of reach for the right hand at the moment.



For Tai Chi Ball exercises we do NOT use the solid wooden ball as it is very expensive; is very painful to drop on your toes – or someone else's toes; can be damaged when dropped on a floor; and can damage some floors when dropped. Some of the ball exercises can be performed by using the right wrist instead of the right hand's fingers. To an extent, one can perform the ball exercises without a ball, but this forfeits any pain relief from pressing on the ball, and provides almost zero stretching. We have experimented with a smaller diameter ball but currently there is not a satisfactory accommodation.

	
Solid wooden ball	Hollow rubber ball

At this time we are NOT teaching the so-called bent bang as we have not found any unique and useful exercises associated with it. It would take some effort to adapt it for this student.



For comparison purposes from top to bottom: a Tai Chi Bang; a Tai Chi Ruler; a tape measure and a bent bang

Many years ago the esteemed Siegfried Kufferath taught me some stretching exercises to be done with, according to him, a beach towel. It is possible to do these exercises with any of the several types of resistance bands available. We do not currently do these exercises in class, although Sig had specified that they were most useful for older martial artists. The original plan was to teach these exercises as a seminar. For the student under discussion we might be able to add an elastic loop, perhaps with a fastener. It does not seem safe to entrust the band to a wrist and grip known to be weak. In that context, the original towel might well be a better and certainly safer choice.

I learned several wrist exercises in Palo Alto around 1975, but I never thought to ask for their origin. After asking close to one hundred fellow martial artists, about half of whom remembered the exercises or still did them, I still have no idea what style or even martial art the exercises might have come from. The general procedure is one grips the left wrist with the right palm and fingers and then carefully moves both wrists. There are several grips and several axes of movement, so usually one alternates sides. The outcome is your wrists and fingers and thumbs are supposed to be more flexible and more difficult to lock. Our current procedure is the student under discussion can use the left hand to twist the right hand CAREFULLY and then a teacher or an aide loans their hand to twist the left hand. We are considering asking parents or siblings to repeat these exercises as what might be considered assisted homework. The other leading candidate for inclusion as homework would be grip rings.

The Tai Chi Bang is usually a polished wooden cylinder used to stretch and strengthen wrists, and forearms, and, to a lesser extent, fingers and elbows. Typically, the bang is 16 inches long and 2 inches in diameter. The bang exercises we do in class are far too dynamic for the student under discussion. Almost all of the material developed by the illustrious Jesse Tsao (San Diego California) for both single and double bang also depends heavily on having two skillful hands.



At last, the Tai Chi Ruler. While the Tai Chi Bang may have evolved from Chen Fa Ke (陳發科; 1887–1957; courtesy name Chen Fusheng 福生) watching his wife roll dumplings, the origins of the Tai Chi Ruler have been lost. In a manner similar to the Tai Chi Bang, we have found that one size does not fit all students. In practice this means that both tools may need length and diameter increased for larger students.

From top to bottom in the image below:

/1/ a sassafras bang 18" long and 3 inches in diameter. The student was very insistent on sassafras wood which turned out to be too porous and resistant to taking a smooth finish.

/2/ a tape measure

/3/ a bird's eye maple bang 16" long and 2" in diameter

/4/ a sassafras ruler made as a companion to the sassafras bang. 12" long and 3" in diameter.

/5/ a bird eye's maple ruler 11" long and 2" in diameter



Note: all bangs and rulers hand-made to specification by the very capable and quite patient Charles Tauber of Toronto Canada.



This was a bang and ruler combination made for another student with a different problem: the slots in the centers of the tools accommodate a paracord lanyard so that if the tool is dropped it will probably not hit the floor. For any xylophiles reading this the wood is known in the trade as bocote and is usually from *Cordia gerascanthus* or a related species.



