ELECTRONIC GUIDE TO THESES APPROVED BY PHYSICAL THERAPY DEPARTMENT OF SURGERY **PREPARED BY NERVEEN ABD EL SALAM ABD EL KADER AHMED**

Physical Therapy Department of Surgery

Doctoral Degree

2019

Author	:	Bassem M. Fouda.
Title	:	Proprioceptive neuromuscular facilitation and virtual reality
		for improving hand functions post reconstructive surgeries.
Dept.	:	Physical Therapy Department for Surgery.
Supervisors	1.	Prof. Dr. Zakaria M. Emam Mowafy
	2.	Prof. Dr. Ahmed Gamil El Sharkawy,
Degree	:	Doctoral.
Year	:	2019.
Abstract	:	

Background. Tendon transfers are reconstructive surgeries that restore motion or balance to the hand that has impaired or absent function of its extrinsic or intrinsic muscle-tendon units at the level of forearm and hand. Purpose. To evaluate the efficacy of using Proprioceptive Neuromuscular Facilitation (PNF) and Virtual Reality (VR) for improving hand functions post reconstructive surgeries. Subjects. Sixty patients from both genders aged 20 to 35 years old, who had post reconstructive surgeries for flexor muscles of the hand. They were selected from the plastic surgeries department of El Kaser El Aini Hospital. Methods. Subjects were randomly assigned in three equal groups each one has 20 patients; Group A (Study group) had received PNF facilitative techniques in addition to their physical therapy program and medical treatment. Group B (Study group) had received VR-based exercise in addition to their physical therapy program and medical treatment. Group C (Control group) had received only their physical therapy program (splinting, stretching ex., strengthening ex. and ROM ex.) and medical treatment. Measurement. All patients were assessed by using hand-held dynamometer assessment scores for the power of hand flexor muscles (per kilogram), upper extremity functional index (UEFI) score and the Biodex Isokinetic testing for wrist flexor muscles total work (per Joule), wrist Flexion-Extension range of motion (per degrees) and average peak velocity for wrist flexor muscles (per degrees/second). Results showed a statistically significant differences between results of the three groups, where the significant increasing of hand-held dynamometer assessment scores for the power of hand flexor muscles (per kilogram), upper extremity functional index (UEFI) score and the Isokinetic testing for wrist flexor muscles total work (per Joule) was shown in GA and GB compared to GC (P<.0.000 and P<.0.007), (P<.0.000 and P<.0.000) and (P<.0.000 and P<.0.000) respectively, where group A showed the highest mean. while The significant increasing of the Isokinetic testing for wrist Flexion-Extension range of motion (per degrees) and the Biodex Isokinetic testing for average peak velocity for wrist flexor muscles (per degrees/second) was shown in GA and GB comparing to GC (P<.0.000 and P<.0.000) and (P<.0.014 and P<.0.000) respectively, where group B showed the highest mean.

Conclusions. These results revealed that PNF and VR-based exercise are effective in improvement of the power and function of hand flexor muscles and wrist ROM.

Key words	1.	Virtual reality.
	2.	Proprioceptive neuromuscular facilitation.
	3.	Hand function.
	4.	Hand reconstructive surgeries.
	5.	Dynamometer.
Classification number	:	000.000.
Pagination	:	94 p.
Arabic Title Page	:	إستثارة المستقبلات الحسية العميقة ومحاكاة الواقع الإفتراضي لتحسين وظائف اليد
		بعد عمليات الترميم.
Library register number	:	6603-6604.

ELECTRONIC GUIDE TO THESES APPROVED BY PHYSICAL THERAPY DEPARTMENT OF SURGERY PREPARED BY NERVEEN ABD EL SALAM ABD EL KADER AHMED

Author	:	Noha Mohamed Kamel Ahmed.
Title	:	Adjunctive <i>Effect of</i> Low Level Laser Therapy <i>on</i> Quadriceps
		Muscle Strength in Lower Limb Burn.
Dept.	:	Physical Therapy Department for Surgery.
Supervisors	1.	Adel Abdel Hamid Nossier
	2.	Maamoun Ismail Maamoun
Degree	:	Doctoral.
Year	:	2019.
Abstract	:	

Purpose: The current study was conducted to examine the *effect of* low level laser therapy (LLLT) on quadriceps muscle strength in lower limb burn. Subjects and Methods: Sixty patients (37 males and 23 females) who suffered from second degree lower limb burn of thermal injury were participated in this study. Total body surface area (TBSA) for burns ranged from 20% to 35% and their ages ranged from 25-40 years. They were selected randomly from Physical Therapy Department for Burns, Orabi Hospital for Burns, Al Obour City. Procedures: Group (A) (study group) composed of 30 patients who received LLLT before strengthening exercises for quadriceps muscle, 3 sessions /week for 8 weeks. Group (B) (control group) composed of 30 patients who received strengthening exercises for quadriceps muscle, 3 sessions /week for 8 weeks. Patients in both groups were received traditional physical therapy program in the form of (range of motion exercise, stretching, splinting, massage, functional training for ambulation and activities of daily living). Method of evaluation was measurement of quadriceps muscle peak torque before and after 8 weeks of treatment for both groups by using isokinetic dynamometer. Results: There was a significant increase in the mean values of quadriceps peak torque after 8 weeks of treatment in both groups *while* there *was* a significant difference in post treatment mean values of *quadriceps peak torque* in the study group when compared to control group. Conclusion: Low level laser therapy is an effective treatment modality for improving muscle strength and performance in patients with lower limb burn when preceding strengthening exercise training.

Key words	1.	Postmenopausal women.
	2.	Biodex balance system.
	3.	Low Level Laser Therapy on Quadriceps.
	4.	Electronic balance board.
	5.	Muscle Strength in Lower Limb Burn.
Classification number	:	000.000.
Pagination	:	169 p.
Arabic Title Page	:	التأثير المساعد لليزر منخفض الشدة على قوة العضلة الرباعية في حروق الطرف
		السفلى .
Library register number	:	6527-6528.