

TRYING TO UNDERSTAND  
THE CONCEPT OF  
BREATH CONTROL  
AND  
SINEWAVE

by Seida Scholl-Latour

In my former essay “Importance of proper Breathing in Taekwon-Do” I give a concise description of different breathing techniques, the principle of Yin and Yang, the basic concept of Qi and several schools of Qi Gong.

From this starting point I tried to better understand Gen Choi’s concept of “Breath Control”, one of the factors of the Theory of Power in Taekwon-Do.

Gen. Choi stated the following:

- “Controlled breathing not only affects one’s stamina and speed but can also condition a body to receive a blow and augment the power of a blow directed against an opponent. Through practice, breath stopped in the state of exhaling at the critical moment when a blow is landed against a pressure point on the body can prevent a loss of consciousness and stifle pain. A sharp exhaling of breath at the moment of impact and stopping the breath during the execution of a movement tense the abdomen to concentrate maximum effort on the delivery of the motion, while a slow inhaling helps the preparation of the next movement. An important rule to remember : Never inhale while focusing a block or blow against an opponent. Not only will this impede movement but it will also result in a loss of power. Students should also practice disguised breathing to conceal any outward signs of fatigue. An experienced fighter will certainly press an attack when he realizes his opponent is on the point of exhaustion.” [Theory of Power]
- “One breath is required for one movement with the exception of a continuous motion.” [Theory of Power]
- “To exhale briefly at the moment of each blow except a connecting motion” [Training Secrets]
- “In the technical area, I created a wide variety of techniques that can be used in almost any situation, they are based on the following principles : correct breathing methods should be devised, enhancing the speed of each movement and reducing fatigue.” [History of Taekwon-Do]

One important and complex aspect of martial arts training is proper breathing. Several forms of breathing are used in martial arts, to enhance physical performance, focus the mind, increase concentration, improve health and cultivate spiritual sensitivity. These techniques are not unique to Taekwon-Do or any particular martial art, but come from the broader religious, philosophical and medical traditions common to many Eastern cultures. Unfortunately breathing techniques are usually not being taught in External martial arts nowadays. External styles emphasize training techniques and building up the physical body, but the internal energy development is not a focus of training in most systems. Some external martial artist, when they reach a high level of external training will start training internal Qi Gong. Training moves from external to internal.

In Internal oriented martial arts Qi Gong training is more emphasized: the building up of Qi in the body and later applying this Qi to physical action.

It is said that the External styles are from hard to soft and the Internal styles are from soft to hard, the ways are different, the final goal is the same.

Internal and External style are also differentiated by how the power (Jin) is manifested (this will be discussed later in the essay).

## Abdominal breathing from an Oriental point of view:

“On the spiritual level, Taekwon-do is derived from the traditional, ethical and moral principles of the Orient ...” [Choi, Hong Hi]

“Qi Gong is the essential requirement for development of human success in the Do, through the harmony of mind, breathing, and physical training” [Fang, Mu Hn]

Looking at martial arts, one may understand that the Qi (air or life-force energy) will internally unite the body and mind. We need to maintain a balance of these areas. Proper breathing practice - or “Qi Gong” - is a connection between body and mind. NeiGong controls the body’s Qi through breathing practice.

Neigong exercises involve cultivating physical stillness and/or conscious (deliberate) movement, designed to produce relaxation or releasing of muscular tension combined with breathing techniques. The fundamental purpose of this process is to develop a high level of coordination, concentration and technical skill. Martial Nei Gong is about developing internal power. It exercises the relaxation of blood vessels, nerves, muscles and sinews to help the body move more freely with little effort.

“The ultimate purpose of this practice of NeiGong is for the individual to become one with the Dao”.

