

Confronting the Breathing Issues Caused by the Coronavirus

Masood Falamaki*

Fellow of Engineers Australia Colleges of Structural & Civil Engineering, Institution of Engineers Australia, Australia

RESERACH

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Corresponding Author:

Masood Falamaki
Fellow of Engineers Australia Colleges of Structural & Civil Engineering,
Institution of Engineers Australia,
Australia
drfalamaki@gmail.com

ABSTRACT

For severe cases of Coronavirus sufferings that involves lung infection and then the management of the breathing problem, various methods and recipes are being predicted and propagated.

The Author – as a Highly Qualified Chartered Professional Structural Engineer - while offering his prayers followed by a prolonged Sujud (prostration), got this feeling that the posture of Sujud greatly helps breathing.

He then looked at the Anatomy of Lungs as well as the Physiology of the Respiratory System. He further gathered more information from Medical Practitioners/Experts as well as the Respiratory Physicians on the Physiology of the Respiratory System.

It is important to note that - when most traditional modes of ventilation fail - the prone posture – both with and without support - in management of acute respiratory distress syndrome – was found to be a good substitute to the supine posture - mostly as a strategy to improve oxygenation - as this prone position alters the mechanics and physiology of gas exchange to result consistently in improved oxygenation.

In this article it will be shown that the Sujud (prostration) posture – in terms of the ventilation of the lungs - will be more functional compared to prone position-in management of acute respiratory distress syndrome

Key Words

Breathing Issues, Coronavirus

Introduction

To confront with the breathing issues that could be caused by the Coronavirus it may be considered reasonable that the patient -whose lungs are affected by this virus - to take a prolonged prostration posture Figure 1. In this posture - the position of the body (the way in which someone holds the body when resting on its knees, wrist, and forehead (the flat part of the face, above the eyes and below the hair) was shown in the sketch below. This is the posture that almost 1.5 milliard Muslims – all over the world - practice at least 34 times a day.

The author - when was practicing his night praying – during his prolonged prostration (Sujud) found that in this posture he hardly feels any movements in his lungs; that is, he could continue staying in this posture for a long time very conveniently Figure 2.

He then looked at the Anatomy of lungs as well as the physiology of the Respiratory System; and then further gathered more information from Medical Practitioners/Experts and Respiratory Physicians on the Physiology of the Respiratory System.

The literature survey shows that when most traditional modes of ventilation fail, then the ventilation of lungs will be more functional in prone position in management of acute respiratory distress syndrome - mostly as a strategy to improve oxygenation. This literature survey also shows that the prone posture alters the mechanics and physiology of gas exchange to result consistently in improved oxygen.

The purpose of this article is to show that the Sujud (prostration) posture – in terms of the ventilation of the lungs - will be more functional compared to prone position - in management of acute respiratory distress syndrome.

The principle of physiological effects on oxygenation

Prone position facilitates and improve gas exchange (at alveolar level), by transpulmonary pressure difference - that

allows the calculation of the pressure required to distend the lung - reducing Dorsal Lung compression, compared to supine position (when person is lying on his back).

During Prone Position, the heart becomes dependent lying on sternum, potentially decreasing medial posterior lung compression, the diaphragm is displaced caudally, decreasing compression of posterior caudal lung parenchyma (lung substance or lung tissue).

It is worth mentioning that the Prostration Posture (Sujud) also infuses ventilation & Oxygen Perfusion.

Confronting the Breathing Issues Caused by the Coronavirus

It is understood – from literature survey – please also see the video recently produced by 2020 Nucleus Medical Media [1] - that in patients that its lungs were affected by the Coronavirus, it is first the cells of the upper part of the lungs that are damaged.

Pneumonia is the lung inflammation caused by a bacterial or viral infection, in which the air sacs fill with pus and may become solid. Inflammation may affect both lungs (double pneumonia) and only one (single pneumonia)

It is important to note that because of this infection, fluid (pus and mucus) collects in the alveoli (air sacs) and that is why people associate Pneumonia with having fluid in the lungs [2].

With the infection and the fluid, the linings of the alveoli swell and become less elastic, making it harder for the oxygen to get through.

It is then understood that the fluid accumulated in the upper cells of the lungs eventually sinks into its lower parts.

This fluid will then stop the lower parts of the lungs to do its task and breathing then stops and the patient dies because of suffocation

PNEUMONIA may cause chest pain, coughing, fever, headache ...then respiratory failure happens when breathing becomes so difficult that the patient would need a ventilator for breathing Figure 3.

