

Gait rehabilitation – contemporary methods

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The World Report on Disability defines the **goals of rehabilitation**: prevention of the loss of function; slowing the rate of loss of function; *improvement or restoration of function*; compensation for lost function; maintenance of current function. **Gait** is an important element of the everyday life functionality of our patients in rehabilitation practice, and is crucial for their independence in activities of daily living, respectively for their autonomy.

Our purpose is to emphasize the potential of some contemporary physical modalities for **balance training** and **gait recovery**, based on best practices and evidence-based research. Principal clinical and instrumental assessment and treatment methods are stated. Special attention is paid to: *functional electrical stimulations* (with low and middle frequency electric currents); *deep oscillation*; *manual therapy techniques* (tractions, mobilizations and manipulations); *proprioceptive neuro-muscular facilitation* (PNF) methods; *analytic exercises*, *device-assisted mechano-therapy* (passive, active or combined), etc. We insist on the importance of *technical aids* (wheelchair, canes, or walking sticks) and weight bearing (restricted, fractional or total) during the rehabilitation process. Future possibilities are cited, including potential of *internet-based educational courses*. We explain some **principles of balance and gait rehabilitation**, due to our modest clinical experience (of 30 years) and our own results in patients with conditions of the nervous and motor systems. Special attention is paid to *neurological and neuro-surgical rehabilitation algorithms – in patients with: post stroke hemiparesis, multiple sclerosis, Parkinsonism, traumatic brain injury (TBI), brain tumors, spinal cord injuries (SCI) with paraplegia; lumbo-sacral radiculopathy and diabetic polyneuropathy (DPNP) with femoral, peroneal or / and tibial paresis; or radiculopathies and peripheral paresis after neurosurgical intervention (for spinal trauma and discal hernia)*. Authors suggest '*Guidelines of operational standard procedures in rehabilitation after lower limb orthopedic surgery*': inpatients with acetabular, inter/transstrochanteric or distal femoral fractures, with gamma nail or vis – plaque

endoprosthesis; joint replacement of lower extremities (hip and knee arthroplasty); ACL and PCL (anterior and posterior cruciate ligament) alloplasty; total and partial meniscectomy. Rehabilitation protocols for patients with *trans-femoral and trans-tibial amputations* are proposed. Our rehabilitation algorithms and guidelines are not intended to be construed or to serve as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. **Typical and atypical clinical cases** will be presented, including patients with comorbidities, complex or multiple fractures, common or rare complications.

For effective gait rehabilitation the inclusion of a multi-professional therapeutic and **rehabilitation team** is obligatory. *Different models of organization of the teamwork* of the staff are applied: **interdisciplinary** (complex care of the patient from different scientific and professional disciplines); **multi-disciplinary** (role of every professional is completely independent from the others); **transdisciplinary** (everyone helps the work of the others; role and functions are distributed). We consider that the clinical practice imposes the necessity of transition from a multi-disciplinary to a transdisciplinary model of team work, with a clear definition of the fields of competence and the responsibility of the team members. In Bulgarian rehabilitation practice traditionally a lot of specialists are included: *medical doctors – specialists* in Neurology, Neurosurgery; Rheumatology; Orthopedics and Traumatology and in Physical and Rehabilitation Medicine (PRM); *bachelors and masters* in Physical Therapy and in Occupational therapy (Kinesio-therapy and Ergo-therapy – according nomenclature of some countries, e.g. Bulgaria and Romania).

Biography

Philosophy Doctor - scientific specialty "Physical Therapy and Rehabilitation"; thesis (2004): 'Investigation of capacities of some physical modalities in the prevention, therapy and rehabilitation of diabetic polyneuropathy patients'. Doctor of Medical Sciences - scientific specialty "Physical Therapy and Rehabilitation"; thesis (2009): 'Complex neurorehabilitation algorithms for functional recovery and amelioration of independence in activities of daily living in socially significant invalidating neurological diseases'. Philosophy Doctor - scientific specialty "Pedagogics"; thesis (2013, Sofia University): 'Innovations in the Education in the field of Rehabilitation'. SCIENTIFIC POSITIONS: Associated Professor (2006); Professor (2010); scientific specialty "Physical Therapy and Rehabilitation". High Attestation Commission at the Council of Ministers, Bg. She knows French, Spanish, English, Russian language .

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