

Badania naukowe Erigo®

Obecnie dostępnych jest ponad 40 artykułów dotyczących **Erigo®** pochodzących z niezależnych grup badawczych na całym świecie. Badania te obejmują 8 randomizowanych badań kontrolowanych, 10 badań przekrojowych, badania obserwacyjne i artykuły techniczne.

„W kilku badaniach porównano bezpieczeństwo różnych metod mobilizacji dla pacjentów przebywających na OIT. Badacze porównali pionizację z Erigo® do pionizacji z typowym stołem pionizacyjnym lub mobilizacji przy asyście terapeutów i stwierdzili, że pionizacja Erigo® doprowadziła do mniejszej liczby zaburzeń ortostatycznych i znacznie mniejszej liczby przerw w treningu”.

Frazzitta, G., et al., Safety and Feasibility of a Very Early Verticalization in Patients With Severe Traumatic Brain Injury. *J Head Trauma Rehabil*, 2015. 30(4): p. 290-2

Krewer, C., et al., Tilt Table Therapies for Patients with Severe Disorders of Consciousness: A Randomized, Controlled Trial. *PLoS One*, 2015. 10(12): p. e0143180.

Frazzitta, G., et al., Effectiveness of a Very Early Stepping Verticalization Protocol in Severe Acquired Brain Injured Patients: A Randomized Pilot Study in ICU. *PLoS One*, 2016. 11(7): p. e0158030.

Badania pokazują, że trening na Erigo® jest bezpieczny dla wielu grup pacjentów:

Uszkodzenia rdzenia kręgowego:

Borghgraef, C., et al. Influences of ErigoPro on Spasticity and aspects of Quality of Life in Spinal Cord Injury, a randomized AB design. Poster presented at International Spinal Cord Society. 2014 in Maastricht, Netherlands.

Colombo, G., et al. Novel Tilt Table with integrated robotic stepping mechanism: Design Principles and Clinical Application. in 9th International Conference on Rehabilitation Robotics. 2005. Chicago, Illinois, USA.

Craven, C.T., et al., Investigation of robotic-assisted tilt-table therapy for early-stage spinal cord injury rehabilitation. *J Rehabil Res Dev*, 2013. 50(3): p. 367-78.

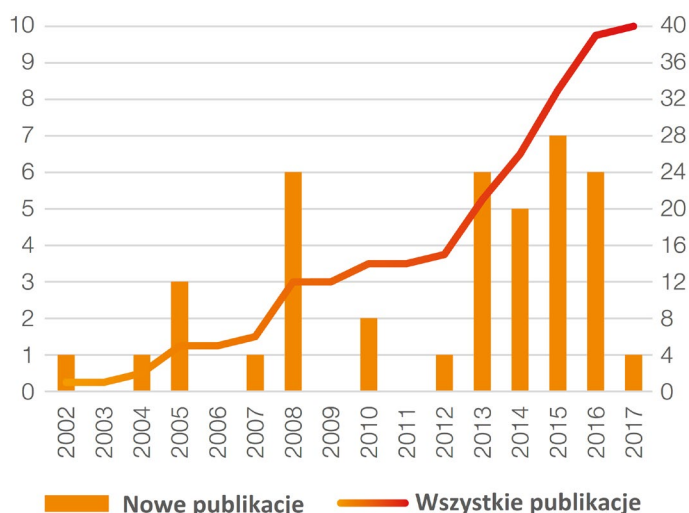
Laubacher, M., C. Perret, and K.J. Hunt, Work-rate-guided exercise testing in patients with incomplete spinal cord injury using a robotics-assisted tilt-table. *Disabil Rehabil Assist Technol*, 2014. 10(5): p. 422-428.

Lukowicz, M., W. Kuczman, and J.R. Hoffman, [Active tilting a patient to erect position within a very early period of neurorehabilitation]. *Acta Bio-Optica Informatica Medica*, 2008. 14(3).

Makarova, M.R. and O.V. Romashin, [Verticalization as a factor of early rehabilitation in the patients with a spinal cord injury]. *Vopr Kurortol Fizioter Lech Fiz Kult*, 2013(4): p. 47-52.

Plewa, H., et al. Circulatory stabilisation of acute spinal cord injured patients during physiological continuous passive motion therapy and verticalisation. Poster presented at 39th Annual Congress of the German Society for Biomedical Engineering (DGBMT). 2005 in Nuernberg, Germany.