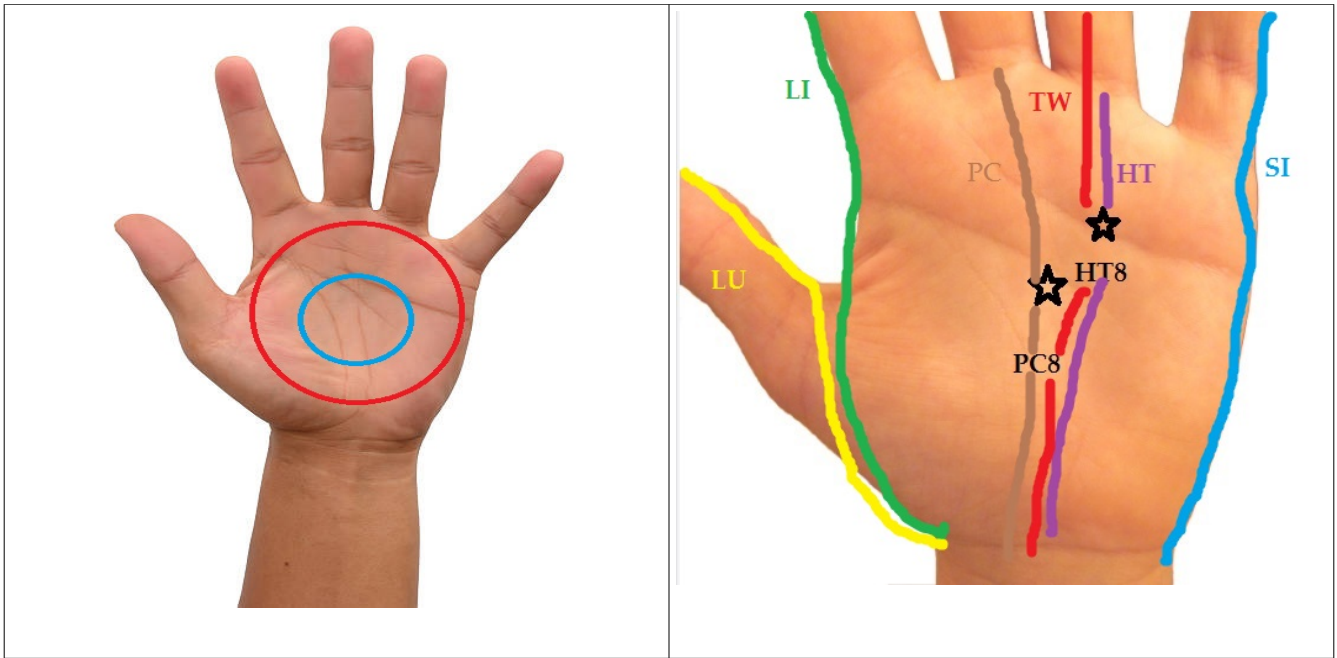
Top to bottom – all ziricote wood – probably *Cordia dodecandra* or a related species: a standard center; twin central spheres; a 12" plastic ruler; and a center of an Archimedean truncated cube. These are the same pieces as shown on the cover- just not photographed as well.



Top to bottom – all zircote wood: a center of a quartz cube; a center of a wooden cube; the same 12" plastic ruler; and a standard bang.



Some of Charles Tauber's customers have more elaborate flights of fancy that I do. We generally measure pain indirectly by measuring temperature with sensors. From a limited sample of students we have not been able to detect any significant difference due to the variations in the center. We purposefully kept the wood constant and tried to minimize changes in diameter and length. We would be comfortable in asserting that for taller students longer than standard rulers are indicated otherwise the shoulders have a tendency to sag forward and impact breathing. This can usually be measured by clipping two oximeters to the same two fingers on different hands. The student can do the hook hand in Single Whip. There is a struggle with the opened right hand in White Crane Spreads Wings. Reversing the hands in Buddha's Attendant Pounds Mortar so the left fist punches down into the right hand would be a disaster.



