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INTRODUCING ROBOTIC-ASSISTED REHABILITATION INTO CLINICAL PRACTICE

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Introduction. New technologies are gradually being introduced in all areas of health care to improve patient care. These efforts stem from demographic data showing an increasing number of elderly people, a rising trend in the incidence of diseases with a consequent disability, and society's legitimate demands for the availability of state-of-the-art diagnostic and therapeutic procedures. The introduction of new technologies is also related to an increasing number of musculoskeletal and neuromuscular injuries, including sports medicine. The introduction of robotic and robot-assisted rehabilitation is currently a major challenge in rehabilitation medicine. These are new technologies that are currently of great interest, but the search is still ongoing for optimal indications and treatment protocols to evaluate the effect of treatment as well as possible combinations of interventions. There are also considerable gaps in the information of workers, definitions of treatment procedures, classification of devices, and classification of medical procedures.

The topic to be discussed. The aim is to present the current basic definitions of robotic and robot-assisted devices, classification schemes of devices according to the nature of the movement, segmental focus and mechanical structure, level of movement support, connection with biofeedback, and virtual reality. We present the main advantages of robot-assisted therapy, which arise from the nature of this therapy. These relate mainly to the motor learning process, the training of cognitive functions, the process of neuroplasticity, the influence of neurotrophic and growth factors in the brain, patient motivation, the possibility of adapting the treatment to the current state of the patient, and the objectification of progress in the course of treatment using accurate and reproducible methods. We also present an overview of a series of robotic-assisted devices acquired by the Department of Physiatry, Balneology and Medical Rehabilitation of the Medical Faculty of P. J. Šafárik University and L. Pasteur University Hospital in Košice, within the framework of the international INTERREG project "Robot-Assisted Rehabilitation" – RaRe (SKHU/1902/4. 1/093) in cooperation with the National Institute of Medical Rehabilitation in Budapest, where these technologies are already used as standards. This represents a good potential for professional and scientific research cooperation and the effective implementation of these new technologies under our conditions.

Conclusion. Our preliminary study showed that the introduction of innovative robotically assisted rehabilitation is positively perceived by employees in both workplaces. A significant improvement in functional status and quality of life was demonstrated in a subset of patients. Even when treating patients with more severe degrees of disability, the experience of working with innovative technology motivates rehabilitative employees.