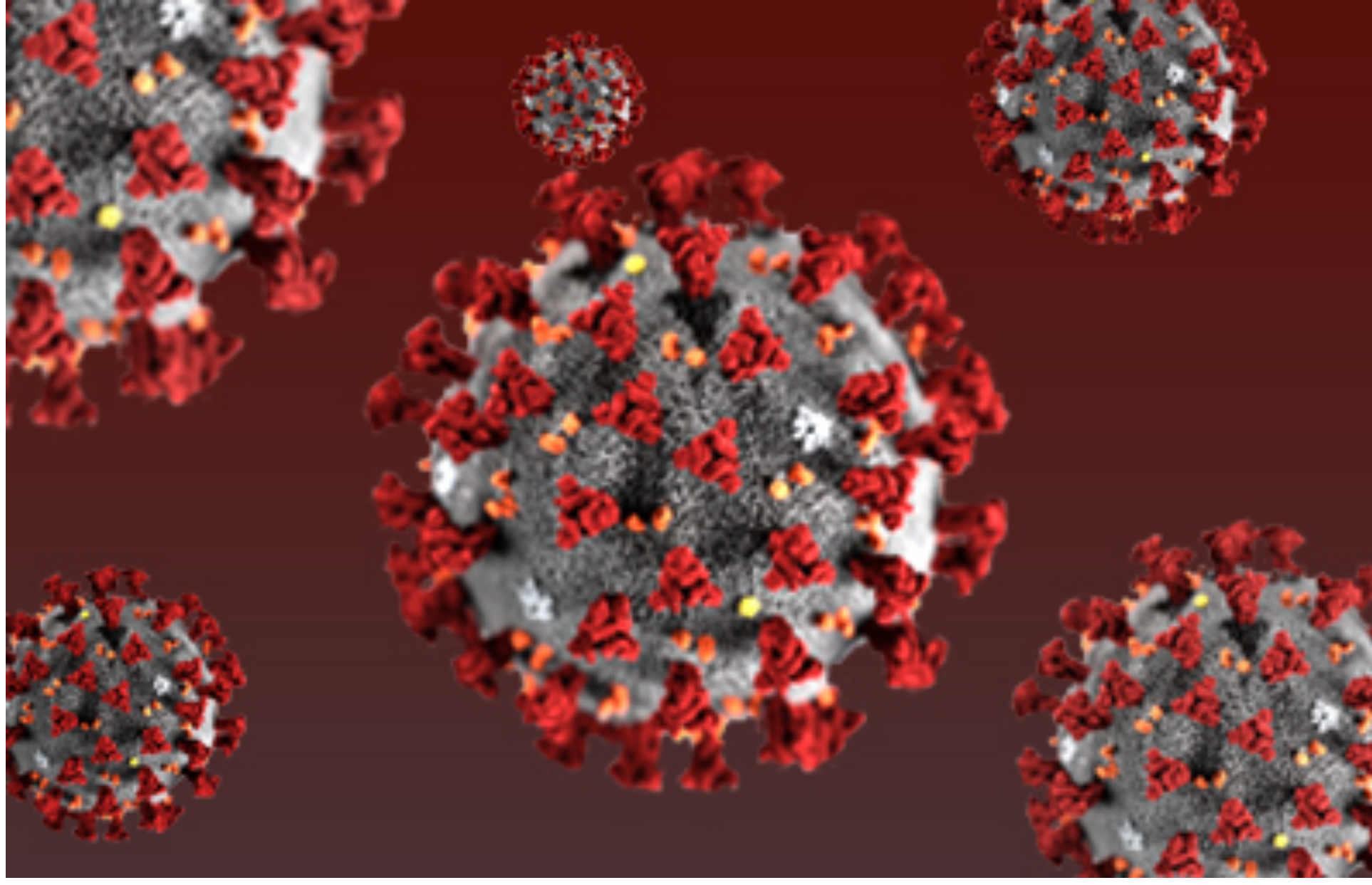


Immune Protective Effects of Nasal Breathing and Nitric Oxide in the time of COVID-19



Viruses and bacteria are spread through contact with contaminated surfaces and also through the air. Our nose is one of our primary lines of defence against airborne pathogens. It has a very sophisticated system for protecting the whole airway from infection and one of the key mechanisms involves the production of a chemical called nitric oxide within the nose and nasopharynx [1, 2].

