THE ROLE OF WATER ENVIRONMENT REHABILITATION IN PATIENTS WITH NEUROLOGICAL AND COGNITIVE DISABILITIES

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ABSTRACT

In this study 50 subjects (mean age 48.5 years) were evaluated and treated because suffering from neuromotor cognitive and / or mental disabilities. Subjects underwent two evaluations, (T0) and (T1) through, FIM and Tinetti SCALE and Computerized Postural assessment. Considering the scores of the FIM scale, neurological patients went from a score of 84.323 to 97.29 after 20 sessions of treatment (p=0.0487), patients with mental disabilities increased from a score of 76.895 to 94.63 (p = 0.0383). In all patients the FIM scale score increased from 82.692 to 95.75 (p = 0.0107). Gait and balance, evaluated through Tinetti scale, improved from 20.105 to 24.474 (p=0.04) for patients with mental disabilities, from 11.774 to 13.742 (p = 0.4688) for patients with neuromotor disabilities. In all patients the Tinetti score rose from 13,385 to 17,885 (p = 0.4688). The positive results suggests that we continue to develop rehabilitation techniques in water in the future.

Keywords: Water rehabilitation, Mental disabilities, Cognitive disabilities, Balneotherapy, Thermal rehabilitation, Microgravity environment

INTRODUCTION:

The organism-microgravitary environment interaction influences the biomechanical behaviors allowing the reorganization of sensorimotor relations through “unique” stimulation of the functional hierarchies of the central nervous system, thus changing the motor gesture as a whole. The physical characteristics of the aquatic environment can be exploited by the rehabilitator to achieve specific muscle, neurological and sensory recovery with different modality and times compared to the techniques used in dry, stimulating the re-acquisition of neuromotor-sensory skills impaired or even lost.

OBJECTIVE:

The purpose of the study, conducted at the Thermal Rehabilitation Center of Castelnuovo della Daunia (Fg) Italy, in agreement with the National Health Service and with Rehabilitation Chair of Chieti University, is to evaluate the effectiveness of a rehabilitation protocol in thermal aquatic environment, on postural parameters, gait and balance and autonomy on disabled patient. The water of the Castelnuovo della Daunia Thermae is mineral bicarbonate-sulphate-alkaline-earthy used in rehabilitative and functional sub-aqueous modality.

MATERIALS AND METHODS:

50 subjects (mean age 48.5 years) were evaluated and treated because suffering from neuromotor cognitive and / or mental disabilities.

Subjects underwent two evaluations, one before rehabilitation protocol in aquatic environment (T0) and one at the end of the 20 therapy sessions in thermal water (T1) through physiatric, specialist examination, FIM and Tinetti SCALE and Computerized Postural assessment without markers (Sa.BB Imaging), in order to assess the effects of the Protocol on the health
of the patient, evaluating the ADL, balance and postural parameters and if these three data show a correlation in clinical practice.

RESULTS:

Considering the scores of the FIM scale, neurological patients went from a score of 84,323 to 97,29 after 20 sessions of treatment \((p=0.0487)\), patients with mental disabilities increased from a score of 76,895 to 94,63 \((p = 0.0383)\). In all patients the FIM scale score increased from 82,692 to 95,75 \((p = 0.0107)\).

![FIM GLOBALE vs TINETTI GLOBALE](image)

Gait and balance, evaluated through Tinetti scale, improved from 20,105 to 24,474 \((p=0.04)\) for patients with mental disabilities, from 11,774 to 13,742 \((p = 0.4688)\) for patients with neuromotor disabilities. In all patients the Tinetti score rose from 13,385 to 17,885 \((p = 0.4688)\).

![FIM vs SCALA DI TINETTI](image)

These data were validated by the improvements achieved at the postural level, particularly in the values concerning the anteposition of the head, important for the distribution of the load in the polygon of support; supported also by the reduction of the lateral side oscillations of the pelvis.
CONCLUSIONS:

The proposed rehabilitation protocol in the aquatic environment is the result of preliminary, postural, functional assessments and medical history related to the mainly responsible structures for the disease and the framing of the patient in a well-defined pathogenetic syndrome. The standardized and customized rehabilitation protocol, in relation to disability and the residual potentiality of the patient showed scientifically reliable results, through an approach easily implemented in clinical practice that uses principles of EBM and EBP, verifiable over time and therefore sufficiently standardized, to produce results that have enabled positive conclusions about its effectiveness and repeatability.

REFERENCE