

# Studying the effects of COVID - Here's my experience as a diver

A few months ago, my partner [Manuel Bustelo](#) and I tested positive for COVID-19. We experienced quite strong symptoms, but fortunately only for a short period of time, and we are now fully recovered.

We went through a pretty long period of isolation at home, as many other people during the pandemic. Then it was finally time to return back to 'normal' - whatever that means in current circumstances. In our case, normalcy includes exposing our bodies to a very special environment: the underwater world. A place that can be wonderful and very dangerous at the same time, if not experienced and in the best of physical conditions.

Very little is known about the new coronavirus. What the scientific evidence highlights is the potential harm it can cause to our lungs. We all know how important breathing capacity is, but this becomes particularly crucial when you're underwater, relying on a gas tank and on a healthy respiratory system to survive.

The only way to know how COVID-19 actually affected our physiology in diving would be to perform a series of medical tests. Fortunately, DAN Europe is conducting a Medical Research Study addressed to [divers who have been infected with COVID-19](#). We were lucky enough to participate to the study.



## It is not DAN Europe's first time on being the first one

Over the past four decades DAN Europe has distinguished itself as an innovation-driven organisation, especially in the field of diver safety. Their Research team is a multidisciplinary group of specialised

scientists, in areas ranging from hyperbaric medicine, to bioanalysis and engineering. They will be in charge of carrying out, with great professionalism, this first-time in the world study.

## The Y-40® OpenLab

Located in the structure of the deepest thermal pool in the world, the [Y-40® OpenLab](#) was born from the collaboration between DAN Europe and the [Y-40®](#). It is dedicated to medium and long-term scientific research projects, related to prolonged human exposures in hyperbaric environments. The final objective is sharing the results with the diving community and increase diver safety.

It was decided to carry out these special study there, due to the special characteristics of '[The Deep Joy](#)' pool, which allows in-depth tests to be performed in a controlled environment.



## How was the study conducted?

We did several dives spread over a couple of days, during which our physiological values were evaluated before each dive and immediately after them, as well as 30 minutes and 60 minutes after the dive.

These remarkable scientists even managed to extract our blood sample **during** the dive, at a 40m depth!

Indicators that were measured:

- Real time electrocardiogram, blood saturation, temperature and respiratory rate, thanks to wearable technology created from the [AVATAR](#) project (a smart t-shirt, along with oximeter and

thermometer), which allows DAN Europe physicians to view physiological data in real time.

- Ultrasound of the lungs and heart, to observe the possible presence of gas bubbles.
- Markers of inflammation and dysfunction of the lung membrane in blood, urine and breath.

At the same time, we dove with a special prototype developed by DAN Europe, called [Dive Sense](#). This device is capable of registering with great precision the variations in depth, the speed of descent and ascent, the time elapsed at the different altitudes reached, the water temperature, the position of the body in the water as well as the geolocation.

Afterwards, all of our dive profiles and medical results were uploaded into the [Diver Safety Guardian \(DSG\)](#) portal, a database that includes the most advanced tools in dive analysis. By logging in, we have access to our data and results.

Now we just have to wait for the DAN Europe Research team to interpret the results they have found. We are excited to know what their conclusions will be!





## **Thank you, science!**

Thanks to medical research studies like this one, we can have peace of mind when diving again. We are really grateful to DAN Europe for investing valuable resources in research, so all divers can feel safer when

returning to diving after Covid-19.

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Before diving make sure your DAN membership is still active. If it isn't, join DAN or renew your membership at [www.daneurope.org](http://www.daneurope.org).

Your DAN membership ensures the services of the biggest international network for assisting divers anywhere, during any emergency.