

How to get into the zone of peak performance, and increase your health and well-being.

by Paul Mracek

Everybody is looking for the extra edge to win and be outstanding whether it be in sports, arts or in business. How is it possible to have the trifecta of peak health, peak performance and peak flow (being in the zone) on demand and apply it to anything that you do?

Are peak performance and flow simply subjective perceptions of performance excellence? Or are they distinct mental states, a defined set of optimal behaviours, a heightened sense of self-confidence, or something endowed to a select few individuals?

We have all experienced at some time what is referred to as a sense of optimal state of consciousness, those peak moments of total absorption where the sense of self vanishes, time flies, and all aspects of performance go through the roof.

One Art that has practiced this physical and mental awareness, focus, discipline and calmness for well over a thousand years is Martial Arts; and thanks to Neuroscience we now have an insight into what are the factors and preconditions needed to be able to get into the zone and achieve extraordinary results.

The most common question that comes up in martial arts classes is how can we learn this? It would be great if we could bottle it. Well thanks to neuroscience, we may now have a way.

The Flow State

Research findings in neuroscience have identified three conditions that reveal how and when flow occurs: i) alpha/theta brain waves, ii) brain coherence, and iii) deactivation of the dorso-lateral, pre-frontal cortex (DLPFC).

Firstly, the point at which the flow state occurs is when alpha brain waves crossover to theta brain waves, i.e. at 8 Hz (cycles per second) and below. As brain activity slows from the relaxing alpha state into the hypnagogic* theta wave (below 8 Hz), the neural network becomes highly attuned. At the same time, super-fast (40-100 Hz) gamma waves, triggered by the theta waves connects information drawn from various parts of the brain which are involved in the specific activity and or skill, allowing learning, procedural memory, and self-expression to settle into rhythm.

Next, synchronization between the left and right hemispheres is triggered, which is known as *brain coherence* and is another condition for flow to occur. In martial arts this is achieved through bi-lateral actions that stimulate both hemispheres and work complementarily to integrate what is often said to be artistic movements with the technical skills on both sides of the body. The physical aspect of the training includes such things as cardio exercise, meditation, as well as well-known tai chi and yoga movements and of course breathing to promote brain coherence.

Enhancing Flow

In flow, as attention heightens, the slower and energy-expensive extrinsic system (conscious processing) is swapped out for far faster and more efficient processing of the subconscious

*Reference: *(relating to the state immediately before falling asleep)*

intrinsic system. We're trading energy usually used for higher cognitive functions for heightened attention and awareness.”

This is one of the main reasons flow feels flowy—because any brain structure that would hamper rapid-fire decision-making is literally shut off. This is a temporary brain state called transient hypofrontality* and has shown that it enhances flow by lowering the activation of the DLPFC. This part of the brain holds the inner critic, that voice of doubt that can trigger cognitive anxiety. Cardio exercise redirects blood flow away from the DLPFC to the motor parts of the brain, enabling a more embodied focus without interference from self-consciousness, distraction, or negative thinking. We act without hesitation. Creativity becomes more free-flowing, risk taking becomes less frightening, and the combination lets us flow at a lot faster rate.

Researchers in neurochemistry have determined, that endorphins, norepinephrine, dopamine, anandamide, and serotonin are all involved in flow. All five are pleasure-inducing, performance-enhancing neurochemicals, upping everything from muscle reaction times to attention, pattern recognition and lateral thinking—the three cornerstones of laser-focused problem-solving.

Neuroscience has identified six key skills that can reliably trigger peak flow, they are relaxation, imagery, goal setting, self-talk, concentration, and pre-performance routines.

1) Relaxation

Is the first key because performance anxiety usually inhibits peak performance. Anxiety and increased physiological awareness must be controlled before peak performance and flow can occur. Deactivation of the sympathetic nervous response (commonly known as fight, flight or freeze) and stress activators is necessary to allow a shift to the parasympathetic response (rest and relaxation). In martial arts this is made to happen through the use of controlled breathing which triggers the change in the autonomic nervous system.

