



## **Hello!**

I hope you have enjoyed the summer. While we may experience anxiety from a myriad different areas that affect us either directly or indirectly, it is important for mental health to stay positive and treasure the good things in our lives, in our society, and in the environment. As we practice tai chi, make sure to focus internally - feel the pressure distribution under the feet, check for proper structural alignment as you move, pay attention to your muscle activation sequence and the resulting force propagation through the body, all while breathing in unison with each form's open (storing energy) and close (expending energy) phases. The mind and body are refreshed after 20-30 minutes of this intense focus.

## **Insight Sharing - Gentle Resistance, Isometrics, and Edges**

In this edition of the newsletter, I'd like to discuss the technique of gentle resistance. Tai chi movements are performed slowly. However, there is more to it than just the speed of movement. Tai chi is done with gentle resistance, imagining that one is moving in water, or that the air is thick and viscous. Some describe it as moving meditatively or moving with intent. Over my 10+ years of teaching tai chi, I have found that a good portion of my class participants struggled to move in this manner. I believe the main reason is because moving with gentle resistance is unfamiliar to most people. In fact, I cannot think of any movement in everyday life that comes close to it, other than actually moving in water. The following exercises and explanations may help practitioners understand how to move with gentle resistance.

To illustrate the concept, let's consider the commencement form - see the photo above. Part of this form involves lifting the arms from the sides of the body to shoulder height, with the hands drawing a circular arc that goes forward and then up. The arms are gently held straight.

Beginners will typically activate the muscles of the shoulders and arms to perform this movement. However, with gentle resistance, the brain understands that when the hand pushes forward against the imaginary water, there is an equal and opposite force pushing the hands back. This is Newton's second law. The force on the hands will in turn be transmitted to the shoulders, resulting in a force that pushes the torso back. We would activate the muscles along the entire kinetic chain in order to brace the body against the imagined reaction force. This muscle activation to support the external movement (what an observer can see) is what we aim to achieve when performing the movement with gentle resistance. How does one create these muscle activations when there is no actual reaction force?

To generate these muscle contractions, one can try the following. First, stand in front of a wall, with arms resting by your side. Push the back of your hands forward into the wall, as if beginning the commencement form, only to be stopped by the wall. Press with enough force that you can feel the muscles of the legs and torso activate to counteract the reaction force from the wall. These are isometric muscle contractions.

Next, stand in front of a book shelf or linen closet. Raise your arms slightly higher than before, again as if performing the commencement form, but this time pushing the back of your hands into the bottom of one of the shelves, ideally weighted or fixed so that it doesn't lift. Again, feel the isometric muscle contractions in the legs and torso.

Finally, find a weighted or fixed shelf that is around shoulder height and place your arms underneath it, using the back of the hand to press upwards, as if trying to lift the shelf. Feel the muscles of the legs and torso contracting.

Once you have experienced the muscle contractions through the range of motion of the arm movement, try performing the commencement form replicating the

same muscle contractions, but more gently. This is how gentle resistance is performed, by using the body's own muscles isometrically to create the resistance and to move against that resistance. The imagery of moving in water is for the purpose of cuing the brain to generate these contractions. The muscle contractions are considered isometric because the arms are moving slowly (and the legs and torso are not moving at all). Once you have successfully generated this feeling of gentle resistance, try using the imagery of moving against water, and apply it to the rest of the tai chi form.

Use of gentle resistance will exercise more of the body's muscles, in functionally relevant movement patterns. It will also prepare the practitioner for learning more advanced force management skills such as rooting.

In figure skating, isometric muscle contractions along the body stack are essential for powerful edges. Like in tai chi, one must cue the brain to generate these forces. Unlike gym exercises where you are working with weight machines, free weights, or pushing against a wall in isometric exercises, there are no such physical cues when skating. Isometric muscle contractions along the body stack are what allows one to not just balance over your skating foot, but to command the ice, .

With Warmest Regards,

**Vincent Chun, PhD**

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