

Intensive Physiotherapy Protocols in Pediatric Care

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Introduction

Chronic non-progressive encephalopathy [cerebral palsy (CP)] is one of the most common disorders that causes neuromotor impairments in children. Sensory issues, cognitive impairments, aberrant posture patterns, and changes in postural tone are all symptoms of PC in children [1]. Some methods have been identified in the literature that appears to improve the neuromotor rehabilitation of these youngsters.

Physical Therapy Protocols: Physical therapy's goals are to improve and restore the body's functionality. To overcome gravity's power, a youngster with neuromotor impairments employs compensatory methods. As a result, repeated attempts to achieve such compensation result in muscle imbalances, deformities, greater hypertonia, and decreased functionality in the child [2]. As a result, it is critical that the therapist maintains the children in proper posture throughout the rehabilitation process in order to aid the correction of their body image. In this regard, the PediaSuit, TheraSuit, PenguinSuit, and AdeliSuit are some intense physiotherapy regimens connected with the use of special garments (dynamic splint) that have been shown to treat these youngsters [3-5]. Vest, shorts, kneepads, and shoes with hooks and elastic cords that help place the body in an optimal physical alignment to accomplish daily activities are common examples of special clothing [5]. The recommendation of special clothes is justified because usually the child with CP presents axial hypotonia (mainly trunk) and spasticity in the muscles of appendicular skeleton (limbs) [2].

Apart from the unique clothing, the above-mentioned therapy regimens are designed in rigorous modules (3-4 hours each day, 5 days a week, for 4-5 weeks). The combination of these characteristics has shown to be effective in the rehabilitation of children with neuromotor impairments.

Warm up (massage, stretching, exercise with passive, active, and active assisted mobilisation); kinesiotherapy (kinesiotherapy cage with active resistance); kinesiotherapy using special clothes (with elastic cage, plank balance, ball, roller, trampoline); respiratory physiotherapy, gait training (using clothes on uneven terrain, stairs, ramps, conveyor, grass, parallel bars with and without) are some of the therapeutic resources used in these protocols [3-5]. Some resources, such as a kid-friendly elliptical ergometer and electrical stimulation devices with closed loop and biofeedback, may be included in these protocols, but they are currently uncommon in clinical practice.

In 2011, Bailes published a study that looked at the impact of wearing a suit during an intense rehabilitation programme on motor performance in children with CP [6]. Twenty youngsters were randomly assigned to one of two groups: experimental (TheraSuit) or control (control suit), and they were put through an intensive rehabilitation regimen. Before and after the procedure, the Gross Motor Function Measure (GMFM) and the Pediatric Evaluation of Disability Inventory (PEDI) were administered (4 and 9 weeks). This was the first research to look into the many aspects of suit therapy. Despite the fact that the study found no statistical differences ($p < 0.05$) between the two suits utilised, the experimental group (TheraSuit) demonstrated statistically significant improvement after 9 weeks of therapy as evaluated by the GMFM and the PEDI. Due to the limited sample size and lack of

blinding of families and treating therapists, this study has significant drawbacks.

Because these intensive physiotherapy protocols with the use of suits were just devised a few years ago, there are limited researches on their efficacy. Scaling up treatment is restricted to therapist training and the price charged to families, which ranges from 2000 to 4000 dollars for four weeks of therapy. However, there has been a great demand for these procedures in clinical practice, as a result of the happiness of the families who have previously experienced their success.

Functional diagnosis and monitoring of results: Classic assessment instruments can be suggested for functional diagnosis and monitoring of results achieved in the rehabilitation process of children with neuromotor deficits: the Alberta Infant Motor Scale (AIMS), which detects developmental delays in children under the age of 18 months; the PEDI, which assesses functional performance in children aged 6 months to 7 years; and the GMFM, which quantifies the percentage of a child's motor function in relation to typical motor development [7]. However, in order to evaluate nutritional status and fat free mass, objective equipment such as force platforms, electrogoniometry, electromyography, mechanomyography, and dual-energy x-ray absorptiometry (DEXA) are increasingly being used [3].

Conclusion: In global neurology rehabilitation, intense physical treatment protocols with customized clothing in conjunction with objective instruments of evaluation and functional diagnosis have shown to be a trend. These protocols can incorporate the best components of numerous approaches and treatment procedures, and they're backed up by research on exercise physiology. Although it is impossible to determine the impact of the suit on the treatment protocol's success, the suit facilitates the therapist's treatment delivery. Traditional physiotherapy (a few hours of treatment per week) for neuropediatric patients has become obsolete in a short period of time. More precision in treatment protocol design is possible because to technological advancements and the use of objective assessment instruments.

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