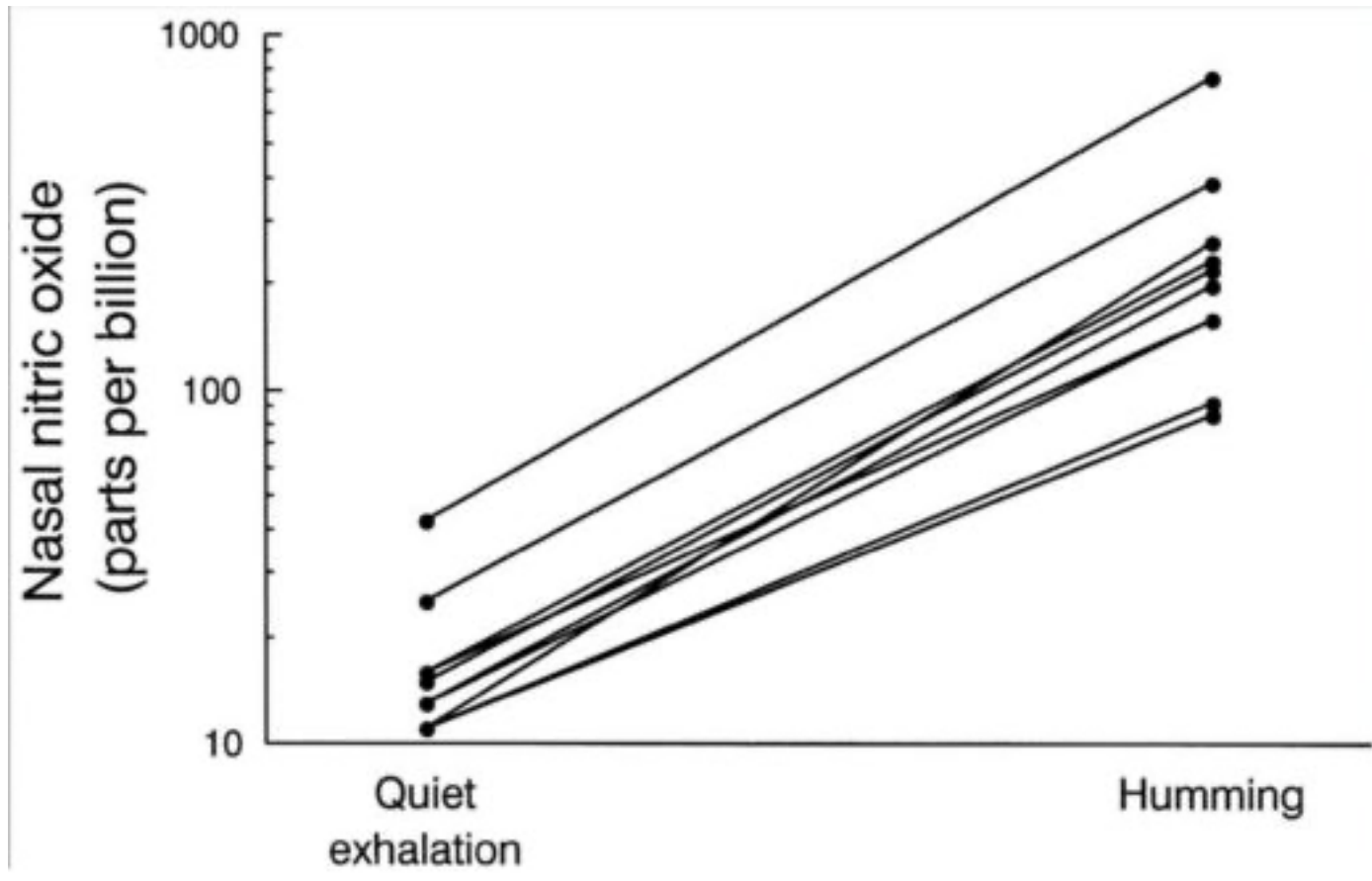
The current worldwide epidemic of COVID-19 is having enormous impact and we need to respond to all advice given by medical authorities regarding social distancing, hand-washing and general hygiene. We also need to take care of ourselves with general health measures that support our body's natural immune mechanisms. These include things like getting adequate sleep, managing stress, eating the most healthy diet we can and breathing through our noses as much as possible at rest, during exercises and while asleep. **While we can't say that nasal breathing inhibits replication of the COVID-19 virus it seems prudent to breathe through our nose given its well known role in general immune defence.**

