Wilfried Ehrmann & Hans Steinbichler

Coherent Breathing

The Exercise Book

The Easiest Way to Relaxation and Balance

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Foreword

This small book in your hands can change your life. Coherent breathing has already had a positive influence on the lives of many people: Breathing and heart problems are eased or disappear, circulatory problems dissolve, sleep disorders are remedied and anxiety is reduced and can be managed more easily. In addition, the method presented in this book offers acute help and at the same time effective prevention against stress, one of the main problems of our time.

We have written this book to bring coherent breathing to a wide audience. It is written in a way which makes it easy to understand. The book is practice-oriented. You will learn all the essentials of the method so that you can use it for yourself. The background knowledge helps you to understand why breathing should be done the way it is prescribed. Because: When you have understood WHAT you are doing and WHY you are doing it, the HOW is much easier!

Many additional exercises will help you to avoid difficulties that can occur with coherent breathing and to gain greater benefit from the method. You will also get suggestions on how to integrate coherent breathing into your everyday life.

If you are interested in more information on coherent breathing, we recommend the book „Coherent Breathing" by Wilfried Ehrmann, Tao Verlag 2017.

It is our mission to bring coherent breathing to everyone who is open for it. And is everyone who is interested in simple methods to improve their health, performance and joy of life. Coherent breathing is easy to learn and, with the necessary discipline of practice, inevitably produces positive effects. It is free of side effects, except that you will become more relaxed and calm. It has no contraindications and can be practised by anyone, anywhere.

While writing, we met Ka and Lori, who now accompany us through the book. I'm sure they will be happy to see the word about coherent breathing spreading and becoming a useful life aid for more and more people.

We wish you much joy, profit and success with coherent breathing. If you have any questions about the method or how to practice, or if you would like to take part in one of our courses, please feel free to contact us.

Wilfried Ehrmann and Hans Steinbichler

Introduction

Life, imbued with consciousness, tends toward order and coherence. (In this regard, we can help this process or hinder it by using our intention, or not…)

In this regard, we have the freedom to support this process by using our intention. If we are ignorant about this opportunity, we hinder the tendency of life towards coherence.

Here I refer to "self-governance", how we decide to live our lives, e.g. what we do, how we act, how we eat, our posture, and most importantly, how we breathe. This is because how we breathe is a key determinant of our ability to self-govern.

My thesis is that breathing well cleans, nourishes, and energizes the brain with every breath, and with a healthy brain comes mental clarity and strong willpower. It isn't just the brain that receives this benefit, it is the entirety of the body, every cell.

Coherent Breathing® accomplishes this by generating wave action in the circulatory system, this wave propagating throughout the fluid environment of the body, hydrating, cleansing, and nourishing every cell with every breath we take.

When we breathe this way we feel different and we function differently. This difference is measurable using EEG, EMG, EDR, HRV, Valsalva Wave biofeedback, blood pressure, and hand temperature – virtually any measure that we want to apply to the human body.

It is the action of the diaphragm which sets this wave action in motion, the diaphragm being controlled by the phrenic nerve, the phrenic nerve being under both unconscious and conscious control. Ultimately, it is the mind that generates the wave.

Hence, we all have the ability to control our diaphragms to breathe "coherently" if and when we wish, thereby realizing these benefits to health, well-being, and performance, and of course longevity, in that healthful circulation wards off a myriad of disease conditions. Add to this, realizing our potential as human beings, no matter what the pursuit.

I've spent much of the last 20+ years instrumenting the body

in order to understand the inner workings of Coherent Breathing. In summary, the brain sees the wave action and synchronizes the action of the entire nervous system with it, including that of the circulatory system at large, thereby "closing the loop". It is this closed loop that results in breathing induced heart rate variability (HRV).

Coherent Breathing is very simple to learn, practice, and adopt. In my own practice, I propose to my clientele that a single session, performed correctly will convince one of the benefit. Once convinced, the rest, adoption "as a practice" or "as a way of life follows". Personally, I've chosen the latter.

I applaud this work by Drs. Wilfried Ehrmann and Hans Steinbichler, which has the intention of making Coherent Breathing accessible to anyone and everyone.

Stephen Elliott

President & Life Scientist

Recommendation

It is an honour for me to recommend the book„Coherent Breathing - The Exercise Book".

As a medical doctor and international expert in „Peak Performance Health Coaching" who understands the depths of human physiology as an important part of knowledge for my work, I can only compliment the authors of the book, Wilfried Ehrmann and Hans Steinbichler, for describing the complex nature of breathing in such a simple and easy to understand way.

The integration of this knowledge, which is precisely formulated and described in clear, complementary images, can change your life for the better. It can increase your stress resilience as coherent breathing itself directly and positively influences the vagus nerve, the main component of the parasympathetic nervous system. Reducing the breathing rate and practicing additional abdominal breathing has a direct effect on the relaxation of the vascular and other systems of the body and especially on HRV (heart rate variability).

