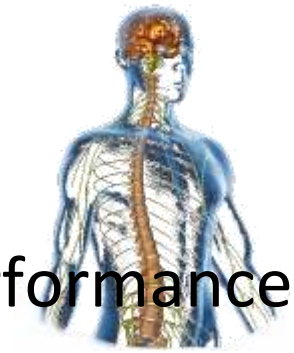
NEUROLOGICAL TRAINING FOR OPTIMAL PERFORMANCE

N-TOP

Nerves of steel



A New Millennium. A New Performance!

ActiVe Respiro / Relaxation

For Maximum Performance

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Gereral info;

Origin;

Orient: yoga, martial arts, the Vedas, Shamanism

Occident: occultism, psychology, biofeedback, healing arts
animate/inanimate

Applications;

Sport, Recreation

Performance, technique, recovery, speed, to bring movements to a more "intuitive" level, Enjoyment

Health, Illness/ Injury

General wellbeing, cancer stroke etc.,

Business

To increase productivity, creativeness and cooperation

Goal; To achieve a stress free body, mind and soul

Internet links to REAL BREATHERS;
Jujistsu, Yoga, Alza peso, Biatlon, Lance Armstrong

Remember..! None of this is EASY... and it takes some time to be able to incorporate it into ones personal STYLE. Yet the rewards are important!

So patience and persistence!!

ActiVe BREATHING

ActiVe Naturopatia is grateful for all the help by the dedicated cyclists whom have offered many hours of hard training to test and refine the following performance enhancing techniques. Also for their open mindedness and perseverance in integrating these special techniques into their already well defined and studied riding practices… Because without them, NONE of this material would be available!!! Thanks!!

Before starting on this adventure of maximizing any undiscovered potential that you may still possess within your breathing, circulatory and even psychological apparatus, ActiVe Naturopatia would like to remind the reader of a few things;

1. That participation in and practice of this clinic is done with the understanding that the participant has a current doctors sports health

examination for participation in competitive sporting events. A copy of this report is needed upon the start of the course. Obligatory.

2. That although breathing and relaxation can hardly be regarded as "dangerous", ActiVe Naturopatia expressively asks participants at any sign of discomfort, pain, dizziness, emotional stress, etc, to stop immediately the exercise and inform the instructor of your situation.
3. That the written information presented here is only intended to give a general understanding of the diverse techniques and concepts involved and should only be used in conjunction with a course provided by ActiVe Naturopatia. Any and all other use of this written course material outside of these courses is prohibited and possibly even detrimental to ones health without the close attention of a qualified instructor. Obligatory.
4. To provide ActiVe Naturopatia with a "O2max Test" current to at least one year prior to start of clinic.
5. To provide ActiVe Naturopatia with any cardio-frequency recordings that the participant may have of their training and/or race performances in order to better "aide" the participant in their desire to achieve their maximum performance. Send via e-mail to bsjgillis@alice.it. This is not obligatory.

Importance of Healthy Breathing

We think know how to breathe. That Proper Breathing is something that occurs automatically, spontaneously, and naturally. We are breathing even when we are not aware of it. So it seems foolish to think that one can be told how to breathe. Yet, one's breathing becomes modified and restricted in various ways, not just momentarily but habitually.

Here are some reasons why Proper Breathing is so important:

- Teaches us the proper way to breath. We become used to breathing from our chest, thus using only a fraction of our lungs, not knowing that this is unhealthy and an unnatural way.
- **Reduces the toxins and body wastes from within our body.**
- Helps in one's digestion. With the proper way of breathing, one's metabolism and general health condition can also start to improve.
- Develops our concentration and focus. **It fights away stress and relaxes the body. Controlling one's breathing also results in serenity and peace of mind.**
- Offers a better self-control. Through concentration, one can better handle temper and reactions. Mind can function clearly, avoiding arguments and wrong decisions. **Moreover, self-control also involves control over one's physical body.**
- Increases the capacity of our lungs, bringing more oxygen supply to the body to function well. We relearn how to breath slowly and deeply - the right way.
- Increase in oxygen is also perceived by the brain which than creates a response of hormones associated with happiness, joy and relaxation as well as lowered heart rates.

