PREPARED BY NERVEEN ABD EL SALAM ABD EL KADER AHMED

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

**Doctoral Degree**

**2020**

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| **Author** | **:** | **Ahmed Salim Mohamed.** |
| **Title** | **:** | **Universal Exercise Unit Versus Functional Resisted Training Effect On Muscle Strength In Spastic Diaplegia.** |
| **Dept.** | **:** | **Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery.** |
| **Supervisors** | **1.** | **Hebatallah Mohamed Kamal.** |
| | **2.** | **Eham Mohamed Abd-Elgafar.** |
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| **Degree** | **:** | **Doctoral.** |
| **Year** | **:** | **2020.** |
| **Abstract** | **:** | |

**Purpose: to compare between the effect of Universal Exercise Unit and Functional resisted exercises on the strength of lower limb muscles in children with spastic diaplegia following participation in a physical therapy program which included Universal Exercise Unit strengthening program and Functional resisted training exercises; three times per week for three successive months. Subjects: Forty spastic diaplegic children of both sexes ( boys and girls), their ages ranged from to years old , chosen from outpatient clinic of Faculty of Physical Therapy, Cairo University. They were randomly classified into two groups of equal number (Two study groups). Methods: peak force, Total work, Maximum work repetition, Average power, Agonist to antagonist ratio by using Biodex Isokinetic Dynamometer before and after the application of treatment program. Methods: peak force, Total work, Maximum work repetition, Average power, Agonist to antagonist ratio by using Biodex Isokinetic Dynamometer before and after the application of treatment program. Results: The results revealed statistically significant improvement in the treatment values for the two study groups (More improvement in study group B than study group A) in all measured variables. Conclusion: Universal Exercise Unit may be considered as an effective method for improving lower limb strength more than Functional resisted training exercises in spastic diaplegic cerebral palsy children.**

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| **Key words** | **1.** | **Cerebral palsy.** |
| | **2.** | **Diaplegia.** |
| | **3.** | **Average Peak Force.** |
| | **4.** | **Total Work.** |
| | **5.** | **Maximum work repetition.** |
| | **6.** | **Average power.** |
| | **7.** | **Agonist to antagonist ratio.** |
| | **8.** | **Universal Exercise Unit.** |
| | **9.** | **Functional resisted training.** |
| | **10.** | **Muscle Strength.** |
| **Classification number** | **:** | **000.000.** |
| **Pagination** | **:** | **97 p.** |
| **Arabic Title Page** | **:** | |
| **Library register number** | **:** | **7159-7160.** |

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|---|---|---|
| **Author** | **:** | **Amal Youssef Elsaeed Wahba.** |
| **Title** | **:** | **Posture And Quality Of Life In Heavy Using Smart Phone Adolescents.** |
| **Dept.** | **:** | **Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery.** |
| **Supervisors** | **1.** | **Faten Hassan Abdelazeim** |
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| **Year** | **:** | **2020.** |
| **Abstract** | **:** | |

**Background: Postural abnormalities are often found in adolescents who use the smart phones heavily. Purpose: The main objectives of this study were to measure the postural deviations from comfortable standing position in heavy using smart phone adolescents and to determine the correlation between the quality of life and smartphones addiction in normal adolescents. Methods: One hundred forty normal male students ranging in age between 17 and 18 years, were selected randomly, studied at Pharos University, Alexandria. Sample group was screened to detect any postural deviations in head, trunk and lower limbs. Postural assessment software (SAPO/PAS) were used to analyze and document postural findings, the smart phones addiction scale (SAS) was used to assess the degree of addiction to the smart phones, the Quality of Life Index scale(QoLI) was also used to assess the quality of life among students. Results: Screening showed that the most common postural deviations recorded were in the head, 87.9% of the sample presented some deviation in the horizontal alignment of the head from anterior view, 100% of the sample had forward head from lateral view. Regarding the shoulder, 87.1% of the sample had drop shoulder, 93.6% of the sample had drop pelvis. Regarding the trunk 97.1% of the sample had scoliosis, 31.4% had false leg length discrepancy .The results showed a strong relationship between smartphones addiction and decreasing the quality of life among the students, also there were a strong relationship between SAS and the postural deviations developed. Conclusion: Postural abnormalities occur at a high rate in adolescents using the smartphones heavily leading to negative effects on the quality of life. Therefore it should be stressed on the importance of providing information to adolescents about the problem of bad posture and its consequences.**

