Department of Basic Science

Doctoral Degree

2010

Author	**:**	**Ahmed Ebrahim Elerian.**
Title	**:**	**Effect of Low Intensity ultrasonic on Ehrlich Solid Tumor in Vivo.**
Dept.	**:**	**Department of Basic Science.**
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Degree	**:**	**Doctoral.**
Year	**:**	**2010.**
Abstract	**:**	

Purposes: To determine the effect of low intensity ultrasonic on Ehrlich solid tumor in vivo. Study Design: It is a randomized controlled study. Methodology: Thirty one mice were divided into 2 experimental groups. Experimental group I (which started after 4 weeks from induction of Ehrlich solid tumor) contained 17 mice, which subdivided into treated group contained 10 mice, and the control group which received shame ultrasonic and contained 7 mice. Experimental group II (which started after 2 weeks from induction of Ehrlich solid tumor) , contained 14 mice, which subdivided into treated group contained 7 mice, and the control group which received shame ultrasonic and contained 7 mice. Comparison in between both groups in each experiment was done for measuring tumor cell size and tumor necrotic area through histopathology examination, and for measuring Vascular Endothelial Growth Factor (VEGF) expression through immunohistochemistry examination. Also comparisons between treated groups of 2 experiments were done. Results: The study revealed that there were significant differences in the measurements of Tumor cell size between treated and control groups in 1^{st} and 2^{nd} experiment. For tumor necrotic area measurements there were significant differences between treated and control group in 2^{nd} experiment, and no significance difference in 1^{st} experiment. For VEGF expression there was highly significant difference between treated and control group in 2^{nd} experiment and no significant difference in 1^{st} experiment. And for all variables there were significant difference in between 1^{st} and 2^{nd} experiment Conclusion: Low intensity ultrasonic particularly targeted the vascular structures of tumor, and may prevent further tumor growth.

Key words	**1.**	**Ultrasonic.**
	2.	**Antitumor.**
	3.	**VEGF.**
	4.	**angiogenesis.**
	5.	**Low Intensity ultrasonic. on**
	6.	**Ehrlich Solid Tumor in Vivo.**
Arabic Title Page	**:**	**تأثير الموجات الفوق صوتية منخفضة الشدة علي ورم ايرلش الصلب داخل الجسم.**
Library register number	**:**	**2235-2236.**

Author	**:**	**Ahmed Taha Farrag.**
Title	**:**	**Influence of Base of Support and Load Knowledge on Trunk Mechanics During Lifting.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Mohsen El-Sayyad.**
	2.	**Fatma Seddik.**
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Degree	**:**	**Doctoral.**
Year	**:**	**2010.**
Abstract	**:**	

Background: Large percentage of world population suffers from low back pain. Investigators paid great attention to investigate the factors leading to such problem. Among these factors are base of support (BOS) and lack of load knowledge. Purposes: to investigate the effect of changing BOS and lack of load knowledge on trunk mechanics and muscle activity, during lifting. Sample: Eighteen subjects, with a mean age of 26.8 ± 4.9 years, were recruited. Methods: electrical activity from 10 trunk muscles was recorded. Subjects performed a total of 36 symmetrical lifting trials lifting boxes of different weight. Wide and narrow BOS were used. Knowledge had two conditions: known and unknown box weight. Results: showed that significantly higher compressive spinal forces ($p<0.001$) and muscle activity ($p<0.001$) were recorded when lifting unknown weight compared to known condition. Stance had minimal effect, on compression ($p=0.592$) and muscular activity ($p=0.447$), compared to knowledge although higher values were recorded with wide BOS. Interaction between stance and knowledge resulted in significantly higher sagittal trunk kinematics ($p=0.031$) when lifting a box of unknown weight with wide BOS. Conclusion: findings revealed that it is critical to know the weight of the item to be lifted before lifting to avoid back injury. Foot placement during lifting can either increase or decrease spinal loading depending on foot orientation.