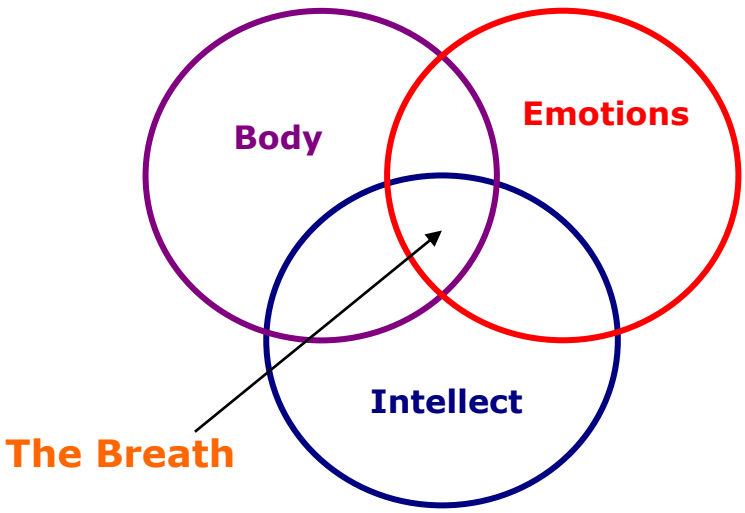
- Increased production of Oxytocin, Thymus function, immune system strengthening all of which are proven to help the prevention of major diseases and cure minor illnesses as well as important effects on performance recovery time leading to greater satisfaction with ones sport.

The science of breath control: consists of a series of exercises intended to meet these needs and to keep the body in vibrant health, first and second, improve ones Personal Performance!

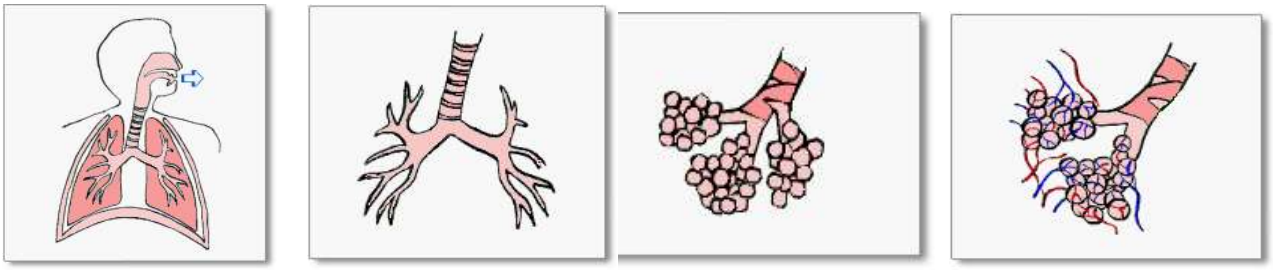
Oxygen purifies the blood stream
One of the major secrets of energy and rejuvenation is a purified blood stream. The quickest and most effective way to purify the blood stream is by taking in extra supplies of oxygen from the air we breath. The Breathing Exercises described are some of the most effective methods ever devised for saturating the blood with extra oxygen. So here are a few things about what oxygen does to our body:

- Oxygen cleans up the waste products (toxins) in the body, as well as recharges the body's batteries (the solar plexus).
- Most of our energy requirements come, not from food, but from the air we breathe.
- By purifying the blood stream, every part of the body benefits, as well as the mind.
- Rejuvenation of the skin will start to occur.