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|---|---|---|
| **Key words** | **1.** | **Posture, Adolescents.** |
| | **2.** | **Smartphones addiction.** |
| | **3.** | **Quality of life** |
| | **4.** | **Adolescents.** |
| **Classification number** | **:** | **000.000.** |
| **Pagination** | **:** | **173 p.** |
| **Arabic Title Page** | **:** | **القوام وكفاءة الحياة لدى المراهقين كثيفي إستخدام الهواتف الذكية** |
| **Library register number** | **:** | **7123-7124.** |

# ELECTRONIC GUIDE TO THESES APPROVED BY PHYSICAL THERAPY DEPARTMENT FOR GROWTH AND DEVELOPMENT DISORDER IN CHILDREN AND ITS SURGERY

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|---|---|---|
| **Author** | **:** | **Amira Yosry El-Dwiny.** |
| **Title** | **:** | **Efficacy of goal-directed training on gait and energy expenditure index in children with spasticity.** |
| **Dept.** | **:** | **Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery.** |
| **Supervisors** | **1.** | **Kamal El-Sayed Shoukry** |
| | **2.** | **Aziza Kaleel Omar** |
| | **3.** | **Asmaa Abd Elsatar Abonour** |
| **Degree** | **:** | **Doctoral.** |
| **Year** | **:** | **2020.** |
| **Abstract** | **:** | |

**Background: Poor endurance and early fatigue are factors contributing to an ambulatory decline in spastic cerebral palsy that was associated with low level of physical activity and general health problems, so it is vital to develop effective strategies to reduce excessive energy cost during walking to improve participation. Purpose: This study aimed to investigate the effect of goal-directed training on gait and energy expenditure index, and to examine the relation between changes in energy expenditure index and changes in gait related gross motor functions and gait pattern in children with spastic CP. Methods: Thirty children with spastic cerebral palsy were randomly allocated to either study or control group. Children in the study group participated in goal-directed conditioning training program with heart rate biofeedback for 30 minutes, 3 days per week, for 8 weeks in addition to a traditional physical therapy program, whereas children in the control group received the same traditional physical therapy program only. Measured variables were: gross motor function scores for standing (GMFM-D), walking, running and jumping (GMFM-E), two kinematic gait parameters: the angle of the knee at initial contact (ic-knee) and the angle of the hip at terminal stance (ts-hip), through 2 dimension gait analysis, in addition to, energy expenditure index (EEI) and the corresponding walking speed on a treadmill. Results: Post-treatment results showed significant improvements within both groups in all measured variables except for the kinematic gait parameters, significant improvements were found only in the study group. No statistically significant difference was found between study group and control group post-treatment; in spite of that, there was clinical difference and higher percentage of improvement in favor to study group compared to control group regarding all measured variables. In study group, the correlation between mean difference value of EEI with mean difference values of GMFM-D, GMFM-E and ic-knee were not statistically significant; however significant moderate positive correlation was found between changes of EEI and changes of ts-hip. Conclusions: However, there was no statistically significant difference between both groups post treatment, goal-directed training was an effective program with higher percentage of improvements in the study group compared with the control group regarding all measured variables. Factors other than gait related gross motor functions or gait pattern may be related more to changes in EEI post goal-directed conditioning training.**



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| **Key words** | **1.** | **Goal-directed training.** |
| | **2.** | **energy expenditure index.** |
| | **3.** | **heart rate biofeedback.** |
| | **4.** | **gait analysis.** |
| | **5.** | **Gross Motor Function Measure.** |
| | **6.** | **spasticity.** |
| | **7.** | **children with spasticity.** |
| **Classification number** | **:** | **000.000.** |
| **Pagination** | **:** | **143 p.** |
| **Arabic Title Page** | **:** | **فاعلية التدريب بواسطة التوجه لهدف على المشي و مؤشر الطاقه لدى الاطفال المصابين بالشلل التقلصي.** |
| **Library register number** | **:** | **7155-7156.** |

# ELECTRONIC GUIDE TO THESES APPROVED BY PHYSICAL THERAPY DEPARTMENT FOR GROWTH AND DEVELOPMENT DISORDER IN CHILDREN AND ITS SURGERY

| | | |
|---|---|---|
| **Author** | **:** | **Ebtehal Ahmed Mahmoud Taha.** |
| **Title** | **:** | **Effect of Different Therapeutic Interventions on Upper Extremity Skills in Children with Unilateral Spastic Cerebral Palsy.** |
| **Dept.** | **:** | **Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery.** |
| **Supervisors** | **1.** | **Kamal El Sayed Shoukry** |
| | **2.** | **Samia Abdel Rahman Abdel Rahman** |
| | **3.** | **Hassan Magdy ElBarbary** |
| **Degree** | **:** | **Doctoral.** |
| **Year** | **:** | **2020.** |
| **Abstract** | **:** | |