Research conducted during the a previous Coronavirus epidemic, the SARSCoV (Severe Acute Respiratory Syndrome Coronavirus) epidemic, showed that nitric oxide inhibited the replication of SARSCoV in a dose dependent manner, meaning that higher levels had a greater inhibitory effect on the replication of the virus [3].

Nasal breathing and breathing techniques such as humming and particular types of controlled breath holding stimulate increased nitric oxide production. Because the nasal airways and sinuses are the primary sources of exhaled nitric oxide [4-6], nasal breathing concentrates the amount of nitric oxide circulating in the upper airway [7]. Levels reduce greatly if we switch to mouth breathing and some research shows that mouth breathing reduces the amount of exhaled nitric oxide by 50% [5]. Nasal breathing also makes the nose healthy in other ways, improving its microbiome, hydration, blood flow and mucous production [8].

Nasal breathing improves lung health and oxygenation of the body in several ways. The nose helps to filter particulate matter that can adversely affect the health of the lungs and contribute to inflammation. Breathing through the nose significantly reduces particle deposition in the lungs that occurs during mouth breathing [9]. Nasal breathing also improves pulmonary function by improving the motility of the cilia. It also improves the circulation in the lungs so that the blood is better oxygenated by around 10% [10].

Humming is able to increase nitric oxide levels 15 fold as compared to normal quiet breathing [11].



Humming has been applied therapeutically for the treatment of chronic sinusitis [12,13]. A case study of a patient who had been unable to nose breathe due to chronic sinusitis for a month was able to achieve a clear nose and breathe easily through his nose after 4 days of intensive humming (one hour the first day and 120 hums 4x per day). The authors hypothesised that the effect was due to the increase in nitric oxide produced by the humming [12].

Breath holding can also help reduce blocked noses and has been shown to increase nitric oxide [14]. The concentration of nitric oxide in the nasal passages and the naso-pharynx increases after breath holding with voluntary closure of the soft palate [5]. In cases of nasal obstruction, breath holding after exhalation for up to 30 seconds can reduce nasal resistance and the effect lasts over time [15].

So please be clear - this article does not claim that nasal breathing, humming or breath holding are a cure or prevention for Coronavirus. However at this time, it makes sense to increase our efforts at self-care for physical and for psychological health reasons. Also anything we do to increase our personal agency increases our sense of control, helps us feel a little less stressed. And as we know reducing stress helps our immune system!

Take care everyone.... of your selves and each other.

Stay home, stay safe, breath and know this too will pass.

I will be passing on more information on self care, internet breathing classes, webinars and blogs. If you want to be on my email list please email us on contact@rosalbacourtney.com

You can also follow my facebook page [Dr. Rosalba Courtney](#)

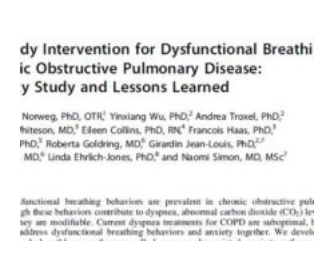
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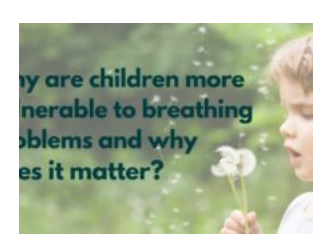
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