

# ICU – Technologies for Early Rehabilitation

Research Results – Abstract

(USA - Johns Hopkins University - Dale M. Needham, MD, PhD et al. Crit Care Med 2009 Vol. 37, No. 15)

## Technology to enhance physical rehabilitation of critically ill patients

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**BACKGROUND:** Neuromuscular complications after critical illness are common and can be severe and persistent. To ameliorate complications, there is growing interest in starting physical medicine and rehabilitation therapy immediately after physiologic stabilization. The introduction of physical medicine and rehabilitation-related technology into the intensive care unit may help facilitate delivery of this therapy.

**DISCUSSION:** Neuromuscular electrical stimulation therapy creates passive contraction of muscles through low-voltage electrical impulses delivered through skin electrodes placed over target muscles. Although neuromuscular electrical stimulation has not been studied in patients with acute critical illness, published guidelines based on available evidence suggest that neuromuscular electrical stimulation may be considered in intensive care unit patients who are at high risk of developing muscle weakness. Bedside cycle ergometry can provide range of motion and muscle strength training for intensive care unit patients who are either sedated or awake, and may help preserve muscle architecture and improve strength and function. Finally, custom-designed technological aids to assist with ambulating mechanically ventilated patients may reduce the human resource requirements and improve the safety and effectiveness of early mobilization in the intensive care unit.

**CONCLUSION:** Physical medicine and rehabilitation-related technologies may play an important role in preventing and treating intensive care unit-acquired neuromuscular complications. Future studies are needed to evaluate their efficacy in intensive care unit patients. (Crit Care Med 2009; 37[Suppl.]:S000 –S000)

**KEY WORDS:** electric stimulation therapy; ergometry; physical therapy modalities; physical medicine; rehabilitation; early ambulation; exercise therapy; muscle weakness; respiration; artificial; critical care; intensive care units

*The active/passive therapy intervention has been performed with the motor-assisted movement therapy device MOTomed letto2 (Reck-Technik, Betzenweiler, Germany).*

*If you are interested in the complete study please contact us at [info@motomed.com](mailto:info@motomed.com).*

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