Author	**:**	**Ahmed Mahmoud Nasr Tolba.**
Title	**:**	**Effect of Low Level Laser Therapy on Knee Range of Motion and Functional Abilities after Total Knee Arthroplasty.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Fatma Seddek Amin**
	2.	**Rania Nagy Karkousha**
	3.	**Adham Abdel Raouf Elsharkawy Elgeidi**
Degree	**:**	**Doctoral.**
Year	**:**	**2021.**
Abstract	**:**	

Background: Persistence of functional limitations for patients with total knee arthroplasty signifies the need to find effective rehabilitation strategies. Purpose: The purpose of the study was to investigate the effect of low level laser therapy on pain threshold level, local knee swelling, knee range of motion and functional abilities after total knee arthroplasty. Subjects and Methods: Forty participants (male and female) had received total knee arthroplasty referred from the orthopedic surgeon of the knee unit at Mansoura University hospital, Egypt and completed in outpatient physical therapy department of Mansoura health insurance hospital, Egypt. The participants were allocated randomly into two groups: Control group (A): 20 participants were treated with intensive functional rehabilitation program in form of (warming up and stretching exercises, specific strengthening exercises, functional task oriented exercises, endurance exercise and cooling down). Whereas experimental group (B): 20 participants were treated with low level laser therapy (LLLT) dose of 6 J/cm2 over 8 points around the knee, (continuous wave, wavelength 650 nm), 60 seconds per point with a total dose of 48J in each session in addition to the intensive functional rehabilitation program until complete 12 treatment sessions, two sessions per week for six weeks. Each session lasted 60-90 minutes. All participants were assessed at base line before starting physical therapy treatment and after 12 sessions. The measured variables were level of pain threshold by pressure algometer, local knee swelling measured by tape measurement, knee range of motion by digital goniometer and level of functional abilities by WOMAC index. Results: The results showed that within group statistics there was a statistical significant difference between pre and post treatment for all variables in each group. Also, there was no statistical significant difference between groups pretreatment regarding general characteristics and all measured variables (P > 0.05) except level of pain threshold which showed significant difference (P< 0.05). While, there was a statistical significant difference between groups post treatment regarding level of pain threshold, local knee swelling, knee flexion and WOMAC index (P< 0.05) in favor of experimental group, but there was no statistical significant difference between groups in knee extension (P > 0.05). Conclusion: LLLT has an effective role in improving level of pain threshold, local knee swelling, knee range of motion and level of functional abilities after total knee arthroplasty and adding it to rehabilitation program gives improvement in these variables after total knee arthroplasty.

Key words	**1.**	**Low Level Laser Therapy**
	2.	**Knee Range of Motion**
	3.	**Total Knee Arthroplasty**
	4.	**Functional Abilities**
Classification number	**:**	**000.000.**
Pagination	**:**	**135 p.**
Arabic Title Page	**:**	**تأثيرالعلاج بالليزر منخفض التردد علي المدى الحركي للركبة والقدرات الوظيفية بعد التغيير الكلي لمفصل الركبة.**
Library register number	**:**	**7397-7398.**

Author	**:**	**Ahmed Sayed Ali Sayed.**
Title	**:**	**Effect of core stabilization on spinopelvic parameters in lumbar disc degeneration.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Neveen Abdel Latif Abdel Raoof**
	2.	**Marwa Shafeik Mustafa Saleh**
	3.	**Hatem Mohamed El Azizi**
Degree	**:**	**Doctoral.**
Year	**:**	**2021.**
Abstract	**:**	