[The principle of *samjae* in Korea postulates that the universe is defined by three fundamental essences: heaven, earth and human being. It is essentially a concept revolving around the process of transformation, change or constant interplay of these three fundamental essences, not unlike Yin and Yang. Mind and body are inseparable within a human being. A human being is inseparable from heaven and earth. Heaven and earth are inseparable from each other. Thus heaven, earth and human being are destined to exist in unity]

**Dao** or Tao [Chinese], Do or To [Japanese or Korean] means “path” or “way” and embraces the concepts of Yin and Yang (law of change) and Qi (universal life force).

Within the context of traditional Chinese philosophy and religion, Tao is a metaphysical concept [= explaining the fundamental nature of being]. Taoism was created by LaoTse in the 6th century BC [during the Zhou dynasty 1046–256 BC]. The most important Taoist text, the “Tao Te Ching”, is attributed to LaoTse.

The object of spiritual practice is to 'become one with the tao' (Tao Te Ching) or to harmonise one's will with Nature in order to achieve 'effortless action' (Wu wei).

In the Tao Te Ching LaoTze mentions the importance of natural and unforced breathing.

About 300 BC the Taoist philosopher Juang Tzyy described the relationship between health and breathing in his book “Nan Hwa Ching”.

The scholars emphasized gaining a calm and peaceful mind. Their training focused on regulating the mind, body and breath.

Taoism can be seen as the life force of all the Chinese martial arts. Taoists believed that breathing exercises would aid them in their search for longevity. They believed that although Qi was an intrinsic force inherent in all human being, it had to be cultivated through the taoist breathing exercises.

Qi and breath are mutually related and cannot be separated, the functioning of Qi is connected with the breathing. In QiGong, when you are breathing, you should move your abdomen and breath from your DanTien.

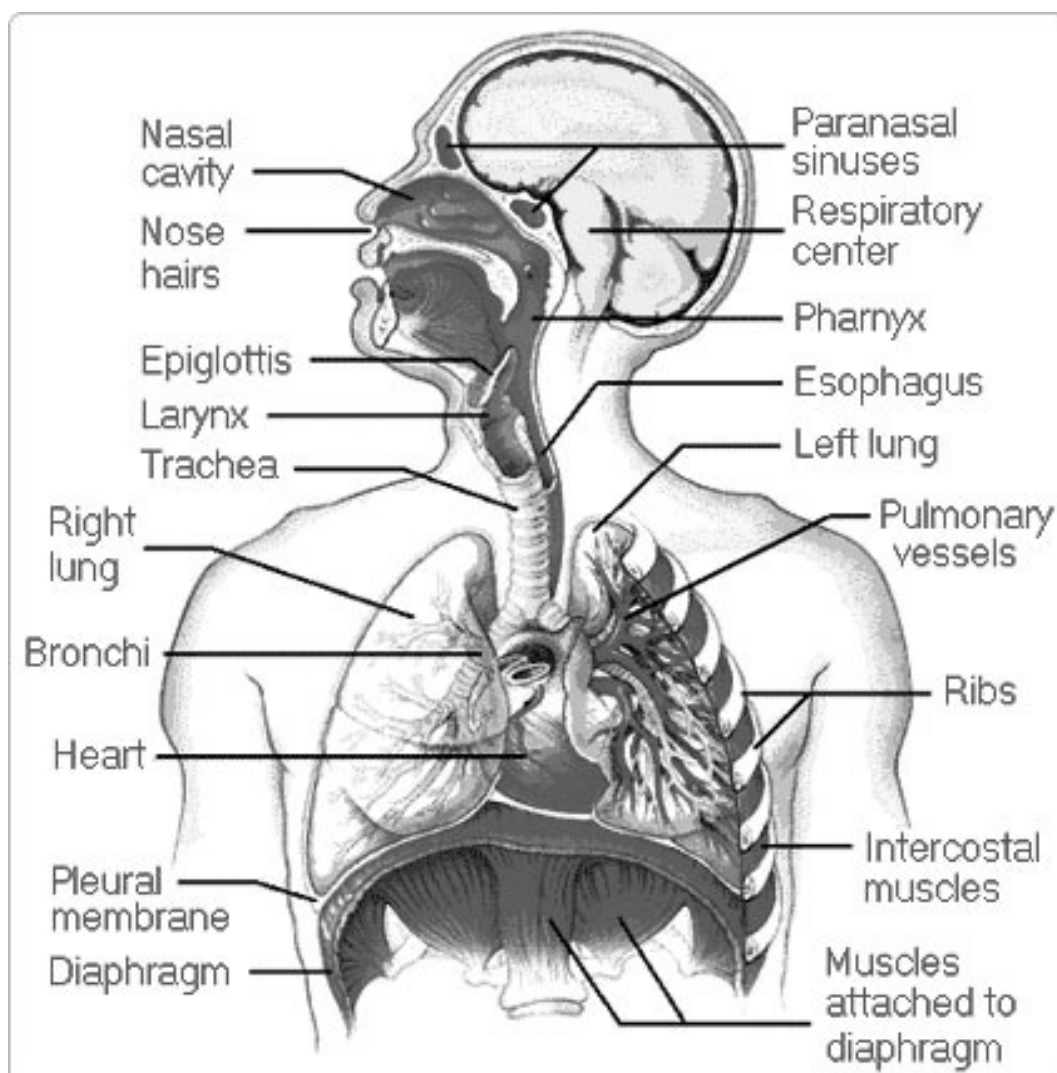
## Abdominal breathing from an Western point of view

