Physical Therapy Department for Growth and Development Disorder in children and Its Surgery

Master Degree
2014

Author : Ahmed Sayed Ali Sayed
Title : Lumbosacral mechanics as a predictor of low back dysfunction in subjects with central obesity
Supervisors 1. Omaima Mohamed Aly Kattabei
2. Hatem Mohamed El-Azizi
3. Ibrahim Mustafa Mustafa
Degree : Master.
Year : 2014.
Abstract :

Background: The effectiveness of the Lumbosacral mechanics in determining level of intensity of low back pain and level of disability at subjects with central obesity has been the subject of debate for many years. The purpose: This study was conducted to investigate if the lumbosacral mechanics could be a predictor of low back dysfunction in subjects with central obesity. Subjects: Seventy subjects with mean age 32.29±1.2 years, mean height 161.29 cm, mean weight 84.69 kg and mean body mass index 32.4 were participated in this study also with waist circumference >88 in females subjects and >102 in male subjects referred from an orthopedist with the diagnosis of chronic mechanical low back pain since more than 3 months and class I obesity (30-34.9). Method: Lumbosacral mechanics were determined by x-ray, waist circumference was determined by tape measurement, intensity of low back pain was determined by numerical pain rating scale and level of disability was determined by Oswestry disability index scoring and all of these variables were determined for all subjects. Results: There was non significant correlation between numerical pain rating scale and lumbar gravity line (r = 0.007, p = 0.95), between numerical pain rating scale and absolute rotatory angle (r = -0.07, p = 0.52), between numerical pain rating scale and pelvic tilt (r = -0.15, p = 0.19), between numerical pain rating scale and pelvic incidence (r = -0.14, p = 0.23), between numerical pain rating scale and sacral slope (r = -0.03, p = 0.8), between waist circumference and lumbar gravity line (r = 0.13, p = 0.28), between waist circumference and sacral slope (r = 0.15, p = 0.19), between waist circumference and numerical pain rating scale (r = 0.02, p = 0.83), between waist circumference and Oswestry disability index scoring (r = 0.02, p = 0.83), between absolute rotatory angle and pelvic tilt (r = -0.13, p = 0.27) and between pelvic tilt and sacral slope (r = 0.09, p = 0.42). Conclusion: It was concluded that there was no significant correlation between Lumbosacral mechanics and low back pain, between waist circumference and low back pain and between waist circumference and (lumbar gravity line, pelvic tilt and sacral slope) but there was significant correlation between waist circumference and (absolute rotatory angle and pelvic incidence). So, lumbosacral mechanics couldn’t be a predictor of low back dysfunction in subjects with central obesity.

Key words 1. Body Mass Index.
2. Lumbosacral, mechanics
3. pelvic incidence.
4. sacral slope.
5. central obesity.
6. waist circumference.
7. pelvic tilting
8. lumbar gravity line

Arabic Title Page : ميكانيكية الفقرات القطنية العجزية كمتنبئ للخلل الوظيفي لأسفل الظهر في الأشخاص ذوي السمنة المركزية.
Pagination : 118 pages
Library register number : 3929-3930.
The purpose of this study was to evaluate the effect of constraint induced movement therapy on gait parameters of hemiparetic cerebral palsied children. Thirty children (13 boys, 17 girls) with hemiparetic cerebral palsy whose age ranged from four to six years participated in this study. They were classified randomly into two groups of equal number; control group (fifteen children: seven boys, eight girls) who received a designed physical therapy program directed towards improving gait pattern and study group (fifteen children: six boys, nine girls) who received the same designed physical therapy program given to the control group in addition to constraint induced movement therapy technique. Gait parameters measured from both control and study groups were evaluated by using foot print before and after eight weeks of treatment. A significant improvement was recorded in the measured variables in both groups when comparing their pre and post treatment mean values. However, post treatment improvement was recorded in the favor of the study group as compared with the control group. From the obtained results of this study, it could be concluded that constraint-induced movement therapy is beneficial to improve gait pattern in hemiparetic cerebral palsied children.