Key words	**1.**	**load knowledge.**
	2.	**base of support.**
	3.	**spine biomechanics.**
	4.	**lifting.**
	5.	**Trunk Mechanics.**
Arabic Title Page	**:**	**تأثير قاعدة الإرتكاز و معرفة وزن الثقل على ميكانيكا الجذع أثناء الرفع.**
Library register number	**:**	**2325-2326.**

Author	**:**	**Amira Mohamed Aly Elgendy.**
Title	**:**	**Effect of magnetic therapy and neurodynamic tension on median nerve function.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Fatma Sedik Amin.**
	2.	**Ali Mamdoh El-Ashmawy.**
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Year	**:**	**2010.**
Abstract	**:**	

Background: Carpal tunnel syndrome (CTS) is the most common disorder causing sensory and motor disturbances in the hand. It has been increasing over the past two decades and it is a known cause of work disability. Purpose of the study: To investigate the effect of pulsed magnetic therapy (PMT) and neurodynamic tension (NDT) on altering pain level, median sensory and motor distal latencies (MSDL and MMDL), and the skin blood perfusion (microcirculation) of the hand in patients with CTS. Subjects: Forty five CTS patients (34 females and 11 males) with age ranged from (30 to 50) years old and the mean age was (42.51±7.52) years. Materials and methods: The patients were assigned randomly into three equal groups. Group A (PMT group) received PMT on the wrist for 30 min. 3 times per week for 6 weeks, group B (NDT group) received NDT in the from of upper limb tension tests, 3 times per week, for 6 weeks, and group C (combined group) that received both treatments for 6 weeks. Pain level, MSDL and MMDL, and microcirculation were measured pre and post treatment by visual analogue scale, electromyography, and laser Doppler flowmeter, respectively. Results: There was significant decrease in pain intensity, MMDL and MSDL in all groups with higher significance in group C. Also there was significant increase in skin blood perfusion in group A and C with higher significance in group C, while there was no significant change in group B. Conclusion: This study showed the feasibility and safety of magnetic therapy and neurodynamic tension for treating CTS patients. The combined treatment provides statistical significant improvement in pain level, objective neuronal functions of the median nerve, and in skin blood perfusion of the hand.

Key words	**1.**	**Carpal tunnel syndrome.**
	2.	**Pulsed magnetic therapy.**
	3.	**Neurodynamic tension.**
	4.	**Pain.**
	5.	**Electrodiagnosis.**
	6.	**Microcirculation.**
	7.	**magnetic therapy.**
	8.	**neurodynamic tension.**
	9.	**median nerve function.**
Arabic Title Page	**:**	**تأثير العلاج المغناطيسى وشد العصب على وظيفة العصب الأوسط.**
Library register number	**:**	**2321-2322.**

Author	**:**	**Einas Elsayed Mohamed Abu Taleb.**
Title	**:**	**The Relationship between Cervical Curvature and Mechanical Cervical Dysfunction.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Omaima kattabei.**
	2.	**Samy Abd El Samad.**
	3.	**Hatem El Azizy.**
Degree	**:**	**Doctoral.**
Year	**:**	**2010.**
Abstract	**:**	

The purpose: **The purpose of this study was to determine the relationship between the cervical curvature and the forward head posture with neck pain intensity and functional disability level respectively, and to investigate the effect of age and sex on the relationship between the cervical curvature with pain intensity and neck functional disability respectively and on pain and neck functional disability as well.** ***Subjects:*** **100 patients suffering from chronic mechanical neck pain were anticipated in this study. Their age ranged from 20 to 60 years with a mean (40.79±10.63).** ***Method:*** **forward head displacement (FHP), absolute and relative rotatory angles (ARA and RRA) were measured on lateral cervical radiographs, pain using visual analogue scale (VAS) and functional disabilities using neck disability index (NDI) were obtained.** ***Results:*** **there was a significant correlation between neck pain intensity and functional disability level among sex and different decades. There was a non significant correlation between FHP and neck pain intensity and functional disability level. There was a non significant correlation between neck pain intensity and functional disability level and cervical curvature (ARA and RRA) among sex and different decades.** ***Conclusion:*** **there was a significant correlation between neck pain intensity and functional disability level among sex and age but a non significant correlation between the absolute and relative rotatory angles and FHP with neck pain intensity and functional disability level respectively. Furthermore, there was a non significant effect of sex and age on the relationship between the absolute and relative rotatory angles with neck pain and functional disability respectively.**

Key words	**1.**	**Cervical lordosis**
	2.	**chronic neck pain.**
	3.	**chronic mechaical neck pain.**
	4.	**Disability.**
	5.	**forward head posture.**
Arabic Title Page	**:**	**العلاقة بين مدى انحناء الفقرات العنقية مع الخلل العنقي الميكانيكي.**
Library register number	**:**	**2189-2190.**

Author	**:**	**Mohamed Taher Mahmoud El Desoky.**
Title	**:**	**Efficacy of Therapeutic Intervention on multifidus muscle Dysfunction.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Omaima Kattabei.**
	2.	**Ahmed Kholeif.**
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Degree	**:**	**Doctoral.**
Year	**:**	**2010.**
Abstract	**:**	

