Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and Its Surgery

Master Degree
2013

Author	**:**	**Abeer Abd Rabo Mohammed.**
Title	**:**	**Influence of Sensory disturbance on balance in patients with diabetic polyneuropathy.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Nahed Ahmed Salem.**
	2.	**Gehan Moussa Ahmed.**
	3.	**Ibtesam Mohammed Fahmy.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	

Background: Thirty percent of diabetic polyneuropathic patients (DPN) suffer from balance deficits. Unsteadiness during standing and walking is a frequent complaint of patients with polyneuropathy. Objective: The aim of this study was to evaluate proprioception and vestibular function in patients with DPN and to determine factors that may influence balance in such patients with diabetic polyneuropathy other than proprioception loss. Subjects and Methods: Sixty subjects from both sexes participated in the study. Subjects were assigned into two equal groups; study group included thirty patients with type II diabetes suffering from polyneuropathy and control group included thirty healthy subjects matched in the same characteristics to the study group. All participants were subjected to complete clinical assessment. The dynamic balance was assessed clinically by Berg balance test and laboratory using the Balance Master system. Results: Scores of BBS were significantly lower in the study group compared to the control group ($p<0.0001$). Comparison of the parameters of (LOS) test between the study and control groups revealed a highly significant increase in the reaction time in all directions, a significant decrease in movement velocity, end point excursion, maximum point excursion and directional control in all directions" in the study group compared to control group ($P<0.05$). A highly significant decrease in the mean values of the SOT was found in the study group in all conditions. A significant negative correlation was detected between balance score and age in the study and control group. Wherease asignificant negative correlation was detected between balance score and body mass index in the study group. Conclusion: There is an effect of sensory disturbance on balance in diabetic polyneuropathic patients and this consequently could increase risk of fall in such patients.

Key words	**1.**	**Diabetes Mellitus.**
	2.	**Polyneuropathy.**
	3.	**Postugraphy.**
	4.	**Vestibular system, Balance.**
Arabic Title Page	**:**	**تأثير خلل الإحساس على الاتزان فى مرضى التهاب الأعصاب الطرفية المتعدد فى مرض الداء السكري.**
Library register number	**:**	**3393-3394.**

Author	**:**	**Ahmed Hares Al-Sayed Mostafa**
Title	**:**	**Gans repositioning maneuver with and without postmaneuver restrictions in treatment of benign paroxismal positional vertigo**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Ebtessam Khatab Gad El-Mawla.**
	2.	**Wanees Mohamed Al Amir.**
	3.	**Ahmed Ehab Fahim Chedid.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	

Objectives: Purposes of this study were to determine and compare the effectiveness of Gans repositioning maneuver (GRM) and the Particle repositioning maneuver (PRM) in treatment of benign paroxismal positional vertigo of posterior canal, and to detect the effectiveness of postmaneuver restrictions on the treatment. Study design:This is a controlled randomized study.Intervention: This is a therapeutic intervention. Patients: Forty five patients (30 males and 15 females) were diagnosed as having unilateral benign paroxismal positional vertigo of posterior canal based on the modified Dix-Hallpike test and Videonystagmography. The patients were randomly allocated to one of three equal groups on the basis of the date of the first visit. Patients in group (A) received GRM with postmaneuver restrictions. Patients in group (B) received GRM only. Patients in group (C) received PRM with postmaneuver restrictions. Treatment maneuvers were conducted once per appointment in all groups. Results: There were no significant differences among the three groups in terms of age, sex, BMI, latency and duration of nystagmus measured by Videonystagmography, and vertigo intensity. An average of two GRMs for group (A), 1.66 GRMs for group (B) and 1.60 PRM for group (C) were required to cure patients. There were no statistical differences between group (A) and (C) (P= 0.311 (df= 30-2)) nor between group (A) and (B) (P= 0.459 (df= 30-2)) in the number of the treatment maneuvers needed. Rate of otoconial migration was (2.2%), while the recurrence rate was (4.4%) from the study sample.Conclusions:Results of the current study revealed that the GRM has the same efficacy as the PRM so it is preferred in patients with comorbid factors. Postmaneuver restrictions add no effect to treatment efficacy, so it is preferred to advise the patients to return to normal ADL immediately after administration of repositioning maneuvers.