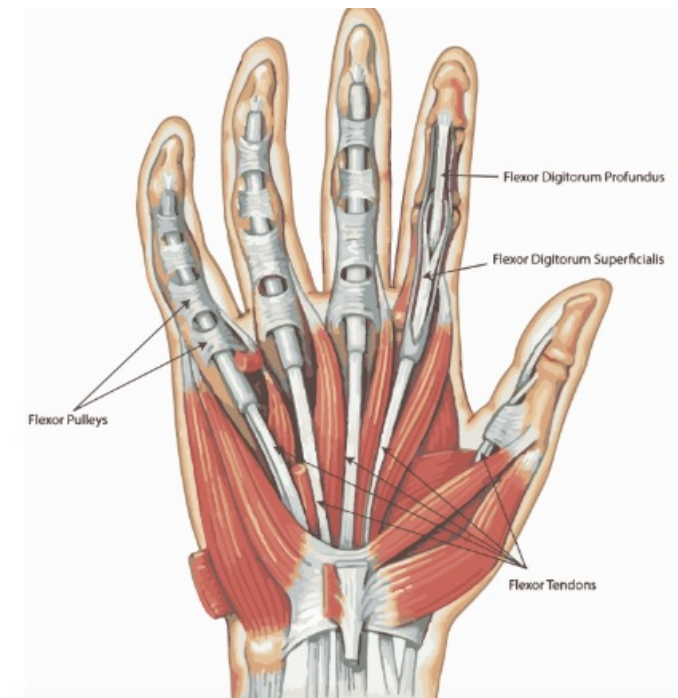
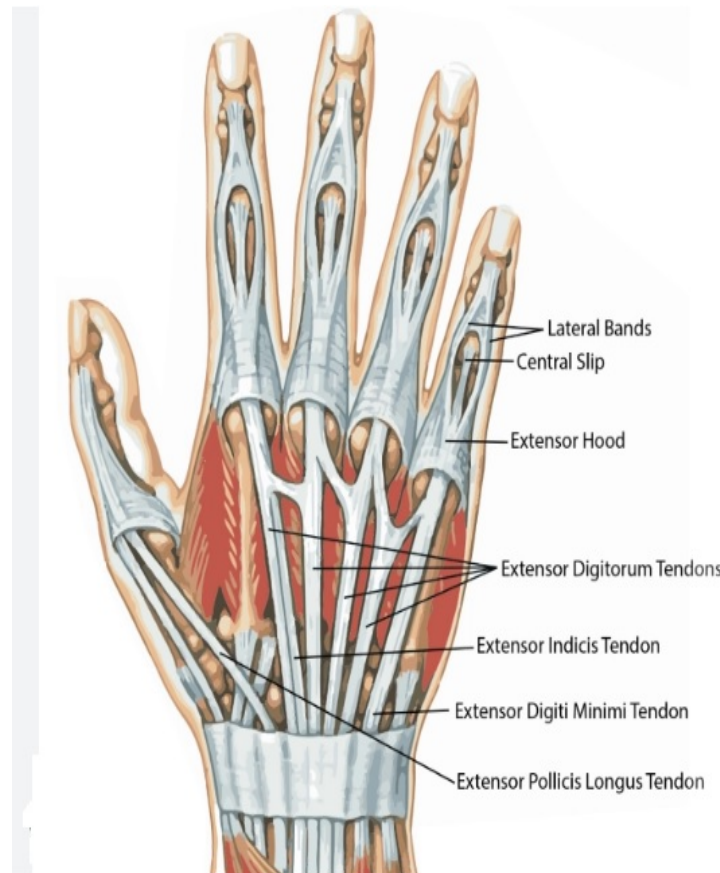
Generally, we try to match the diameter of the ruler's end pieces to correspond to the hand of the holder. Yes, we were assuming that the shapes of one person's hands – left and right – were more or less congruent and that the end piece of the ruler would be able to massage important meridian points on the palm. In most interpretations of Traditional Chinese Medicine there are six meridians that flow through the hands – from left to right above:

lung – yellow
 large intestine – green
 pericardium – brown
 triple warmer – red
 heart – purple
 small intestine - blue

Note that only the pericardium and heart meridians are on the dorsal surface of the palm. The two key points (marked in black) for purposes of the ruler are Heart 8 and Pericardium 8. We note in passing these two points are important in the Chen Family Tai Chi Chuan style movement Buddha's Warrior Pounds Mortar, which is found twice in 18 Movements, three times in Old Frame #2, three times in New Frame #2, four times in Old Frame #1 and four times in New Frame #1.

Other useful habits reinforced by ruler training: shifting weight forward and backward; vertical movement of qi along the macrocosmic orbit; improved physical balance; and horizontal transfer of qi from left side to right and from right side to left side.

From the point of view of Western Medicine hands are very complicated – shown here segregated by extensors and flexors



Leaving aside for the moment the question of whether the rule or some other tool should be used to stimulate points on the lung, large intestine, triple warmer and small intestine meridians, presumably by contacting the top and sides of the hand, we should be governed by the principle of not doing any harm. At the same time, class time in particular and time in general are precious so we need to do some good.

The Questions:

/1/ are the ruler exercises actually doing some good?

Typically, for students with chronic pain in fingers, hands, wrists and forearms, yes. We have at least one student who sleeps holding a ruler. For others, we have no measurable results.

/2/ are the ruler exercises the best use of time and effort – there are actually two considerations here: short-term pain relief and longer term tendon/ligament relaxation.

/3/ If we modify one end of a ruler to be some sort of ellipsoid



that fits the challenged hand of the student should this, in theory, be effective AND, if so, should we change the other end of the ruler to preserve the ruler's symmetry