Breath is the only critical physiological function that operates unconsciously, but can, also, be directed consciously. While your breath is regulated by very complex chemical sensors in multiple places throughout your body, it is, also, tied to specific activities, perceptions and emotions. Regulation of breath is critical to stress reduction including mental relaxation. The mind follows the breath, so when you actively slow down your breathing, you slow down the brain waves which equates to fewer thoughts and creates the conditions for flow to trigger; in martial arts the concept is known as ‘Mind, Breath, Body’.

Learning controlled breathing as is practiced in martial arts, yoga or meditation provides the core skill set to be able to slow down the brain as well as any anxiety. Understanding the relationship between brain waves and breathing levels provides the required pre-conditions to be able to take charge of your health and peak performance.

Brain Waves

When you drop a small stone in water, you see waves. Similarly your brain have wave patterns. The brain waves are measured by **EEG** (electro encephalograph). Researchers have established that brain waves can be split into four main types, i.e Beta, Alpha, Theta and Delta. There has been recent studies that have subdivided these into further levels which we will not look at in detail this article.

*Reference: *Hypofrontality - state of decreased cerebral blood flow (CBF) in the prefrontal cortex of the brain.*

These brain waves also have peaks which are similar and can be compared to the peaks we see in the waves water makes when the small stone was dropped in, as mentioned earlier.

The number of times a peak in the wave appears in one second is called a Hertz, ("cycles per second"). Diagram 1 shows the four brain wave levels of Beta, Alpha, Theta and Delta with their associated details of brain wave frequency level and body responses.

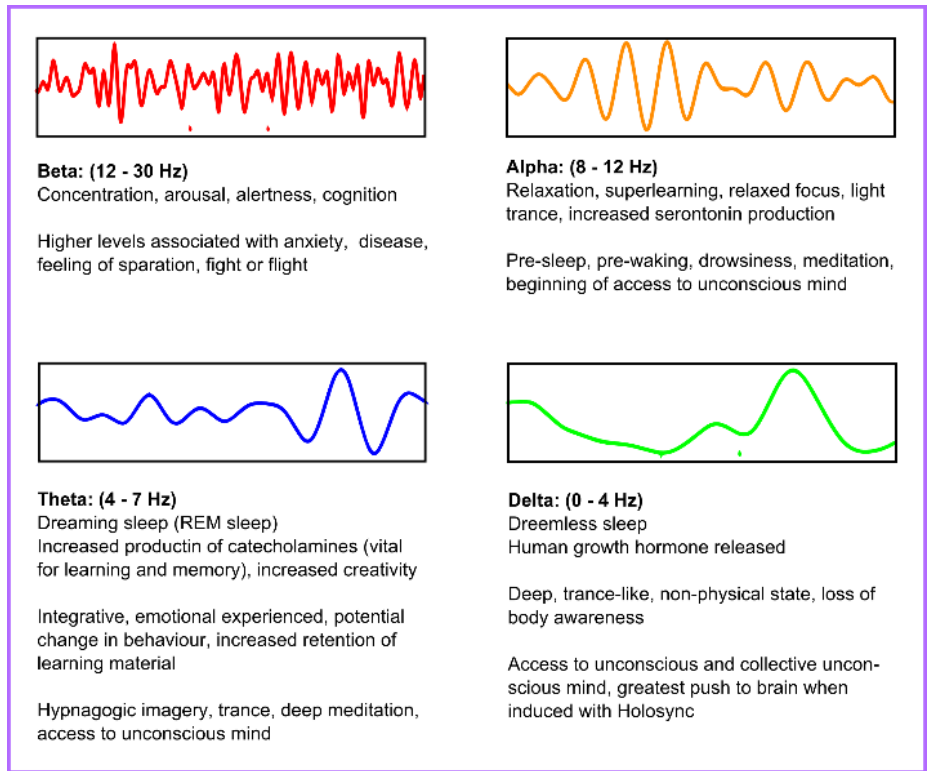
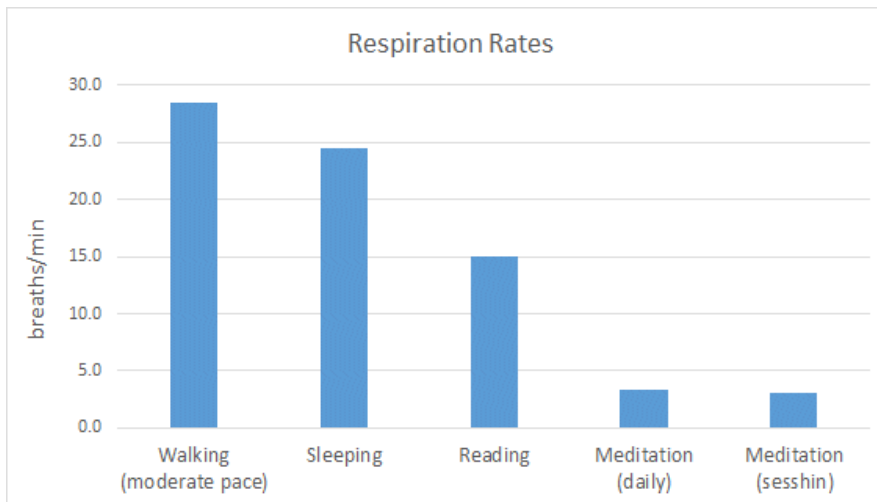