Background: **Although core stability exercises (CSEs) proven to be effective for treatment of patients suffering from various musculoskeletal disorders, its effect on treatment of patients with Lumbar Disc Degeneration (LDD) has not yet been fully investigated.** ***Purpose:*** **This study was aimed to investigate the effects of CSEs on spinopelvic parameters, pain intensity and functional improvement in patients with LDD.** ***Subjects:*** **Eighty four patients of both genders 45 females and 39 males with mean age 40.68 ± 4.75 years, mean weight 76.39± 4.97 kg; mean height 166.78± 4.1 cm; and mean body mass index 27.44 ± 1.25 kg\m^2 were diagnosed by orthopedist with LDD and were distributed randomly and equally to the study or the control group. Group A (Study) received CSEs in addition to traditional physical therapy (Traditional physical therapy exercises, Infrared, Ultrasonic and Transcutaneous Electrical Nerve Stimulation), while group B (control) received only traditional physical therapy 3 sessions per week for 12 weeks. Spinopelvic parameters, pain intensity and functional disability were determined for all patients in both groups before and after the treatment program.** ***Methods:*** **For all patients; spinopelvic parameters were determined through applying lateral views x ray by The OmniDiagnost Eleva after that on marked X-ray films spinopelvic parameters were measured by using Surgimap Spine Software program, pain intensity was determined by Visual Analogue Scale (VAS) and functional disability was determined by Oswestry Disability Index (ODI).*Results:* **There were significant differences in all variables (p = 0.001) in the group A post treatment compared with that pretreatment. There were significant differences in LSA (p=0.02), LLA (p=0.004) and SS (p=0.02) in the group B post treatment compared with that pretreatment, but there was no significant difference in PI (p=0.12) and PT (p=0.94) in the group B between pre and post treatment. However, there was a significant decrease in the mean values of LSA, LLA, PI, PT, VAS, ODI (p = 0.0001) and SS (p = 0.008) of the group A post treatment compared with that of the group B.** ***Conclusion*****: Core stability exercises for patients with LDD could provide an additional effect on improving spinopelvic parameters, pain intensity and functional abilities. So, it can be used with the traditional physical therapy program in the rehabilitation of patients with LDD.**

Key words	**1.**	**Core stability exercises**
	2.	**Spinopelvic parameters.**
	3.	**Lumbar disc degeneration**
Classification number	**:**	**000.000.**
Pagination	**:**	**125 p.**
Arabic Title Page	**:**	**تأثير الثبات المحوري على المعايير الفقرية الحوضية في تآكل الغضروف القطني.**
Library register number	**:**	**7339-7340.**

Author	**:**	**Asmaa Hossam Eldein Ali.**
Title	**:**	**Effects of Whole-Body Vibration on Craniovertebral Angle and Balance Control in Forward Head Posture.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Fatma Seddik Amin**
	2.	**Enas Elsayed Mohamed Abutaleb**
Degree	**:**	**Doctoral.**
Year	**:**	**2021.**
Abstract	**:**	

Back ground: Forward head posture (FHP) is one of common faulty postures seen among university students. A fault posture of head can disturb the body balance. Whole Body Vibration (WBV) is a quick method of neuromuscular training used to increase muscle strength, improve dynamic balance control and eventually correct posture. Purpose: A randomized controlled trial was designed to investigate the effect of WBV training on craniovertebral angle and dynamic balance control in subjects with forward head posture. Methods: Forty -five participants (11 males and 34 females, 18-23 years old) were randomly allocated into 3 equal groups: group (A) received postural advices + traditional exercise treatment (stretching and strengthening exercises), group (B) received postural advices + whole body vibration training, group (C) received postural advices + traditional exercise treatment + whole body vibration training, 3 sessions /week for 4 weeks. Outcome measures included craniovertebral angle (CVA), overall stability index (OSI), anteroposterior stability index (APSI) and mediolateral stability index (MLSI) that were assessed at baseline and 4 weeks post-intervention. Results: Comparing all groups post training revealed that there were statistically significant increases($p<0.05$) in all measured variables (CVA, OSI, APSI and MLSI) in favor of group (C), while there were statistically non-significant differences between group A & B ($p > 0.05$). Conclusion WBV training could provide an additional effect in the treatment of FHP subjects, as it improves craniovertebral angle and dynamic balance control. So WBV training can be incorporated with the traditional exercise treatment of FHP.

Key words	**1.**	**Whole body vibration**
	2.	**Forward head posture**
	3.	**Craniovertebral angle**
	4.	**Balance and postural advices**
	5.	**Balance Control.**
Classification number	**:**	**000.000.**
Pagination	**:**	**125 p.**
Arabic Title Page	**:**	**تأثير الاهتزاز الكلى للجسم على الزاويه القحفيه الفقريه العنقيه والتحكم فى الاتزان فى وضع الرأس الأمامى.**
Library register number	**:**	**7445-7446.**

Author	**:**	**Haitham Ahmad Mo'men AL-Masry.**
Title	**:**	**Spatio-Temporal Parameters in Normal Gait.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Mohsen Mohamed El-Sayyad**
	2.	**Neveen Abdel Latif Abdel Raoof**
	3.	**Yasser Ramzy Lasheen**
Degree	**:**	**Doctoral.**
Year	**:**	**2021.**
Abstract	**:**	