In short, in the absence of a ventilating machine, it may be considered reasonable that the patient - to be able to continue breathing - adopts a Prostration Posture (Sujud) that - for the reasons shown in the lines below - is preferable to a Prone Posture.

Advantages of the Prostration Posture (Sujud) may be listed as follows

- The patient uses the cells of the lower part of the lungs that have not yet been damaged by the virus and this could help the patient to breathe easily.

- The fluid that was produced in the upper parts of the lungs (near the shoulders) rather than sinking to the lower parts of the lungs – due to the gravitation force – travel towards the mouth and eventually exits from the body.

- Over the period that the patient is in the prostration (Sujud) posture, the diaphragm of the patient helps that no pressure to be applied to the lungs and this helps that the healing process to be expedited.

Furthermore, reviewing literature survey indicates that the Prostration Posture (Sujud) has not been tried as a tool to facilitate breathing. Nearest Posture tried so far is Prone Position compared to Supine Position due to reasons described in the above lines.

Obviously, the Prostration Posture (Sujud) has extra advantage in Oxygen Perfusion and perhaps Postural Drainage of thick sputum from airways.

It is important to note that this is the first time that Prostration Posture (Sujud) is introduced as a relief to the damages made by the Coronavirus to the lungs of an affected person.

Regarding the importance of the Prostration Posture (Sujud) in the Shiite Sect of Islam reference could be made to the following narration of the holy prophet of Islam (pbuh):“In the holy month of Ramazan one of the most important postures of true Muslims is the posture of Lengthy Prostration Posture (Sujud). It is only Allah SWT and Masoomin (as) that are aware of the extent of the rain of blessings that falls upon those that practice Prolonged Prostration (Sujud). It was then recommended to have at least one Prolonged Prostration (Sujud) per day” [3].

Putting the Patient in Prone Position

Invasive mechanical ventilation is traditionally delivered with the patient in the supine position.

Prone ventilation is a type of ventilation that is delivered with the patient lying in prone position.

Prone ventilation may be used for the treatment of acute respiratory distress syndrome (ARDS) mostly as a strategy to improve oxygenation when more traditional modes of ventilation fail (e.g., lung protective ventilation).

In other words, Prone ventilation refers to the delivery of mechanical ventilation with the patient lying in the prone position. Prone ventilation is NOT considered a mode of mechanical ventilation. Volume-controlled and pressure-controlled modes of ventilation are the typical modes of ventilation that are delivered in the prone position. Other modes of ventilation including high frequency ventilation and other methods of improving gas exchange (e.g.,

extracorporeal membrane oxygenation [ECMO]) are not generally administered in the prone position but may be used in conjunction with prone positioning Figure 5. Modes of mechanical ventilation are discussed separately. (See "Modes of mechanical ventilation" and "Extracorporeal membrane oxygenation (ECMO) in adults" as well as "High-frequency ventilation in adults") [4-6].

Conclusion

It is worth considering that the Prostration (Sujud) Posture is such as an added tool in Respiratory distress syndrome for people that are located in areas where there is no medical facilities or during interim period while they are waiting for hospital facility.

Also, prone ventilation improves while ventilator must be used in acute Respiratory distress syndrome.

It is understood that prone position could be used only in selective industrial sites that are suitable to practice this procedure with respect to their physical capacity.

This is one of the many blessings of the Allah swt that Prostration (Sujud) Posture helps breathing.

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Figures

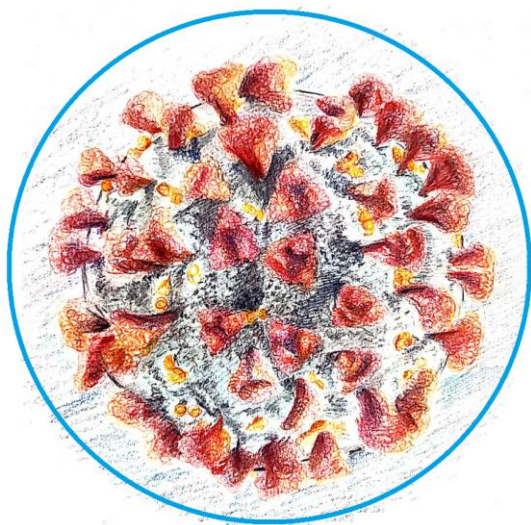


Figure 1: Covid-19.

Doi: [https://doi.org/10.1016/S0140-6736\(20\)30211-7](https://doi.org/10.1016/S0140-6736(20)30211-7)

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Conflict of Interest

The Author declares that there is no conflict of interest.