Diagram 1: Brain Wave Categories-Details

Each of these brain wave levels can be associated directly to your breathing respiration rate, i.e. the number of times that you inhale and exhale per minute which happens during exercise, training or any other activity. For reference diagram 2 shows a comparison of breathing respiration rates for various activities from walking to meditation.

Diagram 2: Respiration Rates Of Activities



For example the average adult respiration rate is around 15 breaths a minute, when awake, at rest; compared to a brain wave activity level of Beta (12-30 Hz).

Controlled breathing has been known in martial arts for centuries to have a direct impact on calming the mind and

allowing increased focus. Research in neuroscience has shown a corresponding reduction in brain wave activity at this time. The practice of controlled breathing has become very popular in recent times in sports, business and for personal health and well-being with the practice of 'Mindfulness'.

Mindfulness is simply a particular way of paying attention. It is about being in the present moment and focusing your attention in an open, flexible and non-judgemental way. It does not just involve sustaining your attention, but also being able to deliberately shift your attention to other things when it is important or advantageous to do so, as is needed for you to get into the zone or flow and peak performance.

Breathing – we’ve been doing it wrong...

Although we’ve been breathing all our lives, some of us are better at it than others which is probably why you often here in martial arts that some people find it hard to control their breathing. The first thing to know is that in martial arts, tai chi and yoga breathing is done through the nose. It has been shown through numerous studies that *nose breathing* is better than mouth breathing, and provides the key advantages of:

- Absorption of oxygen which occurs from the air on the exhalation and since nasal breathing slows the air movement, the lungs have more time to extract the oxygen from the air.
- Drawing more oxygen from nasal breathing due to the lower lobes of the lungs which promotes relaxation
- Resulting in a lower heart rate and rate of respiration when comparing nasal breathing to mouth breathing
- Increasing alpha brain waves (more relaxing) when comparing nasal breathing with mouth breathing
- Increased health as breathing through the mouth is inefficient and leads to hyperventilation. This can worsen symptoms of asthma, heart disease and high blood pressure.
- Increased calmness and focus compared to mouth breathing which has been linked to anxiety, stress, addictions, sleeping problems and negative emotions
- Improved posture, less slouching and reduced muscular tension compared to mouth breathing.

Controlling the mind through the breath?