The book on coherent breathing exercises is a valuable guide to what really works to change your energy and what leads to a more relaxed lifestyle.

Dr. Danijela Debelić, specialist in anesthesiology,
cardioanesthesiologist, co-founder of the Brain Research Unit
(International Laboratory for Heart-Brain-Body Energy Measurements),
health expert for peak performance, private and group coach

PART 1 - The theory of coherent breathing

What does coherence mean anyway?

The term coherence comes from physics. It is about the alignment of waves that form a common rhythm, which is called coherence. We know from various experiments that a coherent system is more likely to influence an incoherent system and bring it into coherence than vice versa. This means that in nature, coherence is stronger than incoherence, or: chaos strives towards order. Or: We humans strive from disharmony to harmony.

With coherent breathing, we want to create an equal rhythm between different important systems in the body - especially between breathing, heartbeat and blood circulation. With this unison, a sustainable basis for our health is created, because we come into a state of inner harmony between body, soul and spirit. What distinguishes coherent breathing is the small amount of effort with which we achieve a far-reaching effect: We only need to regulate our breathing in the right way.

Hi Ka, I hear you've been working on breathing lately?

Hi Lori, yes, that's right!

But why? We breathe all the time anyway?

Exactly because of this.

What do you mean?

Because we have to breathe and breathe all the time, we should know whether we are doing it right or not.

Really, you can do something wrong with breathing?

Maybe that's not quite true about „doing it wrong". But we often do not breathe in the way that is best for our health.

Aha, now it's getting interesting for me! Tell me more!

The coherent breathing method

The basic rules of coherent breathing are easy to understand and practice:

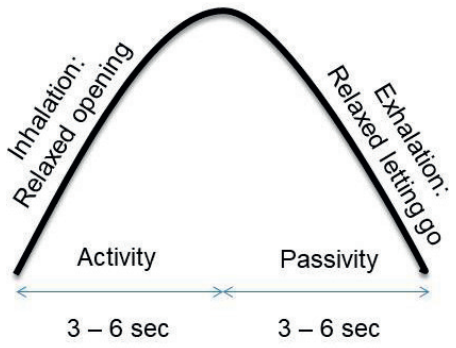
1. Breathing is regular, so we take approximately the same time for inhalation and exhalation. We do not pause between breaths. The inhalation flows into the exhalation and the exhalation into the inhalation.
2. We follow a steady and consistent rhythm during the exercise time. Three to six breaths per minute are recommended. This corresponds to five to ten seconds for inhaling and five to ten seconds for exhaling.
3. We breathe with a medium depth. If the diaphragm covers a distance of ten to twelve centimetres between maximum tension and maximum relaxation, a diaphragmatic movement of four to six centimetres is recommended for coherent breathing. We therefore use the maximum breathing volume to about 50 %.
4. The exhalation is relaxed. Inhalation requires a certain degree of muscular tension, caused by the contraction of the diaphragm and intercostal muscles. The idea of pushing the abdomen out as gently as possible at the appropriate pace and letting the inhalation happen by itself can help. The exhalation consists of simply letting go of this tension.

The basic rules in detail

We will now explain the basic rules in more closely, because often the difficulties show up when we go into the details. As human beings, we differ so much from one another. Each of us has a different organism, so that even with the simple method of coherent breathing, different problems sometimes arise that can be solved with the following hints.

Regularity

The main purpose of coherent breathing is to synchronise breathing, heartbeat and blood circulation. When breathing in, the air flows into the lungs and at the same time the blood is also drawn more strongly into the lungs because the diaphragmatic movement creates a negative pressure in the chest cavity. When you exhale, the air leaves the lungs again. At the same time, the blood is distributed throughout the body and flows increasingly away from the heart into the muscles and organs. The technical term for this dynamic is called the Valsalva wave. This will be explained in more detail later.



Regular breathing

The same time should be chosen for both processes, because then the whole system is in an optimal balance. Breathing, heartbeat and blood circulation only come into harmony when the length of inhalation corresponds to the length of exhalation. In this case we achieve the best breath-cardiovascular coherence.

In order to get the feeling for the regularity of breathing, it is useful to work with timekeepers in the beginning. The easiest way is to follow the seconds when looking at a clock or an electronic device. If you can feel

your own heartbeat well, you can also count the heartbeats. Even more practical are apps that are available for smartphones, where the breathing rhythm can be adjusted up to a tenth of a second. An acoustic signal accompanies us while we breathe. This way, we don't need to check the time with our eyes following a second hand. Pleasant sounds regulate the transition from inhaling to exhaling and from exhaling to inhaling. Listening is better for relaxation than following a hand on the clock. The eyes remain closed, the attention goes inwards. The devices provide the exact impulses in the sense of regularity.

