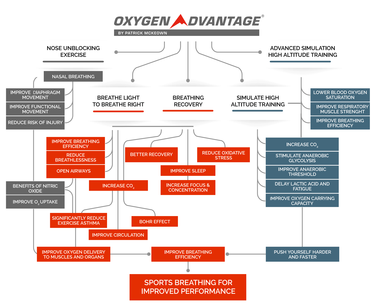
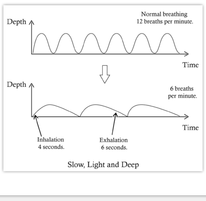



## TRY THE FOLLOWING TWO SIMPLE EXERCISES TO IMPROVE YOUR RESILIENCE AND PERFORMANCE!

### Exercise 1
## CADENCE BREATHING

Autonomic function is altered as evidenced by impaired baroreflex sensitivity and reduced heart rate variability (HRV).[1] In a healthy person, the time between each heart beat changes beat to beat. On the inhalation, it is normal for the heart rate to increase a little and on the exhalation, the heart rate slows down a little. Individuals are more resilient both physically and emotionally when heart rate variability is high.[2] Practicing cadence breathing during rest (six breaths per minute) imparts the following benefits:

- Exercises the baroreceptors and increases heart rate variability to improve both emotional and physical resilience.
- Reduces respiratory rate to improve breathing efficiency by 15- 20% (see below).[3]
- Increases blood oxygen saturation during rest. [3]
- Improves breath hold time (BOLT score) which translates into reduced breathlessness during physical exercise.



Slow, Light and Deep

(For this exercise, you will need a timer. All breathing exercises are practiced using nasal breathing only).

*Breathe slow, light and deep through the nose....*

**Slow:** *"Slow down the number of breaths per minute so that you are taking fewer breaths than you normally do. The goal is to achieve six breaths per minute."*

**Light:** *"Ensure that your breathing is smooth, silent and light. You should feel a tolerable air hunger"*

**Deep:** *"As you breathe in, I would like you to bring the air deep into your lungs. Place your hands at either side of your lower two ribs. As you breathe in, feel your ribs expanding outwards. As you breathe out, feel your ribs moving inwards."*

Repeat this six times.

Then proceed to breathe **slow, light and deep** through your nose to a cadence of 4 seconds inhalation and 6 seconds exhalation:

*So, breathing slow, light and deep: Breathe in, 1,2,3,4... and out,1,2, 3,4,5,6..."*

*"As you breathe in, feel your ribs expanding outwards. You might also feel your tummy moving out. Don't push or pull the movements. Allow it to happen. Guide the movements with your mind. The objective is to breathe slow, light and deep. Use your diaphragm, and feel a light air hunger."*

In order to stimulate the baroreceptors, you should aim to practice this exercise at home for 10-20 minutes, twice daily. Make sure that you feel a light air hunger during the exercise. This will help ensure that you don't overbreathe during the cadence breathing. A light air hunger along with deep breathing will improve breathing biochemistry, biomechanics and stimulate the baroreceptors.

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### Exercise 2
## BREATHE MORE EFFICIENTLY DURING PHYSICAL EXERCISE

The nose is directly linked to the main breathing muscle: the diaphragm. The mouth is directly linked to the upper chest. Breathing fast through the mouth using the upper chest is inefficient and reduces oxygen transfer from the lungs to the blood.

**Objective:**

- Nasal breathing
- Slow breathing: less breaths per minute
- Light breathing: breathing slightly less air than normal
- Deep breathing: improved use of the diaphragm

**Benefits:**

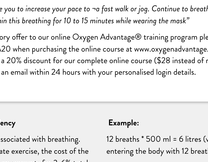
If your goal is to breathe more efficiently, to improve oxygen delivery to working muscles, to help avoid exercise induced asthma and to achieve better recovery post exercise then breathing through the nose and utilizing the diaphragm breathing muscle is paramount.

**Exercise 2**

*"Begin to walk with your mouth closed, correct tongue posture (tongue resting in the roof of the mouth), lips together, jaws relaxed, breathing in and out through your nose.*

*Place your hands on either side of your lower ribs.*

*As you breathe in, feel your hands moving gently outwards. As you breathe out, feel your hands moving gently inwards."*




*"Breathe slow, light and deep. Take the air slowly into your nose. Breathe soft, light and slow, only taking the amount of air that you actually need. You will be surprised at how little air you actually need. So, with each breath take the air deep into your lungs. As you breathe in, feel your ribs moving outwards. As you breathe out, feel your ribs moving inwards."*

*"Now I would like you to increase your pace to ¬a fast walk or jog. Continue to breathe slow, but light but deep. Maintain this breathing for 10 to 15 minutes while wearing the mask"*

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**Breathing efficiency**

There is a cost associated with breathing. While at moderate exercise, the cost of the respiratory system accounts for 3-6% total VO2, heavy exercise accounts for a ~10% demand and maximal exercise accounts for anywhere between 13-15%.[4]

Of each breath taken into the body, 150ml remains in dead space. Breathing a slower respiratory rate reduces amount of air lost to dead space, thereby improving breathing efficiency.

**Example:**

12 breaths * 500 ml = 6 litres (volume of air entering the body with 12 breaths per min)

12 breaths * (500-150) = 4.2 litres (volume of air entering the alveoli with 12 breaths per min)

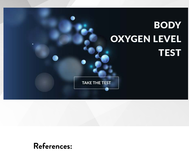
6 breaths * 1000ml = 6 litres (volume of air entering the body with 12 breaths per min)

6 breaths * (1000-150) = 5.1 litres (volume of air entering the alveoli with 12 breaths per min)

By reducing the respiratory rate from 12 breaths per minute to 6, increases air delivery to the lungs from 4.2 litres to 5.1 litres.

For more information visit
www.oxygenadvantage.com/science/

## TEST YOUR BREATHING

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