



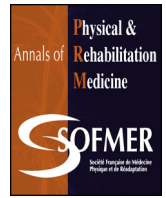
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## Letter to the editor

### Early mobilization in hospitalized patients with COVID-19



Dear Editor,

Many hospitals worldwide are overwhelmed with an unprecedented number of patients, frequently of an advanced age, who are confined to intensive care units (ICUs) due to COVID-19-associated complications. In the European Union, about 32% of affected patients are hospitalized and about 9% of these are admitted to ICUs for treatment of life-threatening pneumonia; these numbers are much higher in people > 65 years old (<https://www.ecdc.europa.eu/en/publications-data/rapid-risk-assessment-coronavirus-disease-2019-covid-19-pandemic-eighth-update>). In this context, a main, albeit often forgotten, stressor to body functional reserves, especially in older patients, is not only severe infections or other acute conditions per se but also forced inactivity. The latter can severely deteriorate the so-called intrinsic capacity (the combination of mental and physical function), which, according to the World Health Organization, is a major determinant of health in our progressively older society.

Hospitalization is likely to promote disability because of the combination of disease and low mobility levels. Most hospitalized adults (~82%), especially those > 80 years old (~96%), present disability, with mobility and self-care the most commonly affected domains of the International Classification of Functioning and Health [1]. Moreover, approximately one third of older adults lose their ability to independently perform 1 or more activities of daily living from hospital admission to discharge even with successful treatment of the condition that caused the hospitalization, the so-called hospital-induced disability [2]. This condition has major negative consequences in the short and long term, including an increased risk of re-admission and mortality [2]. In addition, critically ill patients experience severe muscle wasting (“ICU-acquired weakness”) from the first week of hospitalization [3]. No pharmacological intervention can prevent (or reverse) the functional deterioration that accompanies hospital confinement. By contrast, as confirmed in a recent meta-analysis, simple early mobilization programs have been found useful to attenuate the deleterious consequences of disuse observed upon discharge in older adults (> 60 years old) hospitalized for an acute medical condition [4].

Several studies have reported beneficial effects of in-hospital exercise programs for patients with pneumonia. For instance, an inpatient rehabilitation intervention (daily 50-min sessions for 8 days, including stretching, resistance and walking exercises) improved functional ability, muscle strength, quality of life, and dyspnoea as compared with standard respiratory physiotherapy (secretion removal, breathing exercises and walking) in adults (51–59 years old) hospitalized with community-acquired pneumonia [5]. Moreover, a recent trial reported the benefits on

physical performance and disease symptoms (fatigue, cough) of an intervention combining physical exercise and neuromuscular electrical stimulation (i.e., the generation of involuntary muscle contractions via the application of intermittent electrical stimuli to skeletal muscles) in older adults (mean age 75 years) hospitalized due to pneumonia [6].

Early rehabilitation programs have been found beneficial even for ICU patients, and indeed the international guidelines to optimize liberation from mechanical ventilation in critically ill adults such as those by the American Thoracic Society/American College of Chest Physicians recommend that these patients, particularly those with mechanical ventilation for more than 24 hr, undergo early mobilization [7]. However, despite these recommendations, early mobilization is still uncommon in most ICUs (applied in ~16% of patients) [8]. In this regard, a recent meta-analysis showed that this type of intervention can reduce the incidence of ICU-acquired weakness, improve functional capacity, and increase the number of ventilator-free days and the discharged-to-home rate [9]. Notably, an early exercise and mobilization program (from range-of-motion to sit-to-stand and walking exercises, depending on functional status) during periods of daily interruption of sedation increased the number of ventilator-free days and improved functional independence at discharge while decreasing the duration of delirium [10].

Of note, advanced age is not a barrier to the benefits of early mobilization. Simple interventions consisting of solely sit-to-stand and walking exercises have been found useful for preventing functional decline even in the oldest and weakest patients hospitalized for an acute medical condition (mean age 88 years), as we recently showed [11]. For individuals unable to perform volitional exercises, such as intubated patients, an alternative is neuromuscular electrical stimulation – the generation of involuntary contractions by the application of intermittent electrical stimuli to skeletal muscles. This approach, studied for decades in physiology laboratories worldwide, can attenuate muscle wasting in critically ill patients [12].

Because of the recent nature of the COVID-19 pandemic, no specific evidence is yet available on the effect of early mobilization or other physical therapies (e.g., respiratory physiotherapy) on affected patients. Moreover, the lack of personal protective equipment (at least in many European countries) and the need for rapid discharge hinders the application of early mobilization therapies. However, as recently highlighted by a group of international experts in the intensive care and acute cardiorespiratory fields, these therapies would likely play a major role in promoting a functional return to home for affected patients [13]. Once the infection curve has flattened and hospitals are no longer overwhelmed, these simple therapies could play an important role in promoting a functional return to home for patients and thus, in contributing to better management of the pandemic in general. Health professionals should be aware of the

importance of preventing functional decline in hospitalized patients (particularly older ones) as well as the specific recommendations for managing COVID-19 to ensure the safety of both patients (e.g., identifying those in whom these interventions would not be indicated) and themselves (i.e., avoiding infection) [13]. Before an effective cure or vaccine is widely available, not likely in the next months, we should avoid a preventable condition, severe functional deterioration of the thousands of patients discharged after COVID-19 care.

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#### Disclosure of interest

The authors declare that they have no competing interest.

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