

Applied Tensegrity: Chen-Style Taijiquan

Grandmaster Chen Xiaowang (as cited in Graycar & Tomlinson, 2010, p. 79) noted that 3 "languages" were necessary in the practice of Chen taijiquan: the language of speaking and writing for explanations and theories; the language of the body for demonstrations and teaching; and the most important language is corrections or "the feeling".

Due to language barriers, many ancient taiji texts have not been accurately translated. Some compare the body to a building or column. However, in this stacked and compressed model does not work as the skeleton/body would quickly deteriorate from compressive forces (Graycar & Tomlinson, 2010). The arch is another model where the sacrum and pelvis are the keystone (Graycar & Tomlinson, 2010). This model works only when two-footed (on the ground) (Graycar & Tomlinson, 2010). These models describe compressive loading forces but fail to capture/communicate stability under shear/torque forces (Graycar & Tomlinson, 2010).

Graycar and Tomlinson (2010) also explained that movement mechanics using analogies of lever systems and our body as a stacked column also fail to describe more complex, multiplanar and circular motion.

Tensional integrity is the balance between tension (yang) and compression (yin) components within a structure that allows the structure to equilibrate and stabilize itself (Graycar & Tomlinson, 2010). The state of prestress or in taiji terms "wuji" (without ridge-pole) balances the body regardless of the practitioner's position (Graycar & Tomlinson, 2010).

From the taiji classics "stand like a balanced scale; move lively like a cartwheel", the tensegrity principle allows one to stabilize on one or both legs (Graycar & Tomlinson, 2010, p. 82). The "cartwheel" is like the bicycle wheel with the rim (limbs), spokes (soft tissue, muscles, etc.), and suspended hub ("dantain" or body center). Graycar and Tomlinson (2010) noted that "tensegrity is clearly nature's preferred building system" (p. 82). The poses "post standing" and "silk-reeling" utilize static and movement tensegrity principles (Graycar & Tomlinson, 2010). Proper basic stance calls for the body to be neither too relaxed nor overly tensed (Graycar & Tomlinson, 2010). Proprioception is very important in taiji practice to create the inner awareness and an "unconscious balanced state" (p. 94).

To practice taiji, one needs to develop a keen sense. Going through the different poses, the body needs to maintain equilibrium (between "expanding and compacting", push/pull, twisting, shear, etc.) and flow.

Another example is Russian Systema (take any Systema "flavor"). Systema is thought of as "soft" martial art, but it has a lot of applications. Watching and practicing (especially with weapons), one can get a good sense of flow-state and the constant re-balancing or drive towards a new equilibrium. Taiji and Systema are non-linear and non-localized. They truly demand whole-body participation.

References

Graycar, M. R., & Tomlinson, R. (2010). Tensegrity: Development of Dynamic Balance and Internal Power in Taijiquan. *Journal Of Asian Martial Arts*, 19(3), 78-95.