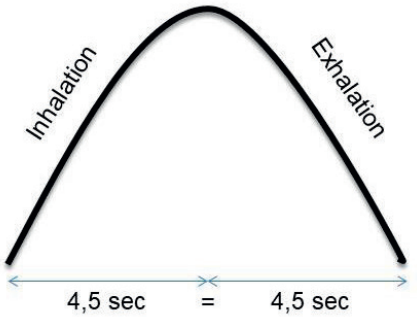
After some time of practising with an external signal generator, we gain a feeling for the regularity and also for the frequency. From then on, we can practise coherent breathing without external aids and are independent of devices. This gives us the freedom to practise coherent breathing virtually anywhere. We no longer need a completely exact signal generator, because our body never functions completely exactly anyway. In the free flow of the breath in an approximate regularity, we best fulfil the requirements of this first basic rule. Nevertheless, it is advisable to use a timekeeper again from time to time during free practice to see if the timing we have become accustomed to is still appropriate for a coherent rhythm.

In Chapter II, we present a comparison of some external supports and give practical tips for application.

Frequency (speed)

We know from measurements of the heart rate variability that it reaches its best performance in the range of 3 to 6 breaths per minute. With these breathing frequencies we can therefore generate the most favourable results of our heart rate variability. When we breathe faster than the optimal resonance frequency, the sympathetic nervous system comes into play too strongly: the breathing is taken over by the stress system, rising upwards: the faster we breathe, the more sympathetic dominance and the more stress is created. With the dominance of the nervous system in the sympathetic range, the heart rate variability successively decreases.

Below three breaths per minute - i.e. in the range of very slow breathing - the regularity of variability is lost, the differences in heart rate between inhalation and exhalation become more irregular and chaotic.



Example of a coherent breathing rate

So which breathing rate should we choose for our practice within the range that is favourable for HRV? One parameter for this is physical lung size in relation to body size. Taller people have larger lungs and hearts, and blood circulation has to cover greater distances in their circulatory systems. For them, breathing will fit in the smaller or slower frequency range, that is, in the region between three and five breaths per minute. Smaller people will feel more comfortable in the slightly faster frequency range at five or six breaths. For children, the best results are achieved usually between seven and ten breaths/minute.

For some people (especially those with habitual short breathing) who begin coherent breathing exercises, a regular frequency of five to six breaths per minute can only be achieved under pressure and strain. They have to extend their breathing far beyond the habitual level that it can only be done with effort and strain.

Since any form of stress and pressure is counterproductive for practising breath coherence, we recommend starting the practice with a frequency that can be comfortably maintained over a period of a few minutes, even if it is, for example, ten or twelve breaths/minute. Subsequently, the aim should be to gradually lengthen and slow down the breaths until the recommended frequency range is reached. Practising the successive slowing down of breathing - combined with a regular pattern - is already an important step towards reducing inner stress. Because if we can't breathe slowly, there is a deep rooted stress at work - which means that the body is permanently overdriven by the sympathetic nervous system. With each step closer to the optimal frequency, our autonomic nervous system regulates itself back to its optimal balance.

Part 2 contains exercises to slow down breathing. Here is a foretaste:

EXERCISE FOR SLOWING OUR BREATHING

Breathe in on a four count and choose the interval that feels good and relaxed for you. When you feel comfortably connected to the rhythm, lengthen the exhalation by counting to five on the exhalation. As soon as you feel good about it, count to five on the inhale as well. In this way, you can lengthen your breath even more, as you like.

By breathing slowly, we prevent the excessive exhalation of carbon dioxide. A sufficient amount of carbon dioxide in the blood is the best guarantee for the optimal supply of oxygen to all cells. For this reason, too, practising lengthening the breaths is recommended and worthwhile in terms of securing our health in the long term.

Depth (volume)

If we breathe too shallowly, there is a danger that we do not use the diaphragm enough for breathing. This is the reason for many breathing disorders. The breathing is operated by the auxiliary breathing muscles and not by the diaphragm, which is our strongest and most important breathing muscle. With this misuse, we overstrain the -auxiliary muscles, and tensions in the shoulder and neck area are the usual unpleasant consequence, even leading to headaches or migraines.

But even if we only use the diaphragm to a small extent, e.g. by only allowing an up-down movement of one to two centimetres, we restrict the space for the joint movements of heart and lungs and less blood can be drawn in and expelled. In this case, the diaphragm supports the heart in its pumping activity only to a small extent.

