Mastering the Breath: A Guide to the Invisible Key for Athletic Success

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Introduction

Try This:

Take a deep inhale. Contract your upper shoulders and back. Hold it for 30 seconds.

Would you perform at your best like this?

Breathing gives the body what it needs for physical performance. This guide will teach the athlete how to breathe properly & how to use it to support optimal performance.

(Ungerleider, 2005)

What can I do with this?

Increase the strength of the respiratory muscles for increased efficiency to better serve the body for athletic performance.

Improve the flexibility of lung tissues and chest wall to increase lung capacity and breathing efficiency.

Support recovery by increasing antioxidant function and removing metabolic waste after exercise.

Increase control over the rest of the body. Increase focus, decision making and performance during athletic endeavors.

(Enright et al., 2006; Martarelli et al., 2011; Telles et al., 2013; Zope & Zope, 2013)
Breathing Anatomy

A lot of respiratory system is internal. Visualizing the structure helps in proper use.

This is the diaphragm. It is the main and most efficient respiratory muscle. It should be the foundation of all breathing

![Image](image.png)

Below is what should happen as the diaphragm contracts and relaxes.

As the diaphragm contracts, the abdomen below the ribs and above the navel expands. The bottom of the rib cage expands out. The sternum lifts. The shoulders stay relaxed. Then the diaphragm recoils. Contraction of the abdominals and intercostal (between the ribs) muscles can assist in a more complete, elongated exhale.

(Kaminoff, 2012; Nelson & Beach, 2012)
Diaphragmatic Breathing: 3
Basic Steps

Notice & Allow
- Close or rest the eyes. What is the breath doing? Allow it to flow consistently
- Feel the area below the rib cage & above the navel expand forward then retreat
- Feel the lower ribs expand outward
- Goal: Feel and get comfortable breathing this way

Expand & Deepen
- Now begin to deepen and expand respirations
- Ungerleider Technique
  - Imagine the lungs and chest cavity in three sections: lower, middle and upper.
  - First imagine filling the bottom third of the lungs by pushing down and out on the diaphragm, stretching it to its max, opening the abdomen. Exhale completely.
  - Next fill the middle third through rib cage expansion in all directions. Exhale
  - Last fill the top third by expanding the upper chest, shoulders and collar bone. Exhale
  - On each exhale pull the abdominals up and in to expel stale air.
  - Goal: Repeat this for 30-40 deep breaths a day

Lengthen
- Now focus on elongating the exhale. This will expel more CO2, calm heart rate and prepare for the most efficient inhale possible.
- Imagine gently pushing air up and out. Towards the end, contract the abdomen and lower rib cage in to further recoil the lungs and diaphragm.
- Exhale as slowly and controlled as possible. Purse the lips slightly to help.
- Goal: Reach a breathing rate of 2-6 breaths per minute for as long as possible.

Having trouble? THAT’S OKAY! Flip the page to see tips to help.

(Hourani et al., 2011; Ungerleider, 2005; Zope & Zope, 2013)
Tips for Practice

Train your brain: Set cues
- Set an alarm to check in with your breathing
- Take 5 focused, deep breaths. Then return to the day
- Set situational cues: Everytime "this" happens...breathe
- Set environmental cue: Everytime I am "here"...breathe
- Before unlocking your smart phone...BREATHE

Use Biofeedback
- Place the dominant hand between the rib cage and navel with the other on the chest: Feel and see dominant hand movement
- Place a light object on abdomen to see movement
- Place both hands on lower ribs and feel outward expansion

Visualize it! Imagine...
- ...air filling the lungs like a glass of water: bottom to top
- ...reeling the diaphragm down and out to navel
- ...the diaphragm expanding and contracting the lungs like a balloon
- ...smelling something pleasant on the inhale & pushing the air out on the exhale
- ...a steady consistent airflow

Support yourself
- Sit, stand or kneel leaning forward with arms resting on a level surface
- Sit in a semi-reclined position with back and arm support.
- Lay flat on the back with knees bent so feet are flat. Let knees fall in toward each other

(Henderson, 2008; Hourani et al., 2011; Ungerleider, 2005; Zope & Zope, 2013)
Manipulate the Breath: Find control and strength

Time it!
Try these different inhal/exhale ratios (seconds)
5:5 2:4 3:6

Now how far can you expand the inhal and how long can you control the exhale?
Try retaining the breath for 1 second at fullest exhale then exhale just a bit more

Ujjayi "Victorious" Breath
Inhale through the nose, slightly contracting the throat and feeling the breath like you are snoring
Exhale through the mouth directing breath to the back of the throat and pushing it out producing a "HAH" sound of ocean waves like you are fogging up a window
Try with closed mouth exhale
Exhale for as slow as possible
Goal: 2-6 breaths per minute

Pursed Lip
Inhale deeply through the nose then
Exhale through the mouth with pursed lips creating resistance
Like blowing through a straw or
Flickering a candle flame without blowing it out
Exhale as slow as possible
Goal: 2-6 breaths per minute

Bhastrika
Begin with one full inhal/exhale
Take a moderate inhal
Forcefully exhale and inhale 1:1 sec
Excentuate the exhale propulsion with abdominals
Repeat 10 times
After the 10th take the fullest inhal, hold it, then fully exhale
Follow with 3-5 slow deep breaths
Repeat 3 times

Use this to...
Increase Focus
Nervous system stimulation
Decreased impulsive reactions

Do not force it. Focus on the practice and let your system adapt over time. Start gentle, practice consistently, find a practice for you

(Mooventhian & Khode, 2004; Verabhadrappa et al., 2011; Zope & Zope, 2013)
Breathing during Sport Activity

“Out of Breath”

Body exercises with no exhale

“If there is no exhale, CO2 buildup will occur. The body will get a message of O2 depletion, struggle, and fatigue.”