Background: The importance of human gait analysis from the clinical point of view, lies in the fact that gait disorders affect a high percentage of the world's population. Studies on healthy human gait may be partly because there are some difficulties in evaluating healthy gait patterns; even if walkers have usual walking ability, their walking includes many patterns, which are at least seemingly neutral. Also understanding differences in gait between men and women is important to start discriminating normal sex related patterns from early pathologic changes. The purpose: of this study was to identify the spatio-temporal parameters among different age groups within each gender and to establish the spatio-temporal parameters between normal males and females within the same age groups. Methodology: Five hundred normal subjects (247 males and 253 females), their age ranges from 10 to 50 years were randomly selected. Design of study: One shot study, They were randomly assigned into 4 equal groups (A,B,C and D) with ages from (10-19,20-29,30-39 and 40-50 respectively). Each group consists of normal 125 subject was randomly assigned for measuring spatio-temporal parameters including (cadence, velocity, step time, step length, step width, stride time, stride length, stance time, swing time, single support time and double support time) and were collected barefoot with the Tekscan High Resolution Walkway Mat™. The results: *among different age groups within each gender*, there were statistical significant differences among groups (A, B, C, and D) in both males and females in *all* spatio-temporal parameters. This significant increase in (cadence favors of group (A) in males and group (D) in females, velocity favors of group (B) in males and females, step time favors of group (C) in males and females, step length favors of group (B) in males and group (A) in females, step width favors of group (C) in males and group (D) in females, stride time favors of group (C) in males and group (A) in females, stride length favors of group (B) in males and females, stance time favors of group (C) in males and females, swing time favors of group (B) in males and group (A) in females, single support time favors of group (B) in males and group (C) in females and total double support time favors of group (C) in males and females). *Within each age group between males and females*, there were statistical significant differences within groups (A, B, C and D) in cadence and velocity. This significant increase in {cadence favors of groups (A, B and C) in males and group D in females, velocity favors of groups (A, B, C and D) in males}. There were statistical significant differences within groups (A, C and D) in step time, this significant increase favors of group (D) in males and groups (A and C) in females. There were statistical significant differences within groups (A, B and C) in step width, this significant increase favors of groups (A, B and C) in males. There were statistical significant differences within groups (B, C and D) in step length and stride length. This significant increase in (step length and stride length favors of males. There were statistical significant differences within groups (A) in stride time, this significant increase favors of females. There were statistical significant differences within groups (A and C) in stance time and swing time. This significant increase in {stance time favors of females, swing time favors of group (C) in males and group (A) in females}. There were statistical significant differences within groups (A and D) in single support time, this significant increase favors of group (D) in males and group (A) in females. There were statistical significant differences within groups (C and D) in total double support time support time, this significant increase favors of females. While there were no statistical significant differences between males and females in {(step time within group (B), step length within group (A), step width within group (D), stride time within groups (B, C and D), stride length within group (A), stance time within groups (B and D), swing time within groups (B and D), single support time within groups (B and C) and total double support time within groups (A and B)}. Conclusion: There were statistical significant differences of age and gender on all tested parameters. Moreover, the interaction between age and gender was significant, which indicates that the effect of age on the parameters was influenced by the gender. Also this study has established values of widely used spatiotemporal parameters that might provide clinicians, physiotherapists and researchers values against which measurements can be compared for assessing and interpreting gait dysfunction.

Key words	**1.**	**Gait Analysis**
	2.	**Tekscan.**
	3.	**Spatio-Temporal Prameters**
Classification number	**:**	**000.000.**
Pagination	**:**	**198 p.**
Arabic Title Page	**:**	معايير المسافه والوقت في المشي الطبيعي.
Library register number	**:**	**7421-7422.**

Author	**:**	**Mai Hussieny M. Ali.**
Title	**:**	**Effect of extracorporeal shock wave therapy on electromyographic activity of trunk muscles in nonspecific chronic low back pain.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Mohamed Hussein El-Gendy**
	2.	**Hisham M. Hussien**
Degree	**:**	**Doctoral.**
Year	**:**	**2021.**
Abstract	**:**	