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Rupp, R., et al., [Reha-Stepper locomotion therapy in early rehabilitation of paraplegic patients]. *Biomed Tech (Berl)*, 2002. 47 Suppl 1 Pt 2: p. 708-11.

Yoshida, T., et al., Cardiovascular response of individuals with spinal cord injury to dynamic functional electrical stimulation under orthostatic stress. *IEEE Trans Neural Syst Rehabil Eng*, 2013. 21(1): p. 37-46

Udary:

Calabro, R.S., et al., Do post-stroke patients benefit from robotic verticalization? A pilot-study focusing on a novel neurophysiological approach. *Restor Neurol Neurosci*, 2015. 33: p. 671-681.

Chernikova, L., et al. The early activation of patients with acute ischemic stroke using tilt table "Erigo": the prospective randomized blinded case-control study in 5th World Congress of NeuroRehabilitation. 2008.

Isaeva, T., et al. Features of early rehabilitation of the patients with the cardioembolic stroke (CES) and chronic heart failure (CHF). in 7th World Congress of the International Society of Physical and Rehabilitation Medicine. 2013. Beijing, China.

Kuznetsov, A.N., et al., Early poststroke rehabilitation using a robotic tilt-table stepper and functional electrical stimulation. *Stroke Res Treat*, 2013. 2013: p. 946056.

Piscitelli, D., et al. Effects of dynamic tilt-table with integrated robotic stepping associated with functional electrical stimulation in acute stroke: a pilot study. in Second International Meeting of the Milan Center for Neuroscience (NeuroMi). 2016. Milan: Journal of Alzheimer's Disease.



Uvarova, O.A., V.D. Daminov, and A.N. Kuznetsov. Functional Electrical Stimulation in Combination with Robotic Mechanic in Patients with Acute Ischemic Stroke. Poster presented at European Society of Physical and Rehabilitation Medicine. 2012 in Thessaloniki, Greece.

van Beers, E., et al., Influence of post stroke rehabilitation using the Erigo®Pro on mobility, balance and walking: a pre-post AB design, in FACULTEIT BEWEGINGS- EN REVALIDATIEWETENSCHAPPEN. 2015, KU Leuven. 18 19

Wieser, M., et al., Cardiovascular control and stabilization via inclination and mobilization during bed rest. Med Biol Eng Comput. 2014. 52(1): p. 53-64.

Urazy mózgowo-czaszkowe:

Frazzitta, G., et al., Safety and Feasibility of a Very Early Verticalization in Patients With Severe Traumatic Brain Injury. J Head Trauma Rehabil. 2015. 30(4): p. 290-2.

Luther, M.S., et al., Orthostatic circulatory disorders in early neurorehabilitation: a case report and management overview. Brain Inj. 2007. 21(7): p. 763-7.

Luther, M.S., et al., Comparison of orthostatic reactions of patients still unconscious within the first three months of brain injury on a tilt table with and without integrated stepping. A prospective, randomized crossover pilot trial. Clin Rehabil. 2008. 22(12): p. 1034-41.

Müller, F. Use of the Erigo in DOC (Disorders of Consciousness). Poster presented at IBIA Meeting. 2008 in Lisbon, Portugal.

Utrata przytomności:

Tavecchia, G., et al., Robotic tilt table reduces the occurrence of orthostatic hypotension over time in vegetative states. Int J Rehabil Res. 2015. 38(2): p. 162-166.

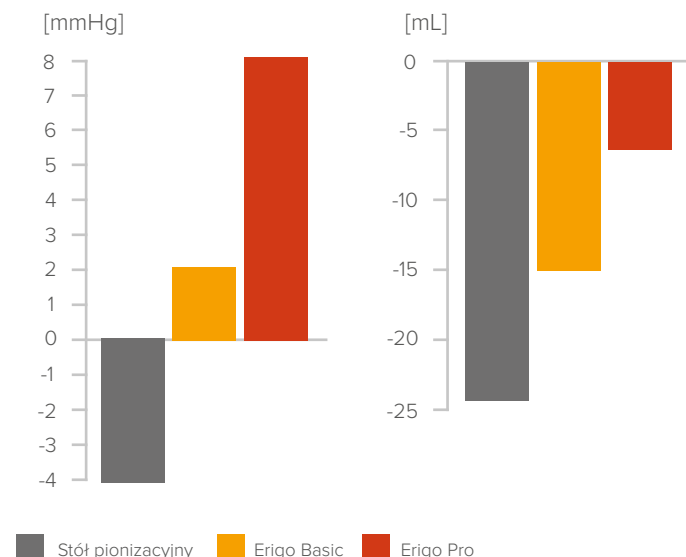
Incisa della Rocchetta, A., et al. Can the ERIGO Increase Level of Consciousness, as Measured by the CRS-R, in a Patient in a Minimally Conscious State? Poster presented at World Federation of Neurorehabilitation (WFNR). 2014 in Turkey.

