Abstract

Introduction: A new approach to the treatment of critically ill patients lies in early mobilization. One of the options is the functional electrical assisted ergometry method (FES-CE). Until now, we do not know how much patients are burdened with this therapy - we know nothing but meaningless numbers. The aim of the work is therefore to describe what the patients undergo during the therapy and to get an idea about the therapy itself.

Aim: Find out the distance traveled during functional electrical stimulation on cycloergometer (meters), the average session duration (seconds) and how energy-intensive the therapy is (calories). Whether performance has improved or coma has shortened.

Methods: Functional electrical stimulation-assisted cycle ergometry. Coma patient is strapped to a cycloergometer modified for use on a hospital bed. Functional electrical stimulation – low-voltage electrical impulses (frequency 40 Hz, current 0-60 mA) transmited by electrodes placed on (glued to) musculus quadriceps femoris, musculus biceps femoris and musculus gluteus maximus bilaterally. Muscle contractions are timed to correlate with turning of the pedals to achieve functional movement. Total distance and duration are set by muscle fatigue causing reduced response to electrical stimulation. Expended energy is calculated from data obtained during the session.

Results: At the end of the therapeutic program using functional electrical assisted ergometry, there was a significant prolongation of duration (p=0,0050) and distance (p=0,0004). Expended energy (p=0,2405) and intensity of electical stimulation (p=0,3633) did not change significantly. A notable decrease in the number of therapies with electical stimulation appeared in 5 out of 14 cases, i.e. 35,7 % patients, where there was a faster acquisition of coma consciousness.

Conclusion: This paper provides clear information (duration, distance travelled, expended energy and intensity of electrical stimulation) about how critical patients are burdened by the FES-CE. These parameters indirectly show how the physical condition of critically ill patients develops during FES-CE therapy.

Keywords: critically ill patient, immobilisation syndrome, secondary manifestations of immobilisation syndrome, physiotherapeutic intervention (rehabilitation), positioning, passive, active, fitness exercise, verticalization, respiratory physiotherapy, bobath concept,

Vojta method (reflex locomotion), proprioceptive neuromuscular facilitation (PNF), electrical stimulation, functional electrical stimulation, distance travelled, duration, expended energy