**Background: Upper limb dysfunction is a common symptom in children with cerebral palsy (CP), especially those with unilateral spastic CP (USCP) which intern has the potential to limit participation in life and causing distress to both children and parents. Objective: The purpose of this study was to compare the therapeutic effect among hand-arm bimanual intensive therapy (HABIT), modified constrained induced movement therapy (mCIMT) and task oriented training (TOT) on upper extremity functions and hand grip strength in children with unilateral spastic CP. Methods: Sixty USCP children of both genders with age range from five to eight years were randomly divided into three groups of equal number. Group (A) received HABIT, group (B) received mCIMT and group (C) received TOT. Treatment was conducted for 60 minutes, three days/week for three successive months. Peabody Developmental Motor Scale (PDMS-2) and Quality of Upper Extremity Skills Test (QUEST) were used to assess the upper extremity functions for all groups. Baseline Pneumatic hand held dynamometer was used to measure hand grip strength. Assessment was performed before as well as after the period of intervention. Results: Significant improvement in the visual motor integration and grasping subsets of PDMS-2, dissociated movements and grasp subtests of QUEST as well as hand grip strength in the three groups after intervention with a higher significant effect for group (B). Conclusion: All of the three physical therapy interventions (HABIT, mCIMT and TOT) could improve upper extremity functions for children with USCP with a more significant effect for mCIMT.**



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|---|---|---|
| **Key words** | **1.** | **Modified constrained induced movement therapy.** |
| | **2.** | **Task oriented training.** |
| | **3.** | **Cerebral palsy.** |
| | **4.** | **Unilateral spasticity.** |
| | **5.** | **Hemiparesis.** |
| | **6.** | **Hand arm bimanual intensive therapy.** |
| | **7.** | **Therapeutic Interventions.** |
| | **8.** | **Upper Extremity Skills.** |
| | **9.** | **Children with Cerebral Palsy.** |
| **Classification number** | **:** | **000.000.** |
| **Pagination** | **:** | **172 p.** |
| **Arabic Title Page** | **:** | **تأثير تدخلات علاجية مختلفة على مهارات الطرف العلوي لدى الأطفال المصابين بالشلل الدماغي النصفي.** |
| **Library register number** | **:** | **7277-7278.** |

# ELECTRONIC GUIDE TO THESES APPROVED BY PHYSICAL THERAPY DEPARTMENT FOR GROWTH AND DEVELOPMENT DISORDER IN CHILDREN AND ITS SURGERY

| | | |
|---|---|---|
| **Author** | **:** | **Fathia Mostafa Ahmed Gelany.** |
| **Title** | **:** | **Impact of Weight Loss on Ventilatory Function in Obese Asthmatic Children.** |
| **Dept.** | **:** | **Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery.** |
| **Supervisors** | **1.** | **Kamal El-Sayed Shoukry** |
| | **2.** | **Elham Elsayed Salem** |
| | **3.** | **Mohamed Shahat Badawy** |
| **Degree** | **:** | **Doctoral.** |
| **Year** | **:** | **2020.** |
| **Abstract** | **:** | |

**Objective: of this study was to investigate the effect of weight loss by whole body vibration on ventilatory functions in obese asthmatic children. Materials and Methods: Forty obese asthmatic children from both sexes aged from 8 to 12 years participated in this study. They were assigned randomly into two groups of equal number (group A and group B). Group A received balanced caloric diet and breathing exercises. Group B received the same balanced caloric diet and breathing exercises given to group A in addition to whole body vibration. The treatment program was conducted 3 sessions /week for 3 successive months. Anthropometric measures (measurement of body weight, height, body mass index , waist circumference, hip circumference and waist/hip ratio) and ventilatory functions measures (FVC, FEV1, FEV1/FVC%, , PEFR) were evaluated before and after 3 months of treatment for both groups. Results: There was significant improvement of all measuring variables including anthropometric and ventilatory functions parameters in both groups after treatment ($p<0.05$).However, there was no significant difference between control and study groups after treatment ($p<0.05$) in all measured variables. Conclusion: The balanced caloric diet and breathing exercises were effective in decreasing body weight and BMI and improving ventilatory functions in obese asthmatic children**

