improvement of muscular strength, improvement of subjective state. Quality of life has improved in all working group with slogan “Be Active Live The Life”. http://dx.doi.org/10.1016/j.rehab.2014.03.1184

P319-e
Development of continuous passive motion (CPM) devices using air pressure system
J.S. Yoon a,b, H. Choi b
a Department of Physical Medicine and Rehabilitation, Guro Hospital, College of Medicine, Korea University, Seoul, South Korea
b Department of Medical Sciences, Graduate School of Medicine, Korea University, South Korea
*Corresponding author.

Keywords: Continuous passive motion (CPM) device; Pneumatic pump

Introduction.– There were many continuous passive motion (CPM) devices for upper extremity using mechanical motor, which have applied forceful range of motion (ROM) exercise without sensing the patient’s compliance. It could raise the problem of excess movement over the safety range. The aim of our study was to develop CPM device using air pressure system, which has advantages of gentle, gradual movements and biofeedback between the patient and device.

Material and methods.– We reviewed the treatment protocol of ROM exercise in the wrist and finger, especially in patients with increased spasticity. For gradual increment of angle and movement, we decided to use multi-air bag system at each joint. In addition, we developed to make the device sense the angle and pressure in patients, not to exceed the safety range and pressure.

Results.– We developed the CPM device for the wrist and finger using multi-air bag system with pneumatic solenoid valves. It could exercise the wrists and fingers progressively with bi-directional biofeedback between the patient and the device for the safety ROM and pressure.

Discussion.– Further studies for clinical implementation should be needed in the patients with spasticity or contracture for evaluating the efficacy and safety.
http://dx.doi.org/10.1016/j.rehab.2014.03.1185

P320-e
The effects of electrical stimulation on selected anthropometric trunk parameters
N. Taheri a, M. Siavash
Isfahan medical university, Isfahan, Iran
*Corresponding author.

Keywords: Electrical stimulation; Obesity; Anthropometric parameters

Introduction.– Two methods are used for decreasing body mass. Firstly, active methods in which the person takes part in physical activities. Second, inactive methods in which there is no requires physical activities, e.g. usage electrical stimulation.

Materials and methods.– In this clinical trial, 50 subjects were randomly put in two groups of case & control. Although both groups received similar diet, subjects in case group had true electrical stimulations, while controls had sham stimulations. After intervention and also follow up period which last four weeks, parameters of body weight, BMI, fat thickness in umbilicus and supra-iliac levels were measured in two groups of study.

Results.– There was a significant difference between the mean values of body weights in case group before and after electrical stimulation (P<0.001). There was a significant difference between the mean values of abdomen circumference in case group before and after electrical stimulation (P<0.001).

Discussion.– This study showed that electrical stimulation does not prefer than diet recommendations to reduce abdominal circumference, fat thickness in umbilical and supra-iliac levels in obese subjects. It seems that electric stimulations have most effects immediately after using this stimulation & in short term manners in abdominal circumference.

http://dx.doi.org/10.1016/j.rehab.2014.03.1186

P321-e
Low-level laser therapy as a possible resource to improve muscle regeneration in rats
N. Rodrigues
University of Sao Paulo, Ribeirao Preto, Brazil

Introduction.– The effects of LLLT were studied during muscle regeneration through gene expression.

Methods.– It was evaluated 10 and 50 J/cm2 doses during 7, 14 and 21 days post cryoinjury, through histopathological analysis and mRNA MyoD, Myogenin, VEGF and Cox-2 expression.

Results.– Irradiated groups presented less inflammatory process than control group after 14 and 21 days. Cox-2 levels were downregulated in all irradiated groups after 7, 14 and 21 days. On day 7, both treated groups had a downregulation of VEGF levels, and an upregulation after 14 and 21 days, mainly with 50 J/cm2. The MyoD levels were upregulated with high dose in all periods and with low dose after 21 days. Myogenin expression was downregulated in both treated groups after 7 days, and was upregulated with 10 J/cm2 after 21 days.

Conclusion.– These responses suggest that LLLT can improve the skeletal muscle regeneration through the gene expression stimulation.

http://dx.doi.org/10.1016/j.rehab.2014.03.1187

P322-e
Uni- or bilateral vibration effect during postural control for young adults
S. Mesure a,b, L. Maynard a, N. Duclos a
a Aix Marseille Université, Institut des Sciences du Mouvement, FSS, Marseille, France
b CRF de Valmonte, France
*Corresponding author.

