

Algorithm guides post-Covid rehabilitation

Robotic System

Francesca Cerati

At the beginning of October, the WHO formally recognized the “post-Covid syndrome” that - as reported in a study published in Jama Network and conducted by researchers at Penn State College of Medicine - affects more than half of the individuals infected with the virus. In particular, one in five develops mobility disorders, and one in four complains of neurological disorders.

The mechanisms by which Covid causes persistent symptoms are not yet fully understood, but now an Italian research conducted at the Sacco Hospital in Milan and just published in Neurological Sciences shows that the virus compromises movement control and can generate persistent fatigue. This is the first study that, thanks to artificial intelligence,

measures neuromotor deficits (lack of balance and coordination), of patients recovered from Covid, regardless of whether they were hospitalized for a severe condition or were treated with home isolation in their own home. This new evidence, was possible thanks to the use of the hunova robotic rehabilitation system, developed by Movendo Technology, a spin-off of the Italian Institute of Technology.

“Our hospital is one of the centers that in Lombardia has received the largest number of Covid patients - explains Arnaldo Andreoli, director of the Operative Unit of Specialized Rehabilitation of Sacco Hospital and Fatebenefratelli Hospital in Milan, and among the authors of the research - and since the beginning of the pandemic we had perceived that patients suffered from neurological and motor problems related to the disease. However, some aspects are difficult to be identified with tradi-

tional diagnoses because they are difficult to objectify, such as fatigue or neurological problems related to balance. In this context, new technologies, such as robotic systems, allow to assess the patient’s problems in an analytical way and are useful both in the diagnostic phase, to estimate the entity of the problem, and to guide the rehabilitation pathway“. It’s not yet clear how the Sars.Cov2 infection causes these problems, but researchers hypothesize that they may be due to the direct action of viruses on nerve fibers or to hypoxia, the lack of oxygen in tissues that typically follows the acute phases of the disease.

‘ New technologies make it possible to parameterize patient problems analytically

“The robotic system we have used allows us to highlight problems that would otherwise be unrevealed and allows the monitoring of the patient’s progress and the effectiveness of rehabilitation treatment - adds Fabrizio Gervasoni, physiatrist at Sacco Hospital and first author of the study - In these patients, however, we must always take in account the possible psychological consequences of Covid.ig that, in some cases, can strongly affect the independence in activities of daily living“.

The case histories treated at Sacco Hospital in Milan are very significant because, in addition to the 66 patients mentioned in the study, the robotic platform has been used on several hundred patients recovered from Covid.

‘ DIAGNOSIS
However, we must always consider also the possible psychological consequences of Covid-19.