Key words	**1.**	**Gans Repositioning maneuver.**
	2.	**Benign paroxismal positional vertigo.**
	3.	**Postmaneuver restrictions.**
	4.	**Positional vertigo.**
Arabic Title Page	**:**	**وضعية غانز مع وبدون قيود فى علاج الدوار الوضعي الحميد .**
Library register number	**:**	**3557-3558.**

Author	**:**	**Ahmed Shawky Ali Salim.**
Title	**:**	**Efficacy Of Transcranial Magnetic Therapy On Fatigue In Patients With Multiple Sclerosis.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Usama Mohammad Rashad.**
	2.	**Ahmed Mohammad Abo mousa.**
	3.	**Islam Mahmoud Alazab.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	

Background: The aim of this work was to investigate the efficacy of Transcranial Magnetic Therapy (TMT) on Fatigue in Multiple Sclerosis patients. It was conducted in outpatient clinic in Faculty of Physical Therapy, Cairo University. Subjects and Methods: Thirty Multiple Sclerosis patients from both sexes represented the sample of this study. They were chosen from outpatient clinics, Faculty of Physical Therapy, Cairo University and Multiple Sclerosis specialized clinic in the Neurology department, Faculty of Medicine, Cairo University . The patient's age ranged from twenty to forty years. They were assigned randomly into two equal groups; the study group (GA) and the control group B (GB).The assessment of fatigue is done before and after treatment for both groups by Fatigue Severity Scale(FSS) and Fatigue Assessment Scale(FAS). Assessment of Multiple Sclerosis symptoms was done before and after treatment for both groups by Expanded Disability Status Scale(EDSS). Study group (GA) treated by TMT (Low intensity and low frequency) in addition to a selected physical therapy program for fatigue in Multiple sclerosis patients (Treadmail training, bicycle training and deep diaghragmatic breathing exercises). Control group (GB) treated by the same program of treatment for Fatigue only as the GB without TMS. The duration of treatment was six weeks, three times weekly ,day after day. Results: Comparison of the mean value of each variable pre and post treatment in each group revealed a significant improvement in all different parameters in both groups ; however comparison between post results of both groups revealed that the study group (GA) showed a high significant improvement compared to the control group (GB) in all different variables (p <0.01 for all), the results of the study showed that there, was a moderate positive highly significant correlation between FAS scores and FSS scores also there , was a moderate positive highly significant correlation between FAS and EDSS also there , was a moderate positive highly significant correlation between FSS and EDSS , so application of TMT with low intensity and low frequency had a positive effect in decreasing MS fatigue.

Key words	**1.**	**Sclerosis.**
	2.	**Fatigue.**
	3.	**TMT.**
	4.	**FSS.**
	5.	**FAS,EDSS.**
Arabic Title Page	**:**	فاعلية التنبيه المغناطيسى عبر الجمجمة على الإرهاق فى مرضى التصلب المتعدد.
Library register number	**:**	**3375-3376.**

Author	**:**	**Mona Abd El-Ghaney Mohammed.**
Title	**:**	**Functional outcomes of selected bilateral upper extremities training program in stroke patients.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Magdy Ahmed Arrafa.**
	2.	**Mohamed El Sayed El Awuady.**
	3.	**Waleed Talat Mansour.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	