Keywords: Posture; Vibration; Proprioceptive cues; Center of pression

Objective.– Proprioceptive inputs from legs provide the most sensitive means of perceiving postural sway. The vibration of muscle tendons has become a frequent tool for studying the relative role of muscle proprioception in human postural control. Our objective is to determine how proprioceptive inputs from these muscles influence the entire postural control.

Methods.– We applied bilateral or unilateral vibration on Achilles or Peroneus tendons to 21 young adults in standing position. The center of pressure and the covered length were computed (we analyze on periods of 4 s).

Results.– In all conditions, we observed a backward shift of the CoP. The extreme backward position was reached before the suspension of vibration at around 12–16 seconds after displacement didn’t evolve any more. Y-min position was always more posterior for BiVib compared to UniVib but was reached at a similar time for all conditions.

Conclusions.– The dependence of the magnitude of CoP shift on duration of vibration appears not true after 16 s of vibration. We highlight phenomena of cerebral saturation of proprioceptive inputs, depending on time and not on amplitude of the displacement, with a new position of reference. The return to the initial state is longer when both hemispheres were stimulated.

http://dx.doi.org/10.1016/j.rehab.2014.03.1188

P323-e
Effect of elastic taping on obstacle crossing for the stroke patients with foot drop
Y.T. Hsin a,b, J.F. Yang a, C.P. Chen a,b
a Institute of Physical Therapy, National Cheng Kung University, Tainan City, Taiwan
b Department of Occupational Therapy, Tainan Municipal Hospital, Tainan City, Taiwan
*Corresponding authors.

Keywords: Foot drop; Taping; Obstacle crossing; Stroke

Objective.– Proprioceptive inputs from legs provide the most sensitive means of perceiving postural sway. The vibration of muscle tendons has become a frequent tool for studying the relative role of muscle proprioception in human postural control. Our objective is to determine how proprioceptive inputs from these muscles influence the entire postural control.

Methods.– We applied bilateral or unilateral vibration on Achilles or Peroneus tendons to 21 young adults in standing position. The center of pressure and the covered length were computed (we analyze on periods of 4 s).

Results.– In all conditions, we observed a backward shift of the CoP. The extreme backward position was reached before the suspension of vibration at around 12–16 seconds after displacement didn’t evolve any more. Y-min position was always more posterior for BiVib compared to UniVib but was reached at a similar time for all conditions.

Conclusions.– The dependence of the magnitude of CoP shift on duration of vibration appears not true after 16 s of vibration. We highlight phenomena of cerebral saturation of proprioceptive inputs, depending on time and not on amplitude of the displacement, with a new position of reference. The return to the initial state is longer when both hemispheres were stimulated.

http://dx.doi.org/10.1016/j.rehab.2014.03.1188
Introduction.– Foot drop is a common impairment in the stroke patients. The purpose of this study was to investigate the effect of elastic taping on the stroke patients with foot drop while crossing obstacle.

Material and methods.– The stroke patients who regularly used AFO to correct foot drop participated in this study. Subjects stepped over a 4 cm height obstacle under three conditions:
- wearing an AFO (AFO);
- taping (KTP);
- without AFO and without taping (NON).

Preliminary data of successful rate and kinematics from four subjects were analyzed. More data are collecting.

Results.– The average successful rate revealed the KTP condition was the highest (96.88 ± 6.25%), followed by the NON (93.75 ± 7.22%) and the AFO (84.38 ± 15.73%). Regarding toe clearance, three of four subjects had a similar pattern which showed lower toe clearance under the KTP condition (8.11 ± 1.72 cm) than AFO (9.36 ± 2.64 cm) and NON (9.26 ± 0.99 cm). The ankle joint variability across trials at the moment of crossing obstacle was greater for the KTP condition (3.46 ± 1.83°) than the other two conditions (AFO: 1.84° ± 0.99°; NON: 2.76° ± 1.05°). Similar patterns were found for the knee and hip joints.

Discussion.– The stroke patients may be benefit from elastic taping on obstacle crossing. The potential applications of elastic taping will be discussed.

http://dx.doi.org/10.1016/j.rehab.2014.03.1189

P324-e
Examining the effect of wrist support with two different computer mouse types among healthy computer users

W.L. Chang a, C.Y. Cho
Department of Physical Therapy, Medical College, National Cheng Kung University, Tainan City, Taiwan
*Corresponding author.

Keywords: Ergonomic mouse; Wrist support; Posture; Surface electromyography; Perceived score

Introduction.– Excessive wrist extension and ulnar deviation are risk factors for computer users. The aim of study was to examine the effect of wrist support use on upper extremity performance during using conventional and ergonomic mouse.

Material and methods.– Twelve subjects performed aiming task for four conditions. Outcome measures included posture, electromyography, perceived ratings.