Most modern martial arts use *natural breathing*, which is a novice level of breathing suited for beginners. There are three different methods of natural breathing. The first method mainly moves the chest. The second moves the stomach area. The third type of natural breathing moves the chest and stomach together. We call these chest-natural, stomach-natural and chest- stomach-natural breathing. In all three cases the breathing must be smooth and steady.

In contrast to natural breathing, lower *abdominal breathing*, which is the basis of the QiGong, develops the lower abdominal musculature.

Keeping tension in the lower abdomen throughout the respiratory cycle stimulates the parasympathetic nervous system consequently fostering relaxation, lowering of the pulse, slowing of respiration and a conservation of energy. In addition, maintaining deep abdominal breaths and a constant breathing rhythm supplies the heart with more oxygen. Proper respiration keeps the heart muscle functioning at peak capacity for any given situation. At the same time deep abdominal breathing with slight tension in the abdomen dampens the sympathetic response in favor of the parasympathetic nervous system.

The *diaphragm* is the primary muscle of respiration.



The diaphragm extends across the bottom of the rib cage and separates the thoracic cavity - containing the heart and lungs - from the abdominal cavity. It performs an important function in respiration: as the diaphragm contracts and moves in the inferior direction, the volume of the thoracic cavity increases and air is drawn into the lungs. The accessory muscles of respiration include the intercostal muscles (between the ribs) and to a lesser extent, the neck muscles. The accessory muscles function to increase the anterior-posterior diameter of the chest cavity as well as to lift and spread the rib cage. Using the accessory muscles without proper use of the diaphragm does not expand the lungs to their capacity. A normal thoracic breath draws only 500 to 700 cc of air. Deep abdominal breath typically draws 2500 cc to 3000 cc of air, expanding the entire lungs for optimal oxygen delivery. Low abdominal breathing allows more air into the lungs. By using only the chest to breathe it is the chest muscles that are working, compared to lower abdominal breathing, which focuses on the diaphragm. When the diaphragm moves 1 cm up or down, the extra air movement will be 300cc. During lower abdominal breathing, the average person's diaphragm will move more than 2 to 3 cm. For an expert of this breathing technique the movement of the diaphragm will be up to 5 cm.

In **normal abdominal breathing**, when we inhale, the diaphragm pulls down, you push the abdomen out and the perineum [= region between the pubic symphysis and the coccyx] down. This allow the large and small intestine to drop and allow the diaphragm to go lower .

