



# More Attention to Spinal Cord Injury Patients During COVID-19 Pandemic

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## 1. Background

Corona Virus Disease 2019 (COVID-19) is an emerging contagious disease that mainly affects the respiratory system and causes various systemic problems (1). Due to the high risk of transmission and the significant prevalence of the disease, it has now become one of the main global health problems. The main strategy to control the disease is to prevent social contact, which has resulted in the closure of public places and home quarantine.

Spinal Cord Injury (SCI) is one of the main causes of disability in society, especially in the young population. It is caused by lesions to the spinal cord due to various reasons such as trauma, which induces a mixture of the motor, sensory, and autonomic disorders. Patients with SCI are at risk of spasticity, limited range of motion, bedsores, heterotopic ossification, and many other complications and need continuous rehabilitation (2). Rehabilitation is very important in the management of these patients to prevent secondary complications.

With the closure of rehabilitation centers due to the COVID-19 epidemic, the disability may worsen, and the patients may experience secondary complications, especially they are not informed and educated. Therefore, it is necessary to think of new rehabilitation policies in the present situation. With progression in new technologies and virtual methods, tele-education can be an effective and proper method for patients and their caregivers to decrease SCI secondary complications. One of the most important tasks of rehabilitation teams is to provide the proper content for such virtual tutorials.

In this letter, we try to remind the usual home-based rehabilitation programs for patients with chronic SCI and emphasize the importance of continual rehabilitation dur-

ing the quarantine days. These programs can be used in virtual education courses for SCI patients.

## 2. Rehabilitation Recommendations for Patients with Spinal Cord Injury Without COVID-19 Disease

### 2.1. Positioning

The patient position in sleeping and sitting states is a critical issue to educate, which depends on the level of injury. Proper positioning prevents secondary complications such as bedsores, contracture, and so on (3).

### 2.2. Exercise

It is essential for the patient to perform a range of motion exercises at least twice a day, actively for non-paralyzed limbs and active-assisted or passively (patient's caregiver) for paralyzed limbs to prevent contracture.

Active or passive stretching exercises, including calf and hamstring, as well as pectoral and shoulder posterior capsule stretching, must be done at least two times a day (4).

Stretching exercises are also one of the primary and essential treatments in the management of spasticity, which is a common complaint among these patients. If necessary, a splint can be additionally used to reduce spasticity.

To improve the gastrointestinal function and abdominal blood circulation, it is advised for paraplegic patients to frequently contract and relax abdominal muscles (5).

Weight-bearing on the lower extremities is also recommended. In paraplegic patients, it can be done using appropriate orthotic devices while standing on the side of a wall or getting help from another person (6).

### 2.3. Prevention of Deep Vein Thrombosis

In these patients, there is a great risk of Deep Vein Thrombosis (DVT) in plegic lower limbs, followed by pulmonary embolism (7).

Preventive measures include elastic pressure stocking and abdominal elastic bands to improve blood circulation, performing passive and active-assistive movements of paralyzed limbs, and proper positioning to avoid pressure on large blood vessels.

### 2.4. Prevention of Pressure Ulcers

Compression ulcers are very common in these patients (8). Therefore, it is essential to educate the patients and caregivers to regularly observe and record the patient's skin condition in the high risk stressed areas and change the patient's position at least every two hours. Special bed and wheelchair mattresses are also helpful in this way.

### 2.5. Recommendations to Improve Respiratory Function

Abnormal respiratory function should be considered, especially in quadriplegic patients. There is some recommendation to improve the respiratory function, including stretching exercises of pectoral and other chest wall muscles that result in the increased mobility of the thorax and educating Glossopharyngeal breathing and deep breathing exercises.

The caregivers should be trained about the prevention of Autonomic Dysreflexia (AD) in patients with high SCI (upper than T6) by the early management of constipation, preventing urinary retention, and avoiding wearing tight clothing.

## 3. Rehabilitation Recommendations in SCI Patients Suffering from Common Forms of COVID-19

In addition to the previous recommendations, breathing exercises are strongly advised, including:

Diaphragmatic breathing and pursed lips breathing at least two times a day, each exercise lasting at least 10 min

The huff coughing technique that is the recommended method for airway clearance and secretion drainage (1, 9).

In patients who are admitted due to COVID-19, it is recommended to follow the rehabilitation and exercise protocols with the permission of their physicians regarding their cardiopulmonary status and O<sub>2</sub> saturation. If the patient experiences symptoms such as chest tightness, vertigo, headache, blurred vision, palpitations, imbalance, or any other abnormal situation during exercise, the session should stop. If the symptoms continue to present, a physician consult is mandatory (1, 9).

## 4. Rehabilitation Recommendations in SCI Patients Suffering from Severe Forms of COVID-19

In these patients, the rehabilitation program should be performed by a skilled therapist, according to the patient's general condition, and with the permission of the treating physician (1).

In general, rehabilitation is an essential and integral part of the life of patients with spinal cord injury and should continue as distance training during the COVID-19 epidemic.

### Footnotes

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