Breathe…
The common denominator…



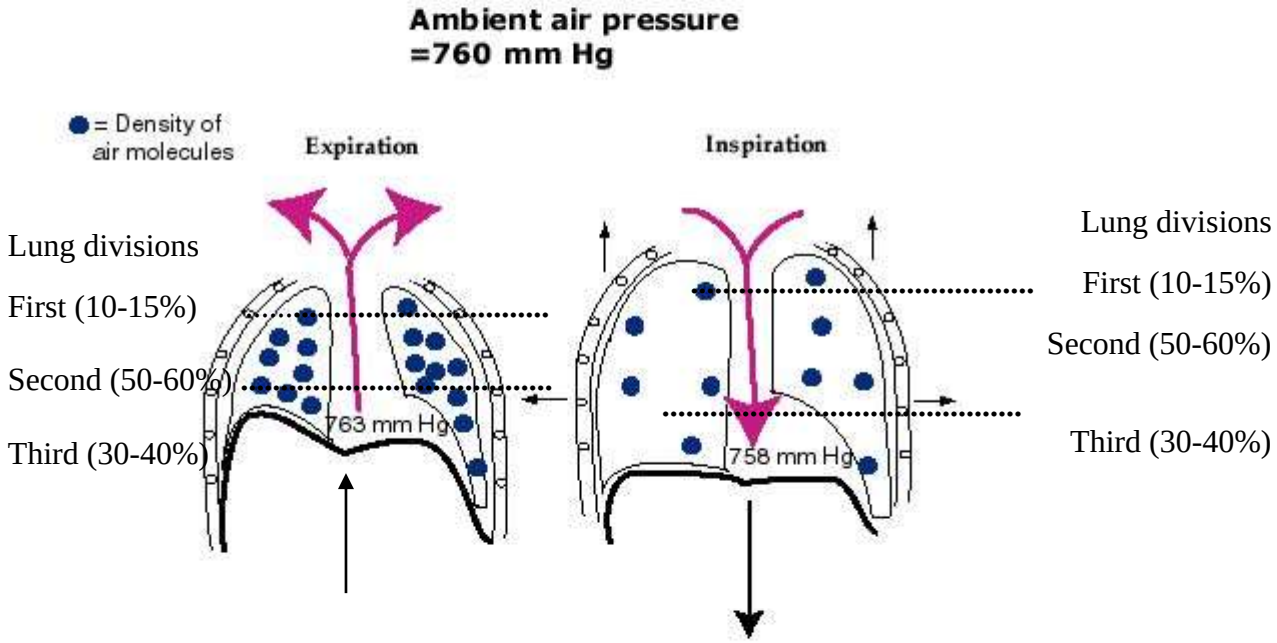
The breathe and the anatomy of the "exchange"



THE MECHANICS OF EXPIRATION AND INSPIRATION

The function of respiration is to supply oxygen that the cells of the body require to carry out their vital functions; and to remove gaseous waste products (carbon dioxide) of these funceions.