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|---|---|---|
| **Key words** | **1.** | **Asthma.** |
| | **2.** | **Whole Body Vibration.** |
| | **3.** | **Ventilatory Functions.** |
| | **4.** | **Children in Obesity.** |
| | **5.** | **Obesity.** |
| | **6.** | **Obese Asthmatic Children.** |
| **Classification number** | **:** | **000.000.** |
| **Pagination** | **:** | **114 p.** |
| **Arabic Title Page** | **:** | **تأثير فقدان الوزن علي وظائف الرئة في الاطفال البدناء المصابون بالربو الشعبي.** |
| **Library register number** | **:** | **7099-7100.** |

# ELECTRONIC GUIDE TO THESES APPROVED BY PHYSICAL THERAPY DEPARTMENT FOR GROWTH AND DEVELOPMENT DISORDER IN CHILDREN AND ITS SURGERY

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|---|---|---|
| **Author** | **:** | **Maha Hamed Abd Elwadood El-Gharib.** |
| **Title** | **:** | **Relationship between Values of Quadriceps angle and Tibiofemoral angle among adolescents.** |
| **Dept.** | **:** | **Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery.** |
| **Supervisors** | **1.** | **Amira Mohamed El Tohamy** |
| | **2.** | **Nanees Essam Mohamed** |
| **Degree** | **:** | **Doctoral.** |
| **Year** | **:** | **2020.** |
| **Abstract** | **:** | |

**Background: Quadriceps angle (Q-angle) and Tibiofemoral angle (TF-angle) are both considered in assessing the proper alignment of the knee joint when assessed from frontal plane. Both are used for assessment of knock-knees and bow-leg deformities. Objectives: To investigate the interrelationship among Quadriceps angle and Tibiofemoral angle, compare the effects of dominancy on both angles, find the difference in q-angle/tf-angle with respect to dominance, sports' practice and dominance. Design: An observational design (cross-sectional study). Settings: The assessment procedures were conducted at the Faculty of Physical Therapy, Cairo University. Participants: One-hundred and fifty adolescent, age ranged from 12 to 18 years represented two groups; group A (Athletic group) included four subgroups of different sport activities, and group B (Non-athletic group). Outcome measures: Both Quadriceps angle and Tibiofemoral angle were measured through computerized photogrammetry. Results: This study showed a statistically significant strong relationship between Quadriceps angle and Tibiofemoral angle (r= 0.73, P<0.05), also a statistically significant difference regarding dominance, sports practice and gender (P-value<0.05). Conclusion: there is a strong direct relation between q-angle and tf-angle which means that the greater one of them the greater the other and vice-versa.**



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| **Key words** | **1.** | **Computerized Photogrammetry.** |
| | **2.** | **Tibiofemoral angle.** |
| | **3.** | **Quadriceps angle.** |
| | **4.** | **adolescents.** |
| **Classification number** | **:** | **000.000.** |
| **Pagination** | **:** | **81 p.** |
| **Arabic Title Page** | **:** | **العلاقة بين قيم زاوية العضلة الرباعية و زاوية عظمة الساق و الفخذ عند اليافعين.** |
| **Library register number** | **:** | **7273-7274.** |

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|---|---|---|
| **Author** | **:** | **Mohammed Emad El-Dein Mohamed Esmail.** |
| **Title** | **:** | **Aerobic exercises versus acupuncture for overweight children.** |
| **Dept.** | **:** | **Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery.** |
| **Supervisors** | **1.** | **Samia Abdel Rahman Abdel Rahman** |
| | **2.** | **Gehan Mosaad Abd El Maksoud** |
| **Degree** | **:** | **Doctoral.** |
| **Year** | **:** | **2020.** |
| **Abstract** | **:** | |

**Background and purpose: Obesity is considered as a main factor that affects human activity and his participation in daily living. Obesity in children is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health. The purpose is to compare between the efficacy of exercise and acupuncture in reducing weight of the overweight children. Methods: Forty overweight children of both sexes, with age ranged from 9-12 years were divided randomly into 2 groups of equal number. Children in group (I) received exercise therapy program and group (II) received acupuncture therapy. Both groups received diet therapy. Treatment was conducted for one hour of exercise therapy program and half an hour for acupuncture therapy, three times per week for a successive three months for both groups. In Body 270 apparatus was used to assess body weight, body fat mass, total body water and waist-hip ratio before and after three months of intervention. Results: Significant improvement in weight reduction, body fat mass, total body water and waist-hip ratio was gained in the both groups. Significant difference in favor of group (II) was obtained regarding weight reduction, body fat mass, total body water and waist-hip ratio. Conclusion: Both exercise therapy and acupuncture could reduce weight of overweight children.**