Proper breathing has major benefits for the martial artist:

- through a neuro-physiologic feedback loop, it keeps the mind calm and grounded
- deep abdominal breathing with slight tension in the abdomen dampens the sympathetic response in favor of the parasympathetic nervous system
- the parasympathetic system fosters relaxation, lowering of the pulse, slowing of respiration and conservation of energy.
- proper breathing allows superior oxygen exchange in the lungs resulting in improved muscle performance
- keeping the breath low in the abdomen automatically keeps your center of gravity low for improved balance
- proper respiration assists in keeping the mind focused
- the more oxygen we take in, the more energy we have to put into more powerful physical action

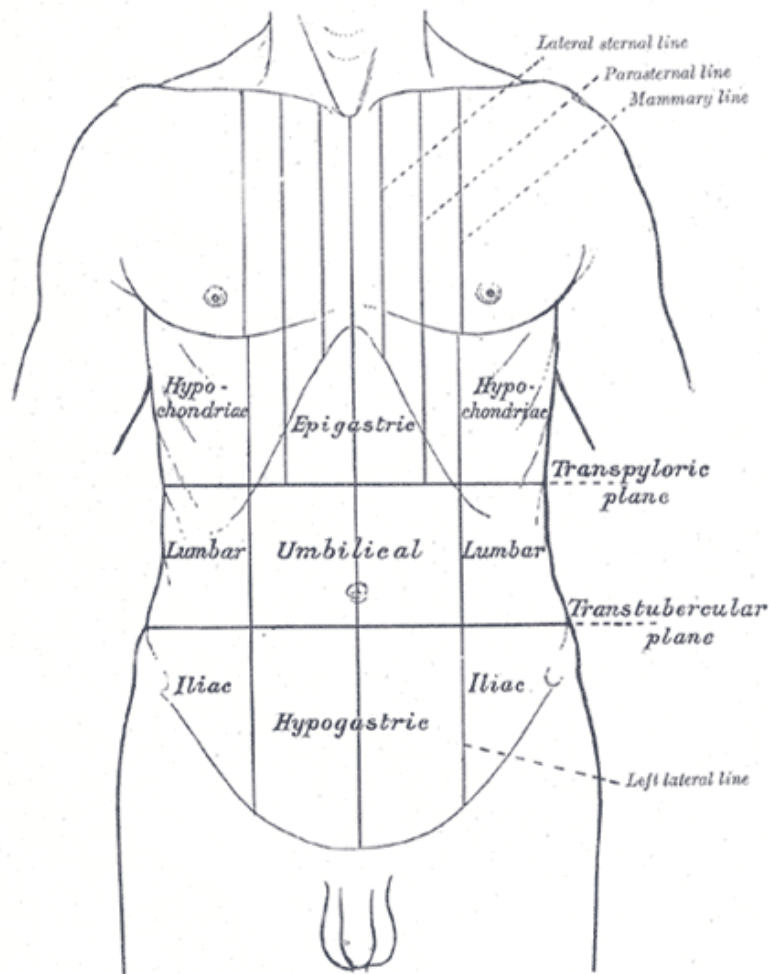
Normal abdominal breathing should be exercised first, as it is very relaxing and safe. But developing the habit of abdominal breathing takes considerable practice.

#### *How to practice abdominal breathing?*

The first step is to focus your awareness on the natural rhythm of your breath, which will allow you to shift from unconscious breathing to conscious breathing.

The second step is to exercise abdominal breathing.

As we have seen before, abdominal breathing is about filling the lungs completely and invigorating the abdominal muscles. This will also massage the internal organs and thus increases blood circulation.



The focus is on two areas of the abdomen:

- the DanTien (Chinese), Hara (Japanese), DanJeon (Korean), [= acupoint CV-6 QiHai] which is located 3 fingers widths below the navel, situated in the Hypogastrium of Western medical terminology,
- the HuiYin cavity [= acupoint CV-1], or Perineum in Western medical terminology.

When you inhale, you lightly push the abdomen out and the perineum down, while trying to achieve a smooth expansion.

When you exhale pull the abdomen gently back into the body.

You should not expand or contract your chest.

