

## Medical Update: Wearing of face masks



In response to various social media posts, Dr Dave Knight, Occupational Medicine Specialist with International SOS, has issued some information on the wearing of face masks, which we felt would be of some interest to you.

### **Does using a face mask lead to a significant carbon dioxide build up in the body or adversely affect oxygen saturations?**

Some social media sites and even a few medical professionals claim that wearing face masks leads to carbon dioxide build up in the body that may be dangerous to one's health. Let's look at some recent evidence for whether wearing a face mask may have any significant adverse health effect.

The most recent study conducted this year found no impact from wearing a surgical mask even in veterans with severe COPD (lung disease). This study evaluated people with normal lung capacity and military veterans with obstructive lung disease and found no relevant adverse health effect from wearing a surgical mask. Another study from 2010 monitored participants over 1 hour on a treadmill wearing a N95 face mask (tighter fitting than a cloth or surgical mask) and controls not wearing a face mask. They found that there was no clinically relevant deterioration in the body's oxygen or CO<sub>2</sub> levels during exercise in the people wearing the N95 masks compared to the controls.

Another study in 97 people with severe COPD found that wearing N95 masks (tight fitting) could result in respiratory difficulty and symptoms but only in some of those with severe lung disease with less than 30% of lung capacity (would virtually never have workers with such severe lung disease in a normal working population) – even in this group with COPD there was no difference in oxygen and CO<sub>2</sub> levels between those that exercised with a N95 mask on and those without a mask.

Finally, a study conducted in 2013 on 20 healthy adults wearing N95 masks who were exercised for 1 hour found no clinically significant difference in oxygen or CO<sub>2</sub> levels compared to controls. Slight changes in CO<sub>2</sub> concentrations ranged between 1.7 and 3.0 mmHg, which is very small considering the normal range extends over 10 mmHg. They found that "The pulmonary and heart rate responses to wearing a filtering facepiece respirator for 1 hour at a low-moderate work rate are relatively small and should generally be well tolerated by healthy persons".

One must also remember that surgeons and theatre staff have been wearing surgical masks for large parts of their entire working life for over a century now with no reported significant ill effects.

**Conclusion:** unless you have very severe lung disease with lung capacity of less than 30%, wearing any type of face mask, even a tight fitting N95 mask, will not cause any significant deterioration in oxygen or carbon dioxide concentrations in the body.

The World Health Organization also has a very useful website – [Coronavirus disease \(COVID-19\) advice for the public: Mythbusters](#) – where evidence is published to prevent the further spread of COVID-19 misinformation.