Background: **Histological and morphological changes of multifidus muscle have been reported in lumbar disc herniation (LDH), but there is much debate about the effectiveness of different treatment programs that can correct multifidus dysfunction in chronic low back pain (LBP) with LDH.** ***The purpose:*** **this study was conducted to investigate and compare the effect of lumbar stabilization exercises and manipulation on multifidus muscle in chronic LBP patients with LDH.** ***Subjects:*** **sixty patients aged ranged from 30 – 50 years suffering from chronic LBP with LDH were randomly assigned into three groups, each group included 20 patients.** ***Method:*** **group (A) (control group) received general exercises for back muscles, group (B) received general exercises and lumbar stabilization exercises, and group (C) received general exercises and lumbar manipulation (experimental groups). The measurements before and after 6 weeks of treatment were collected for pain intensity by visual analogue scale, functional disabilities by Oswestry disability index, lumbar repositioning by Biodex system, cross sectional area (CSA) and the asymmetry of both sides of multifidus muscle at the forth and fifth lumbar vertebrae by ultrasongraphy.** ***Results:*** **there was significant improvement in all measured variables after treatment in groups (B and C) than group (A). Group (C) showed significant reduction in pain intensity and functional disabilities more than group (B), while group (B) revealed significant improvement in lumbar repositioning accuracy than group (C). There was no significant difference in CSA and asymmetry of multifidus muscle between groups (B and C).*** ***Conclusions:*** **both experimental groups fulfilled greater improvement in all measured variables than the control group. General exercises with manipulation reduced pain intensity and functional disabilities better than general exercises with stabilization exercises, while lumbar repositioning accuracy improved more in general exercises with stabilization exercises. The CSA and asymmetry of multifidus muscle improved to the same degree in both experimental groups.**

Key words	**1.**	**Multifidus dysfunction.**
	2.	**Therapeutic Intervention on multifidus Dysfunction.**
	3.	**low Back pain.**
	4.	**lumbar stabilization exercises.**
	5.	**lumbar manipulation.**
Arabic Title Page	**:**	**مدي كفاءة تدخل العلاج الطبيعي على خلل العضلة متعددة الأجزاء.**
Library register number	**:**	**2187-2188.**

Author	**:**	**Osama Ahmed Khaled.**
Title	**:**	**Effect of proprioceptive cross training on repositioning accuracy and balance in healthy subjects.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Fatma Sedik Amin.**
	2.	**Mohamed Hussein El-Gendy.**
	3.	**Hassan Eisa.**
Degree	**:**	**Doctoral.**
Year	**:**	**2010.**
Abstract	**:**	

Purposes: To investigate the effect of proprioceptive cross training on Proprioception accuracy of the knee joint and balance in healthy subjects. Materials and methods: Sixty healthy subjects from both sexes were involved, aged between 18– 30 years. They were randomly assigned into two equal groups, thirty subjects each. Subjects in the first group (experimental group) received a proprioceptive training program, while subjects in the second group acted as controls. Training was done 3 times a week for 8 weeks. Proprioceptive accuracy and dynamic balance were measured before and after treatment using Biodex isokinetic and Biodex balance system respectively. Results: there were significant differences between the two groups in proprioception accuracy (P was 0.001), Overall stability index (P was 0.000), anterior-posterior stability index (P was 0.000) and medial-lateral stability index (P was 0.007). Conclusion: Proprioceptive training proved to have significant cross effects in improving proprioceptive accuracy and dynamic balance in healthy subjects.

Key words	**1.**	**Cross training.**
	2.	**Proprioception.**
	3.	**Balance.**
	4.	**repositioning accuracy.**
Arabic Title Page	**:**	**تأثير التدريب المستعرض للمستقبلات الحسية العميقة على دقة إعادة الوضع والاتزان فى الأشخاص الأصحاء**
Library register number	**:**	**2229-2230.**

Author	**:**	**Salah Eldin Bassit Ahmed Elsayed.**
Title	**:**	**The Effect of Microcurrent Electrical Stimulation on Tendon Healing.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Omaima Mohamed Ali Kattabei.**
	2.	**Amal Fawzi Ahmed.**
	3.	**Ibrahim Mohamed Ibrahim.**
Degree	**:**	**Doctoral.**
Year	**:**	**2010.**
Abstract	**:**	