Background: Non-specific chronic low back pain is a common musculoskeletal problem, which is associated with a reduction in muscle performance and activation. Extracorporeal shock wave therapy (ESWT) has been used effectively in the rehabilitation of low back pain problems yet, there is still limited evidence regarding its mechanism of action. Purpose: to investigate the effect of ESWT on electromyographic activity of trunk muscles, pain, and functional disability in non-specific chronic low back pain. Methods: Thirty patients suffering from NSCLBP were divided randomly into two equal groups. Group "A" received ESWT and standard physical therapy treatment program in form of (progressive strengthening exercises for abdominal and back extensors muscles, and manual passive stretching exercises for hamstring, iliopsoas and back extensors) and Group "B" (control group) received a standard physical therapy treatment program only. Patients received two sessions per week for six weeks. The electrical activities of rectus abdominus, external oblique, lumbar erector spinae and lumbar multifidus muscles during maximum isometric contraction were assessed using Electromyographic device The electrical activities inside the selected muscles were represented as EMG amplitude (mv),Visual analog scale was used to assess pain level and Oswestery Disability index was used to assess functional disability. Results: EMG amplitude values showed statistical significant increase for all muscles. ODI and VAS scores improved in both groups after treatment (p > 0.05). ESWT group demonstrated a significant increase in EMG amplitude values of all muscles and a significant reduction in pain scores, and functional disability compared to the control group (p < 0.05). Conclusion: ESWT can effectively improve electromyographic activity of trunk muscles, and reduce pain level and functional disability in patients with non-specific chronic low back pain.

Key words	**1.**	**Extracorporeal shock wave therapy**
	2.	**electromyography**
	3.	**Specific chronic low back pain.**
	4.	**trunk muscles**
Classification number	**:**	**000.000.**
Pagination	**:**	**106 p.**
Arabic Title Page	**:**	**تأثير العلاج بالموجات الصادمة علي النشاط العضلي الكهربي لعضلات الجذع في ألم أسفل الظهر المزمن الغير محدد.**
Library register number	**:**	**7455-7455.**

Author	**:**	**Sahar Mahmoud Mohamed El Sayed.**
Title	**:**	**Effect of Exergames on Natural Killer Cells in Normal Weight and Obese Children.**
Dept.	**:**	**Department of Basic Science.**
Supervisors	**1.**	**Mohsen Mohamed El-¬Sayyad**
	2.	**Omaima Mohamed Kattabei**
	3.	**Soheir Shehata Rezkallah**
	4.	**Zainab Ali El-Saadany**
Degree	**:**	**Doctoral.**
Year	**:**	**2021.**
Abstract	**:**	

Background: There are an increasing numbers of screens time hours that child in school age has been spending, which coincides with a decreasing of physical activity they have. The rapid increase in prevalence of overweight and obesity signals that development of strategies to face such problem is a health priority. Exergames as promising tool which combines the increasing in physical activity and digital technology that children love. Objectives: To measure the effect of exergaming comparing with aerobic exercise on natural killer (NK) cells in normal weight and obese children. Material and Methods: Sixty children aged from 7-10 years of both sexes were divided into four equal groups: exergaming normal weight group (A), exergaming obese group (B), aerobic normal weight group (C), and aerobic obese group (D). Both (A) & (B) groups played exergaming on Nintendo Wii (C) & (D) groups performed moderate aerobic exercise o treadmill of moderate intensity. All groups practiced 3 sessions per week (30 min), for 4 weeks. The NK cell count and its subsets ($CD56^{dim}$ and $CD56^{bright}$) in peripheral circulation were evaluated pre- and post- exercises. Results: Statistical analysis using, Wilcoxon test and Kruskal-Wallis test revealed that the NK cell count and $CD56^{dim}$ showed significant reductions within group (B) ($p<0.05$), while they showed significant increases within group (D) post-exercise compared to pre-exercise ($p<0.05$). However, $CD56^{bright}$ showed significant reductions within the four groups post-exercise compared to pre-exercise ($p<0.05$). Between groups comparison, pre- and post-exercise, revealed non-significant differences in NK cell count and its subsets ($CD56^{dim}$ and $CD56^{bright}$) ($p>0.05$). Conclusions: Exergaming has a significant suppressive effect in NK cell count and its subsets of obese, while aerobic exercise has a significant boosting effect in NK cell count and $CD56^{dim}$ subset of obese. However, there were no significant differences between exergaming and aerobic exercise groups in the count of NK. Exergaming may be considered a novel tool for a more active and healthy lifestyle and may be useful in the fight against childhood obesity, but they may not exert the same as more traditional physical activity. More studies need to be conducted and examine whether physiological, immunological and metabolically benefits come along with exergames.

Key words	**1.**	**Exergaming**
	2.	**$CD56^{dim}$, $CD56^{bright}$.**
	3.	**Natural killer cells**
	4.	**Aerobic exercise.**
	5.	**Normal Weight**
	6.	**Obese Children.**
Classification number	**:**	**000.000.**
Pagination	**:**	**151 p.**
Arabic Title Page	**:**	**تأثير الألعاب التمرينية على الخلايا الطبيعية القاتلة عند الاطفال ذوي الوزن الطبيعي و البدناء.**
Library register number	**:**	**7355*7356.**