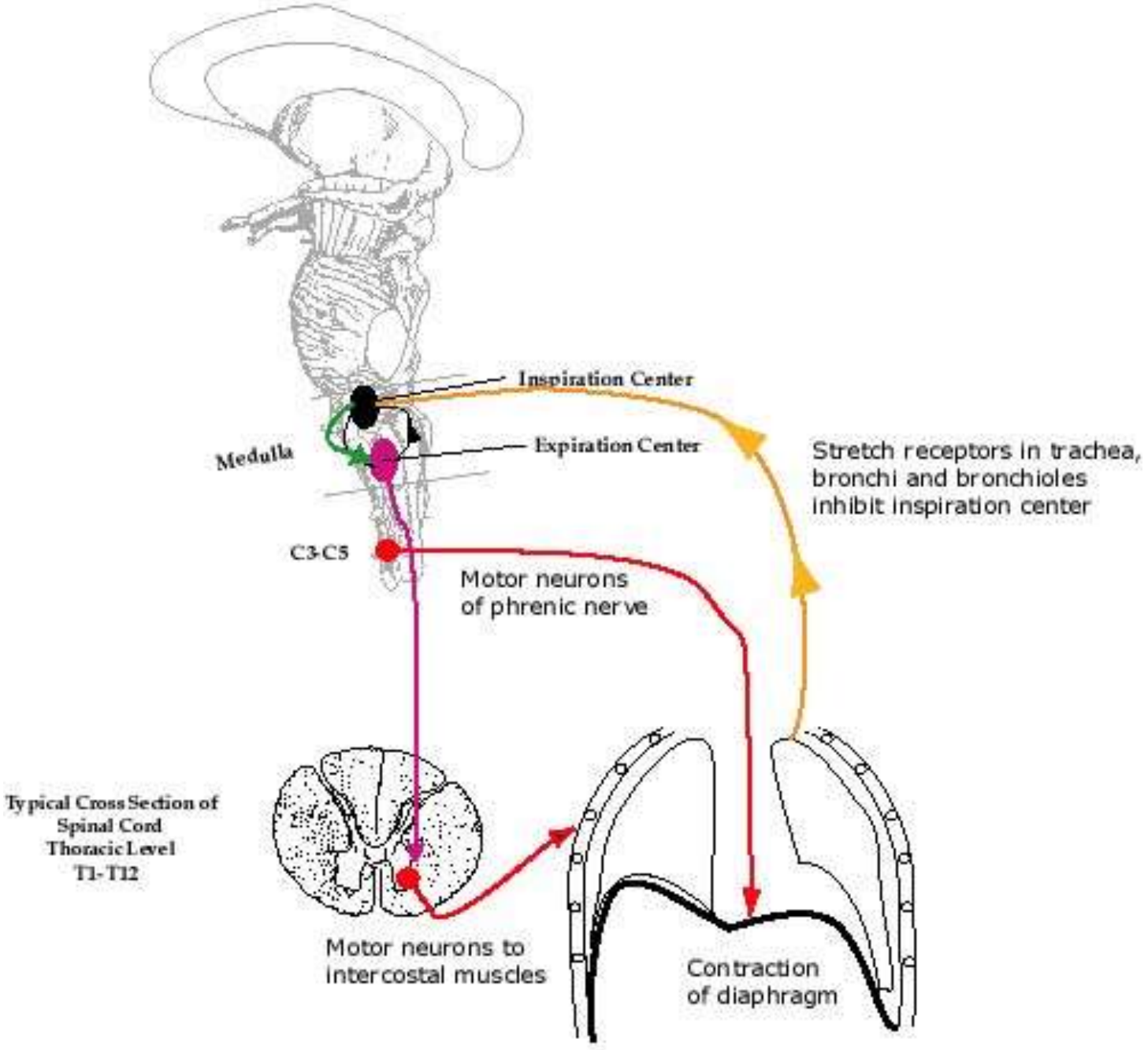
The thorax is a closed container except for the airway. Because this container is elastic, the enclosed volume may be increased or decreased. As these volume changes occur, intrathoracic pressures fall or rise accordingly.



1. Contraction of ribs (internal intercostals)
2. Intrathoracic volume decreased
3. Intrathoracic pressure rises
4. Therefore, air flows out of airway down its pressure gradient

1. Elevation of ribs (external intercostals)
2. Intrathoracic volume increased
3. Intrathoracic pressure falls
4. Therefore, air flows into airway down its pressure gradient

THE MEDULLA'S CONTROL OF THE RESPIRATORY CYCLE



The Breathing Cycle:
Each cycle of breathing which is usually thought of as merely a single inhaling followed by a single exhaling, may be analyzed into four phases or stages, each with its distinct nature. The transitions from inhaling to exhaling and from exhaling to inhaling involve reversals in the direction of the movements of muscles and of expansive or contractive movements of lungs, thorax and abdomen. The time necessary for such reversals can be very short, as may be observed if one deliberately pants as shortly and rapidly as he can. Yet they can be long, as one may notice if he intentionally stops breathing when he has finished inbreathing or out-breathing. The effects of these pauses, especially when they become lengthened deliberately at first and then spontaneously,- seem remarkable. Thus in our analysis of the Four Stages of Breathing, we shall pay special attention to these pauses, how to lengthen them and how to profit from them.