The purpose of this study is To evaluate the effect of selected bilateral training program on improving the function of upper extremities in stroke patients. Methods: Thirty stroke patients, aged from 45 to 65 years old were participated in this study. They were randomly assigned into two equal groups. Group 1 is a study group and was treated by selected bilateral training program combined with traditional physical therapy program for upper extremities. Group 2 is a control group was treated with traditional physical therapy program only. Both groups participated in an 12 week training protocol. They received three training sessions weekly every other day. General neurological assessment was done for all the patients before conducting this work while assessment scales including Fugl-meyer assessment scale for upper extremity (FMUE), Motor assessment scale (MAS) and Wolf Motor Function Test (WMFT) have been implemented before & after the treatment. Results: There was a highly significant difference between pre and post treatment in the study and control groups regarding the three measured variables. There was a highly significant difference among the two groups with the best results for study group (G1) regarding all measured variables. Conclusion: A program of selected bilateral training exercises combined with traditional physical therapy program is more effective than traditional physical therapy program alone in improving function of upper extremities in patients with stroke.

Key words	**1.**	**Stroke.**
	2.	**Bilateral training.**
	3.	**Upper extremities.**
Arabic Title Page	**:**	**النتائج الوظيفية لبرنامج مختار لتدريب الطرفين العلويين معاً في مرضى السكتة الدماغية**
Library register number	**:**	**3343-3344.**

Author	**:**	**Mostafa Shawky khaled .**
Title	**:**	**Mobilization with movement in chronic lumbar disc prolapse/ Mostafa Shawky khaled.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Nawal Abd El-Raouf Aboushady.**
	2.	**Sherif Ibrahim Zalat.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	

The purpose of this study was to investigate the efficacy of mobilization with movement (MWM) technique on pain level, functional disability, and spinal mobility in patients with chronic lumbar disc prolapse . Subjects and methods: Thirty referred patients from both sexes were diagnosed by physician with chronic lumbar disc prolapse, aged 25 to 45 years ,Subjects were randomly divided into two groups; group A (control group) received selected conventional physical therapy program that include (Infrared, Ultrasonic and strength exercises for back and abdominal muscles). Group B (study group) received the selected physical therapy program as group A in addition to MWM technique, the treatment was applied three days/week for four weeks. Level of pain was measured by Visual Analogue Scale, Lumbar range of motion was measured by Inclinometer and modified schoper`s test and Functional disability was measured by Oswestry disability scale. Measurements were taken at two intervals pre and post-treatment. Results: There were statistical differences between the two groups, where the study group showed greater improvement in level of pain intensity, lumbar flexion ROM, and functional disability. Conclusion: mobilization with movement technique is considered as an effective treatment for reducing level of pain, increasing lumbar ROM and improving functional disability in individuals with chronic lumbar disc prolapse.

Key words	**1.**	**lumber disc prolapsed.**
	2.	**MWM technique.**
	3.	**Inclinometer.**
	4.	**Oswestry disability scale.**
Arabic Title Page	**:**	**تليين يدوي مع الحركه فى حالات الانزلاق الغضروفى القطنى المزمن.**
Library register number	**:**	**3331-3332.**

Author	**:**	**Noura Abd Elhamid Ahmed Elkafrawy.**
Title	**:**	**IMPACT OF TRUNK CONTROL ON BALANCE AND FUNCTIONAL ABILITIES IN STROKE PATIENTS.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Magdy Ahmed Arrafa.**
	2.	**Waleed Talat Mansour.**
	3.	**Hanan Helmy El-Gendy.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	

Background: **A major prerequisite for balance and coordinated extremity use in daily functional activities is proximal trunk stability.** ***Objectives:*** **The aims of this study were to evaluate trunk control in chronic stroke patients, to determine to what extent it affects balance abilities and functional performance of those patients, to recognize which subscale of Trunk Impairment Scale is the best indicator of patients' balance and functional abilities and to assess the effect of balance impairment on the functional abilities of those patients.** ***Methods:*** **forty adult post-stroke ambulant patients participated in this study. Their mean age was 56.1± 5.45 years. The testing protocol included assessment of trunk control by Trunk Impairment Scale, evaluation of balance ability of each patient by Biodex Balance System, and assessment of patient's functional performance by Functional Independent Measure (motor subscale).** ***Results:*** **the trunk control was detected to be impaired in 39 (97.5%) out of 40 patients. Measures of trunk control were significantly correlated with measures of balance and functional ability. Univariate regression analysis and partial correlation showed that the dynamic sitting balance subscale of the Trunk Impairment Scale has the highest effect on measures of balance and functional ability. Also, patients' functional performance is strongly dependent on their balance ability.** ***Conclusion:*** **this study clearly indicates that trunk performance is still impaired in most of chronic stroke patients and it strongly affects their balance and functional abilities.**

