

## RESEARCHES REGARDING MODERN REHABILITATION APPROACHES IN TRAUMATIC BRAIN INJURY TREATMENT FOR BALANCE DISTURBANCES THROUGH THE SENSITIVE SYSTEM INTERVENTION, IN CHILDREN AD ADOLESCENTS

Radu Mihai Avram<sup>1,2</sup>, Liliana Padure<sup>1,2</sup>

<sup>1</sup> Univeristy of Medicine ad Pharmacy „Carol Davila” Bucharest, Romania

<sup>2</sup> National Neuro-psycho-motor Rehabilitation Center „Dr. Nicolae Robanescu” Bucharest, Romania

### Abstract

**Introduction:** Traumatic Brain Injuries (TBI) are caused by different accidents (car, work-related, sport accidents) and can be acute, sub-acute or chronic, leading to a series of imbalances and neurological post-lesion dysfunctions, from which balance disturbance can be named.

**Material and method:** We surveyed TBI patients at the sensitive system intervention (visual and proprioceptive) in Stabilometric Therapy watching the correct posture, the body oscillations' and the static evolution of the center of gravity, to proceed as much as possible towards the physiologic values reporting to the base support. There was observed a study group made of 7 children, aged between 5 and 18 years old, on the course of a two year period of time in which they received stabilometric therapy in our clinics' division, and were evaluated at admission and discharge (2 weeks period). We will use an advanced apparatus device to stimulate and train the static and dynamic balance, through VR projection on a desktop, where well-defined cinematic patterns are identified/asserted to oppose the tendencies to disequilibrium deviation, consecutive to pathology approach with the stimulation of redressing and balancing reactions, including tracing the modified correction adaptation of muscle/postural tonus necessary to gain the correct posture and movement engrams. The patients were put on a pressing plate with sensors in front of a monitor. There were applied postural corrections in isometry and through the visual and proprioceptive system, they could follow their activity and correct it each time they saw a mistake.

The patients' evaluation was made following the spatial and temporal parameters and there was extracted the following data: 1 – epileptic area; 2 – perimeter; 3 – antero-posterior standard deviation; 4 – medio-lateral standard deviation and body oscillations.

**Results:** In TBI patients, the obtained results showed improvement in various spatial and temporal parameters: epileptic area – all 7 patients, perimeter – 7 patients, antero-posterior standard deviation – 7 patients, medio-lateral standard deviation – 7 patients and body oscillations – 5 patients.

**Conclusions:** After this survey we noticed that in cases of TBI patients the proprioception, postural stability and the ability to respond in appropriated time to different and complex tasks, improved significant.

**Key words:** stabilometric therapy, proprioception, rehabilitation, traumatic brain injury