The Four Stages of Breathing

1. **Inhalation**
   A single inhalation. It is a process of drawing in air and is expected to be smooth and continuous.

2. **Pause After Inhaling**
   Consists of deliberate stoppage of flow of air and retention of the air in the lungs, without any movement of lungs or muscles or any part of the body and without any incipient movements. A beginner may experiment by using some force to keep such pause motionless

3. **Exhalation**
   The third stage, Exhalation. Like inhalation, it too should be smooth and continuous, though often the speed of exhaling is different from that of inhaling. Normally, muscular energy is used for inhaling whereas exhaling consists merely of relaxing the tensed muscles. Such relaxing forces air from the lungs as they return to a relaxed condition. Muscular effort may also be used for both inhalation and exhalation. You can force air out with muscular effort like when you sit or stand erect with your abdominal muscles under constant control. When you deliberately smooth the course of your breathing and hold the cycle in regular or definitely irregular patterns, you are also likely to use muscular energy at each stage, including the pauses. However, in a condition of complete **relaxation**, you should expect to exert some effort for inhalation.

4. **Pause After Exhaling**
   The Fourth Stage of Breathing, the pause after. This empty pause completes the cycle which terminates as the pause ends and a new inhalation begins.

To prolong the pause between exhaling and inhaling (and vice versa) doing so can have special physical and mental benefits. Based on these Patterns of Rest between inhalation and exhalation, we can distinguish the Five Types of Breathing Cycles:

1. Involuntary pausing after inhaling or exhaling;
2. Intentional termination of movement after a full inhalation;
3. Stoppage caused by special exertion after thorough exhalation;
4. Intentionally stopping inhalation at any time; and
5. Voluntarily stopping exhalation at any time

What's Wrong with the Way We Breath?

- Our breathing is too shallow and too quick.
- We are not taking in sufficient oxygen and we are not eliminating sufficient carbon dioxide. As a result, our bodies are oxygen starved, and a toxic build-up occurs. Every cell in the body requires oxygen and our level of vitality is just a product of the health of all the cells.
- Shallow breathing does not exercise the lungs enough, so they lose some of their function, causing a further reduction in vitality.
- Quick shallow breathing results in oxygen starvation which leads to reduced vitality, premature ageing, poor immune system and a myriad of other factors.
- Lower levels of oxygen cause a demand for more oxygen which the brain perceives and one of the responses is increased stress hormone levels and an increased heart rate.

Why Is Our Breath Fast and Shallow?

There are several reasons why our breath becomes fast and shallow. The major reasons are:

- We are in a hurry most of the time. Our movements and breathing follow this pattern.
- The increasing stress of modern living makes us breathe more quickly and less deeply.
- We get too emotional too easily.
- We get easily excited or angry, and most of the time, we suffer from anxiety due to worry.
- Anxiety due to stress; physical, emotional and/or psychological. These negative emotional states affect the rate of breathing, causing it to be fast and shallow.
- The body many times just takes in enough air to simply carry out only its basic functions.

As we go through life, these bad breathing habits we picked up become part of our lives. Unless we do something to reverse these habits, we can suffer permanent problems. The good news is that these are reversible.

Proof of benefits of ActiVe Breathing

ActiVe Naturopatia has studied scientific studies of athletes in respect to many different conditions (high/low altitude), sports (cycling, skiing, climbing, Greek wrestling, running, weight lifting), cultures (Italian, Swedish, Finish, Norwegian, French, USA), as well as our own research using Cardio-frequency (recordings of; training, race (and even sleep heart patterns) over many years to compare with current readings) and maybe most importantly… the "subjective" experiences of the athletes.

