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an interventional proof of concept study

Author(s)

Sommers, Juultje; Wieferink, DC; Nollet, F; Dongelmans, Dave A; Engelbert, R.H.H.; van der Schaaf, M.

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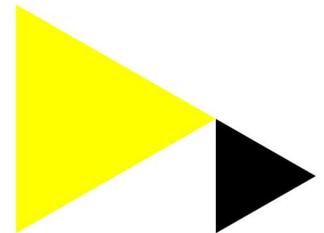
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Body weight-supported bedside treadmill training facilitates ambulation in ICU patients: An interventional proof of concept study

J. Sommers, PT, MSc¹, D.C. Wieferink, PT¹, D.A. Dongelmans, MD, PhD.², F. Nollet, MD, PhD.^{1,3}, RHH. Engelbert, PT, PhD.^{1,3}, M. van der Schaaf, PT, PhD.^{1,3}

¹:Department of Rehabilitation, ²: Department of Intensive Care Academic Medical Center, University of Amsterdam, The Netherlands.

³: ACHIEVE-Centre of Applied Research, Faculty of Health University of Applied Sciences, Amsterdam, The Netherlands.

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Background

- Intensive Care Unit-acquired weakness (ICU-AW) is associated with short- and long- term physical impairments and impaired functional status.
- Early mobilisation and ambulation of patients admitted to the ICU improve functional recovery.
- Severe weakness in combination with tubes, lines and machinery are practical barriers for the implementation of ambulation of critically ill patients.

Objective

- To explore the feasibility of Body Weight- Supported Treadmill Training (BWSTT) at the bedside in the ICU.

Methods

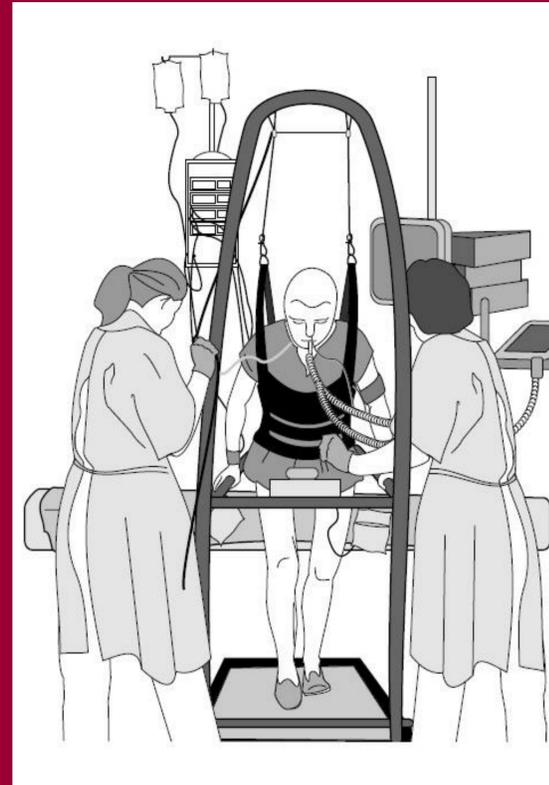
- Single centre interventional study
- Tertiary 34-bed mixed medical-surgical ICU of the Academic Medical Center, University of Amsterdam, the Netherlands

Inclusion criteria:

- Adult ICU-patients, mechanically ventilated for ≥ 48 hours
- No contra-indication for mobilisation or activation
- Able to follow instructions
- Muscle strength m. quadriceps MRC ≥ 2
- Independent sitting balance

Intervention

- The BWST enables ambulation at the bedside within the range of ventilator tubes, lines and monitoring equipment.
- In patients with insufficient motor control or muscle strength for ambulation, a harness is used in combination with a weight bearing construction.



Measurements

- Feasibility was evaluated according to:
 - Eligibility
 - Successful number of BWSTT
 - Number of staff needed
 - Adverse events
 - Number of patients that could not have walked without BWSTT
 - Patient satisfaction and anxiety

Results

Patients characteristics at the first time of BWSTT	
	median (IQR) or n n=20
Age, years	69.5 (52.8 – 77.5)
Male	12 (60%)
Medical category	
• Medical	9 (45%)
• Non-elective surgery	4 (20%)
• Elective surgery	7 (35%)
APACHE II	18 (15 – 20)
Time in ICU to first BWSTTT, days	23.0 (10.0 – 56.3)
Mechanical ventilation, days	10.0 (7.1 – 31.5)
MRC sum score	40 (32.5 – 47.5)
ICU-AW (MRC < 48)	15 (75%)
Functional Ambulation Categories (FAC range 0-5)	0.0 (0.0 – 1.0)
Functional Ambulation Categories 0	13 (65%)
Characteristics of ICU treatment devices during BWSTT	
Continuous monitoring	20 (100%)
Patients with mechanical ventilation	4 (20%)
Patients with tracheostomy	8 (40%)
Surgical wounds	11(55%)
-Sternotomy	6 (55%)
-Abdominal	3 (27%)
-neck	2 (18%)
Patients with infusion lines or drains	20 (100%)

Results

- BWSTT was performed in:
 - 20 patients and 54 sessions
 - 53 sessions were successfully performed
- Two numbers off staff needed
- BWSTT is feasible and safe:
 - Median treatment time 25 minutes
 - No adverse events
 - Patients are not anxious
 - Patients are very satisfied
 - All patients were not able to walk or would have walked shorter distance without the BWST

Conclusion

- BWSTT is feasible and safe and facilitates early ambulation with critically ill patients in the ICU.
- To perform BWSTT less staff is needed compared to ambulation without BWSTT.

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Contact

Juultje Sommers: j.sommers@amc.uva.nl