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<tr>
<th>Key words</th>
<th>1. Constraint induced movement therapy</th>
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**Arabic Title Page:** أثر العلاج المبنى على الموانع على محددات المشي لدى أطفال الشلل المخبي المصابين بالذات التنسيق المهني

**Library register number:** 3913-3914.
Background: Obesity is significantly associated with an endless list of postural disorders. The prevalence of childhood obesity is steadily increasing so it is important to study the effect of obesity on musculoskeletal system, trying to plan a program in the prevention and treatment of those children. Purpose of the study: the purpose of the study was to assess the static posture during standing position among the obese adolescent girls and compare their obtained data with non-obese adolescent girls. Subjects: One hundred of non-obese adolescent girls (group A) compared with thirty obese adolescent girls (group B). Their ages ranged from 12-14 years old, the mean values ± SD were 13 ±0.7 and 12.8 ±1.2 years old for both groups respectively, Methods: All girls evaluated on static standing position from sagittal view. AutoCAD was used for analyze the photographic posture. The posture measurements was achieved through analysis of five angles (cervico-thoracic angle, trunk angle, lumber angle, pelvic tilt angle, sway angle) to quantitatively assess the positioning of several body segments in the upright posture. Results: The results of this study revealed significant differences when comparing the mean values of the measuring angles between obese adolescent girls and non-obese adolescent girls. Conclusion: Obesity have a greater effect on static posture. These effects on obese adolescent girls represented through protruded head, hyper kyphosis (dorsal spine), hyper lordosis (lumber spine), anterior pelvic tilting, and increased posture sway.

Key words
1. obese adolescent girls
2. postural analysis
3. static standing
4. Obesity.
5. Adolescent Girls.

Arabic Title Page: تقييم العضود الفقري في وضع الوقف الثابت عند المراهقين البدينات.

Library register number: 3817-3818.
**Author** : Amira Yosry El-Dwiny

**Title** : Efficacy of dual-task training on body sway during walking in children with spastic diplegia


**Supervisors**
1. Kamal El-Sayed Shoukry
2. Zeinab Ahmed Hussein Abo-Saleh
3. Kamilia Saad Abd El-Hameed

**Degree** : Master.

**Year** : 2014.

**Abstract**

**Background**: Motor learning and performance are the result of an interaction between mechanical and neurologic mechanisms, in addition to cognitive factors (including arousal and attention). By modifying both cognitive and motor demands of the task, therapists can adjust their interventions to create appropriate challenges for children with spastic diplegic cerebral palsy. **Purpose**: The purpose of the study was to evaluate the efficacy of dual-task gait training on body sway during walking in children with spastic diplegic cerebral palsy. **Methodology**: Twenty spastic diplegic cerebral palsy children whose ages ranged from 6 to 10 years were included in this study. They were equally divided into two groups (control and study group). Children in the control group received selected physical therapy program, whereas children in the study group received the same physical therapy program in addition to the dual-task gait training program, which included walking (motor task) simultaneously with visual identification task (cognitive task). Evaluation of frontal plane body sway was carried out pre and post treatment by measuring the angle of lateral trunk deviation away from vertical line during walking using kinovea (video motion analysis software). **Results**: Comparing the results of pre and post treatment revealed that the angle of trunk deviation was decreased by significant degree in both study and control groups, while the post treatment results revealed that children in the study group showed (0.05) <significanty less trunk deviation compared to that of the control group where p-value was significant. **Conclusion**: Physical therapy program in addition to dual-task gait training were more effective in decreasing body sway in spastic diplegic children who walk with lateral trunk lurching gait.

**Key words**

1. cerebral palsy
2. spastic diplegia
3. dual-task gait training
4. children

**Arabic Title Page**: تأثير التدريب بالمهمة المزدوجة على تمايل الجسم أثناء المشي في الأطفال المصابين بالشلل المزدوج التقلصي.