On the other hand, according to available evidence, 50-60% of the maximum possible breathing volume is sufficient for practising coherent breathing. We need the full capacities for breathing under performance conditions, e.g. during sports, physically demanding work or when singing or playing a wind instrument. Practi-

sing should be done under relaxed conditions and not at maximum volume, which can again be a stress factor. The exhalation should be relaxed, as will be explained in more detail in a moment - this keeps us in a range of easily deepened breathing, in a pleasantly expanded comfort zone, and does not experiment with expanding and contracting the breathing spaces to its maximum. In the middle segment of the available volume, we can let the exhalation flow out, free from any excessive control.

Again, for many people who have not yet worked a lot with their breathing, practice will lead to a gradual expansion of the breathing volume so that slowly the area of pleasantly deepened breathing becomes larger. In effect, this means that the total surface area of the alveoli expands, intensifying and improving gas exchange and metabolism.

How do you easily determine the right depth of breath? Take a few full breaths so that you open and stretch your breathing spaces in your chest, abdomen and lower back as much as you can. This will give you a sense of your maximum breathing volume (the vital capacity) and the maximum movement your diaphragm can make while breathing.

EXERCISE FOR THE RIGHT DEPTH OF BREATH

To feel the diaphragm, place one hand on the abdomen. Breathe in as deeply as you can for a few breaths. This will give you a feeling for the maximum breathing volume. Then breathe shallowly for a few breaths so that the diaphragm hardly moves. Finally, find a good centre between the two extremes. You are now in a medium depth of breathing. It will be wider than your normal breathing, but less than the maximum of your capacity. You will notice that your diaphragm moves about the width of a hand from top to bottom. The abdominal wall will move visibly and tangibly. Now take a few nice coherent breaths with this depth.

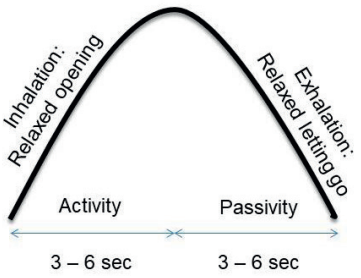
Relaxation of the exhalation

Our breathing is maintained by muscle activity. Muscles basically have two directions of movement: contraction and letting go of contraction. The former is labour, the latter is the interruption of labour, so the former requires energy, the latter does not.

We notice this phenomenon when we simply clench our fist. We need energy to do this, and we also feel it. When we open the fist again, we stop applying force and the fist opens by itself. Of course, we can also open the fist with force and then immediately notice the difference between tension and relaxation.

In breathing, this principle corresponds to the contraction while inhaling and release while exhaling. During inhalation, the muscle groups involved in breathing contract; during exhalation, this tension is released and the breath is expelled to the extent of relaxation. The process of **exhalation** therefore basically consists of muscular relaxation. Nevertheless, for many people relaxed exhalation is easier said than done: We have become accustomed to exhaling with (perhaps only slight) pressure. So we act with force and energy where it could actually go by itself, like when we forcefully open our fist without necessity.

This way, we tend to have stress included in our exhalation. This means that the sympathetic nervous system, which is responsible for tension processes, is involved in both inhalation and exhalation. Consequently, the whole organism is in a state of stressful and potentially pathogenic imbalance because the parasympathetic part is strongly reduced.



Relaxed exhalation

Therefore, it is of central importance to find the way to relaxed exhalation. This principle applies to many schools of breathwork, so that we are tempted to rephrase Confucius' 2500-year-old sentence, „The first thing to be taught is the breath", for today as: „The first thing to be taught is the relaxation of the out-breath".

To relax the exhalation is to strengthen the parasympathetic nervous system, and this is the key to establishing breath-heart coherence. Without equality of the parasympathetic nervous system in the breathing process, there is no coherence. Relaxation, however, cannot be „done" because it consists in non-doing. Our body does not normally exhale by being active, but by interrupting action until in the next inhalation action is needed again.

EXERCISE FOR RELAXED EXHALATION

So how can we learn to relax the exhalation? You will find many more suggestions in the exercise section. Here is a foretaste:

THE IDEA OF RELAXATION

In mindful self-study and patient practice, you can work with the idea of relaxation: I imagine that when I exhale I let everything fall with ease, that when I exhale I become light and free, that when I exhale I let nothing but the earth's gravity take effect.

THE EXTENDED FIST EXERCISE

Raise a hand with tension when you inhale and release it when you exhale, taking out any force - the hand simply falls down. So the inhalation is with force and effort - like the arm that is lifted and needs energy to do so. The exhalation is done powerlessly - similar to the hand falling down. In contrast, you lift the arm again and lower it with tension, as if you had to bring something heavy slowly to the ground. Now muscle activity is involved.

Once you have gained a sense of relaxation as you exhale, go one step further and allow a loose and slow relaxation so that all the air does not immediately flow out as you release the exhalation, but leaves your body in a slow form. You imagine that you are relaxing more and more as the breath slowly flows out. Like the waves on the seashore, this up and down of your breathing is a calm and steady process, tireless and infinitely patient.