

Role of Spider Cage in Motor Control in Cerebral Palsy

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Abstract

Cerebral palsy can be defined as disorder of movement and posture caused by lesion in immature brain. Brain lesion leads to abnormal sensory motor development along with visual, cognitive and hearing impairments. Motor control in normal individual is developed as body come under the influence of higher centers. Universal exercise unit, spider web, theasuit, functional training and repetitions of body transitions are used in these protocols. Therapy sessions are extended from three to four hours. It can be used with children and adults with different neurological conditions like stroke, cerebral palsy, spinal cord injury and spina bifida. Spider cage is made of metal with equal length, width and height, size of cage can be different depending upon type of population pediatric or adults. Cage consists of elastic cords and belts, which are used to support the patients in the cage. Different activities of functional training can be practice in this cage easily. Elastic resistance of cords can be used to strengthen the weak muscles. Initiation of a particular posture can be easily trained in this cage. Therapies and techniques are discovered over the time to treat patients with cerebral palsy. Although use of universal exercise unit in rehabilitation is not new, however in cerebral palsy it can be used with new concept. Scientific research literature is limited on its effectiveness.

Keywords: Cerebral palsy; Motor control; Universal exercise unit

Introduction

Cerebral palsy can be defined as disorder of movement and posture caused by lesion in immature brain [1]. Brain injury can occur in fetal life or during the first year of life by hypoxia, asphyxia, neonatal jaundice, traumatic brain infections and prematurity [2]. Brain lesion leads to abnormal sensory motor development along with visual, cognitive and hearing impairments [3]. Exact cause of cerebral palsy is still unknown; however brain damage can occur before birth, during the birth and after the birth. Pregnancy disorders are considered leading cause before birth [4]. Birth asphyxia, prematurity, neonatal infections and traumatic brain injury are some important causes in cerebral palsy [5]. Cerebral palsy has different types like spastic, athetoid, ataxic, hypotonic and some tome mixed type [6]. Cerebral palsy can be divided depending upon parts of body involve like monoplegia, diplegia, hemiplegia and quadriplegia, this is called topographical classification of cerebral palsy [7]. Gross motor functional classification categorized the children into level I (least disability) to level V (severe disability) depending upon the abilities and disabilities of child [8].

Universal Exercise Unit

Intensive protocols in pediatric physical therapy are getting popularity in cerebral palsy centers [9-15]. Universal exercise unit, spider web, theasuit, functional training and repetitions of body transitions are used in these protocols. Therapy sessions are extended from three to four hours. It can be used with children and adults with different neurological conditions like stroke, cerebral palsy, spinal cord injury and spina bifida. Spider cage is made of metal with equal length,

width and height, size of cage can be different depending upon type of population pediatric or adults. Cage consists of elastic cords and belts, which are used to support the patients in the cage. Different activities of functional training can be practice in this cage easily. Elastic resistance of cords can be used to strengthen the weak muscles. Initiation of a particular posture can be easily trained in this cage.



Figure 1: One leg control.

Universal exercise unit can be used in different therapeutic posture (Figures 1-4). Continuous training of a specific posture in universal exercise unit enables the child to adopt that posture in participation.

Universal exercise unit can be used in adjunct to various different traditional physical therapy treatments like strength training, stretching, functional training and weight bearing on joints [16-18]. In intensive therapy session universal exercise unit is frequent part of treatment. Therapist has better control of body and easy to induce the posture in this unit.



Figure 2: Half kneeling.



Figure 3: Quadruped training.



Figure 4: Standing with activity.

Conclusion

Therapies and techniques are discovered over the time to treat patients with cerebral palsy. Although use of universal exercise unit in rehabilitation is not new, however in cerebral palsy it can be used with new concept. Scientific reach literature is limited on its effectiveness.

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