Innate reaction to inhale for more O2

Body gets a message of O2 depletion, struggle, and fatigue

While exercising...

Your breathing is a communication system between you and your body.

The greater the intensity of exercise, the more stimulated the breathing. Allow the breathing to fluctuate with intensity for it to meet metabolic need. But always breathe with proper form.

As intensity increases the drive to inhale increase. Be sure to exhale to keep the air flow consistently circulating.

Do not control the breath too much. Allow it to flow as needed. Listen to your body’s message of pain, fatigue, and exertion. If these feelings keep increasing, you may be holding your breath.

Once oxygen is used it must be replaced. Once carbon dioxide is out, it builds back up. Keep your breath circulating to match the needs of the body.

Take control and...

EXHALE!

Control the body rather than the body reacting

Decrease pain perception

Increased exercise tolerance

Homeostasis between gas exchange

Increased ability to inhale

CO2 expulsion

(Haouzi, 2014; Hourani et al., 2011; Jaret et al., 2006; Kapus et al.,)
What is your Goal?

**Endurance**
- Reach a physical flow of exercise and match a flow of breath
- Allow breathing to be dynamic to fluctuate with exercise intensity. Make sure of proper deep breathing technique
- Balance inhale with an equal or slightly longer exhale
- Try for a 2:4 second ratio
- Every now and then, see how deep you can make your inhale and how long and relaxed you can make your exhale

**Anaerobic**
- Right after intense activity, consider a supported position
- Focus on pace and depth of breath
- Allow a deep, diaphragmatic inhale, maximizing expansion
- Remember to EXHALE. The drive to inhale will be intense.
- Progressively elongate exhalations to bring the body to rest
- Expect to feel uncomfortable for a little

**Focus**
- Concentrate on respirations and a sport specific task
- Stimulate the body with increased vigor of controlled breaths
- Keep an equal inhale to exhale ratio of 1:1 or 2:2 seconds
- Utilize Bhastrika technique
- Find appropriate "off" time during sport to concentrate on the breath

**Timing**
- When limited to inhaling at a certain time (ex swimming), time the exhale to be at its max right before the next inhale
- Focus on resistance breathing techniques to improve the efficiency and power of the diaphragm
- Practice integrating breathing with sport specific movements

**Aesthetics**
- Dancers or other performers may not like the idea of bulging the abdomen
- Focus on the 2nd step in the Ungerleider technique and rib expansion for increased efficiency
- Deepen lower abdominal contraction on the exhale. Maintain that contraction with the next inhale.
- Practice a flow of breath with movement-- try inhaling on back/chest expansion patterns and exhaling with contraction patterns

(Buchheit et al., 2007; Garza & Ford., 2009; Kaminoff, 2012; Matsumoto et al 2011; Telles et al., 2013)
Recovery: Deep breathing after exercise

- Increases antioxidants & body’s ability to remove metabolic waste
- Decreases muscle tension
- Decrease stress hormone

Get in a comfortable position
- Lying flat on back
- Lying on back with knees bent in and resting in toward each other
- Semi-reclined with low back and arms supported
- Whatever feels most comfortable to you

Notice the breath
- Go back to step one; just notice the quality of the breath
- Let it flow consistently, circulating through the body
- Allow the breath to "breathe" you

Stimulate then slow the breath
- You may go right into slow, deep breathing or practice Bhastika first.
- This step can be optional but is helpful to set the body up for relaxation
- Perform about 3-5 stimulating breaths, deliberately inhaling and exhaling with an equal ratio.
- Now let go with an elongated exhale and relax the breath

Continue slow, deep breaths for as long as possible
- Inhale deeply and exhale slowly for at least 2-10 minutes or for as long as possible
- Feel the breath effortlessly flow through nose for 10 breaths
- Feel the breath effortlessly flow through the ribs and abdomen for 10 breaths
- Place hands on the belly to feel the effortless rise and fall for 10 breaths
- Feel back and chest expand for 10 breaths
- Utilize gentle pursed lip breathing or Ujjayi techniques

Be sure to stay conscious and aware!
When the mind begins to wander, 
Simply bring it back to the breath

(Hourani et al., 2011, Martarelli et al., 2011; Ungerleider, 2005; Vechothadrappa et al., 2011)
But Wait! There’s more!

**INTEROCEPTION**

- the ability to sense the physiological state of the body
- the recognition of the internal state during ongoing activity or exercise
- motivating actions to regulate the body toward homeostasis

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*Athletes that have stronger interoception show different brain activations and perceive physical challenges as less stressful and difficult.*

Breath control accomplishes all of this. Sensing the rate and pace of the breath tells us how the body is doing, how hard we are working and if we can go more. Controlling the breath allows us to bring the body to where we want it to be and how we want to feel.

Here are some examples of people putting this into action…

**Ekaterina Karsten**
- World champion rower; Olympic gold medalist
- Times breath and blade movement
- Utilizes a "double exhale" to achieve an integrated sense of flow that connects her to the boat

**Kirk Krack**
- Free diver able to descend 500 feet in water with one inhale
- Developed a survival program for big-wave surfers
- Recruited by Olympic and X-games champions to train breath control

**Kerri Walsh & Misty-May Treanor**
- Olympic Beach Volleyball Champions
- Works with a sport psychologist on breathing techniques
- "I always need breath. When I’m breathing, I’m always doing good" - Kerri Walsh

**Royce White of the Houston Rockets & Pro Golfer Charle Beljan**
- Both suffer from severe anxiety during their sport
- "The most effective way to inhibit internal fears and fend off panic attacks is to breathe"

Paulus et al., 2012