Opieka na OIT:

Rocca, A., et al., Sympathetic activity and early mobilization in patients in intensive and intermediate care with severe brain injuries: a preliminary prospective randomized study. BMC Neurology. 2016. 16(1): p. 169.

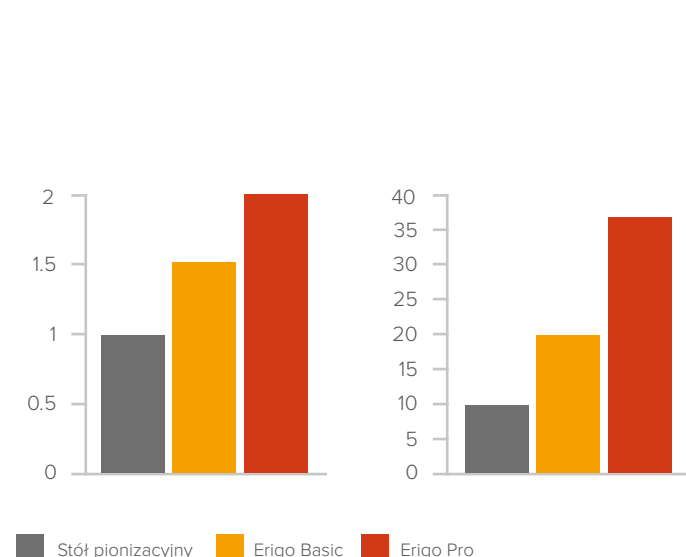
"Aktywność mózgu podczas pracy na stole Erigo® jest porównywalna z treningiem chodu. Wykazano, że aktywność mózgu podczas kroczenia jest bardzo podobna w odniesieniu do lokalizacji oraz formy pobudzenia kory mózgowej jakiej uzyskuje się podczas reedukacji chodu".

Wieser, M., et al., Temporal and spatial patterns of cortical activation during assisted lower limb movement. Exp Brain Res. 2010. 203(1): p. 181-91.



Zmiana ciśnienia tętniczego krwi przy stresie ortostatycznym oraz zmiana objętości udarowej pod wpływem stresu ortostatycznego.

Chernikova L, Umarova R, Trushin I, Domashenko M (2008). „The Early Activation of Patients With Acute Ischemic Stroke Using Tilt-Table – Ergio.” Neurorehabil Neural Repair 22(5):556. Luther MS, Krewer C, Muller F, Koenig E (2008). „Comparison of orthostatic reactions of patients still unconscious within the first three months of brain injury.” Clin Rehabil 22:1034-1041. Yoshida T, Masani K, Sayenko D, (2013). „Cardiovascular Response of Individuals With Spinal Cord Injury to Dynamic Functional Electrical Stimulation Under Orthostatic Stress.” IEEE Trans Neural Syst Rehabil Eng 21(1):37-45. Tavecchia G, Ragusa I (2015). „Robotic tilt table reduces the occurrence of orthostatic hypotension over time in vegetative.



Wzrost siły mięśniowej po 30 dniach treningu oraz wzrost prędkości przepływu krwi obwodowej po 30 dniach intensywnego treningu.

Mohr T et al (1997). „Long-term adaptation to electrically induced cycle training in severe spinal cord injured individuals.” Spinal Cord 35(1):1-16. Krause P, Szecsi J, Straube A (2008). „Changes in spastic muscle tone increase in patients with spinal cord injury using functional electrical stimulation and passive leg movements.” Clin Rehabil 22(7):627-634. Kuznetsov AN, Rybalko NV, Daminov VD, Luft AR (2013). „Early poststroke rehabilitation using a robotic tilt-table stepper and functional electrical stimulation.” Stroke Res Treat. 2013;2013:946056.