ActiVe Breathing clearly and positively affects the cyclist in the following manner;

1. Reducing initial Cardio-vascular and Respiration systems stress in start of race or training. Decreasing Cardio stress while still "cold".
2. Decrease heart rate while at complete maximum force.
3. Increases maximum heart rate even to above "age category" norms.
4. Increases focus short and long term.
5. Increases Lung capacity (volume, area)
6. Increases volume of blood available for gaseous exchange within lunges.
7. Increases rate of recovery on bike (mental focus, breathing, heart rate, "re-oxygenation" of muscles.
8. Increases rate of recovery off bike (mental exhaustion, muscular fatigue/pain, removal of cellular waste products (ie. Lactic acid)).
9. Reduces levels of stress hormones, stress "ossidativo".
10. Increases levels of antioxidants, happy hormones.
11. Decreases possibility of training overload (ie. Seasonal "Burnout").
12. Acts as a "cardio-massage" to help reduce stress within the actual muscles of the heart.

ACTIVE BREATHING
"Top Secret"
SIMPLICITY IS THE POWER

ActiVe BREATHING or… Advanced Performance Breathing Techniques, are very specific forms of controlling/forming/timing ones breath, yet are seemingly simple and "normal". ActiVe Naturopatia and its associated athletes, worked hard to discover ActiVe Breathing, and requires, surprisingly, a high level of concentration and physical effort.

SO TAKE THIS AS A WARNING. THIS WILL CHALLENGE YOU GREATLY, AS EASY AS IT MAY SEEM.
SO RISE UP TO THE CHALLENGE!!
STAY COMMITED AND YOU WILL REAP GREAT REWARDS FOR YOUR EFFORTS!!

Just remember it will take some time and practice to overcome the initial difficulties and to be able to use these techniques spontaneously and naturally…. But it will come!!! So be strong and persevere because the rewards are greater than one can ever imagine!!

Lets start with the landmarks that "every" cyclist knows. They can be very generally divided into two "categories". One is The Vascular system and consists of; breathing like a "dog", diminishing focus and burning legs. The other is The Cardio-respiratory system and consists of; "second wind" and "exploding" heart.

The problems associated with The Vascular category are primarily due to the lack of oxygen in the bloodstream.
ActiVe Breathing's solution is deep rhythmical circular breathing… However, in order to accommodate for as "quick" an exchange of the largest volume of air as possible, the thorax should remain "large" and "open" while "pumping" the air "in" and "out" with the diaphragm.

We have found that this "large thorax" and "pumping diaphragm" creates two important situations to consider, one positive and the other negative. The first is that by keeping the thorax large a certain volume of air is "left" behind. This will, with time, create an oxygen deficit and is negative. The other situation is that by keeping the thorax "open" the surface area of the lunges (the oxygenated blood and venous blood) is large and more "quickly" exposed to the incoming "fresh" air, which is VERY positive.

The first situation is easily remedied by adding another special ActiVe Breathing's techniques, The "Power Breath". By taking as deep a breath as possible and than with as much force as you can muster, completely "blow out" ALL the air in your lunges, including the thorax. And repeat this breath two more times for a total of three "Power Breaths". The "Power Breath" has no rules as to when it can be used, as we understand today. However with practice and experience the body will start to spontaneously "ask" for it. This technique is also seemingly simple but you will need many months of work, on and off your bike, to perfect it.

The second situation is one to "take advantage"! By breathing in this manner we have found that a slight "pause" after the inhalation allows for a few more liters of blood to pass through the alveoli. MORE BLOOD MORE OXYGEN ABSORBED AND MORE CARBON DIOXIDE TO BE RELEASED. This is why lunge volume is of extreme importance. There is one other very import yet very subtle positive effect by pausing after the inhalation, the pressure created by the lunges surrounding the heart creates a slight moment of "support" for the heart. This allows the heart to "rest" or at least work a bit less for this 0.1 to 4 second pause. At this moment ACTIVE RESPIRO can and will DECREASE your heart rate… Regardless of your current stress level. And paradoxically this same technique will help to INCREASE your heart rate more smoothly and with less stress on the heart while in the first minutes of cycling.