**Reverse abdominal breathing** is the breathing method best suited for those who study martial arts, since it concentrates the focus on the lower abdomen during exhale. You exhale while pushing out. Reverse abdominal breathing increases the abdominal pressure, which in turn increases power.

As you inhale you slowly draw the abdomen in and the perineum up. The upper chest will naturally expand and the diaphragm is pulling downward. Because this can generate tension in the stomach area, the lungs and the diaphragm areas must be as relaxed as deeply as possible, to allow a smooth intake of air.

When you exhale push the abdomen out and the perineum down.

One should have knowledge and practice in normal abdominal breathing before attempting to work on using reverse abdominal breathing, as this can lead to a variety of problems, including chest pain, increased heart-frequency or blood pressure.

Note that reverse abdominal breathing is part of our normal breathing habits. For example, when you are happy and you laugh, you exhale and your abdominal area pushes out. It is the same when you have an intention to energize your muscular power, for example if you are pushing a car or lifting a heavy weight.

### **Controlled breathing and holding the breath**

“In Taekwon-Do controlled breathing is used to maximize the body’s performance, leading to increased speed, power and endurance and more focused concentration. Breath control is also used during strikes and blocks to help coordinate and time the body’s actions, so power is focused at the moment of impact.

In traditional oriented TKD styles, breathing during the execution of a strike is characterized by momentarily holding the breath during delivery, then sharply exhaling at the moment of impact, as you tense the abdomen.

The breathing during blocking techniques is usually characterized by a short, sharp exhalation, then momentarily holding the breath. This method not only powers the block, it is also used to fortify the body against blows to vital points (in case they are hit), in order to prevent loss of consciousness or recognition of pain.

Slow inhalation is usually done between actions. “ [Tedeschi]

“correct breathing techniques should be devised, enhancing the speed of each movement and to reducing fatigue”

“a slow inhaling helps the preparation of the next movement.” [Choi]

Controlled breathing teaches us to connect between mind and body and so to learn to manipulate the way we breathe - to have control on how we inhale and how we exhale. We have to learn to use our mind to tell our body to avoid all tension in the phase of the inhale.

If we inhale deeply, we receive more oxygen to convert into energy. If we have plenty of oxygen, the muscles won’t fatigue so easily and won’t produce as much acid. On the contrary, if we don’t have enough oxygen to handle the metabolism, then the acid in the body will increase and we will lose the endurance.

Deep and complete breathing does not mean, that you inhale and exhale to the maximum capacity, as this would cause the lungs and the surrounding muscles to tense up, which in turn would keep the air from circulating freely and hinder the absorption of oxygen. Also when the lungs and the surrounding muscles are relaxed, this decreases the need for oxygen. As we inhale slowly and exhale just at the end of a technique, we tension up our body only for a very limited time and so we can reduce fatigue.

“In Tae Kwon Do training, breathing supports the speed. During movements we must hold our breath for maximum power when striking, attacking or blocking. When we contact the opponent, breathe out quickly. After contact, inhale slowly. If we inhale during the block, a light attack can do a lot of damage. Even with a strong attack to you, holding your breath will reduce the damage. The conclusion is that during action, it is best to hold our breath when attacked” [Choi, Hong Hi]

“A sharp exhaling of breath at the moment of impact and stopping the breath during the execution of a movement tense the abdomen to concentrate maximum effort on the delivery of the motion” [Choi, Hong Hi]

In QiGong theory it is said :

“Hold the breath for maximum power. - The reason you hold the breath is to allow the energy to reach its maximum, so muscles can manifest more efficiently”.

Power manifestation is connected to breathing. In this context we find different schools of power manifestation - Jin - in Chinese martial arts:

#### *Hard Jin (power)*

In this method muscles are conditioned more than tendons. This style [e.g. Tiger Claw or Eagle Claw] is very physical.

The breath is typically held for a few seconds after the muscles reach their extreme of tension or energy manifestation.

If strength is overtrained, speed suffers.