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| **Key words** | **1.** | **Acupuncture.** |
| | **2.** | **Body water.** |
| | **3.** | **Aerobic exercises.** |
| | **4.** | **Body fat mass.** |
| | **5.** | **Overweight.** |
| | **6.** | **Waist-hip ratio.** |
| | **7.** | **Children in overweight .** |
| **Classification number** | **:** | **000.000.** |
| **Pagination** | **:** | **104 p.** |
| **Arabic Title Page** | **:** | **التَّمارينُ اَلْهَوائيَّةُ مُقابلَ الوَخْز بالْإبَر فِي عِلاجِ الوَزْنِ الزّائِدِ عِنْدَ الأطْفال.** |
| **Library register number** | **:** | **6969-6970.** |

# ELECTRONIC GUIDE TO THESES APPROVED BY PHYSICAL THERAPY DEPARTMENT FOR GROWTH AND DEVELOPMENT DISORDER IN CHILDREN AND ITS SURGERY

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|---|---|---|
| **Author** | **:** | **Radwa Said Shahat Ahmed.** |
| **Title** | **:** | **Role of Triceps Kinesiology Taping on Elbow Flexion Tightness in Extended Erb's Palsy Infants.** |
| **Dept.** | **:** | **Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery.** |
| **Supervisors** | **1.** | **Emam Hassan ElNegmy** |
| | **2.** | **Gehan Mosaad Abd ElMaksoud** |
| | **3.** | **Amena Mohamed Hindawy** |
| **Degree** | **:** | **Doctoral.** |
| **Year** | **:** | **2020.** |
| **Abstract** | **:** | |

**Background: Contracture formation of the elbow flexors occurs in the majority of children recovering from extended Erb's palsy. Objective: To investigate the effect of kinesiotaping in preventing elbow flexion tightness in infants with extended Erb's palsy. Method: Thirty-two infants from both genders, aged 3-6 months, and diagnosed with extended Erb's palsy, were randomly allocated into two groups equally. Group (A) received a designed program of physical therapy triweekly for three months, while group (B) received the same physical therapy program in addition to Triceps kinesiotaping. Assessment of muscle power and elbow extension range of motion were conducted using the Toronto Active Motion Scale and smartphone goniometer "G-Pro" application respectively. Assessment was conducted before and after 3 months of treatment for both groups. Results: Significant difference was recorded in elbow extension range of motion when comparing the affected side with the non-affected side in group (A) after the treatment (P=0.0001), while there was non-significant difference in group (B) (P=0.234). Significant improvements of elbow extensors' and flexors' muscle strength were obtained post-treatment within each group. There was significant difference between both groups regarding extensor and flexor muscle strength in favor of group (B) (P=0.0001, P=0.001 respectively). Conclusion: Kinesiotaping of the Triceps muscles is an effective modality for boosting muscle power and preventing the occurrence of elbow flexion tightness in affected infants with extended Erb's palsy.**



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|---|---|---|
| **Key words** | **1.** | **Kinesiotaping.** |
| | **2.** | **Toronto Active Motion Scale.** |
| | **3.** | **Elbow Flexion Tightness** |
| | **4.** | **Extended Erb's Palsy.** |
| | **5.** | **Smartphone Goniometer.** |
| | **6.** | **Erb's Palsy Infants.** |
| **Classification number** | **:** | **000.000.** |
| **Pagination** | **:** | **92 p.** |
| **Arabic Title Page** | **:** | **دور الشريط المطاطي الحركي على العضلة ثلاثية الرؤوس العضدية في مرونة العضلة ثنائية الرؤوس العضدية للرضع ذوي شلل الإرب الممتد.** |
| **Library register number** | **:** | **7187-7188.** |

# ELECTRONIC GUIDE TO THESES APPROVED BY PHYSICAL THERAPY DEPARTMENT FOR GROWTH AND DEVELOPMENT DISORDER IN CHILDREN AND ITS SURGERY

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|---|---|---|
| **Author** | **:** | **Shimaa Abd El Rahim Abd El Aty.** |
| **Title** | **:** | **Association between motor skills and different types of learning disabilities.** |
| **Dept.** | **:** | **Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery.** |
| **Supervisors** | **1.** | **Gehan Hassan Elmeniawy** |
| | **2.** | **Zeinab Ahmed Hussein** |
| | **3.** | **Emad Abdul-Maksoud Mahgoub** |
| **Degree** | **:** | **Doctoral.** |
| **Year** | **:** | **2020.** |
| **Abstract** | **:** | |