ActiVe Breathing consists mainly of these previously described techniques;

1. Even circular breaths
2. A pause after inhalation
3. A "Power breathe"

Sound simple? In truth these simple little techniques will take at least six months to "start" to feel natural and at least a year before the REAL benefits of ActiVe Breathing start to take you to new levels in your cycling. So it is best to start today so you can blow away all your old rivals as soon as possible!!

ActiVe Relaxation... Performance Enhancer

Usually through respiration but, not exclusively, relaxation with a proper respiration affects our being at the deepest biological and mental/emotional levels. ActiVe Relaxation has the ability to affect our body chemistry, mental activity and emotional state. By proper and practiced relaxation one is able to recover quicker from training, increased focus, reduce levels of "stress" hormones, increase levels of "relax" hormones, reduce negative emotional stress and even control ones heart rate. All of this having an exponentially positive affect on one performance.

This is also the moment in which the athlete prepares his/her body to breath maximally on the bike. This is the place were the athlete can "instruct" his/her body "how to behave" when it really counts. This quiet time, while practicing ones breathing, speeds up radically the athletes' recovery period, initiates psychologically "positive response" tactics and generally creates a sense of "simply feeling GREAT"!!

ActiVe Relaxation is a key factor to achieving ones desired performance level. The higher the level of desired performance the greater the importance of ActiVe Relaxation. ActiVe Naturopatia recommends to our athlete clients the following;

Ratio: Training to ActiVe Relaxation/Breathing….

On bike	Cross training	ActiVe Relaxation	
80%	15%	5%	% of training
20%	30%	50%	% of importance to performance

Percentages are applicable ONLY for experienced athletes, are applicable for all age groups and can vary slightly from individual to individual.

Practically this equates to the following schedule;

Time on bike	Time practicing ACTIVE Relaxation
1hr	10 min
2hr	15 min
3hr	20 min
4hr - greater	25 min

And if time is an issue… Reduce your on bike time to allow for the proper relaxation time needed to assimilate your efforts on the bike. When the time of ActiVe Relaxation is reduced the athletes body slowly accumulates; oxidized free-radicals, lactic acid and stress hormones. This stresses the body and makes the "recovery" more difficult and less effective. This normally pushes the cyclist to believe he/she must spend more time training which increases the levels of stress hormones, free-radicals etc. thus creating a "negative" cycle. A negative cycle like this also has very detrimental affects on the psyche (feelings of failure, anxiety, depression, agitation, sleep deprivation) which creates even more stress hormones and less effective assimilation of the athletes training.

But why do we need to control our breath?
The breath and the mind are interdependent entities. That is, if one's breath is under control, then so is his mind. Our state of mind is very important because our emotions, reactions, and everything else that is needed to live a productive life depends on it. Learning Proper Breathing partly aims to bring the mind to a state of peace, which is essential to living a good life and **OBTAINING YOUR OWN PERSONAL OPTIMAL PERFORMANCE**.

Remember!!

- Breathing Exercises should never be pushed to the point of weariness or exhaustion.
- Exercises should not be repeated too often.
- They should not be merely mechanical.
- There should be no hurry or haste.
- Attention should be concentrated on the exercise while it is being performed.
- There should always be variety and change in the exercises.
- Exercise should always be gentle and nonviolent.
- Breathing should not be jerky or irregular, but smooth, steady, and continuous.

The smoothness of your breath is of paramount importance. If at some point during practice your breath suddenly becomes rough or uneven, stop and relax. Then, slowly allow your breathing to return to its normal pace.

Some breathing techniques may induce dizziness or even make you lose consciousness. If you start to feel dizzy or think you are about to faint, stop immediately. Relax, and next time you do that certain exercise, be extra careful.

Relaxation…
Usually through relaxation but, not exclusively, we can change at the deepest levels changing our body chemistry, mental activity and also our emotional state. By proper and practiced respiration one is able attain this level of relaxation, ActiVe Relaxation!! ActiVe Relaxation/Respiration, done properly, will help one to recover quicker from training, increase focus and reduce emotional

stress. All of this having a strongly positive affect on one performance and wellbeing.