Key words	**1.**	**Stroke, Trunk control.**
	2.	**Trunk Impairment Scale.**
	3.	**Balance.**
	4.	**Functional performance.**
Arabic Title Page	**:**	**تأثير التحكم في الجزع على الاتزان و القدرات الوظيفية عند مرضى السكتة الدماغية.**
Library register number	**:**	**3371-3372.**

Author	**:**	**Osama M. Elmehrath.**
Title	**:**	**Effect of Shock wave therapy: on knee extensors spasticity in patients with stroke.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Gehan M. Ahmed.**
	2.	**Hatem S. Mohamed.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	

Thirty patients from both gender (45-65 years) with ischemic stroke in the domain of the carotid system participated in this study. Methods: The patients were assigned randomly into two equal groups: *(Study group)* received three sessions of ESWT on knee extensors as one session per week and *(Control group)* received placebo stimulation of ESWT on knee extensors. Both groups received selected physical therapy program for stroke patients (every other day) for total four weeks. The patients were evaluated by clinical examination. Measurement of muscle tone was assessed by Modified Ashowrth Scale, maximum knee joint flexion angle during walking was assessed by the digital camera and Auto CAD program, speed of walking was assessed by calculating the distance (ten meters) divided by the time (m./ sec.) and function at knee joint was assessed by percent of function scale at knee joint. All the measurements were taken at three intervals, pre treatment, three weeks and four weeks after treatment. Results: The findings of this study demonstrated that, the *study group* showed significant improvement in quadriceps femoris muscle tone, maximum knee joint flexion angle during walking, speed of walking and percent of function at knee joint than the *control group*. Conclusion: Application of ESWT is effective as a treating method for stroke patients with spasticity

Key words	**1.**	**Stroke**
	2.	**Spasticity**
	3.	**Extra Corporeal Shock Wave Therapy**
	4.	**knee extensors.**
Arabic Title Page	**:**	**تأثير العلاج بالموجات التصادمية على تشنج العضلات الباسطة للركبة في مرضى السكتة الدماغية.**
Library register number	**:**	**3585-3586.**

Author	**:**	**Reham Raafat Henary Azer.**
Title	**:**	**Smoking and low back pain : Effect of physical therapy intervention.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Moshera Hassan Darwish.**
	2.	**Hazem El Kashef.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	
Objectives: to analyze and investigate the effects of smoking on lumbar discs as a cause of back pain, and to evaluate the effect of physical therapy intervention in treatment of mechanical low back pain in smoker patients. Subjects and methods: Fifteen adult smokers male patients suffered from chronic non-specific low back pain (group B) matched with fifteen adult non-smokers male patients suffered from chronic non-specific low back pain (group A). Both groups treated by the same physical therapy program (low intensity pulsed ultrasound+ Mckenzie exercise program) for one month three sessions per week. Radiological analysis of lumbar discs at all levels of lumbar spine was done for both groups (affected lumbar discs, degenerative changes of annulus fibrosus, nucleus pulposus, end plate and disc height "L4-5& L5-S1"). All patients were assessed pre and post treatment by "electrical stimulation" as an objective method for pain assessment (pain threshold & tolerance), and back performance scale (BPS) to evaluate daily activities. Results: radiological analysis revealed that there was a significant difference between both groups in the mean values of change in nucleus pulposus and disc height at "L4-5". Post treatment, a significant improvement (P< "0.05") in pain threshold, tolerance and back performance scale in both groups was observed. Group A(non-smokers) showed greater improvement than Group B (smokers) in pain threshold and back performance scale. Conclusion: there was a strong relationship between smoking and disc degeneration. Low intensity pulsed ultrasound with Mckenzie exercises program are effective therapy program in treatment of smoker male patients with chronic low back pain.		
Key words	**1.**	**Low back pain.**
	2.	**low intensity pulsed ultrasound.**
	3.	**Mckenzie exercise.**
	4.	**smoking.**
Arabic Title Page	**:**	**التدخين و الم اسفل الظهر: تأثير تدخل العلاج الطبيعي.**
Library register number	**:**	**3457-3458.**