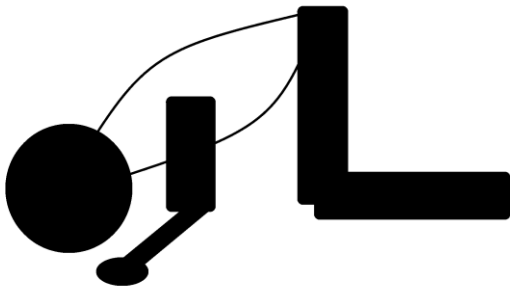


Figure 2: Prostration Posture (Sujud).

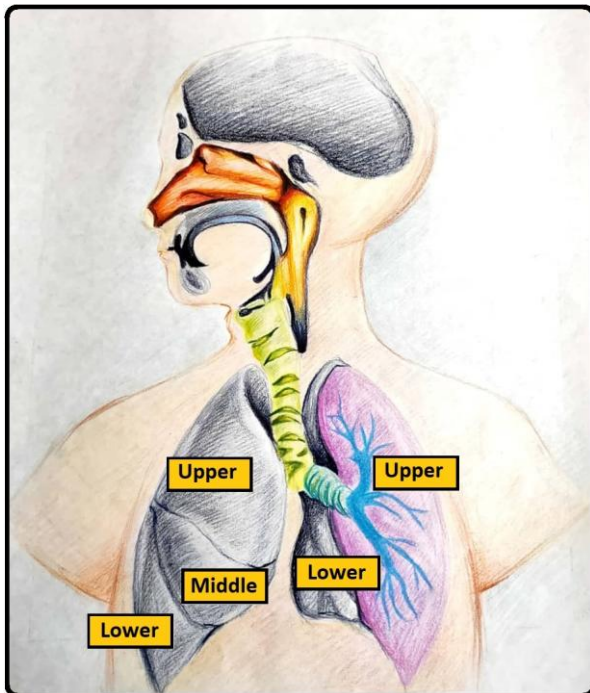


Figure 3: The Respiratory System.

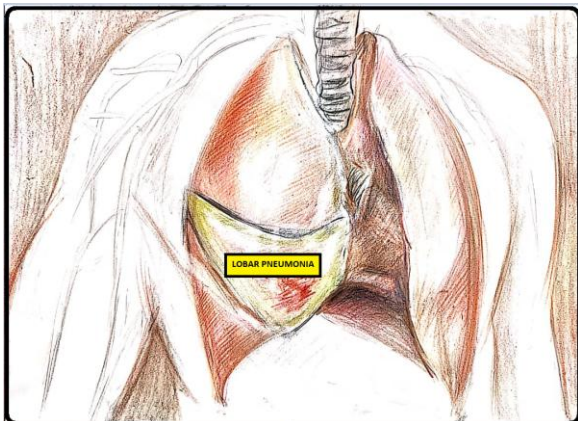


Figure 4: Lobar Pneumonia.

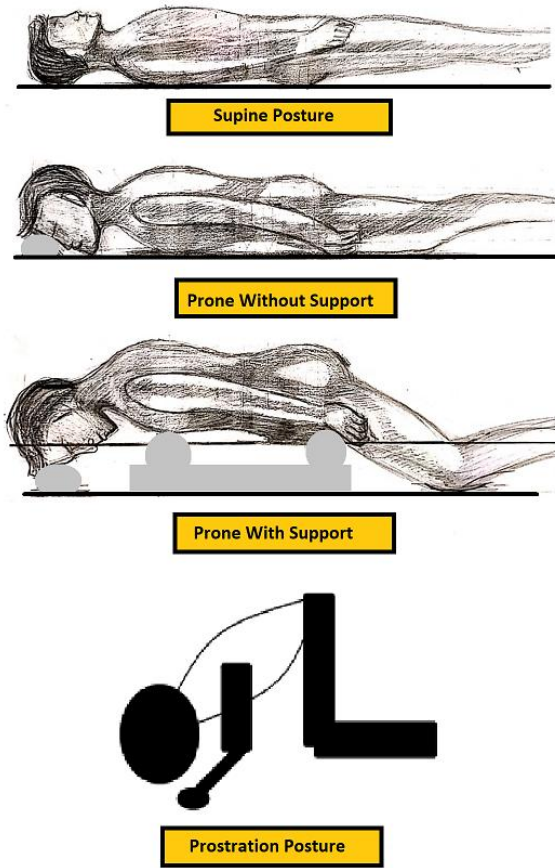


Figure 5: The Supine, the Prone and the Prostration Posture (Sujud).