**Library register number** : 3999-4000.
Abstract

Standing is a critical skill that took part in all activities of the child daily living. Although properly aligned feet is essential for proper controlled standing, there is few studies concerning the most effective type of orthoses for correction of the feet pronation in spastic diplegic cerebral palsy cases or comparison between the effect of various orthotics. Purpose: To determine the effect of using both supramalleolar orthoses and/or using medial heel wedge for improving foot alignment which will be reflected on proper standing posture. Subjects: Ten children (group A) with spastic diplegic cerebral palsy received selected therapeutic exercises for achieving controlled standing pattern using supramalleolar orthoses. Another ten children (group B) received the same physical therapy exercise program but using medial heel wedge for correcting the pronation deformity. The treatment session lasted for one hour with rest interval, three times per week for three successive months. Methods: standing ability was evaluated by using Gross Motor Function Measure Scale (GMFM-88), while foot pronation angle was assessed using CorelDraw software before and after three months of successive treatment. Result: There effect of using supramalleolar orthoses on feet pronation in spastic diplegic children did not differ from the effect of the medial heel wedge, both corrected the degree of pronation and gross motor skill represented by kneeling &crawling and standing domains of Gross motor functional measure but no method is better than the other. there is no significant difference between using either supramalleolar orthoses or medial heel wedge for correction of pronated feet in spastic diplegic children.

Key words
1. Foot pronation
2. Standing.
3. Cerebral palsy
4. Supramalleolar Splint.
5. Spastic Diplegic.
6. Medial Heel Wedge
7. Children

Arabic Title Page
جبيرة فوق القدم مقابل وند الكعب الأنسي على الأقدام المتكئة عند الأطفال المصابين بالشلل الدماغي بالجانيين.

Library register number : 3859-3860.
**Title:** Correlation between anthropometric Measurements and balance In normal children.

**Abstract:** This study was to evaluate the correlation between anthropometric measurements as (height (HT), weight (WT) and width of base of support (WBOS) and balance tests (Biodex balance system BBS and Functional reach test FRT) in normal Egyptian children. Subjects: Total number of 70 children who were normally developing in the age 8-11 years, boys n=36 and girls n= 34 were included in this study. Methods: The outcome measure which used was the Biodex Balance System at level 3 of dynamic test measuring Anteroposterior (APSI), Overall stability index (OSI) Mediolateral (MLSI) and the Functional Reach Test (FRT) to assess the balance in normal children after measuring child weight, height, Body mass index (BMI) and width of base of support. The person correlation coefficient (r) was used to measure the association between weight, height and width of base of support and balance tests. Results: It showed a weak positive correlation between body composition (weight and height) and balance (FRT, SLAP and ML). While width of base of support showed negative weak correlation with FRT and weak positive correlation with (SLAP and ML). Conclusion: From this study we concluded that boys had good balance stability (SLAP and ML) than girls in the same age group specially age group 8-9 years were also this age group had the best balance abilities groups than age group 10-11 years and age group 9-10 years. In spite of there were no significant difference in gender with age groups, there were significant difference with age group. Weight showed significant difference with only SI of the Biodex Balance System. Height showed significant difference with balance variables. Width of base of support show no correlation with Biodex balance variables. Functional Reach Test showed no correlation with Biodex Balance System variables.

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**Arabic Title Page:** العلاقة بين القياسات الانتروبومنترية والالتزام في الأطفال الأصحاء.

**Library register number:** 3975-3976.
The purpose of this study was to investigate the effect of visual rehabilitation on hand function in spastic cerebral palsied children with cortical visual impairment (CVI). Twenty spastic cerebral palsied children with CVI, from both sexes, ranged in age from 1 to 3 years old, participated in this study. They were divided randomly into two groups of equal number; study and control group. The study group (group A) was treated by using visual rehabilitation program including different visual stimulation modalities inside the sensory room in addition to the standard occupational therapy program. The control group (group B) was treated by the same standard occupational therapy program only. Evaluation of visual level and fine motor skills was carried out for each child of both groups before and after four months of treatment. The results of this study revealed a statistical significant improvement of both parameters when comparing its results before and after treatment for each group. Also, there was a statistical significant difference in both parameters when comparing its results after treatment for both groups, but in favor to study group. It was concluded that using visual rehabilitation program in combination with standard occupational therapy program based on the concept of eye hand coordination is essential part of rehabilitation of spastic cerebral palsied children with CVI to improve both visual level and fine motor skills.