Author	**:**	**Remonda Nabil Antoon Yacoub.**
Title	**:**	**Effect of low level laser therapy on discogenic headache patients.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Nawal Abd El-Raouf Abou Shady.**
	2.	**Ahmed Zohdi.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	

Objectives: The objectives of this study were to determine the influence of low level laser applied on acupuncture points in cervicogenic headache patients. Subjects and methods: Thirty patients were assigned into two equal groups, a study group (1) and a control group(2) . The G1 received selected physical therapy program in addition to acupuncture laser therapy, while, the G2 received the same physical therapy program, in addition to placebo laser therapy. The patients were assessed with visual analogue scale which was recorded twice (before and after treatment). OB goniometer for measuring range of cervical flexion, extension and rotation, and migraine disability assessment questionnaire. Results: There was a significant difference between both groups in range of motion measured by OB goniometer, migraine disability assessment questionnaire and the visual analogue scale before and after treatment. Conclusion: Low level laser applied on acupuncture points is effective in treatment of discogenic headache.

Key words	**1.**	**Acupuncture points.**
	2.	**cervicogenoic headache.**
	3.	**OB Goniometer.**
Arabic Title Page	**:**	**تأثير العلاج بالليزر منخفض الشدة على مرضى الصداع الغضروفى.**
Library register number	**:**	**3237-3238.**

Author	**:**	**Sara Aziz Mohammed El Said.**
Title	**:**	**Efficacy of magnetic field Versus Conventional Physical Therapy In Chronic sacroiliitis.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Hussien Ahmed Shaker.**
	2.	**Wael Salah Shendy.**
	3.	**Husam Salah Morad.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	

The purpose of this study was to compare between the effects of magnetic field therapy versus conventional physical therapy on patients with chronic sacroiliitis. Methods: Thirty male and female patients suffering from chronic sacroiliitis were assigned randomly into two equal groups. study group(GA) (n=15) and control group (GB) (n=15). The patients in GA received magnetic field only whereas, the patients in GB recieved traditional physical therapy program (Infrared radiation, ultrasonic and TENS). Parameters of pain assessment through visual analogue scale and balance stability through biodex stability index were measured before and after four weeks of treatment for both groups. Results: post treatment results showed that there was significant decrease in pain intensity in both groups but the improvement of pain in GA was greater than GB. There was significant improvement in balance stability in GA affected side only presented in overall stability and medio/lateral stability improvement. There was no significant improvement in balance stability at any side (affected or non-affected side) in GB Conclusion: it can be concluded that magnetic field is more effective as a method of treatment for chronic sacroiliitis in compare with traditional physical therapy treatment (Infrared radiation, ultrasonic and TENS), with the parameters used in the present study.