Active Relaxation is an important part of achieving ones desired performance level. The higher the level of desired performance the greater the importance of ActiVe RELAXATION!!

Exercises to improve breathing, relaxation, sleep, heart rate,

GREAT care should be taken to perform these series as smoothly and controlled as possible!!!
Remember STOP if you should feel any unusual uncomfort or undo pain!!!

SPORTS RECOVERY BREATH

1. Lay flat on the ground/carpet (not in bed!)
2. Optional!!! Bend your knees, keeping feet on floor spread apart.
3. Place hands on chest (not crossed)
4. Observe your heart rate, your respiration, muscular tension and even your state of mind.
5. After a moment (2-3 min) take 4 deep breathes (but not maximum) and hold for 3-4 seconds before exhaling, exhale without forcing, but quickly (simply letting go of the tension in your thorax and diaphragm)
6. REPEAT STEP 5 BUT NOW TO 100% OF MAX VOLUME
7. REPEAT STEP 5 BUT NOW TO 75% OF MAX VOLUME
8. REPEAT STEP 5 BUT NOW TO 50% OF MAX VOLUME
9. Now let your breathing find its own natural rhythm.. WHATEVER COMES SPONTANIOUSLY!!
10. Continue for 5 min. Observe your heart rate, your breathe, muscular tension and even your state of mind than redo steps 5, 6, 7, 8
11. Continue for 5 min. Observe your heart rate, your breathe, muscular tension and even your state of mind than redo steps 5, 6, 7, 8
12. Continue as above for as long as desired but at least 2 – 3 cycles..

4 Breath Consciousness

1. Lay flat on the ground/carpet (not in bed!)
2. Optional!!! Bend your knees, keeping feet on floor spread apart.
3. Place hands on chest (not crossed)
4. Observe your heart rate, your respiration, muscular tension and even your state of mind.
5. After a moment (2-3 min) take 4 deep breathes (but not maximum) and hold for 3-4 seconds before exhaling, exhale without forcing, but quickly (simply letting go of the tension in your thorax and diaphragm) than;

    a) inhale for 4 seconds
    b) pause for 1 second
    c) exhale for 3 seconds
    d) pause 1 second

    Repeat steps a to d 4 times breathing INDIVIDUALLY INTO EACH THE THREE ZONES;

    I. upper chest
    II. thorax
    III. abdomen

4 Breath Stretch

1. Lay flat on the ground/carpet (not in bed!)
2. Optional!!! Bend your knees, keeping feet on floor spread apart.
3. Place hands on chest (not crossed)
4. Observe your heart rate, your respiration, muscular tension and even your state of mind.
5. After a moment (2-3 min) take 4 deep breathes (but not maximum) and hold for 3-4 seconds before exhaling, exhale without forcing, but quickly (simply letting go of the tension in your thorax and diaphragm) than;

a) inhale completely
b) completely lock thorax and abdomen
c) attempt to press air out without releasing the air for 4-7 seconds
d) relax thorax and abdomen
e) exhale completely

Repeat steps a to e 4 times breathing INDIVIDUALLY INTO;

I. upper chest
II. thorax
III. abdomen

4 Breath Mental Focus

1. Lay flat on the ground/carpet (not in bed!)
2. Optional!!! Bend your knees, keeping feet on floor spread apart.
3. Place hands on chest (not crossed)
4. Observe your heart rate, your respiration, muscular tension and even your state of mind.
5. After a moment (2-3 min) take 4 deep breathes (but not maximum) and hold for 3-4 seconds before exhaling, exhale without forcing, but quickly (simply letting go of the tension in your thorax and diaphragm) than;

a) 7 seconds full inhale
b) 10 to 25 seconds
c) 5 seconds full exhale
d) 10 to 25 seconds pause