#### *Soft Hard Jin [e.g. White Crane]*

The special characteristics of the power manifestation, is that at first the action is soft and the physical body is very relaxed. The body is suddenly tensed right before reaching the target. The usage of the muscles is reduced significantly, while tendons are given more attention. When the target is almost reached a sudden tension of the muscles is used to prevent over-stretching of the ligaments. The breathing is soft and deep. In order to harden the muscles at the end of the action, holding the breath is also commonly employed in the training.

It is said “When it is needed to be hard, it can be hard. When it is required to be soft, it can be soft. Soft and hard can support each other skillfully.”

This style of training is considered the safest. The body is not tensed all the time and therefore the muscles will not be over-developed. Since the physical body is tensed right before the contact, the ligaments in the joint areas are also well protected.

The power generated is greater than that of Hard Jin.

Shaolin White Crane is widely recognized as the root of Okinawan Karate and was introduced from China to the Ryukyu Kingdom [Okinawa] probably during the Chinese Ming dynasty (1368-1644). [Bubishi]

#### *Soft Jin*

In this training stiff muscular strength is not emphasized. The entire body is soft at all times. Speed is the main factor in this power manifestation, the entire body must act as softly as a whip. In order to prevent injury of the ligaments caused by the fast, jerking emission of power, the strength and endurance of the ligaments must be conditioned. This power is more penetrating. (TaiChiChuan attributed to the Taoist philosopher, acupuncturist and martial artist Zhang Sanfeng (towards the end of the Song dynasty 960-1279AD).



It is especially difficult to stop the breath and remain relaxed, as the intention to hold the breath will make you more tense because the mind is involved. Therefore we have to train to hold the breath without consciousness .

An ancient Daoist named Li Ching-Yen said “ Regulating breathing means to regulate the real breathing until (you) stop”. - Correct regulating means regulating is no longer necessary. Real regulating is no longer a conscious process, but has become so natural that it can be accomplished without conscious effort.

### ***Shall we inhale through the nose or through the mouth?***

The advantage of breathing through the nose has several reasons:

- the nasal passage has a series of defense mechanisms that prevents impurities and extremely cold air from entering the lungs
- nose breathing is most efficient for preserving the moisture of the airways. This becomes important when involved in lengthy dehydrating workouts
- the smaller diameter of the nasal passages create pressure in the lungs during exhalation, allowing the lungs to have more time to extract oxygen from them
- carbon dioxide CO<sub>2</sub> is one of the mediators of local autoregulation of blood supply. If its levels are high, the capillaries expand to allow a greater blood flow to that tissue. If carbon dioxide is lost too quickly, as in mouth breathing, oxygen absorption decreases
- when we breathe through the nose, the air passing through the nasal airway is slowed down. This allows the proper mixing of the air with a gas produced in the nasal sinuses called nitric oxide = NO.
- nitric oxide is secreted into the nasal passages and is inhaled through the nose. It is a potent vasodilator (dilatation of the blood vessels), and in the lungs it enhances the uptake of oxygen.

In breathing exercises it is important to inhale and exhale through the nose. In that way we maintain a closed circuit within the body. In QiGong practice this is called “forming the bridge” - the tongue is up, touching the top palate of the mouth, where the Conception and the Governing vessel meet. If we breath out of the mouth, we break the circuit and the energy dissipates

When training in martial arts, breathing strictly through the nose is often unrealistic, as the body 's demand for oxygen sometimes increases too fast for the nose to handle the flow. Furthermore it is important to control the amount of air we expel, so that we keep a certain level of air in the lungs and so we don't have to inhale too deeply after each technique.