Key words	**1.**	**Chronic Sacroiliitis.**
	2.	**Pain.**
	3.	**Balance.**
	4.	**Magnetic Field.**
Arabic Title Page	**:**	**مقارنه بين تاثير المجال المغناطيسي وطرق العلاج التقليديه في حالات التهاب مفصل الحوض المزمن.**
Library register number	**:**	**3415-3416.**

Author	**:**	**Shereen Zarey Anwar.**
Title	**:**	**Percutaneous versus Transcutaneous electrical nerve stimulation in treating mechanical low back pain.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Abdul Alim A. Atteya.**
	2.	**Ebtesam Mohamed Fahmy.**
	3.	**Waleed Talat Mansour.**
Degree	**:**	**Master.**
Year	**:**	**2013.**
Abstract	**:**	
Objective: The purpose of this study was to compare the effect of percutaneous versus transcutaneous electrical nerve stimulation in treating patients with chronic mechanical low back pain. Subjects: Forty five male patients diagnosed as having chronic mechanical low back pain participated in the study their ages ranged from 20-30 years and were divided into three equal groups (I, II, III). Patients in the three groups received a selected physical therapy exercise program. In addition, patients in group (I) received percutaneous electrical nerve stimulation, while patients in group(II) received transcutaneous electrical nerve stimulation. Methods: All patients were submitted to complete clinical assessment. In addition; the following assessment including degree of pain, range of motion of lumbar spine and the functional disability were measured before and after the treatment program. Results: There was significant improvement of pain intensity , functional disability grade and range of motion of lumbar spine after treatment in the three groups. The improvement was significally high in group (I) compared to group (II) and (III). Conclusion: Percutaneous electrical nerve stimulation seems to be more effective than transcutaneous electrical nerve stimulation in treating patients with chronic mechanical low back pain for the sample used in this study.		
Key words	**1.**	**Percutaneous.**
	2.	**TENS (transcutaneous electrical nerve stimulation).**
	3.	**mechanical low back pain.**
	4.	**lumbar range of motion.**
	5.	**functional disability.**
Arabic Title Page	**:**	**التنبيه العصبي الكهربائي عن طريق الوخز بالأبر تحت الجلد مقابل التنبيه العصبي الكهربائي الحسي في علاج آلام أسفل الظهر الميكانيكية.**
Library register number	**:**	**3525-3526.**

Author	**:**	**Wafaa Ahmed Hassan.**
Title	**:**	**Efficacy of Transcranial Magnetic Stimulation On The Unaffected Hemisphere Activity In Stroke Patients.**
Dept.	**:**	**Physical Therapy Department for Neuromuscular and Neurosurgical Disorder and its Surgery.**
Supervisors	**1.**	**Abdul Alim Attya.**
	2.	**Saly Hassan El Kholy.**
Degree	**:**	**Master.**
Year	**:**	**2012.**
Abstract	**:**	
Back ground: After stroke the unaffected hemisphere is disinhibited, due to reduction in transcallosal inhibition from the damaged hemisphere this in turn may increase inhibition of the affected hemisphere by disinhibited unaffected hemisphere and could impair functional recovery Purpose: this study was conducted to determine the efficacy of repetitive transcranial magnetic stimulation on the unaffected hemisphere activity in stroke patients. Methods : Thirty stroke patients were assigned randomly into two equal groups, the study group (G1) and the control group (G2). The study group treated by conventional physical therapy program, as well as repetitive transcranial magnetic stimulation, the control group treated by conventional physical therapy program, the following parameters including quantitative encephalogram ,timed up and go test , laboratory examinations (3-D motion) and Fugle Meyer scale were measured before and after six weeks of treatment program. Results: there was significant improvement in the study group in comparison to control group. Conclusion :There is a positive effect of using repetitive transcranial magnetic stimulation on un affected hemisphere activity and consequently in improving functional activity and gait.		
Key words	**1.**	**Stroke.**
	2.	**repetitive Transcranial Magnetic stimulation.**
	3.	**3-D measurements.**
	4.	**Quantitative electroencephalogram.**
Arabic Title Page	**:**	**تأثير المجال الكهرومغناطيسى عبر الجمجمة على نشاط الفص الصدغى الغير مصاب فى مرضى السكتة الدماغية.**
Library register number	**:**	**3363-3364.**