**Objectives: To determine the level of motor skills and its association with different types of specific learning disability in children. Methods: The cross-sectional study conducted on 100 children 50 with specific learning disabilities (29 dyscalculia, 11 dyslexia and 10 mixed) and 50 typical, their ages ranged from 9.8 years and 12.9 years (53 boys and 47 girls). The motor performance was evaluated by Bruininks-Oseretsky Test of Motor Proficiency, second edition. Its total composite composed of four composites; fine manual control, manual coordination, body coordination, and strength and agility. Results: There were significant differences in scores of Bruininks-Oseretsky Test of Motor Proficiency, second edition between children with a specific learning disability and typical ones ($p < 0.05$). The associated subtests with different types of specific learning disabilities were fine motor integration, upper limb coordination, and bilateral coordination. Conclusion: It was concluded that the children with specific learning disability had defects in the total motor proficiency (gross and fine motor composites). The most affected subtests that associated with those children were fine motor integration, upper limb coordination and bilateral coordination. So it is important to evaluate the motor performance in the children with specific learning disability.**

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|---|---|---|
| **Key words** | **1.** | **Learning disabilities** |
| | **2.** | **Motor skills** |
| | **3.** | **Children - disabilities** |
| **Classification number** | **:** | **000.000.** |
| **Pagination** | **:** | **102 p.** |
| **Arabic Title Page** | **:** | **الارتباط بين مجموعات فرعية من المهارات الحركية وأنواع مختلفة من صعوبات التعلم.** |
| **Library register number** | **:** | **7083-7084.** |

# ELECTRONIC GUIDE TO THESES APPROVED BY PHYSICAL THERAPY DEPARTMENT FOR GROWTH AND DEVELOPMENT DISORDER IN CHILDREN AND ITS SURGERY

| | | |
|---|---|---|
| **Author** | **:** | **Silvia Hanna Botros Tawadros.** |
| **Title** | **:** | **Comprehensive Assessment of Fine Motor Skills in Children with Acute Lymphoblastic Leukemia.** |
| **Dept.** | **:** | **Physical Therapy Department for Growth and Developmental Disorder in Children and its Surgery.** |
| **Supervisors** | **1.** | **Faten Hassan Abd El-Azim** |
| | **2.** | **Shorouk Ahmed Wagdi Elshennawy** |
| | **3.** | **Moatasem Mohamed Hatem El-Ayadi** |
| **Degree** | **:** | **Doctoral.** |
| **Year** | **:** | **2020.** |
| **Abstract** | **:** | |

**Objective: Children diagnosed with acute lymphoblastic leukemia (ALL) at their early childhood are more susceptible to neuromuscular and musculoskeletal impairments. This cross-sectional study was designed to assess various domains of fine motor skills besides the strength of hand musculature in children treated for ALL compared with a healthy control group. Methods: Fifty-four children treated for ALL on maintenance phase aged from 4 to 7 years, were compared to an age and sex-matched control group. Hand grip strength was examined using the Jamar hand-held dynamometer. Fine motor performance was assessed using the total fine motor form of the Bruininks-Oseretsky Test of Motor Proficiency-second edition (Bot-2). Results: Diminished hand grip strength was observed in ALL group for dominant hand (P=0.02) and the non-dominant hand (P=0.002). Children with ALL had significantly impaired fine motor skills in all measures of Bot-2 compared with the typically developing group ($P < 0.05$). Conclusion: From the obtained results of this study, children treated for ALL were more likely to develop muscle weakness and fine motor problems. Periodic evaluation during treatment is recommended to avoid any possible complications.**

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|---|---|---|
| **Key words** | **1.** | **Acute lymphoblastic leukemia.** |
| | **2.** | **fine motor** |
| | **3.** | **Assessment.** |
| | **4.** | **chemotherapy, children** |
| | **5.** | **Children with Acute Lymphoblastic Leukemia.** |
| **Classification number** | **:** | **000.000.** |
| **Pagination** | **:** | **91 p.** |
| **Arabic Title Page** | **:** | **التقييم الشامل للمهارات الحركية الدقيقة في الأطفال المصابين بسرطان الدم الليمفاوى الحاد.** |
| **Library register number** | **:** | **7117-7118.** |