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**Arabic Title Page**: تأثير التأهيل البصري على استخدامات اليد للأطفال المصابين بالشلل الدماغي التقلسي مع ضعف الإصبار المركزي.

**Library register number**: 3841-3842.
Objective: The aim of this work was to systematically review the studies which assess the effect of intensive suit therapy on functional abilities for children with cerebral palsy.

Methods: Systematic review of randomized control trials studies. A search was made in Medline, Cochrane library, PEDro and Google scholar; from the earliest date of December 2012.

Intervention: Intensive suit therapy (IST) programs performed by the physical therapist in children diagnosed as cerebral palsy with age between birth to eighteen years.

Outcome measure: Gross motor function.

Results: Only 4 studies met the inclusion criteria. Meta-analysis was done and the current level of evidence to support the effectiveness of intensive suit therapy in children with CP became weak. As according to this review there was no enough support to use IST for children with cerebral palsy.

Conclusion: The current level of evidence to support the effectiveness of intensive suit therapy on children with cerebral palsy is not sufficient.


Arabic Title Page: فحص منهجي: العلاج المكثف بطريقة البدلة العلاجية على القدرات الوظيفية للاطفال المصابين بالشلل الدماغي.

Library register number: 3865-3866.
Purpose of the study: to evaluate the effect of underwater training on step length, walking speed and time spent on each foot in children with spastic diplegic cerebral palsy. Subjects: Twenty children with spastic diplegic cerebral palsy from both sexes (15 males and 5 females) with Gross Motor Function Classification System levels (III and IV), with age range from 4 years till 7 years old and mean age was 5.4 years, participated in this study. Methods and Instrumentation: Children were classified into two groups, study group (A) which received underwater gait training and traditional physical therapy program for spastic cerebral palsy, and control group (B), which received traditional program for spastic cerebral palsy only. Step length, walking speed and time on each foot were measured before and after treatment program(two months) through using Biodex Gait Trainer II. Results: Results showed that there was non-significant improvement of group (A) and also, non-significant improvement of group (B) after participation in the treatment program with statistically non-significant difference between group (A) and (B). Conclusion: From the obtained results in this study, after training, there was insignificant improvement of step length, walking speed and time on each foot in children with spastic diplegic cerebral palsy.

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Classification number: 618.92836.HME

Arabic Title Page: تأثير التدريب تحت الماء على المتغيرات الکیناماتیکیة للمشی في الأطفال المصابین بالشلل التلفیي المزدوج.

Library register number: 3733-3734.
### Purpose of the study

The purpose of the study was to determine the effect of floor reaction ankle-foot orthosis on kinematics of the hip and knee joints during walking in children with spastic diplegic cerebral palsy. Methodology: Twenty-six children with spastic diplegia, their age ranged from 4 to 8 years old, were participated in this study. They were classified into 2 groups of equal number, the control group received selected treatment program, once per day for one hour, three sessions per week for three successive months whereas the study group received the same program in addition to 30 min of gait training while wearing FRAFO. Both groups were assessed before and after the treatment program using AUTOCAD program for photographic analysis of movement. Results of this study revealed statistically significant improvement in the measuring variables of the knee angular excursion of the study group when comparing post treatment mean values and non-significant improvement in the measuring variables of the hip angular excursion of both group when comparing pre and post treatment mean values. Conclusion: From the obtained results of this study, it can be concluded that wearing GRAFO can be used to improve kinematics of the knee joint in children with spastic diplegic cerebral palsy.

### Key words

1. FRAFO
2. diplegic CP
3. AUTOCAD program
4. gait kinematics
5. Children.
6. Cerebral palsy.

### Classification number

618.92836.IME

### Arabic Title Page

تأثير جبيرة ردع فعل الأرض للكاحل والقدم على المتغيرات الكينيماتيكية للمشي في الأطفال المصابين بالشلل التقلصي المزدوج.