*Some personal reflections regarding breath-control in Taekwon-Do:*

Gen Choi stated the following rules regarding controlled breathing :

- “A slow inhaling helps the preparation of the next movement”
- “Stopping the breath during the execution of a movement tense the abdomen to concentrate maximum effort on the delivery of the motion”
- “A sharp exhaling of breath at the moment of impact” [Theory of Power]

*At which moment during the execution of a movement should we hold the breath and tense the abdomen?*

- “All movements must begin with a backward motion” [Training Secrets of Taekwon-Do]
- “Never inhale while focusing a block or blow against an opponent. Not only will this impede movement but it will also result in a loss of power” [Theory of Power]

If we say, that the start of a movement is the backward motion and that we should not inhale while focusing a block or blow against an opponent, then the moment when we hold the breath would be in the backward motion of the technique”

This would mean that when we prepare a movement we are in a neutral position, we inhale slowly, we move into the backward motion and we progressively switch from inhale to holding the breath while we tense the abdomen. This allows us to accumulate maximum power for the delivery of the technique which ends with a sharp exhale at the moment of impact.

There are two exceptions to this breathing pattern :

1) *Continuous Motion*

- “One breath is required for one movement with the exception of a continuous motion” [Theory of Power, 15Volume Encyclopedia & Condensed Encyclopedia]  
{Note: in the iTKD Black Belt Syllabus it says “One breath is required for one movement with the exception of a connecting motion”}

In its simplest form, the Continuous Motion has two techniques with one inhale and one “double-pulsed” exhale.

We have Continuous Motion in several Taekwon-Do Pattern, with the most challenging one in Po-Eun movement #6-12 and #24-30, with one inhale followed by one exhale stretched over seven movements.

2) *Connecting Motion*

- “To exhale briefly at the moment of each blow except a connecting motion” [Training Secrets of Taekwon-Do]

If we follow the principle “never inhale while focusing a block or blow” combined with the above rule regarding Connecting Motion, it is my understanding, that the Connection Motion can be defined as:

Two techniques with one inhale, followed by holding the breath during the first technique (Palm Hooking Block or Palm Scooping Block) - as you *never* inhale while focusing on a block - and one exhale with the second technique (Punch). So we don't have an exhale on the first technique because the Connection Motion is the exception to the rule “one exhale with each blow”.

A *Palm Scooping Block* is always performed in a connecting motion when it is followed by a Punch.

Ge-Baek : movements #9/10 and #29/30

Yoo-Sin : movements #10/11 and #14/15

The *Palm Hooking Block* followed by a Punch is performed in different ways in different patterns:

Yul-Gok : movements #16/17 and #19/20 the middle Hooking Block/Punch are performed in *connecting* motion (maintaining a walking stance, keep the heel slightly off the ground) {15Volume Encyclopedia, 2008}

Juche : movements #2/3 and #14/15 the middle Hooking Block/Punch are performed in a *continuous* motion (sitting stance, standing up) {15Volume Encyclopedia, 2008}

Yoo-Sin : movements #4/5 and #6/7 the middle Hooking Block/Punch are performed in a *continuous* motion (sitting stance, standing up) {15Volume Encyclopedia, 2008}  
movements #16,17,18 and 19 the high Hooking Block/Punch are performed in a *continuous* motion (walking stance, going into a sitting stance) {15Volume Encyclopedia, 2008}

Choi-Yong : movements #32/33 and #39/40 the middle Hooking Block/Punch are performed in a *continuous* motion (maintaining a parallel stance) {15Volume Encyclopedia, 2008}

It would seem that the only combination PalmHookingBlock/Punch in a *connecting* motion is performed while maintaining a walking stance.

All other combinations PalmHookingBlock/Punch {up to 3rd Dan pattern} are in *continuous* motion {15Volume Encyclopedia, 2008} {Note: the Condensed Encyclopedia does not mention continuous motion in these patterns} and are either performed in a sitting stance or parallel stance, or are moving from a walking stance into a sitting stance.

## ***Sinewave***

While it is relatively easy to practice abdominal breathing when sitting or standing quietly, it is much more difficult to perform when engaged in activities requiring physical effort and movement. Yet, the timing and rhythm of physical movement are intricately linked to the breathing.

Breath control and sinewave depend on each other and interact.

