



**NATIONAL UNIVERSITY OF MEDICAL SCIENCES, SPAIN
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Title of thesis:

The Use of Tilt Table Machine in Extubation Patients of Intensive Care Unit

by:

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Abstract

Today, the intensive care unit (ICU) plays a key role in preserving lives of the patients. Throughout this dissertation, patient refers to a person who has been hospitalized in the ICU for at least one month and has been connected to a ventilator; and after a while (at least one month), their blood oxygen has risen and as a result the device is disconnected. During this period, the physiotherapist has performed lung/ chest physiotherapy to clear the lungs of secretions; and by physiotherapy of the limbs to maintain the range of motion of the joints (joint rom) and maintain the length of the muscles. The physiotherapist also tries to prevent the bedsores by changing the position of the patient. One of the most important tasks after separating the patient from the ventilator is to improve cardiopulmonary function in order to reduce the patient's dependence on the oxygen devices. Based on the observations, using Tilt Table can be effective to achieve this goal.



In this dissertation, the author, tries to emphasize the importance of using Tilt Table for extubated ICU patients, as well as taking a look at his handmade device for easier and cheaper use of Tilt Table by the patient's family.

Studies show that 24 hours of immobility causes many deleterious changes in the patient's lifestyle and body systems. Status of working, physical ability, and quality of life can be of lifestyle changes resulting of immobility; and cardiovascular and respiratory systems, musculoskeletal system, renal and gastrointestinal functions are of body systems affected by physical inactivity. Remarkable loss of body weight and muscle mass, according to Herridge et al (2003), joint contractures, atelectasis development, and insulin resistance are other adverse effects of immobility.

Physical and occupational therapy (structured early mobilization) are shown to be safe and practical for shortening the delirium period and extending the ventilator-free days. The aim of structured early mobilization for the ICU patients are:

1. Enhancing respiratory function
2. Degrading the adverse consequences of physical inactivity
3. Increasing mindfulness levels
4. Accelerating practical independence
5. Enriching cardiovascular fitness
6. Increase psychological well-being
7. Lowering the delirium risk

Patients who have been connected to a ventilator in the ICU for a long time and were under the intensive care of a treatment team consisting of a doctor, nurse and physiotherapist and were safe of the side effects such as bedsores and limited mobility of the joints, with a stable level of IQ are ready to be separated from the ventilator. Then, they are usually connected to an oxygen concentrator so that the lungs can provide enough oxygen to the body. In addition, at the beginning, since the patient is habituated to the horizontal position of the heart and arteries, it is impossible to pump blood to the brain as soon as s/he sits or stands. Therefore, fainting is an inevitable result. Other problems that may occur to these patients are osteoporosis due to coordination injuries being unable to walk, being in coma for a long time, and being unable to bear weight. So; in this case, the use of Tilt Table is essential, and as many scholars have demonstrated, the importance of using it is clear to everyone.

Using Tilt Table, in the short run, enables the patient to lessen the use of oxygen concentrator devices and reduce other side effects of sedentary lifestyle; but the use of Tilt Table at home can be unaffordable for the patients.

So, we introduce a simple and low-cost initiative to enable the patient's family to build a device that works like Tilt Table but is inexpensive and affordable. First, we prepare a shop cart and cover it with a piece of fiber of 180 cm high and by the width of the cart. Then, it is softened by using a blanket and the patient will be fixed to it by special slings. Finally; from a short time, which is initially less than a minute, we gradually make the patient to the vertical position.

My own experiences, which have been recorded in more than 20 patients, have yielded interesting results. For five patients whose IQ was not risen up and were in coma, after two weeks, with a high SPO₂, it was not needed to use oxygen concentrator; Their cardiovascular condition improved so that patients were able to stand for more than half an hour. One of these patients has been in coma for 13 years and usually has a urinary tract ultrasound every 6 months. Due to this type of standing, no problems such as kidney and bladder stones have been seen in the patient.

Conclusion

The use of Tilt Table in the post-ICU treatment process prevents the patient from immobilization and is an effective way for reducing the use of oxygen concentrators. In addition to reducing patient's costs, the home Tilt Table device is a rehabilitation and practical device that is easily accessible to patient families and will experience effective effects in improving their patient process.







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