Here are some other interesting things that you may not have known. Breathing through your right nostril will give you more energy and breathing through your left nostril will help you to relax and calm down.

The nerves in your nasal passage correlate to the different hemispheres of your brain and nervous system. Breathing through the right nostril will stimulate the rational, left side of the brain and the sympathetic nervous system; increasing your energy and improving left brain functioning such as speech, communication, problem solving and analysis. Breathing through the left nostril has the opposite effect, it stimulates the emotional, right side of the brain and promotes the parasympathetic nervous system or relaxation response; calming you down and improving right brain functions such as creativity, intuition, imagination and the ability to take in the bigger picture. It is normal that throughout the day, one nostril will dominate in breathing, usually the right; and when resting and lying on one side the nostril that’s on top will dominate in breathing.

So when you start down the track of daily meditation keep this in mind and it will help to provide the brain and the body with the routine of correct mind and breathe control. A common question that is asked in martial arts is how long a person should meditate to start getting some benefit. As a guide daily meditation over a minimum of eight weeks will help to reduce anxiety, lowering the resting heart rate and enhance brain plasticity.

As a start into meditation it is common in martial arts for students to be taught breathing patterns as part of learning kata’s (a series of prescribed moves such as blocks, kicks, etc.) so as to create the basis for controlling awareness, focus and calmness by lowering brain wave levels. As a guide the following table provides a good start into controlled breathing to get into flow and peak performance, which improves health and well-being.

Brain Wave	Breathing Pattern (out/hold/in/hold_)	Respiration (breaths/minute)	Body Area Affected
Beta (12–30 Hz)	1-1-1-1 (4sec)	15 *	Neck, lung, heart, hand, leg, foot
Alpha (8-12 Hz)	2-1-2-1 (6sec)	10**	Stomach, intestines, waist, kidney
Theta (4-7 Hz)	4-2-4-2 (12sec)	5	Shoulder, ear, face, nose, mouth
Delta (0-4 Hz)	6-3-6-3 (18sec)	3	Eye & face muscles, nose, mouth, neck

Note: * (Adult resting rate); **Once you go below 10 breaths a minute you start to engage the parasympathetic nervous system

Relearn How To Breathe

One of the common mistakes is that people start breathing with inhalation, however the lungs need to be empty prior to starting the breathing pattern. The best way to do this is to exhale first, to make sure that all the air (CO₂) is out and then start the breathing pattern, think *Out / Hold / In / Hold*. So with that as the starting point let's have a look at the process to relearn how to breathe.

Breathing Flow Process:

Remember to inhale and exhale through your nose. If you find this difficult when you first start then you can use your mouth, for exhaling only until you are able to slowly transition to the nose once you have become more proficient through practice.

1. Breathe out to empty lungs fully.
2. Inhale, filling your lungs from the bottom to the top, instead of taking short sips.
Most people only use a third of their lung capacity
3. Hold your breath to allow the oxygen to saturate the cells
4. Exhale with a short burst. This helps activate your diaphragm, which most people don't use.
5. Exhale with a long, slow finish to empty the lungs. Breathlessness comes from not expelling enough CO₂.
6. Hold make sure that lungs are empty, and to stop the urge to gulp air uncontrolled.
7. Inhale, filling your lungs from the bottom to the top, instead of taking short sips.
8. Hold for a moment to allow the oxygen to saturate the cells.
9. Exhale slowly and completely (as per 5 & 6 above)
10. Repeat steps 2 through 6 for five minutes.

Do this exercise five times a day and you'll start thinking and performing better in no time.

2) Imagery

This engages the power of the senses, especially visualization, to mentally see what peak performance looks, feels and even tastes like when it is achieved. Cardio imagery and rehearsal is a newer technique that combines mental rehearsal with moderate cardio exercise (120-140 bpm, heart rate) to prime learning and reinforce process outcomes. Mental rehearsal is effective because mirror neurons activate various muscle groups through the peripheral nervous system in the same way as physical practice does. The brain cannot tell the difference between real and imagined or perceived practice to achieve the expected results.