One way to get a better understanding of sinewave movement, is to study the basic principles of *stepping*:

1. The body must always be half facing the opponent when stepping backward and forward.
2. The body usually becomes side facing the opponent when stepping sideways.
3. The knee spring of the stationary leg must be flexible and relaxed while stepping.
4. The foot should be moved smoothly, leaving about one centimeter from the ground or floor except in a rear foot stance.
5. The foot should not be dragged or lifted unless absolutely necessary or advised by an instructor.
6. Keep both legs slightly bent throughout the stepping.

### *The function of the knee*

Unless the stationary leg remains flexible, the movement will definitely be inhibited and lack smoothness causing a difficulty in bringing the hand and foot into a simultaneous action due to the loss of dynamic stability.

Since the loss or gain of the mass depends entirely on the knee of the stationary leg, the proper use of the knee spring is the key to this technique.

Bending the knee slightly gives the leg greater flexibility, imparting more momentum and speed to the motion. The knee should be bent about 30 degree.

This is the correct way to move as it allow to perform a sine wave in opposite to horizontal wave or saw tooth wave.

### *Outcurved line*

In this method, the stepping foot reaches the destination passing the center line between the feet. The outcurved line is the one the student of Taekwon-do must follow with the exception of rear foot stance.

One might be surprised to learn that a similar stepping was already described in the principles of movement in the *Bubishi* :

[The *Bubishi* is a classic Chinese work on philosophy, strategy, medicine and technique as they relate to Martial Arts. For hundreds of years *Bubishi* was a secret text passed from master to student in China and later in Okinawa]

“foot movement must be similar to walking. One initiates the step naturally and concludes it with firmness.

Smoothly make each step identical to the last, with the big toe of the rear foot aligned with the heel of the other (shoulder-width apart).

Foot movement, both in a forward and backward direction should correspond to the crescent shape of a quarter moon with the knees slightly bent, moving quietly”.

*At which stage of the stepping do we turn our stationary foot into the position of the next stance we are moving into?*

- while we start, using the knee joint of the stationary foot to move forward {1st down of the sinewave}
- when the stepping foot is roughly at the level of the stationary foot {using the upward movement of the sinewave, which would facilitate the pivoting}
- towards the end of the movement together with the finishing of the technique {2nd down of the sinewave}

In the encyclopedia the pictures and the drawings seem to show the foot pivoting during the upward movement.

All the principles seem to be linked together and show how important it is to gradually improve one's skills starting with the very fundamentals.

In addition to executing a technique properly, one has to use correct stances and correct stepping. The sinewave then should become a natural movement, not a forced or artificially created move.

At this stage, we should be able to combine sinewave and breath control.

In the method of controlled breath, the tensing the abdomen and holding the breath would take place at the moment when we reach the apex, which is also the moment when we are in our intermediate or loading position.

It takes a long time and a lot of practice to do a technique correctly and to be centered, to have balance, to be rooted and so to reach relaxation. From this stage on we can intensify our study of controlled breathing.

Practice and perseverance are the key for improvement in martial art. Writing this essay has given me an additional opportunity to search for answers.

It is very humbling to realize more and more the complexity of Gen Choi's lifetime work and amazing to discover gradually how the different aspects are connected.

Gen Choi's Taekwon-Do not only provides us with a perfect physical and mental training, but furthermore, the concept of breath control combines the principles of Soft and Hard as complementary forces, not unlike Yin and Yang, and constitutes a part of the Do, the Dao, the "way".

Encyclopedia of Taekwon-Do    Choi, Hong Hi  
Taekwondo    Marc Tedeschi  
Bubishi, The Bible of Karate    Patrick McCarthy  
Shaolin White Crane    Yang, Jwing Ming  
Qi Gong    Yang, Jwing Ming  
The Complete Works of Lao Tzu  
Martial Arts    Peter Lewis  
Total MindBody Training    Jacob Jordan  
Breathing Techniques    GM Dong  
Breathing    Aaron Hope  
Wikipedia