Background: **Microcurrent electrical stimulation (MES) has a significant role in the healing process. It can promote healing in a variety of bone and skin lesions. The purpose of the study: to investigate the biomechanical effect of MES on tendon healing, and to determine if there was an effect of polarity during application.** ***Materials and Methods:*** **70 male New Zealand rabbits; ten of which served as normal group were used as standard biomechanical s data, and the remaining 60 rabbits were randomly allocated into two groups; cathodal MES (n=30), or anodal MES (n=30). Each group was further subdivided into three groups according to the study period; 3, 5 and 8 weeks. Both hind limbs were completely tenotomized, sutured and immobilized in a plaster cast. The right side received either cathodal or anodal application over the injured tendon site, while the left side served as control. Treatment was given duration 30 minutes and was administered in the frequency of 5 sessions/ week. The biomechanical analysis included; load at break (N), ultimate tensile strength (UTS) (N), extension at break (mm), and stiffness (N/mm) values.** ***Results:*** **The study revealed that MES enhance the healing of Achilles tendon, there were significant differences between the treated and untreated sides, there was significant increase in load at break, UTS, and stiffness values in the cathodal group more than the anodal group at the 3 week period, while there was significant increase in the measured values in the anodal group more than the cathodal at 5 and 8 week periods (P<0.05).** ***Conclusion:*** **MES accelerated the healing process of tendon and it was suggested that the polarity of MES application could be an important factor to be considered in treating soft tissues as tendons؛ application of negative polarity at the initial then switching to the positive one.**

Key words	**1.**	**MES.**
	2.	**Tendon healing.**
	3.	**Biomechanical analysis.**
	4.	**Microcurrent Electrical Stimulation.**
Arabic Title Page	**:**	**تأثير التنبيه الكهربائى متناهى الصغر على التئام الأوتار.**
Library register number	**:**	**2075-2076.**

Author	**:**	**Sameh Refaat Ahmed Ibrahim.**
Title	**:**	**Contribution of both central and peripheral fatiguing factors on muscle force output.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Omaima Mohamed Ali Kattabei.**
	2.	**Samy Abd El-Samad Nasef.**
	3.	**Hala El-Habashi.**
Degree	**:**	**Doctoral.**
Year	**:**	**2010.**
Abstract	**:**	

Background: Measurement of muscle fatigue has long been of interest to many different groups, including exercise physiologist and sport physician. Aspects that are commonly considered are the energetic factors but there are several factors contributing to fatigue and the various sites (including central and peripheral sites) in the motor pathway at which fatigue may occur. *The purpose of the study:* to determine changes in muscle force output and blood markers during voluntary and electrically induced fatigue. *Materials and Methods:* 60 male healthy subjects (equally assigned into two groups) were recruited in this study with mean age of 29.9±5.5years. Group one underwent underwent both voluntary and electrically induced fatiguing protocol on left limb, while the right limb underwent electrically induced fatiguing protocol while Group two underwent both voluntary and electrically induced fatiguing protocol on left, while the right limb underwent voluntary induced fatiguing protocol. A TOENNIES neuroscreen plus system was used for measurement of compound muscle action potential.A PHYACTION 787 device was used to apply electric fatigue protocol. A BIODEX 3 system was used to apply voluntary fatigue protocol *Results:* there were significant difference in the amplitude of compound muscle action potential, serum lactate, and serotonin levels between pre-test values and post-test values of the both groups. Also there were significant difference in difference values of compound muscle action potential and serotonin (difference between pre-test and post-test in each limb) between limbs in group I only, while there were significant changes in difference values of serum lactate levels between limbs in both groups. *Conclusion:* it is concluded that: 1) Both factors of voluntary contraction in group I or electrical stimulation in group II contribute to the difference in muscle force output and both played an important role in the difference of compound muscle action potential, serum lactate, and serotonin levels measured pre-test and post test, 2) both compound muscle action potential and serotonin levels doesn't differ when beginning the test with voluntary contraction 3) serum lactate proved to be a sensitive marker when investigating peripheral fatigue chain.