3) Goal setting

This is becoming well known especially in sports as a motivational tool for directing a person's efforts towards optimal learnings and outcomes. Goal setting provides the framework of focused deliberate practice to be successful and continues to motivate you to concentrate your efforts on the most important challenge. As an example, exercising in the morning before training in martial arts, while mentally focusing on what needs work, helps identify training goals and primes the brain for learning later on.

4) Self-talk

This reveals the psychological relationship between you and the other person, for example in martial arts this would be you and your opponent, and having a positive outlook and being mentally tough when under stress. Research shows that positive thoughts and feelings promotes creativity for problem solving whereas negative emotions stimulates critical thinking that can lead to self-consciousness. Not surprisingly, a positive mental attitude is a key component of flow and getting into peak performance.

5) Concentration

As you would expect increased attention skills and mental discipline to focus on the challenges involved in training directly impacts on performance and can be applied to most real life situations, whether it be in sports, business or personal relationships. The mind must be fully engaged in the moment, free of distractions, and immersed in the task. Quite simply, the best way to build focusing skills is to learn to live in the moment. This has been the basis of the increasing interest in Mindfulness's techniques of recent times, and understanding the difference between 'Mind full versus Mindful'. As I am sure you have heard said 'Simple doesn't always mean easy', as many people initially think!

6) Pre-training performance

Get use to establishing a pre-training routine that allows you to find the point where you can activate a positive peak performance mind-set. Martial artists use meditation to quieten their mind, this is often refer to as the Wuji* point, it is the space in between breathes and provides a state of calmness. The tools needed to achieve this we have already talked about with breathing patterns and the use of mindfulness or centring exercises, these will provide the foundation to be able to lock into the zone or flow and engage your positive energy to achieve your imagined known outcome(s) and at the same time converts anxiety and stress into success.

So when it happens, embrace it and I am sure that you will keep using it to achieve success!

*Reference: * Wuji is a state of emptiness or simply a single point in space. There is no discrimination and there are no polarities (or poles). According to Yi Jing (i.e., Book of Change), original universe was in a Wuji*

=====

Resource Box:

Mr. Paul Mracek, consulting CEO and martial arts Master has over 30 years experience in Asia, Europe, USA and Australia establishing and building successful managers, leaders and businesses. He is a master trainer, coach and author on success, business, leadership, balance in health and well-being by applying his “Warrior Mindset”.

Paul has a unique understanding of western methods combined with eastern philosophy that enables him to provide unique insights into achieving source level change and peak performance personally and professionally.

Co-founder: AXIS NeuroPerformance ®
www.AxisNeuroPerformance.com

Trainer & Master Coach – NLP & Kotan Method
Trainer & Master Coach: Time Line Therapy® & Hypnosis

Founder: Martial Arts Style – Taekwonjitsu
www.taekwonjitus.com

7th Degree Black Belt - Taekwonjitsu
6th Degree Black Belt - Taekwondo
OCFM Certified Coach; PPDT Certified Instructor

Founder & CEO: Consulting, Mentoring, Coaching – Kotan Australia Pty Ltd
www.KotanAustralia.com

Chartered Professional Engineer
Fellow: Australian Institute of Management
Graduate: Australian Institute of Company Directors

Contact Details:

email: paul@kotanaustralia.com

=====

References:

Article: You’re Breathing All Wrong By Chuck Thompson

Article: Changing Brainwaves with Breathing Techniques By Charles Hopkins 01/17/2007 | Health

Article: The Neuroscience of Peak Performance and Flow, April 27, 2016, by *Patrick Gannon, PhD*

Article: The Beauty Of Brainwave Frequencies

Article: Breathing Alters Perception: Jonlieffmd.com/blog/ June 29, 2014

Article: Self Observation Alters Perception: January 5, 2014

Article: The Science of Peak Human Performance: Steven Kotler April 30, 2014