### Library register number

3707-3708.
The purpose of this study was to evaluate the effect of suit therapy application on quadriceps muscle strength in spastic diplegic cerebral palsy children. Thirty spastic diplegic children ranged in age between six and eight participated in this study. They were classified into two groups of equal number, control and study groups. The control group received a specially designed physical therapy program. The study group received the same program given to the control group while wearing the therapeutic suit. Hand Held Dynamometer was used to evaluate muscle strength in the two groups before and after four successive four weeks of application of the treatment programs. The pre-treatment results revealed non significant difference in all measured variables between the two groups. The post treatment results revealed a statistically significant difference between control and study group regarding quadriceps strength and GMFM in favor to the study group. We concluded that, suit therapy can be considered as an effective modality in improving muscle strength and can be used safely in the treatment program of spastic diplegic cerebral palsy children.

### Key words

1. Cerebral palsy
2. Diplegia.
3. suit therapy
4. quadriceps muscle strength
5. children.

### Arabic Title Page

تأثير البدلة العلاجية على قوة العضلة للعضلة الرباعية في الفخذ لدى الأطفال المصابين بالشلل المخى التقلصي المزدوج.

### Library register number

3949-3950.
**Objective:** The aim of this work was to systematically review the studies which assess the effects of Taping therapy on gross motor function and skills of hand for children with cerebral palsy. Methods: Systematic review of randomized controlled trials studies. A search was made in Medline, Cochrane library, PEDro and Google scholar; from the earliest date to February 2013. Intervention: Taping therapy programs performed by the physical therapist in children diagnosed as cerebral palsy with age between birth to eighteen years. Outcome Measures: Gross motor function, and skills of hand. Results: Only 3 studies met the inclusion criteria. Meta-analysis could be done and the current level of evidence to support the effectiveness of taping therapy for children with CP becomes strong. As according to this review there is no enough support to use taping therapy for gross motor function but there is enough support to use taping therapy for hand skills on children with cerebral palsy. Conclusion: The current level of evidence to support the effectiveness of taping therapy for gross motor function on children with cerebral palsy is not sufficient however, the level of evidence to support the effectiveness of taping therapy treatment for hand skills on children with cerebral palsy is sufficient.

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- **Classification number:** 618.92836.KNT
- **Arabic Title Page:** فحص منهجي: استخدام الشريط اللاصق في علاج الأطفال المصابين بالشلل الدماغي.
- **Library register number:** 3741-3742.
<table>
<thead>
<tr>
<th>Author</th>
<th>Sara Yousef Abd Elglil Elsebahy</th>
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<tr>
<td>Title</td>
<td>Validity of spontaneous muscle activity by surface electromyography in relation to hoffman reflex in hemiplegic children</td>
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</table>
| Supervisors             | 1. Emam Hassan Elnegamy  
2. Khaled Ahmed Olama  
3. Amena Hendawe |
| Degree                  | Master. |
| Year                    | 2014. |
| Abstract                | The purpose of this study was to determine the validity of using spontaneous muscle activity recorded by surface electrode for evaluation of spasticity in spastic hemiplegic CP children. Thirty spastic hemiplegic CP children from both sexes (16 males and 14 females) participated in this study. They were selected from the outpatient clinic. A computerized electromyographic device was used for recording H/M ratio and advanced computerized electromyographic apparatus (Neuro-EMG-Micro): for recording spontaneous activity. Results: that there was significant correlation between H/M ratio and positive sharp wave amplitude where the r value equals (+0.9) and had P-value of (0.0001). There was significant correlation between H/M ratio and Fibrillation potential amplitude where the r value equals (+0.86) and had P-value of (0.0001). |
| Key words               | 1. Spontaneous activity  
2. Electromyography  
3. Spastic hemiplegia  
4. hoffman reflex in hemiplegic  
5. children |
| Arabic Title Page       | صلاحية علاقة نشاط العضلات العفوية المسجلة من السطح الكهربائي بمفعّل هوفمان للأطفال المصابين بالانكروachment. |
| Library register number | 3857-3858. |