Results.– The ergonomic mouse significantly reduced forearm pronation and the range of wrist deviation, but it led to greater wrist extension and higher activity of anterior deltoid (AD). The wrist support significantly reduced wrist extension, ulnar deviation and activity of pronator teres (PT). Perceived ratings showed that subjects preferred conventional mouse due to usability and comfort.

Discussion.– Consistent with previous finding, the ergonomic mouse promoted a more neutral forearm postme and decreased ulnar deviation. However, forearm muscle activity did not improve and this mouse caused higher activity of AD. The differences might be explained by without offering instructions on how to correctly holding ergonomic mouse and the restricted movement of wrist changed the firing strategy of muscle. Only allowing the wrist on table reduced the effect of forearm support. Placement of wrist was restricted by wrist support so the movement of dragging mouse was compensated by upper arm.

http://dx.doi.org/10.1016/j.rehab.2014.03.1189

P325-e
Impact of physical therapy and medicamentous therapy on muscle strength in subjects with lower bone density

K. Markovic a, M. Karadzic, J. Jovanovic, R. Filipov, M. Stoicikov
Institute for rehabilitation Niska Banja, Nis, Serbia
*Corresponding author.

Keywords: Osteoporosis; Muscle strength; Medicament and physical spa therapy

Introduction.– Important parameters for functional assessment of muscles of the trunk are: quantification of muscle strength, range of motion and endurance.

Material and method.– One hundred and twenty-five postmenopausal women with lower bone mineral density were included and were treated with prescribed medicament and physical spa therapy for six months.

Results.– In the group without therapy during six months with average T-score = -2.3, reduction in muscle strength and mobility in the LS part of the spinal column of 15.47% was noticed. The second group with average T-score = -2.4 was treated with physical spa therapy. After six months, muscle strength and mobility in the LS part was increased by 17.92%, especially in contraction of extensors by 28.43%. Third group with average T-score = -2.7 was treated with calcium and vitamin D3. In the last group with average T-score = -2.88 and the increase of muscle strength and mobility in the LS part was far more than 35%.

Conclusion.– With the application of the prescribed medicament and physical spa therapy in subjects with the lower bone mineral density, there is statistically significant increase of muscle strength and functional mobility in the LS part of the spinal column, independent of age, duration of disease and level of bone mineral density reduction.

http://dx.doi.org/10.1016/j.rehab.2014.03.1191

P326-e
Comparison between laser and LED light therapy on injured rat muscle

M. Mantineoa, J. Pinheiro b,*, M. Morgado c
a IBIL – Institute for Biomedical Research on Light and Image, Faculty of Medicine, University of Coimbra, Coimbra, Portugal
b Rehabilitation Medicine Department, Faculty of Medicine, University of Coimbra, Portugal
c Instrumentation Center, Department of Physics, University of Coimbra, Coimbra, Portugal
*Corresponding author.

Keywords: Low level laser therapy (LLLT); Inflammation treatment; Cytokines; Coherent illumination

Introduction.– In low level laser therapy there is controversy on the use of non-coherent LED sources as replacement for laser light. Here we evaluated the effect of equivalent doses, of same wavelength laser and LED sources, on the treatment of muscle inflammation on rats.

Material and methods.– Twenty Wistar male rats were randomized in one control (10 animals) and two treatment groups (Laser and LED). Inflammation was induced by mechanical trauma in the gastrocnemius muscle. Equal light doses (40 mW, 14.33 J/cm²) were applied daily in the treatment groups using laser (830 nm) and LED (850 nm) illumination, during 6 days. Blood was collected at days 0, 3 and 6. Animals were sacrificed at day 6. TNF-α, IL-1b, IL-2 and IL-2 cytokines were measured by ELISA.

Results.– At days 3 and 6, the reduction in the concentration of all cytokines was significant higher for the Laser treated group.

Discussion.– This study found a large difference in treatment effect between coherent and non-coherent sources providing equal doses of radiation with similar wavelength. This is in accordance with suggestions that the coherence longitudinal length of the light source has an important role when irradiating bulk tissue.

http://dx.doi.org/10.1016/j.rehab.2014.03.1192

P327-e
Radial shock wave therapy in patients with plantar fasciitis: One-year follow-up study

E.M. Ilievaa, R. Minchevb, M. Gonkova a
a Department of Physical and Rehabilitation Medicine, Medical University of Plovdiv, Plovdiv, Bulgaria
b Orthopaedic Department, Medical University of Plovdiv, Bulgaria
*Corresponding author.

Keywords: Radial shock wave therapy; Plantar fasciitis; One-year follow-up study