Key words	**1.**	**Central fatiguing factors.**
	2.	**Peripheral fatiguing factors.,**
	3.	**Muscle force output.**
Arabic Title Page	**:**	مساهمة كل من عوامل التعب المركزي والطرفي علي القوة العضلية المخرجة.
Library register number	**:**	**2259-2260.**

Author	**:**	**Walaa Hamdy Ahmed Elsayed.**
Title	**:**	**Influence of age and gender on the mechanics of stair ascent and descent.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Samy Abd-Elsamad Nassif.**
	2.	**Awatif Mohammed Labeeb.**
	3.	**Mohamed Hussein Elgendy.**
Degree	**:**	**Doctoral.**
Year	**:**	**2010.**
Abstract	**:**	

Background: There is discrepancy between males and females in regards to lower extremity injury rate. Lower extremity kinematics and kinetics differences between genders have been identified at many athletic activities and during walking. Few studies have reported the biomechanical aspects of stair climbing for this ergonomically demanding task. None of these studies examined the gender factor at different age groups. Purpose: To identify differences in lower extremity kinematic movement patterns and EMG activity between genders in adult and children during stair ascent and descent. Methods: Forty subjects (20 adults and 20 children each classified as 10 males and 10 females) underwent motion analysis and dynamic EMG while performing stair ascent and descent. Three trials were measured for each subject. Sagittal hip, knee, and ankle angles were collected and EMG activity for gluteus medius (GM), rectus femoris (RF), vastus lateralis (VL), and soleus muscles (SL) were measured. Results: excursions in sagittal plane were higher in children than adult at hip, knee, and ankle during ascent and at hip maximum (max), knee max, and dorsiflexion in descent ($p<0.05$). Females exhibited higher excursions than males at hip max, knee max, and minimum (min) in ascent, and hip max and min, and planter flexion in descent ($p<0.05$). Children possessed higher normalized muscular activity for GM and RF than adult during ascent and descent ($p<0.05$). Females had higher normalized muscular activity than males at SL muscle during ascent ($p<0.05$). Age and gender had significant effect on VL and SL muscles during ascent. Conclusion: females exhibit lower limb characteristics that differ from males during stair ascent and descent. The presence of significant biomechanical differences between children and adults suggests that physical development influences stair climbing patterns.

Key words	**1.**	**stair climbing.**
	2.	**Gender.**
	3.	**Kinematics.**
	4.	**EMG.**
	5.	**Age.**
	6.	**mechanics of stair ascent.**
	7.	**mechanics of stair descent.**
Arabic Title Page	**:**	**تأثير السن و الجنس على ميكانيكا صعود و هبوط الدرج.**
Library register number	**:**	**2341-2342.**

Author	**:**	**Waleed Salah Eldin Elsayed.**
Title	**:**	**Influence of neurodynamic tension versus manipulation on mechanical and neurophysiological responses of sciatic nerve root.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Samy Abd Elsamad.**
	2.	**Hatem Elazizy.**
	3.	**Hazim Bayomi Elsebaei.**
	4.	**Sahar M. Adel.**
Degree	**:**	**Doctoral.**
Year	**:**	**2010.**
Abstract	**:**	

Purposes: this study was conducted to investigate the effects of neurodynamic techniques and lumbar manipulation on pain, functional disabilities, Hoffmann reflex latency, and sciatic nerve root compression of chronic low back pain (LBP) patients with sciatica resulted from lumbar disc herniation (L5 and S1) and which of two types of treatment was better than other. Design of the study: Pre-test post-test group design has been used. Materials and methods: Sixty patients from both sexes were involved, aged between 30 – 50 years. They were divided into two equal groups. Patients in the first group have received neurodynamic techniques, infrared and ultrasonic for chronic (LBP) patients with sciatica. Patients in the second group received lumbar manipulation treatment, infrared, and ultrasonic. The results of study revealed that: there was a significant difference of both neurodynamic techniques and lumbar manipulation on pain, functional disabilities improvement, H-reflex latency, sciatic nerve root compression. However, manipulation showed better effect than neurodynamic except on H-reflex latency which manipulation and neurodynamic have a same effect. Discussion: chronic (LBP) patients with sciatica who received neurodynamic and manipulation treatment (3 sessions/week for 6 weeks) showed improvement in their pain and functional disabilities. Due to clear effect of manipulation, it demonstrated better effect than neurodynamic. Conclusion: lumbar manipulation has satisfied results than neurodynamic, may be due to great effect on reduction of sciatic nerve root compression.

Key words	**1.**	**Chronic low back pain.**
	2.	**neurodynamic treatment.**
	3.	**lumbar manipulation.**
	4.	**Manipulation.**
	5.	**Mechanical of sciatic nerve root..**
	6.	**Neurophysiological nerve.**
	7.	**sciatic nerve root.**
Arabic Title Page	**:**	**تأثير الشد العصبى الديناميكى مقابل المعالجة اليدوية على الاستجابة الميكانيكية و فسيولوجيا الأعصاب لجذر عصب النسا.**
Library register number	**:**	**2219-2220.**